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TEACHER PERCEPTIONS AND ATTITUDE OF DIFFERENTIATED INSTRUCTION

A MASTER'S THESIS
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BY

Anu Pazhayannur

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TEACHER PERCEPTIONS AND ATTITUDE OF DIFFERENTIATED INSTRUCTION

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December 2022

APPROVED

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Abstract

A classroom comprises of students who are learning at grade level, below grade level and some who find grade-level curriculum not challenging enough. Teachers who are planning and executing lesson plans that view the classroom as one entity are leaving struggling learners confused and gifted learners under-challenged and maybe disengaged. It is obvious that the needs of students must be met in the classrooms to help student achievement and to ensure the academic success of all the children in the classroom.

In essence, teachers are like doctors who can identify the problem and recommend the appropriate instructional method that can help the diverse set of students achieve success in their learning outcomes. In a differentiated classroom, some of the control is transferred to the student and the teacher uses the learners' prior knowledge to design and plan lessons that resonate with the students' readiness, interest, and learning style. Such a stimulating environment nurtures growth and empowerment while eliminating frustrations in struggling learners and boredom in high achievers. Educators have embraced differentiated instruction (DI) as an effective instructional strategy to help scaffold and remediate the issues faced by struggling readers. However, many educators are still not implementing DI in their classrooms on an ongoing basis. This could be because of the lack of confidence, support from management, or also due to lack of awareness around the methodology of DI. To sum it up, educators must engage in effective instructional strategies to teach the diverse student population so that their academic success is achieved. This research study examines the attitudes and perspectives of teachers towards differentiated instruction.

CONTENTS

Acknowledgments	3
Abstract	4
Chapter I: Introduction	6
Theoretical Framework	7
Definition of Terms	10
Research Topic and Rationale	12
Chapter II Review of Literature	14
Literature Search Procedures	14
Teacher Perceptions of DI in Primary and Middle Schools	14
Teacher Perceptions of DI in Early Years	26
Teacher Perceptions of DI in Higher Education	31
DI in Second Language Learning	39
DI for Gifted Students	45
DI in Multi-grade and Mixed Ability Classrooms	49
Challenges in Implementing DI	64
DI in a Virtual Environment	71
Chapter III: Discussion and Conclusion	77
Summary of Literature	77
Limitations of the Research	79
Implications for Future Research	80
Implications for Professional Application	81
Conclusion	83
References	84
Appendix	93

Chapter I: Introduction

The children in our classrooms are unique and special and vary in their interests, talents, capabilities, backgrounds, and ethnicities. As much as we are aware of these differences, often educators seem to teach them all in the same manner. This could be the result of being schooled in the “one-size-fits-all” system of education where the curriculum, resources, and assessments are the same for every student. This methodology of mass education only caters to the needs of some students while leaving behind students who struggle and leaving the top achievers uninspired. In India, The National Education Policy 2020 states that:

Various governmental, as well as non-governmental surveys, indicate that we are currently in a learning crisis: a large proportion of students currently in elementary school - estimated to be over 5 crores in number - have not attained foundational literacy and numeracy, i.e., the ability to read and comprehend basic text and the ability to carry out basic addition and subtraction with Indian numerals. (p. 9)

The gaps in achievement are not specific to only government-run schools as both private and public schools are not successful in providing an environment that stimulates and instils motivation to learn and excel.

The “No Child Left Behind Act” (2001) that was passed in the USA and the “Every Child Matters” movement in the UK both had equitable education for all students at their core. Differentiated Instruction (DI) became a relevant and popular methodology to bridge the achievement gaps. Similarly, in India the National Education Policy 2020 classifies a good school as a place that offers varied learning experiences which allows student agency and helps them develop and grow according to their own leaning profiles and interests. DI is a research based educational

strategy that stands on the foundation of ensuring equal and equitable learning opportunities for all students to achieve academic success. Tomlinson (2001) contended that:

We know that learning happens best when a learning experience pushes the learner a bit beyond his or her independent level. When a student continues to work on understandings and skills already mastered, little if any new learning takes place. On the other hand, if tasks are far ahead of a student's current point of mastery, frustration results and learning does not. (p. 8).

Bridging the achievement gap for struggling learners and engaging high achievers in challenging work is possible in classrooms where teachers differentiate instruction. Using varied instructional strategies and using the time with students flexibly by creating and executing lessons in partnership with students are some of the salient features according to Tomlinson (2001).

Theoretical Framework

The following theoretical framework gives information about the definition of differentiated instruction as well as the components of differentiated instruction. The grounded belief of Differentiated Instruction is the presence of diversity of students in the classroom which sets the expectation for teachers to alter their instruction based on students' needs (Smit & Humpert, 2012). According to Tobin and Tippet (2012) DI is a collection of instructional strategies that can be implemented in an inclusive classroom to meet the diverse needs. Similarly, Roy et al. (2013) defines differentiated instruction as "an approach by which teaching is varied and adapted to match the abilities of students using systematic procedures for academic progress monitoring and data-based decision-making" (p. 1187). DI encourages teachers to include the students' learning attributes while designing instructional strategies for lessons (Goddard et al., 2010). Roy et al. (2013) mentioned that the instructional strategies of DI can be implemented in small groups

and are not the same as individualized learning that focuses on remediating individually for specific learning disabilities or learning gaps. Differentiated instruction is a methodology that is based on “ensuring that what a student learns, how the student learns it, and how the student demonstrates what has been learned is a match for that student’s readiness level, interests, and preferred mode of learning” (Tomlinson, 2003, p. 188). Struggling readers in a classroom require specific instructional strategies that can help them bridge the proficiency gaps on a regular basis. Many educators have embraced DI as an effective instructional strategy to help scaffold and remediate the issues faced by struggling readers. Vygotsky (1962) hypothesized that children should be stimulated through a sequence of goals that increase in difficulty. A child who is not challenged in this way fails to reach the highest stages of thinking or reaches them with great delay.

According to Tomlinson (2003) DI provides teachers with a variety of methods to meet students’ different needs by adjusting what and how they teach. She adds that every classroom is comprised of students with different abilities and the onus relies on the teacher to tailor the instruction and curriculum to cater to these various students ensuring them a chance to succeed in school. The fundamental concept of DI is to take a responsive instructional attitude towards not just the students’ needs but also their interests and learning styles. Tomlinson’s model of differentiated instruction is one of the most respected and valued models in the world of education. She suggests that teachers must accommodate and alter the content, process, and products of a lesson to enhance the chances of students’ achievement and engagement. This model advocates teachers to be alert to lesson design to help students broaden their understanding and knowledge of the subject. Teachers are encouraged to use multimodal approaches such as audio, visuals, manipulatives, various texts, and varied materials to supplement the content. Teachers are urged to scaffold the learning for students to help them succeed and reach grade level proficiency.

Tomlinson (2003) also emphasized the importance of differentiating how students demonstrate their learning by providing tiered activities and allowing students the opportunity to choose the way they displayed their learning. The figure in the appendix shows that curriculum can be differentiated by content, process, and product to adapt to the readiness level, interests and learning profile of the student based on the model by Tomlinson and Imbeau, (2010).

Content encompasses the skills, knowledge and understanding that students need to learn (Tomlinson & Imbeau, 2010). In a differentiated classroom the learning objectives for all students must remain same while the teacher accommodates the “methods that students use to access key content” (Tomlinson & Imbeau, 2010, p. 15). To address the individual student needs, teachers also provide appropriate scaffolding when working with content—by teaching prerequisite content to some students, allowing advanced students to move ahead of the class, or even changing the content for some students based on their individualized education programs.

According to Tomlinson and Imbeau (2010) process is defined as “how students come to understand and make sense of the content” (p. 15). By differentiating process, students can make sense of real-life application and that enhances their capabilities to apply the content they learn effectively. Tomlinson (2003) contends that, the pace at which students learn differs and hence the scaffolding required varies based on those specific needs. This stage of differentiation is where all the learning happens and forms a vital part of the knowledge acquisition process.

Products are methods for the students to “demonstrate what they have come to know, understand, and be able to do after an extended period of learning” (Tomlinson & Imbeau, 2010, p. 15). By differentiating the product and giving choices to students to showcase their learning, teachers motivate them to express their thoughts and understanding in their preferred style.

Scaffolding this process in the various stages such as class assignments and formative assessments also help them to acquire grade level readiness.

It is important to alter some students' learning environment to enhance their ability to process and learn better. By helping make changes to the learning space teachers create a conducive and emotionally responsive space for children to flourish and succeed. Acknowledging the fact that some children need movement breaks while some need quiet spaces and others need special accommodations in their learning environment to succeed is the foundation of differentiation based on affect and environment (Tomlinson & Imbeau, 2010).

The modification of the four elements: content, process, product, and affect/environment are guided by the teacher's understanding of students in terms of three characteristics: readiness, interest, and learning profile. Readiness refers to a student's knowledge and skill level regarding given content. A student's readiness level might vary across subjects or content areas. Interest refers to topics, skills, or activities that pique a student's curiosity or inspire him or her. It is "typically linked to a student's strengths, cultural context, personal experiences, questions, or sense of need" (Tomlinson & Imbeau, 2010, p. 17). Learning profile refers to a student preference based on the way they learn and acquire new skills and information.

Definition of Terms

It is important to clarify and explicitly explain some of the terminology that will appear in Chapter II in order to confirm understanding for the reader. Differentiated instruction (DI) is the varied instructional strategies and process of designing lessons. Teachers accommodate content, process, product, and environment as a response to variances in students' needs pertaining to the differences in readiness, interest, and learning profile. Readiness is the level that is appropriate to challenge a student academically in a specific subject or domain which is usually determined

through a pre-assessment process. Interest is the area that excites and invokes curiosity of the student. Learning profile is the way in which the student best processes information. This includes their multiple intelligences, learning styles, cultural background, and any other characteristic unique to that child's learning. Learning style is the student's preferred way of demonstrating their learning and a way to showcase the information such as a written document, presentation, model, visual infographic and so on.

Professional Learning Communities (PLCs) are groups of teachers who work together and exchange ideas to enhance student learning outcomes. Interactive cognition is the learners' thoughts, process and cognitive responses based on instructional approaches. Pre-assessment is a formal or informal way to check students' knowledge and understanding of specific content to help teachers to gauge readiness. Mixed ability is the differences in students' academic capabilities, learning preferences and strengths and weaknesses. Multi-grade is a classroom or environment that has students from different grades.

Zone of proximal development (ZPD) is a student's challenge zone or range where he/she can learn and grow because the task given is neither too easy nor too (Vygotsky, 1978). Multiple intelligence refers to Gardner's (1993) theory of multiple intelligences which are the different ways a student learns such as verbal, spatial, tactile, kinesthetic, logical, musical, interpersonal, and intrapersonal. Attitudes is the preconceived notions or mind-set that determines actions.

Academic achievement is the student's capabilities based on the teacher's classroom instruction. Academic diversity is the range of learners in a classroom who vary in terms of learning capabilities and range from high achievers to struggling learners.

Research Topic and Rationale

A differentiated classroom creates an open and fearless environment for children that gives them the freedom to choose different paths and take risks as they learn and grow. Teachers' understanding of students' prior knowledge inside and outside the classroom gives students the confidence to share their opinions and ask questions making inquiry an integral part of the learning process. Such modifications ensure that children are appropriately engaged in the classroom and are not left bored or frustrated. Due to the enormous workload and responsibilities that teachers have daily, reflecting on their work and spending time on designing and modifying instruction becomes very difficult. This study aims to look at the perception that teachers have towards differentiated instruction in various educational organizations. The study offers an opportunity for teachers to reflect on their own instructional practices to create awareness about differentiated instruction as a vehicle to meet students' diverse needs in a classroom. The topic and guiding questions in this dissertation are as follows:

- How do teachers and school leaders perceive Differentiated Instruction?
- What attitudes do Teachers have toward the implementation of Differentiated Instruction?
- What challenges do educators encounter when implementing Differentiated instruction?

As educators we often find ourselves racing against time to complete the curriculum and ensure student success in the classroom. Every institution and educator is continually examining different teaching strategies and methodologies to bridge the achievement gap in every classroom. Differentiated Instruction is one such strategy that many schools and educators have embraced as we address a diverse set of students with varied needs. It is being widely practiced and researched globally as it is believed to improve student engagement, teacher motivation and learning outcomes. Through the plethora of research articles, publications, studies, and classroom examples

available on DI, there is a great deal of support that shows promising outcomes. As an educator, I have been introduced to this model of instruction very recently, and I found it necessary to deepen my knowledge and understanding of the effectiveness of the model in order to advocate and implement the strategies as a school leader. The intent and purpose of this study is to review empirical research that views Differentiated Instruction from the lens of an educator and school leader and to examine how an effective differentiated classroom can make a difference. The usual classroom that caters to the 'one size fits all' system is failing and so are classrooms where educators are assuming to implement differentiation but are not doing so. Many educators tend to challenge the struggling learners less and give more rigorous work to the top scorers in the name of differentiation (Tomlinson & McTighe, 2006). This can only be the result of not having fully understood the purpose and strategies of differentiation, prompting educational institutions to guide and educate teachers in the correct implementation of DI. Teachers seldom get an opportunity to look back and reflect on their classroom practices due to the workload and meeting curriculum standards. Through this research and study, I hope to closely examine the DI strategies used and teacher perspectives towards DI to understand the challenges faced by educators and raise awareness about accommodating student's individual needs.

Chapter II Review of Literature

Literature Search Procedures

The literature review for the thesis project was conducted through searching for educational journals in ERIC, ProQuest, and EBSCO. The search was conducted for journals from 2000 to present and the list was narrowed down by only reviewing peer-reviewed articles. Only journals and articles that contained research studies to understand the teacher and the school administrators' perspectives, attitudes, and challenges in implementing differentiated instruction (DI) were considered for the purpose of this literature search. The key words used for this literature search were: differentiated instruction, teachers, principals, attitudes, perspectives, challenges, obstacles, inclusion, and multi-grade. This chapter is structured to review the literature on educators' thoughts and perspectives about implementing differentiated instruction in especially K-12 classrooms and what challenges they face in the process. The different sections include looking at different age groups and scenarios such as DI in primary and secondary schools, DI in early years, DI in higher education, DI in language acquisition, mixed ability classrooms, and inclusive classrooms. In each of these environments, research articles were narrowed down so that the journals chosen had the educators' views and thoughts as the main objective of the study.

Teacher Perceptions of DI in Primary and Middle Schools

Differentiated instruction (DI) is a student-centered and responsive teaching philosophy that is an amalgamation of complex, time taking instructional practice. Tomlinson (2005) contended that the differences in teachers' beliefs about how they teach and learn drives their understanding of differentiated instruction. Many research studies looked at teachers' thinking and attitudes and they have shown to have a great deal of influence on their practices and actions (Hall, 2005). According to Santangelo and Tomlinson (2012), teachers' actions and their effective

implementation of DI depends on their attitudes and perception. The diversity seen in students varies from country to country and so do the perceptions and beliefs on DI.

The sequential mixed methods study on randomly selected primary teachers from 492 schools in Ethiopia conducted by Merawi (2018) explored their perceptions of DI, which revealed that they all had varied ideas about DI. Merawi (2018) used a questionnaire to derive quantitative data to understand the participants thoughts about differentiated instruction. The author analyzed the data and then added more details to these results by following up with a qualitative approach. The participants for this study were educators, school heads, students, and administrative personnel from the Awi zone in the Amhara region, Ethiopia. Using random sampling, 535 primary teachers were selected from over 1000 teachers in the Amhara region, Ethiopia. Out of the 535 teachers, 43 teachers failed to fill the questionnaire properly and as a result 492 responses were considered for data collection. Qualitative data was gathered through semi-structured interviews and focused group discussions. The questionnaire, semi structured interviews, and focused group discussions showed that the teachers who attended the five-day intensive hands-on training in DI had significantly positive attitudes towards the implementation of DI. The researcher's quantitative data was convincing of the fact that the right opportunities for professional development and support from the school leadership would have a direct effect on the efficacy of DI implementation. Merawi (2018) noticed that in this sample study, female teachers were more responsive to student needs. Some of the teachers in the focused group discussions also expressed that the low grade pay and the low esteem that the teaching profession holds is a fact that affects teacher motivation. Merawi (2018) concluded by saying that only the right kind of support, training, and motivation can bring in the necessary changes needed in an educational system.

Professional learning communities (PLC) are a great way for teachers to brainstorm and share ideas to increase student achievement. Through effective communication, educators can enhance their understanding on effective ways to help students in their classrooms. By sharing student outcomes and instructional practices across grade levels, educators engage in reflective practices and helps them to take ownership of their child's education. Developing mutual respect and understanding of each other's strengths and weaknesses can help build strong and fruitful relationships among team members. Today, with technology and social media, global PLCs are possible and including more people from various backgrounds increases the possibility for better and faster solutions. Differentiated instruction and its implementation could be a very vital topic to engage in PLCs.

The exploratory study conducted by Wan (2020), explored the connection between PLCs and their DI practices in the primary section of three schools in Hong Kong. This study mainly investigated how primary school teachers perceive DI and engage in their PLCs to implement DI in their instructional practices. The specific research questions explored by the author were to understand the relationship between teacher's engagement in PLCs and their DI practices and the DI practices used in the classrooms. The researcher used convenience sampling methods to include a total of 121 teachers across three primary schools who completed the survey for the purpose of this study. The researcher used a 6-point Likert type scale to collect the data. Based on the component analysis, Wan (2020) examined PLC engagement related to pupil learning, insightful dialogue, and supportive leadership. Also, the PLC engagement profiles of high and low engagement were correlated to DI practices using cluster analysis. As per the findings teachers were focused on student learning but, reported that they did not receive adequate leadership support. The high PLC engagement group had a higher mean score for DI practice while the low

PLC engagement group had a lower mean score for DI practice. This implied that lower levels of PLC engagement resulted in lesser DI practice in the classroom and higher levels of PLC engagement resulted in more DI practices in the classroom. So, Wan (2020) could confidently say that there was an affirmative relationship between PLC engagement and DI practices. However, the remaining components of the PLC engagement (reflective dialogue and supported leadership) did not seem to influence DI practice as positively. The author also categorically noted that the low PLC engagement group did not receive adequate professional development to be able to accommodate the needs of the diverse set of students in the classroom.

The only limitations that Wan's (2020) research encountered were that only subsidized organizations were targeted, and the sample size was relatively small. The teachers showed a great deal of enthusiasm and took ownership of student learning through their engagement in shared leadership and reflective dialogue was low to moderate. Based on the findings, Wan (2020) recommended that schools promote PLC engagement and more opportunities for teachers to participate in shared leadership within the school environment. This could result in better contribution in using DI practices in the classrooms resulting in elevated student achievement. It is extremely vital to empower teachers through professional development to help teachers make better pedagogical and instructional choices. Wan (2020) also suggests using data to make curriculum and instructional decisions. The idea of using data-driven decision-making is a process that can be developed and promoted by the school leadership and by sharing responsibilities with teachers as it increases the potential of teachers to use the data effectively.

It is important for educators who engage in practicing differentiated instruction to have a sound understanding of the theoretical framework and its application. The qualitative research conducted by Gibbs and Beamish (2021) focused primarily on how teachers and school leaders

demonstrated their understanding of DI, the practices, and strategies they used in their classrooms and lastly what challenges they faced in using DI. The secondary teaching staff and school leaders of a Southeast Queensland, Australian school who participated in the study demonstrated a high level of understanding of the DI philosophy. The participants were interviewed over a three-week period and the interview transcripts were later sent to them for verification. A systematic process was followed for coding the data and interpreting the transcripts from the interviews. The trustworthiness of data interpretation was strengthened by Gibbs and Beamish (2021) as they critically discussed and reached a consensus about themes and the thematic structure during the review phase of the coding process.

The findings from the interviews conducted by Gibbs and Beamish (2021) showed that the teachers who were more confident with the application of DI in the classrooms were the ones who had more years of experience teaching and practicing the strategies in the classroom. The school leaders had set high expectations and established an effective support system which was vital for the implementation of DI. Though school leaders did not talk about any major concerns or challenges, the teachers expressed that the planning and execution of DI strategies was time intensive. Gibbs and Beamish (2021) noted that the teachers mentioned in their interviews that they consistently adjusted and accommodated assessment and instruction based on student readiness and abilities using the student data to guide their decisions as suggested by Tomlinson (2014). Though the very small-scale research study revealed that the teachers perceived DI to be extremely effective and necessary for students who were less capable, the implementation was delivered to all students based on their individual needs in the mixed ability classrooms. Gibbs and Beamish (2021) mention that Smale-Jacobse and colleagues (2019) in their systematic review, point out that the complex nature of DI practices and implementation makes it a very tedious

instructional practice to implement for teachers. Gibbs and Beamish (2021) also contended that adequate support from the school leaders in providing teachers professional learning opportunities and adequate time for instructional planning has a major role in the effective implementation of DI.

Acknowledging the presence of a diverse set of students and having a sound understanding of the principals of DI cannot be helpful if the educator does not know how to engage the diverse classroom in a challenging manner. Mengistie (2020) did not favor the practice of streaming which involved segregating students based on their academic abilities into different classes. This grouping resulted in students either continuing in these classes or moving to different levels based on their end-of-year assessment performance. Mengistie (2020) noted that though streaming presented the same pace of learning for students with similar abilities it surely limited the advantages of a mixed ability classroom where children learned from peers and healthy competition. The research study conducted by Mengistie (2020) examined the perspectives and understanding of differentiated instruction amidst the educators in Debre Markos College of Teacher Education who were completing a Diploma course in 2017. Mengistie (2020) aimed to specifically gauge: 1.) the primary school teachers understanding of DI, 2.) explore their attitude towards the implementation of DI, and 3.) to measure how much of the knowledge they possessed on DI was translated into classroom instruction. The targeted participants were 150 primary school teachers out of 3500 educators who belonged to the Amhara Region and were pursuing in-service training at Debre Markos College of Teacher Education. The survey questions were divided into three sections: 1.) knowledge and understanding of DI, 2.) perspective and attitude towards DI implementation, and 3.) questions on the strategies and DI practices being implemented in the classroom. The survey was piloted with 30 educators who did not belong to the targeted

participants and the results were validated for authenticity. Focused group discussions were also conducted along with the survey questionnaire.

The responses from the survey collected by Mengistie (2020) showed that most of the participants were males, and most of them possessed above-average understanding and knowledge of accommodating the needs of diverse students. The focused discussion group data revealed that, despite having theoretical knowledge of DI, many educators faced challenges when it came to managing the mixed readiness levels in the classrooms due to the diverse set of students. The results of the survey questions that measured the participants attitudes towards DI revealed that the educators were extremely positive about taking ownership of their students learning. The primary school teachers eagerly accommodated and catered to the needs of their students based on abilities, interests, and learning styles. However, they fell short of strategies and ideas to do so in the classroom as they relied predominantly on prescribed textbooks and had very limited access to multimodal resources that could aid differentiation.

Mengistie (2020) noted that teachers used some audio, visual and many other multi modal resources for instructional purposes but, their attention to planning and designing lessons based on students' interests, strengths, and abilities were below average. The author mentioned that product differentiation was the least practiced among all educators who took part in the survey. Some of the main challenges that the educators faced were large class sizes and the lack of time for preparation and planning. As educators are engaged in responsibilities and workload that do not give them adequate time for planning and preparation for learners who need specific instructional strategies. DI offers an opportunity for educators to provide an equitable environment instead of tracking or streaming students. However, along with theoretical knowledge educators require practical understanding of the right strategies to implement in classrooms. Mengistie (2020)

recommended that school leadership needs to be actively involved in equipping educators through appropriate professional development and providing a conducive environment to differentiate instruction.

Lang (2019) conducted a research study to understand the leadership practices among middle school leaders and administrators. Lang (2019) further explored to see if there were any variances in the attitude and perception of DI among teachers and school administrators. Non-experimental quantitative research methodology was used for the purpose of this study. A survey method was employed to understand teacher and administrator attitudes and to examine the instructional leadership strategies used by the school leadership in middle school classrooms. With the growing awareness of differentiated instruction and a pressing need to implement these strategies in classrooms, teachers are in constant need for consistent professional training to be able to tailor instructional strategies to meet the academically diverse needs of students. Many research studies that have explored the effectiveness of school achievement have often concluded that the school leadership and administration have played a vital role in bringing changes in the teaching process that can create a positive impact in today's classrooms. Lang (2019) noted that according to the study conducted by Goddard et al. (2010) also revealed that teachers are motivated and encouraged to incorporate new and innovative teaching strategies when they are adequately supported by their supervisors, school leadership and management. There is significant research that supports the fact that school principals and administrators can influence positive changes in school efficiency when they support the needs and efforts of educators who are willing to incorporate challenging teaching approaches.

Lang (2019) mentioned that the Georgia Department of Education (GaDOE) implemented the Teacher Keys Effectiveness System (TKES) as a tool to measure the effectiveness of teaching

and learning in schools and held school leadership take onus for the implementation of challenging teaching strategies to cater to the growing diversity needs of the State of Georgia. GaDOE recognized differentiated instruction as one of the crucial ingredients to improve student achievement in a classroom with diverse needs (GaDOE, 2012). To further evaluate and understand if instructional leadership influenced the planning and implantation of differentiated instruction, Lang (2019) surveyed teachers from 18 of 26 middle schools in the urban school district situated in Southeast United States. The participants included 25 principals, 83 vice principals, and the 1,499 teachers who were already verified through the TKES system implemented by the Georgia Department of Education (GaDOE, 2012). The final responses accounted for approximately 45% of the administrators and 17% of the teachers among the middle schools that participated.

The survey examined the demographics of the participants and had questions to understand the role that the school leadership played in supporting and encouraging the implementation of differentiated instruction in the middle school classrooms. A 5-point Likert scale was used in this case to indicate the responses of the participants. To ensure the reliability of the survey and data the questionnaire was distributed among well-known middle school administrators who were not part of the targeted group. The feedback and recommendations of the veteran administrators were incorporated before the survey went out to the targeted audience.

Lang (2019) revealed that the perceptions of teachers and administrators varied in many aspects. The teachers did not feel as supported by their leadership team in aspects of providing instructional evaluation, time and professional training as interpreted by the administrators. Differentiated instruction and its implementation being a complex and time incentive activity cannot be executed without proper alignment amongst educators and their leadership team. Lang

(2019) raised an important aspect that such misconceptions and misalignments only negatively impacted teacher motivation to implement challenging instructional strategies. Lang (2019) recommended that the views of principals and school administrators must be considered before mandating innovative instructional practices such as DI as a school policy. He also added that professional development for school leaders as an essential mechanism to make them better equipped to supervise and evaluate teachers to enhance classroom instruction.

Hands-on experiences open the mind to a wide range of questions and answers about the theory of knowledge acquired on any topic. Educators always tend to juggle between practical work and theoretical work while designing lesson plans. The objective of the study conducted by Roe (2010) examined the practical application of differentiated instruction by middle school teachers in rural, suburban, and modern settings. The practical application becomes effective when there is a sound understanding of the depth of knowledge and information about any concept or topic. Roe (2010) noted that the answers to the question “Why” can come from the theory and the answers to “How” and “what if” may arise as the theory is being applied during hands-on activities or real-world application. An ideal education system regardless of age must give opportunities to both theoretical and practical work. Roe (2010) aimed at understanding: 1) teachers’ depth of knowledge about DI, 2) DI practices used in the classrooms especially for struggling learners, and 3) barriers faced by learners and educators in this process. The researcher mentioned that the autonomy a teacher had, to choose the appropriate strategies that fit the needs of the learner is the foundation of differentiated instruction. To highlight this, Roe (2010) referenced the work of Spiro (2004a, 2004b) “Therefore, I take an atypical turn and tap Spiro’s concepts of cognitive flexibility (2004a) and principled pluralism (2004b). As Spiro explains, cognitive flexibility addresses the tendency to oversimplify complex phenomena by allowing multiple representations. Principled

pluralism allows the assembly of elements that apply in the moment rather than being harnessed to a single (and perhaps ill suited) explanatory perspective” (Roe, 2010, p. 5).

Roe (2010) developed a qualitative method based on ideas from many researchers’ work and focused on deepening the understanding of the influence that cultural backgrounds and different settings had on how educators differentiate instruction in the classrooms. For this study the author chose four middle schools and observed classrooms of nine teachers. These schools were strategically chosen as one school was in a rural area, two schools were in sub-urban locations, and another school in a more urban setup, all within a 100-mile range. These schools presented a variation in the diversity among students, class sizes and organizational orientation. The participants were chosen based on their years of experience, educational qualifications and the discipline and age group they taught. One of the educators had five years of teaching experience while the others had 20 years. Among them five educators had a master’s degree, and one had a PhD, while others were undergraduates. The participants were chosen purposefully and not by random sampling and finally, Roe (2010) had selected three male and six female participants. The students of these classrooms also contributed through discussions and observations. There were few students who were part of structured interviews. Data was collected through observing 135 sessions and formal and informal discussions with teachers and students. The semi-constructed interviews were transcribed and reviewed by the participants for data verification. The questions in these interviews included general questions as well as enquiry based on classroom observations. The classroom observations lasted from 50 minutes to 3 hours.

The analysis of the data that was collected by Roe (2010) through various sources was done by drawing connections and links to the DI practices and activities that were observed during classroom sessions. The author looked for these links from the log notes and interviews of students

and teachers. These were also cross referenced between the four schools. This resulted in a gold mine of information that gave an abundance of viewpoints about the instructional practices that were employed in the classroom. One of the two teachers from the rural school who participated taught language and arts for middle school while her core competency was Spanish. The educator was given the responsibility of preparing the children in social studies for which the teacher relied on the prescribed material provided by the district. The other teacher was more experienced and taught literacy, however, she complained of health being a hindrance to her performance and contemplated retirement due to her age. Both teachers seldom made any comments regarding any professional training programs. Among the three sub-urban schoolteachers who taught seventh grade one of the male teachers had an advanced degree while the other two female teachers taught social studies. They focused on the stipulated assignments that needed to be delivered as mandated by the school administrations. Two of them had created a timeline for preparation while one of them allocated time based on their convenience. The teachers worked with a diverse set of students for whom English was a second language and had students who were undergoing rehabilitation programs due to substance abuse. The three teachers from the urban school had advanced degrees and used the school facilities such as library and computers to identify appropriate content material and were often part of PD programs. Many children in the urban school also came from different ethnic groups such as Hispanic and Russian.

Based on the results shown by Roe (2010) it was very evident that the background of the teachers and the availability of the resources guided their responsiveness to various situations. Though all schools dealt with irrational student behavior, only the urban schools had formal policies regarding student behavior. The burden on teachers and students to complete assignments seemed to always take precedence over differentiating the product or process. In many of the

situations, teachers resorted to “behavioral compliance” (Roe, 2010, p. 146) rather than enhancing students’ academic performances. However, all teachers paid attention to their students’ behavioral need and confronted behavioral issues. Roe (2010) mentioned that the teachers were differentiating to the extent that they felt was the need of the student, though completion of assigned tasks and lack of time was always a pressing issue. In a nutshell Roe (2010) contended that teachers tend to differentiate product completion rather than focus on differentiating the process of literacy acquisition. Secondly the resources and organizational set up played a vital role which goes beyond the theories that are associated with differentiated instruction. Most often these teachers focused on differentiating specific activities and failed to link progress monitoring and assessments to the instructional practices. Roe (2010) thus examined the actual instructional practices to explore the gaps that needed to be bridged and quoted “knowing what technique or action makes what patterns and effects is where the real knowledge and expertise is required” (Binnion, 2004).

Teacher Perceptions of DI in Early Years

Al-Shaboul et al. (2021) conducted a study in Qatar that targeted all early educators in understanding how teacher demographics and teacher training impacts the implementation of differentiated instruction. The research study explored the frequency at which early years’ educators implemented DI and if their demographics such as years of experience, disciplines taught, and other certifications had any variance in their application of DI. The authors wanted to understand what challenges were faced by the educators in the process of implementing DI. A mixed method approach was used for this study and since the idea was to gather information about teacher attitudes and challenges, Al-Shaboul, et al. (2021) employed a survey questionnaire and teacher interviews to collect data. A total of early childhood educators from 99 primary schools in

Qatar were included in the study. Out of the total population 236 teachers were randomly picked for the survey and 10 of them were randomly selected for the interview.

The survey questions included demographic enquiries and questions related to the teachers' implementation of differentiated instruction. For the interview questions Al-Shaboul, et al. (2021) adopted the Spradley's (1979) model of questioning. After the initial questions on teachers' demographic questions the authors moved to the "Grand tour questions" and "mini tour questions" (Al-Shaboul et al., 2021, p. 132) where the grand tour questions focused on understanding the teachers' perspectives of Differentiated instruction and challenges and the mini tour questions probed into additional information based on the initial responses of the grand tour questions. The interviews were audio recorded and transcribed.

The results between the qualitative and quantitative analysis showed variances while the author investigated the quantum of differentiation implemented by the early educators in Qatar. The survey results revealed that the teachers implemented DI to a significant degree, however, the responses from the interview did not support this data. As an example, Al-Shaboul, et al. (2021) mentioned that some teachers were incorrect in their definitions of what differentiation means and some of them expressed that they were unaware if, they used the strategies in the classroom, though they were informed by their coordinators that DI was included in their daily lesson plans. The results showed that teacher training did not have a significant impact on the rate of differentiation, though more than 48% of the participants had received formal training. Al-Shaboul et al. (2021) attributed this to the theoretical nature of professional training received by the teachers. The researchers further mentioned that the complex nature of DI demanded more practical application training of the strategies to motivate educators to implement the teaching methodology. Teachers with more years of experience implemented DI often when compared to novice educators. The

results also showed that the second-grade teachers differentiated more than first grade teachers which may be because the reading and writing skills in first graders are underdeveloped and many of the strategies depend on a certain level of mastery in these skills. The large class sizes, overloaded work schedule, lack of preparation time, and inadequate professional training were the most prominent challenges faced by the teachers. Time constraints did factor as one of the major factors in teachers' reluctance to practice differentiated instruction. Some teachers' interview data also pointed to the fact that their lack of class management skills, biases against DI and lack of awareness as factors contributing to rejecting DI as an effective methodology. Al-Shaboul et al. (2021) strongly recommended appropriate professional development and guided assistance for implementing DI.

Instruction in the early years according to Giles and Tunks (2014) had been a debatable topic for decades as researchers through light on appropriate pedagogy for early childhood literacy acquisition. Some theories stress on introduction to literacy based on the appropriate readiness of the child while some argue the importance of pre-reading skills and the emphasis on phonics as a critical methodology in literacy acquisition for early years. The teachers' perspective, preferences, and beliefs have a major impact on how they teach in the classroom.

The research conducted by Giles and Tunks (2014) specifically explored the literacy acquisition in the early years and how educators' knowledge, beliefs, and notions may affect their teaching methodology. Giles and Tunks (2014) noted that there are broadly two perspectives of early literacy, namely one that is skill based on the readiness which is a direct instruction style and the other that is an emergent more child-centric approach. The skill-based perspective was more prevalent in the 1970's when a set of systematic teachers led instructions was adapted for literacy acquisition. Somewhere the idea of waiting for children to be reading ready was taken over by

reading readiness and pre-reading skill approaches. In the 1980s and 1990s the idea of “emergent literacy” (Giles & Tunks, 2014, p. 524) that focused on activities to engage children in reading and writing began to take importance. Giles and Tunks (2014) pointed out that the twentieth century saw a more child-centric approach that was rooted in the belief in experiential learning and hands on activities to develop literacy. The amazing work of early childhood education stalwarts such as Friedrich Froebel, Maria Montessori, and John Dewey inspired most organizations to rediscover literacy acquisition for young children.

Giles and Tunks (2014) organized a research study that explored the views of early childhood educators regarding the literacy acquisition process. The authors also aimed to understand if years of teaching experience or grade level had an impact on the perceptions of early childhood educators. Giles and Tunks (2014) noted that according to Bondy (1990) teachers regardless of their years of experience do have certain attitudes and perceptions when they entered a classroom. Giles and Tunks (2014) referred to a lot of research that had shown that the teachers personal experience as a student, their acquired knowledge, and beliefs had a great amount of impact on their instructional choices in the classroom. The participants for this quantitative research were 76 early childhood educators from different public school in Alabama’s southern districts. According to Giles and Tunks (2014), 35% of teachers had five or fewer than five years of experience and 52% had 6 to 15 years of teaching expertise. The teachers were a mixed group of pre-kindergarten to second grade and 39 teachers had advance degrees while the rest were undergraduates.

Giles and Tunks (2014) sent out a survey questionnaire that had two sections. The first section had questions related to teacher demographics and the second had a two-part survey that was specifically designed to accomplish the objectives of this study. The first part collected

demographic information from participants, and the second part comprised questions related to understanding teachers' perspectives in terms of both reading readiness and strategies that are important for pre-reading and writing development. The demographics data included information about teacher's years of experience, teaching discipline, qualification, and other certifications. The authors adapted the "Literacy Acquisition Perception Profile (LAPP)" (Giles & Tunks, 2014, p. 7) created by McMahon et al. (1998) to evaluate the teachers' views on language acquisition.

Based on the statistical findings Giles and Tunks (2014) mentioned that the teachers' educational qualification or grade level did not have any significant impact on the teaching strategies. However, the data revealed that teachers' who had 6 – 10 years of experience supported the reading readiness-based approach more than teachers with greater than 21 years of teaching expertise. Though chronologically emergent literacy should have been a favorable choice given the fact that this was the most popular literacy acquisition approach in the 1990s' based on when these participants would have received their formal education. Giles and Tunks (2014) also remarked that though the Ministry of Education emphasized on more appropriate approaches to literacy acquisition through connecting text, reading, and writing teachers still resorted to direct instructional methods. The authors recommended educators to use a "professional filter" (Giles & Tunks, 2014, p. 8) to analyze the right approach by differentiating the teaching methodology based on the learner and not resorting to a single methodical approach to literacy acquisition. Giles and Tunks (2014) concluded that encouraging the development of language in natural settings through social interactions, connecting language and vocabulary to daily activities and concepts, and building comprehension by helping the child make connections might be more engaging and effective.

Teacher Perceptions of DI in Higher Education

Regardless of what new educational techniques or instructional strategies have proved effective because of research, the support and encouragement teachers received from school leaders and administration always contributed to the success of any school program. According to Siyabi and Shekaili (2021), the teachers at the University of Technology and Applied Sciences-Rustaq (UTAS-Rustaq) were not happy with the quantum of support they received from the school administration for enhancing differentiated instructional practices. The exploratory descriptive study used a 2-part survey to gather data from the English instructors at the UTAS-Rustaq. The first part was comprised of a questionnaire to gather teachers understanding of DI and used a simple three-point Likert scale format. The second part involved questions that were more open-ended to gauge the instructional practices that the participants used in their classrooms. Siyabi and Shekaili (2021) used frequency and theme coding to analyze the data that was collected.

To improve authenticity and validity the data and survey were reviewed by experienced instructors and necessary adjustments and improvements were incorporated based on their feedback. The study which included approximately 33 educators revealed that only less than 50% of the teachers believed that they received adequate encouragement and support from their institutions for their efforts to differentiate instruction in their classrooms. Despite the lack of support 86% of the educators were positive that differentiated instruction resulted in greater student achievement and motivation according to Siyabi and Shekaili (2021). Most respondents identified time, the effort required, and the delay in achieving their objectives as the significant challenges that made them reluctant to implement differentiated instruction.

Based on the findings Siyabi and Shekaili (2021) revealed that meeting course outcomes, learning objectives, and accommodating student's interests and needs based on ability and

readiness were the key factors that prompted the educators at UTAS-Rustaq to implement differentiated instruction. Most of the survey responses indicated that the time and effort intensive nature of the implementation induced reluctance among educators to embrace differentiated instruction easily. The application of varied differentiated strategies was primarily guided by student data that determined their ability and readiness. Teachers consistently assessed learners to evaluate their responses to the content being taught.

According to the interviews conducted by Siyabi and Shekaili (2021) the teachers gave more time for the students who were falling behind in their learning outcomes. According to Tomlinson (2013), it is extremely crucial to understand the reasons behind a student's performance and spend adequate time planning learning experiences rather than only scaffolding or extending the learning period for children who need extra support. Siyabi and Shekaili (2021) mentioned that though educators implemented flexible grouping and varied differentiated techniques, the lack of awareness among students about DI prevented them from having a positive outlook towards these instructional practices.

Although the study conducted by Siyabi and Shekaili (2021) was limited by the small sample size the researcher showed a very positive perception towards differentiated instruction in general. The lack of adequate support from the school leaders and the time intensive nature of these practices were some of the challenges faced by the educators. Siyabi and Shekaili (2021) concluded that differentiated instruction demanded collaboration and facilitation more than just verbal cues.

The safe, comfortable, and nurturing environment of a school is an important aspect for children to grow progressively. Ginja and Chen (2020) believe that the feeling of insecurity in students that may arise due to various reasons can negatively impact their learning. One such aspect

is diversity in the classroom because of cultural heritage, ethnicity, gender orientation, economic status, religious beliefs, or abilities. According to Ginja and Chen (2020) children from diverse backgrounds sometimes experienced the feeling of seclusion, underrepresentation, and insecurity. Schools and educators who take initiatives and measures to practice inclusion and improve diversity in the classroom found that it benefited all learners. This helped the diverse students to feel represented and the other students gain from the different characteristics and perceptions. Ginja and Chen (2020) mentioned that Ethiopia is one such country that experienced diversity in classrooms and presented a great opportunity to implement differentiated instruction. As a result of the increased student population coming from various demographic locations, higher education teachers often faced with the challenge of catering to their diverse needs.

The study conducted by Ginja and Chen (2020) explored the attitudes of educators in higher education towards differentiated instruction in three different educational institutions in Ethiopia where student diversity was relatively high. Ginja and Chen (2020) investigated: 1.) the depth of understanding and knowledge that educators had towards DI, 2.) the strategies of DI educators used in their classrooms to meet student needs, and 3.) the perspectives of teachers towards DI as an effective tool to reach out to their diverse student population. This research used a mixed method and combined both qualitative and quantitative data to study the research questions. A random sampling of 67 educators participated in this study from Hossana College of Teacher Education (CTE), Dilla College of Teacher Education and Hawassa University (Ginja & Chen, 2020) as these universities were identified due to their reputation of having diverse students. The educators who participated in the study included both teachers and supervisors. This gave Ginja and Chen (2020) a chance to learn about the educators and their DI practices from their supervisors.

The survey questionnaire designed for the purpose of this study was based on Tomlinson's DI model and the instruments based on the study conducted by Santangelo and Tomlinson (2012). Semi-structured interviews were also conducted to receive feedback from both educators and their supervisors. The notes made by Ginja and Chen (2020) during the interviews were immediately reviewed by the participants to verify facts. The questionnaire had three sections. The first section included teacher educators' demographics information. Section two was a five-point Likert scale question for measuring teachers' attitude while the third section was open-ended questions for teachers to express their concerns and opinions about differentiated instruction approach. Ginja and Chen (2020) distributed printed copies to 69 teacher educators at the three mentioned institutions. Two teacher educators (one from Hossana CTE and another from Dilla CTE) were not able to return the survey due to personal reasons. Traveling to three different Zones took more than a week mentioned Ginja and Chen (2020).

The data thus collected was analyzed using statistics, mean averages, and percentages to add more meaning to the research questions. The findings revealed that more than 50% of the participants had received professional training on DI. Though the educators were knowledgeable in the theory of DI, the percentage of educators who were practicing DI in the classrooms was low and inefficient. Ginja and Chen (2020) added that the majority of the educators were sure that DI had a positive effect on student learning and could improve engagement in the classroom. They seemed to genuinely care about their students' learning styles and interests. The nature of the training received by the educators, the relatively large class sizes, and some misconceptions about differentiated instructions contributed to the failure to practice by most of the participants. Based on the findings Ginja and Chen (2020) recommended that educators required more practical and consistent professional development in DI.

Teaching students and accommodating instruction based on student needs and preferences was something that depended on the hands of the educator noted Godor (2021). The large class sizes, limited preparation time, and insufficient knowledge about the practical application of DI contributed to the rejection of using this methodology. Godor (2021) mentioned that many misconceptions regarding DI must be removed for teachers to be able to embrace DI as an effective instructional practice in classrooms. There are innumerable research studies that implied the benefits of differentiated approach to improve achievement in a diverse classroom and yet teachers were reluctant to apply them in the classrooms due to their beliefs and other factors. As a result, Godor (2021) recommended appropriate professional development for teachers to bridge the gap between reluctance and acceptance of DI as an effective classroom teaching methodology.

Godor (2021) examined how teachers' personal preferences influenced the way they differentiated instruction for their students. The research investigated teachers' personal preferences for differentiating their instruction. The researcher used Q methodology to analyze participants' viewpoints. Q-methodology also referred to as Q-sort was used where the participants' viewpoints were studied in an orderly fashion. Here, Godor (2021) specifically examined the viewpoints of his participants surrounding the area of instructional differentiation. Q- methodology helped to identify the participants holding similar viewpoints easily. Godor (2021) used the questionnaire applied by Tomlinson's exemplary model of differentiated instruction (Santangelo & Tomlinson, 2012) and created a Q set for his research study. The original model consisted of 57 statements while the model adapted by Godor (2021) was comprised of 33 statements. The questionnaire had statements related to assessments, student readiness, learning process, product, and learner interests. Godor (2021) in the next step presented the statements to the participants and sorted their results. Based on the findings Godor (2021) identified three

different groups, each with their own preferences. The first group was identified as “competency focused – interest adverse” (Godor, 2021, p. 9) who were more focused on the process of teaching rather than the output of the learning or students’ interests. They did not offer many options in their forms of assessments. In comparison to the teachers in the other two categories, these teachers paid less attention to the learners’ interests.

The second category identified by Godor (2021) was “Operationally focused – mastery adverse” (Godor, 2021, p. 9). They considered learner interests and offered at least three or more options for assessments to determine the grades. They used grouping and some differentiated practices to enhance engagement in the classroom. This category of teachers showed a higher degree of student engagement. They delivered the content in a multimodal fashion and incorporated audio, visuals, and tactile or kinaesthetic activities. They provided no additional content or engagement for students who were advanced and showed mastery of content. This implied that gifted students did not benefit in this scenario.

The last category of teachers identified as “Experience focused – pedagogically adverse” (Godor, 2021, p. 10) considered the students’ interests and seemed to alter the curriculum accordingly. Though they accommodated student needs, they seemed to use very few differentiated practices and grouping in the classroom. The teachers seemed distant and did not appear to be approachable which created an environment where students felt disinterested. Godor (2021) through his research had examined teacher preferences and how they impacted the use of DI and teaching styles in the classroom.

All the teachers differentiated to some extent; most techniques were based on their preferred method of teaching rather than catering to the students’ needs. The first category of teachers showed that they focused on the skill development of the child without paying any heed

to the student's need or interest. This resulted in disengaged students. Godor (2021) noted that the second category differentiated content and used multimodal teaching to meet the students' interest but did not consider engaging students who were gifted. This resulted in the disengagement of gifted students. The last category of teachers provided varied experiences to students but created an environment where students felt less engaged and supported.

Based on the findings Godor (2021) recommended that professional development for teachers must aim at understanding teacher preferences as well as their thoughts about differentiation. Training programs that catered to connect teachers' teaching styles with students' learning so that all students in the classroom may reap the benefits was suggested by Godor (2021).

Turner and Solisb (2017) studied the specific challenges that educators faced when they implemented differentiated instruction in large-size higher education classrooms. Large class sizes are very common in public schools and in higher education and instructional variations and choices for teachers in colleges are limited. While peeking into the diversity that exists in today's classrooms, Turner and Solisb (2017) mentioned that classrooms see a lot of first-generation immigrants belonging to low-economic households and often experiencing language barriers. The authors also mentioned that this diverse set of students did not view traditional academic activities as exciting and required a pedagogy and curriculum with activities that promoted engagement and interest (Phillips & Trainor, 2014; Robinson, 2013).

Turner and Solisb (2017) used the online survey that was employed by Santangelo and Tomlinson (2009) for the current study to address the thoughts, attitudes, perceptions, and challenges faced by educators while implementing differentiated instruction in large class sizes in higher settings. The questionnaire included two open ended questions, a series of seven multiple choice questions along with some questions that gathered the demographics of the participants.

This survey was distributed to 108 educators who were teaching in colleges or research institutions in South-eastern United States that had 50 or more students in each class. Nineteen percent of responses were returned, out of which six were males and 13 were females. Participants taught a wide range of disciplines and had more than ten years of experience teaching higher education. A few were professors while others were either associate professors or instructors. Turner and Solisb (2017) noted that this percentage of teachers catered to only 35.3% of the student community in higher education from that area.

The authors performed a qualitative analysis of the open-ended questions that inquired about the educators' definition of DI as well as their personal experience of practicing differentiated instructional practices in higher education with especially large classes. The results revealed that though the educators had some basic understanding of DI they expressed that the large class sizes, limited preparation time, limited implementation time, and increased academic pressure were some of the major challenges that put differentiated instruction on the back burner.

Turner and Solisb (2017) performed a quantitative analysis of the data collected from the seven multiple-choice questions. According to the responses eighty seven percent responded that large class size was a leading factor in rejecting DI. Seventy eight percent of the educators felt that they did not have adequate preparation time, and more than half of these educators had not received any formal professional training in DI. Despite inadequate training only a very few mentioned the lack of PD as a set-back. Turner and Solisb (2017) pointed out that although the educators were masters in their competency, they were less informed about the theory and application of differentiated instruction. This student-centered approach could be the solution to engage diverse learners in a large classroom. Turner and Solisb (2017) concluded that a teacher-centred approach that all instructors were accustomed to, was a traditional instructional strategy that educators must

look to change. The authors also mentioned that the aim was to combine the theoretical learning and content, with practical application and bring in real world applications that made learning meaningful and exciting.

According to Turner and Solisb (2017) when students are provided choices during the learning process and in the ways that they demonstrated their learning the educators instill a sense of ownership and empowerment in the student. It is almost as though teachers gave away some of the control to the student in allowing them to make some decisions based on their preferences while managing their content. Though the limitation of this study was a small sample size, the data and analysis called for more awareness, research, and professional training for educators who are teaching higher education to defy the misnomers of differentiated instruction.

DI in Second Language Learning

Language is the medium used to communicate with one another and express one's thoughts. There are so many languages spoken around the world and as a child the first language spoken is referred to as the mother tongue. The process of learning a second language after a first language has been acquired is called second language acquisition (SLA) or L2 achievement where L1 refers to the first language. Yavuz (2020) noted that children often speak a different language at home and are exposed to English only at school. Children tend to adapt and learn languages easier, however it is possible to learn a new language at any age. Yavuz (2020) pointed out that acquiring any language in an informal classroom setting. A student or individual may learn a second language for many reasons, and the pace at which they learn varies based on the purpose and willingness to learn the second language. In today's world with global diversity and inter-

cultural existence knowing and having the ability to communicate effectively in a second language is important and advantageous.

The experimental research study conducted by Yavuz (2020) explored teacher attitudes and the impact of differentiated instruction based on the L2 achievements of high school students. The author through his investigation attempted to research the following areas: 1.) the variation in L2 achievements between the DI experimental group and control group, 2.) attitudes and perception of learners towards DI, and 3.) teacher's attitudes towards DI. Yavuz (2020) collected both quantitative and qualitative data for analysis. The study was conducted in a private high school in Istanbul, Turkey.

The school was dominated by a Turkish population and the school mandated an English placement test at the start of the academic year for all its students from 9th to 11th grade. Based on the results of this test the students were placed in different levels for an English teaching program. Following the placement test, each grade was split into three levels according to the results such as ninth graders A2, B1 and B2. The purpose of this learning platform was to assist and enhance the L2 skills of students so that they had the required communication capabilities when they graduated. Based on convenience sampling 22 students from two different 9th-grade classes were chosen for the study. Yavuz (2020) ensured that all the necessary permissions were taken from parents and administrative heads. The students were then placed in different levels based on the placement tests. Due to the experimental nature of the study 14 students were placed in the control group and the other eight were placed in the experimental group. The two groups received twelve 40-minute English lessons every week. Yavuz (2020) introduced different DI strategies to deliver the lessons for the experimental group. They received six hours of treatment lessons every week. Each group attended eight hours of English lessons weekly and each lasted 40 minutes. During the

research, the experimental group received six hours of treatment (in total 24 hours) per week. Yavuz (2020) designed the lessons based on Gardner's theory of multiple intelligences so that the varied learning styles of the students were considered. Many tiered activities were designed and implemented, and Yavuz (2020) paid attention to product differentiation and gave students choices to demonstrate their learning. After the tests were taken, students wrote a reflective essay and the researcher collected both quantitative and qualitative data for analysis.

Based on the test score analysis, the achievement of the experimental group had doubled due to the implementation of DI. The control group that received traditional instruction also showed considerable improvement in their scores. In comparison the experimental group showed a 31.5-point increase in scores while the control group showed a 12.5-point increase. The reading achievement data revealed that there was a 6.63-point increase in the experimental group and a 3-point increase in the control group. There was a significant increase in vocabulary achievement however, grammar achievement data showed no difference.

Yavuz (2020) noted that the reflective journals indicated that DI practices made the classroom engaging and interesting. The pre-assessment strategies, choices in the deliverables, and flexible grouping increased the student learning quotient. The main challenges identified by Yavuz (2020) were mainly due to the time-consuming nature of DI. The pre-existing school responsibilities and deadlines that educators had, made the extensive planning requirement of DI strategies unmanageable. DI requires a good understanding of learner diversities and good amount of theoretical and practical knowledge for application.

Secondly, Yavuz (2020) recommended that teachers, who intend to implement DI, especially in large classes, should administer pre-assessment tools and make a preliminary observation about how their learners learn, and what their interests, strengths, and weaknesses are.

Yavuz (2020) mentioned that it is paramount to know the learners and use that valuable data to inform the implementation of DI. The author further adds that after getting the results from pre-assessment tools, teachers could group learners in terms of their readiness, preferred learning styles, and interests. In doing so, teachers could design lessons in alignment with the general characteristics of learners, rather than trying to cater to every single variety in the class, which is not a part of DI.

Thirdly, DI encompasses a broad spectrum of strategies, areas, and theoretical assumptions, which might deter language teachers from trying it in their classes. However, teachers should not be daunted by the scope of DI but commence DI with small steps.

Fourthly, as DI requires plenty of time for preparation, it might be advisable to carry out DI with smaller groups for the sake of piloting, then generalizing it to more classes and after that perhaps to the whole school. The last recommendation made by Yavuz (2020) for teachers is that it is imperative to invest in professional development in this field by reading about diverse DI strategies, observing colleagues, or watching videos reflecting DI.

Learning a new language involves understanding the basics such as phonics, morphology, grammatical usage, sentence building, and then leading to proficiency in the language. Petraya et al. (2021) mentioned that many researchers supported the idea that, for effective language development teachers should have adequate knowledge of both use of language in written and verbal communication. In essence teachers should be aware of the various roles of phonology, morphology, grammatical usage, conversational usage and academic language usage. Educators must also have a thorough knowledge of the cultural diversity that exist between L1 and L2, as most often students require adequate support and encouragement. Having an understanding of their background builds a positive environment for new language acquisition.

The study conducted by Petraya et al. (2021) consolidated three research studies that examined the development of the language acquisition. The study examined L2 learning and teaching methodologies that were grounded and informed in knowledge, engagement, and effectiveness. In the first study the Petraya et al. (2021) used a qualitative approach and explored the foundational linguistic syllabus of 114 graduate level language programs in 54 different universities in USA. Through the second qualitative study the authors examined the use of appropriate differentiated strategies for English learners that made language acquisition effective. This was conducted in a university in New York. The third research study examined the identity of the ESL teachers who were teaching different disciplines such as Math and science in New Jersey public schools. The results showed that most of the master's level programs either had a pre-requisite linguistic course requirement or offered a course in linguistic preparation. Out of the 114 graduate level programs 59 of them required a pre-requisite and 10 of them offered introductory linguistic courses as elective. Petraya et al. (2021) noted that 45 out of 114 programs did not specify any language requirement. The authors recommended that to promote agency among language teachers, teacher training, advanced certification, and enhanced linguistic pedagogy were vital.

The second study was conducted at the City University of New York which is a public school for higher education. Petraya et al. (2021) mentioned that many students were less prepared for English academic writing. Based on the statistics 33% were immigrants, 30% were students who additionally worked as they were from poor economic backgrounds and 75% spoke a different language or dialect at home. The course that was reviewed for this study was geared towards learning about the variety of world languages and their socio-cultural and historical backgrounds. Most of their assignments were low-point writing assignments as many of the students were not

proficient in writing. There was a total of 30 students who took the course, and a majority were immigrants and spoke a different language at home. Most of them came from the Caribbean and spoke different dialects of English as a first or second language. All the homework and projects were designed for English-speaking students. Most students were not comfortable speaking English fluently and were apprehensive about their academic writing. Their assignments were accommodated to include some standard American English work as well as some non-standard English assignments. The students learned how linguistic development happened around the globe through various modes such as history, commerce, culture, travel, and social interaction. Petraya et al. (2021) noted that gradually the assignments became more streamlined, and students kept building on their knowledge and started using good vocabulary and they revised their previous work. Differentiating instruction and providing the right kind of scaffolds moved the students from a place of language insecurity to a more confident and capable master of the language.

The third study explored the benefit of retrospection to give a perspective view of teacher agency. For this study Petraya et al. (2021) examined an ESL certification course that was designed as an additional program for STEM teachers so that they could enhance their work with English language learners. The teachers were expected to complete 21 credits to gain the endorsement. The study was conducted in a state university in one of the urban areas of New Jersey. A total of 21 participants were included in this study and the data was collected from two self-reflective journals. The participants wrote 14 weekly journals, and they were also asked to present a self-evaluation based on two videotaped classes. They were given several prompts for their weekly reflective journals, and they were also given a rubric for their self-evaluation. As the data was being analyzed two categories were determined from the weekly reflective journals: 1) reflection before writing the journal log and 2) reflections while penning the log. From the responses Petraya

et al. (2021) noted that through this task the teachers reflected on their lesson plans, execution, class performance, and were questioning their practices, instructional strategies, and beliefs. The author thus concluded by saying that linguistic foundational knowledge, instruction that is targeted and differentiated, and empowering educators with appropriate endorsements are all important elements in the language acquisition process.

DI for Gifted Students

Convergent thinking aims at arriving at a single well-rounded solution to a problem. This kind of problem-solving may be seen in tasks that are more logical in approach. Divergent thinking on the contrary involves more creativity and often comprises brainstorming a variety of possible solutions for a single problem. Divergent differentiated instruction is ideally applied to engage high-end achievers as educators aim to get the maximum out of the high-ability performers (Tomlinson et al., 2003). According to Stollman et al. (2021) educators can combine the use of both convergent and divergent DI where, convergent DI can act as a foundation and divergent DI is extensively used to challenge the students with high capabilities.

Stollman et al. (2021) conducted a mixed methods study that divided into the ‘interactive cognitions of DI’ in two different environments: 1.) regular lessons and 2.) talent lessons. This was done to understand the rationale behind how and why teachers planned and executed their instructional strategies. The talent lessons were designed by teachers for highly able students and teachers had the freedom to steer away from the standard curriculum. This study was unique as the stimulated recall interviews (SRIs) were used to explore the interactive cognitions (ICs) of the teachers. The classroom sessions of all the participants were video recorded and used during the SRIs to review the instructional practices and actions of the educators. Stollman et al. (2021), investigated the activities that showed the teacher’s knowledge of DI and chose only those clips

of videos for the SRIs. This implied that the author had reviewed the videos and selected portions of the videotaped lessons to discuss with the teachers. The clips were reviewed to understand the teacher's IC based on student-teacher interactions in one of the following categories: (a) providing instruction, (b) offering help, (c) giving assignments, and (d) calling on a student. The results were coded by correlating the teacher's IC of a specific activity with their knowledge of the student's readiness, interest, or learning profile.

The study revealed that the teacher's ICs were driven by a learner-centric attitude regardless of the environment. Stollman et al. (2021) noted that the regular lessons were more convergent, and the talent sessions were more divergent in nature. The results indicated that teachers had adequate information on DI but had trouble implementing them. According to the researcher, the autonomy that teachers had and the small group size in the talent lessons contributed to creating an easier environment for DI. This study clearly indicated that the teacher's instructional practices were driven by students needs more than the content they should learn in relation to the definition of DI as suggested by Tomlinson et al. (2003). Stollman et al. (2021) added that the talent lessons helped the teachers to focus more on each student's individual needs and helped them feel that they could give students better opportunities.

Giftedness in learners may vary in many aspects such as talents, art, social skills, academics, drama, sports and more. However, in an educational setup where academics become a priority, gifted learners are mostly connected to academic excellence. Handa (2019) noted that struggling learners are often disengaged as they are overwhelmed in the classroom or often lost as they try to cope with content and curriculum. In a similar way Handa (2019) noted that gifted students felt disinterested or may misbehave if they were not engaged with challenging curriculum. Gifted students need opportunities that engage them in higher order thinking. Handa (2019)

suggested that these students need the support and encouragement of their educators who can identify their strengths, weakness, and needs and provide the appropriate differentiation in a general education classroom. They also require constant support and scaffolding up, inside and outside the classrooms so that they can achieve the levels of which they are capable. The research study conducted by Handa (2019) explored the thoughts and attitudes of principals and teachers about differentiated instruction. This study examined the differentiated needs of gifted learners and how principals and teachers perceived DI for high achievers.

According to Tomlinson (2014), differentiated instruction ensures that accommodations in process, content, product, and environment cater to the wide spectrum of learners in the classroom as a response to their interests, readiness, and learning style. Handa (2019) noted that acceleration was a unique concept that enabled learners to advance quickly when they learned faster either by skipping grades or taking higher grade level classes or through early entry. Many times teachers and schools were not supportive of acceleration. Gifted students benefited when teachers used flexible grouping during lessons to group children based on abilities and differentiated content or product. Handa (2019) mentioned that though there was a lot of research that supported flexible grouping of gifted students in a mixed ability classroom, teachers did not implement these strategies. Handa (2019) proposed to understand the contrasts and commonalities of thoughts among principals and teachers about using DI in classrooms.

Secondly Handa (2019) investigated the perceptions of school leadership on differentiation for gifted students and lastly explored the understanding of implementing sustainable DI solutions for gifted learners among school principals. Handa (2019) pointed out that education in New South Wales (NSW), Australia was mainly provided by 67% in government schools, 18% in Christian educational organizations and 15% in private schools. The participants for this study included

educators from 163 government schools in NSW as they were the biggest educational providers in Australia.

The data was collected and analyzed in two phases. In the first phase a survey was sent out to both principals and teachers to collect qualitative data. An online survey was sent to all the teachers and principals of the government schools to explore their thoughts on differentiation as part of the first phase. Handa (2019) received responses from 867 teachers and 120 principals from both the elementary and secondary section of 117 schools in total. The researcher used a new measurement tool called “Differentiated Learning for Gifted and Talented Education (DiL_GATE)” (Handa, 2019, p. 5) which was based on a review of literature focused on instructional strategies for gifted learners. The survey included 36 statements about pedagogical differentiation of product, process, environment, results, and curriculum. The survey used a 5-degree Likert scale. The Cronbach’s alpha value for the teacher survey and principal survey showed a scale of .89 and .87 respectively.

In the second phase four principals with experience in implementing DI were recommended by the regional director of northern Sydney schools for interviews. These four principals were given 15 questions in advance that explored their experiences, thoughts, and implementation style of DI. Later semi-structured interviews were conducted based on this questionnaire and responses were appropriately transcribed. Handa (2019) mentioned that the findings showed that principals expressed fewer tasks for gifted children while comparing principal and teacher views regarding pedagogical strategies than teachers. However, in peer evaluation opportunities for gifted students, principals reported more learning tasks than teachers.

In the second phase of data collection, the four principals suggested that teachers should gather students’ prior knowledge to identify gaps and to alter instructions accordingly. The four

principals agreed that all courses must be differentiated to meet the needs of high achievers. Handa (2019) mentioned that the four principals valued the diversity that existed in the classrooms. They advised the use of pre-assessment strategies to gain insights into the students' prior knowledge. Planning collaborative activities, identifying the unique talents of students and then catering to their cognitive development was the only way to ensure equity in the classroom. Handa (2019) noted that the four extraordinarily motivated principals expressed that the ideas, thoughts, and actions of principals and teachers must be in unison to be able to achieve heightened learning for gifted students.

DI in Multi-grade and Mixed Ability Classrooms

A 'multi-grade classroom' is comprised of students from multiple grades with one or more teachers catering to their curricular needs within a stipulated timetable. Shareefa (2020) noted that most educational institutions around the world had a monograde teaching environment where one educator was responsible for students from a single grade.

In order to meet a need of lack of infrastructure and human resources, multi-graded teaching was incorporated into the education system of Maldives as a policy-driven endeavour (Ministry of Education, 2017). Shareefa (2020) referred to other researchers such as Anderson and Pavan (1993) and Geisler et al. (2009) who suggested that there was a strong link that connected DI and multigrade teaching which contributed to maximize learning outcomes and achievements in students. It was needless to point out that the diversity in the students' skills, abilities, interests, and learning style was high in a multigrade classroom which sets the stage for DI, as the environment demanded accommodation for its diverse learners. A single-site small case study by Shareefa (2020) in a mixed-grade school in Maldives explored the teacher experiences of using DI in multi-grade classrooms.

The data was collected through semi-structured interviews, observations, and document analysis of lesson plans. The researcher personally interviewed all the participants and asked open ended questions about the benefits and practices of using multi-graded teaching. They were also questioned about their instructional practices and the challenges they faced when they used DI. The classroom teaching practices were observed by Shareefa (2020) on two different occasions that investigated the DI practices.

The study revealed that the new setup of grade combination had shown a major shift in the attitude of both teachers and children, as teaching and learning had become more engaging. The researcher noted that DI was implemented based on students' abilities and not based on their grade level. Teachers accommodated student needs and planned instructional strategies even though they were hard pressed on time and loaded with work. The content and process were differentiated at a satisfactory level and met academic standards and student's interests as identified by the core principles of Tomlinson's (2014) model of DI. However, due to the lack of adequate professional development the efficacy of DI implementation was an evident problem. Also, product differentiation was not observed in most of the classes.

It was evident from the study that the educators put in a great deal of effort to reach out to their diverse students. Shareefa (2020) observed that multi-grade classes facilitated an environment where the weaker students learned with the help of the gifted students and the gifted students learned to help peers in need. Shareefa (2020) labeled the mutual learning that was seen in the classroom as 'reciprocal process of social learning' which was first noted by Hyry-Beihammer and Hascher (2015a) in their research. Shareefa (2020) through the research study findings revealed that the teachers had used various strategies to reach out to the individual needs

of the student by accommodating content, materials, flexible grouping and carefully planned out their strategies.

Similar to multi-grade learning, enrichment clusters are designed to give children the opportunity to problem-solve, apply higher order thinking skills, and find answers or create a product in groups that have similar interests. A journal article written by Reed and Westberg (2003) talked about how enrichment clusters were implemented at Harriet Bishop (HB) Elementary School that catered to the needs of diverse students. They implemented strategies that addressed the interests and needs of the gifted as well as some struggling students. The content that was integrated into these clusters were challenging and demanded critical thinking and many a times educators transferred some of these strategies and methodologies into their regular classroom noted Reed and Westberg (2003). These clusters were organized to meet weekly along with their facilitators. The teachers did not have pre-designed lesson plans, the plans were created in collaboration with the students and as they worked through their plans they arrived at their objectives as in real world applications.

The curriculum and model at HB school was a collective effort by the management, parents and teachers. The children learned through an “integrated curriculum using strategies such as differentiated instruction, curriculum compacting, and multi-age learning” (Reed & Westberg, 2003, p. 2). The school had 700 students who were educated from kindergarten through grade 6 and students were associated with the same teacher and peers for two years as it was a multi-grade system. Within the clusters students engaged with their designated facilitator for a stipulated amount of time based on the area of interest. The clusters were organized based on broader disciplines or interdisciplinary topics. Reed and Westberg (2003) noted that this methodology was grounded on the principles of School Wide Enrichment Model (Renzulli & Reis, 1997).

The staff members also got an opportunity to explore topics beyond the textbooks. Not just classroom educators, but other members of the school and administration were also included as facilitators for some clusters depending on the topic. This experience promoted growth both in the students and teachers and the staff received a deeper understanding of how to work in multi-age settings. Reed and Westberg (2003) mentioned that parents were also involved as facilitators which gave them a view on how different children adapted and learned in various ways and rates. The involvement of parents in the clusters enhanced parental support for the school and in turn gave parents an inclusive feeling of being a part of their children's school life.

Students were also equally intrigued by what was going on in different clusters in turn increasing their involvement and adding to their skill development. Some of them were able to apply the knowledge from the work in their clusters into real world application areas. For example, the technology cluster was able to help the school educators and administrators when they needed assistance in technical matters. Ongoing professional training for teachers helped them to raise the bar every time and made enrichment clusters a real success at HB school. Reed and Westberg (2003) concluded that the example at HB school gave a fabulous platform for gifted students to showcase their talents and it also gave students, teachers, non-teaching staff and parents a collaborative environment that played a meaning full role which enhanced their skills. It truly proved to be a win-win situation at HB school.

Another critical element to the success of student achievement in diverse and mixed ability classrooms is the use of culturally responsive pedagogy and intercultural differentiated practices noted Neophytou et al. (2020). Intercultural education and culturally responsive pedagogy put students cultural background at the forefront and connected that to the curriculum to make instruction effective and reachable to the diverse student community. According to Neophytou et

al. (2020) differentiated instruction used targeted instruction to suit students' academic diverse needs with an individual focused approach, while intercultural education had a community focused outlook. The researchers believed that these two philosophies could be complementary in helping educators to face the challenges that existed in multi-cultural and mixed-ability classrooms.

The study organized by Neophytou et al. (2020) aimed to explore the implementation of intercultural differentiated instruction in a mixed ability classroom. The researcher investigated the practices employed by educators and the challenges they faced in the process. Neophytou et al. (2020) chose Cyprus as the location for the purpose of this study and the Educational Policy there recommended differentiated instruction as the most effective strategy to engage students' diverse abilities in the classroom. Twenty schools were identified to participate. These schools were located both in urban and rural areas and all had the maximum percentage of immigrant students. Neophytou et al. (2020) used a qualitative approach and conducted interviews with 40 teachers from the schools that agreed to participate. Among the teachers 22 were females and the rest were males with varied ages and different years of teaching experience. Neophytou et al. (2020) employed semi-structured interviews and adapted versions of interviews used by Gubrium and Holstein (2001) to answer their research questions.

The sessions were video recorded and transcribed to ensure that there was no loss of information. The observations were focused on understanding how teachers differentiated instruction and to examine their practices, challenges, and the intercultural differentiated methodologies. The three researchers did the analysis of data independently and later cross checked their findings to verify their interpretations. The textbooks used at Cyprus schools were distributed centrally and provided ample accommodation to cater to the cultural diversity. The teachers mostly depended on the textbooks for content. Every classroom had a wall space which

the teacher carefully used to show the diversity that existed in the classroom. The educators included pictures of traditional cuisines, clothes, festivals etc. of all the children and kept adding to this information based on the topic that was being discussed in the classroom. Though teachers were making every effort to make accommodations, classroom observation data showed that they were not paying attention to student success.

Neophytou et al. (2020) concluded that teachers had reached a basic level of content accommodation, however, were unable to enrich the students' knowledge building capabilities. The teachers employed simplifying the content as an approach to differentiate instruction and used the VARK (visual, auditory, kinesthetic) model to create assignments and class work. Though they attempted to create their own activities they relied on the textbook for the broader ideas. They only differentiated the difficulty level of the questions and assigned them based on each child's abilities. Neophytou et al. (2020) further mentioned that they were not making drastic alterations to the process and were not doing enough group work and collaborative activities.

Based on the researcher's observations many of the instructional decisions were occurring due to personal preferences of the teachers. Neophytou et al. (2020) noted that the prejudice in treatment of students was mostly due to their own cultural backgrounds and had nothing to do with their intellectual abilities. However, ultimately the children were not receiving equal opportunities nor was the learning process equitable which defeated the whole idea of both intercultural education and differentiated instruction.

In the area of product differentiation, the teachers claimed that they gave children choices to present their learning based on their preferences. Neophytou et al. (2020) observed that in most cases product differentiation was given as an optional element after completing the assignments that were already prescribed. The children were given these choices for certain subjects such as

social studies which created biases and prejudices against certain disciplines of study. Even the choices in assignments provided were content driven and did not demonstrate any accommodation for diversity other than considerations of learning styles. Neophytou et al. (2020) mentioned that the teachers took efforts to create a classroom space that were visually appealing including adjustments for cultural diversity. According to the participants they believed this also enhanced positive feelings in their students. Despite these efforts, the authors concluded through their observations, that children were not involved in any decision making and were not equipped to voice their interests and concerns and thus the school lacked in empowering their students.

DI in an Inclusive Classroom

Inclusive classrooms and inclusion in schools has become more common as research has shown a lot of benefits. Heacox (2012) expressed that the classroom teacher held the responsibility of making sure that all the students in the classroom progressed regardless of their individual differences. The success of an inclusive classroom depended on the acceptance, understanding and accommodation extended by the teacher and students. The fundamental philosophy of inclusion was to view and accept people on equal terms and give equal opportunities by fostering a school environment that encouraged participation across all spectrums. This implied that schools must make considerable accommodations to curriculum and environment at various levels. This resulted in building a school community that was responsive to the diverse needs of the learners as the focus was not just on accommodating changes for students with disabilities, but to improve instruction for all students. There has been a drastic increase in the number of children with disabilities enrolling in mainstream schools for education.

The study conducted by Onyishi and Sefotho (2020) of 382 primary teachers around the Enugu state area of Nigeria explored the responses of teachers' attitudes towards implementation

of DI in an inclusive classroom. Onyishi and Sefotho (2020) mentioned the work done by Martin (2003) that suggested that the elevated level of responsibility and the complex nature of DI was a factor in teachers opting not to use it, though the potential success of DI strategies were high. The researcher used a descriptive survey to collect data systematically on teachers' backgrounds and their use of DI in the classrooms. The survey comprised of various sections such as: 1. Teacher background such as age, gender, years of experience etc., 2. Extent of DI implementation, 3. Challenges implementing DI, 4. Information they need to be able to effectively implement DI, and lastly 5. Teachers' perception on what improvements could be made to effectively implement DI. The survey was structured in a four-point scale degree with strongly agree, agree, disagree and strongly disagree as options. Though the teachers had received training in DI the extent of practical implementation was very low. Only 19.7% of the teachers were using DI strategies and mostly for pre-assessment purposes. The study revealed that lack of time and space, rigid curriculum, large class size, and inadequate teaching aids were the challenges preventing the use of DI. The researchers recommended that teachers needed training in designing the appropriate assessments. Onyishi and Sefotho (2020) mentioned in the study that Lora et al. (2014) also found that the time intensive nature of DI and lack of professional development as a major hindrance in teachers implementing it in an inclusive environment.

The research conducted by Leballo et al. (2021) investigated the in-depth understanding of differentiation teachers had and how much of it was being utilized. Leballo et al. (2021) gained insights into the challenges faced by educators in Lesotho in both private and public schools. The authors noted that based upon the Lesotho Education Act No.3 of 2010 "Education in Lesotho ensures that the learner is free from any form of discrimination in accessing education and is availed all educational opportunities provided" (Lesotho Legal Information Institute, 2010, p.

164). Differentiated instruction was regarded as a very promising instructional strategy that promoted effective learning in all students especially students with disabilities. As Tomlinson (1999) conveyed, “in differentiated classrooms, teachers provide specific ways for each individual to learn as deeply as possible and as quickly as possible without assuming one student’s road map of learning is identical to anyone else” (p. 2).

Leballo et al. (2021) used a descriptive quantitative methodology for their study as they intended to measure the extent of use of differentiated instruction by two groups of educators (ie. Teachers in government school vs teachers in private educational organizations). Ten teachers per school from various disciplines such as mathematics, English and science were randomly chosen for the purpose of this study. These randomly identified teachers were given a questionnaire comprised of both open ended and close ended questions to support the research questions. Leballo et al. (2021) focused their questions to understand the extent of differentiation involved in process, product, and outcomes of learning. This they accomplished through a questionnaire that comprised of quantitative open-ended questions and qualitative open-ended questions using a four-point Likert scale. The next set of questions were aimed at gathering knowledge about the challenges faced by educators in implementing DI. The last part of the survey concluded with similar open and close ended questions that examined teacher beliefs and perspectives of differentiated instruction.

Leballo et al. (2021) noted that the findings from the demographics data showed that the student teacher ratio in government schools was 50:1 vs private school where the ratio was 20:1. The researchers mentioned that the teachers from both government and private schools expressed that they used differentiated practices, group work, and collaborative strategies in their classrooms. Since these were based on teachers’ claims and not based on the authors’ observations in the

classroom, the author mentioned that co-operative learning in government schools was not frequent owing to the large class sizes. This could be one of the limitations observed in the study. Leballo et al. (2021) were discouraged to see that performance assessment practices were seldom used by teachers even in private schools probably because of the time-consuming nature of assessment practices.

The findings clearly revealed that both schools were facing challenges using differentiated instruction. Based on the responses from the teachers in both schools, student diversity in terms of background and abilities was quite prevalent in the classrooms. The educators in the private schools seemed to show more understanding in their ability to accommodate the needs of diverse learners. Leballo et al. (2021) pointed out that teachers from both schools seemed to agree that the lack of time for planning and implementation was one of the biggest challenges they faced. The government schoolteachers strongly agreed that the large class sizes and limited resources were a huge roadblock for them to effectively differentiate instruction in the classroom. As the data suggested, the educators in Lesotho had good understanding of the principles of DI, but they were not successful in implementing the practices in the classroom due to the various reasons identified in this research.

Every country now has policies and amendments in place to safeguard the interests of children with special needs. This has increased the need for making teachers and educators inside and outside the classroom equipped to engage effectively with children who need special care. As general education classrooms became more and more diverse, the obvious answer to catering to the students' needs is a tailored instructional approach such as differentiated instruction.

Quebec, Canada was the chosen location for the research conducted by Roy et al. (2013) as the school policies and reforms that existed around inclusion had pushed educators and school

leaders in their educational system to consider and implement differentiated instruction. The research conducted by Roy et al. (2013) aimed at creating a “differentiated instruction scale” (DIS) that addressed the instructional accommodation required and the appropriate assessment needed. They also explored the teachers’ perspective of how the schools supported differentiated instruction and their own self-governance. Lastly the study examined the strategies and differentiated practices that were employed by the educators. Roy et al. (2013) noted that the accommodations that teachers made were a vital element in enhancing engagement in children with special needs. IQ tests were regularly used to identify learning disabilities.

The participants for the current study included approximately 500 elementary school educators in Quebec, Canada. A questionnaire was emailed to 500 educators and the author received 125 responses. The survey included a mixture of questions regarding teachers’ autonomy and support they received from the school, the various methods in which teachers supported students’ learning, and key questions based on the DIS developed by the author. The survey used a five-point Likert scale to collect the views and responses of educators. Roy et al. (2013) conducted a preliminary exploratory factor analysis (EFA) using SPSS statistical analysis software to determine the scale items to be included in the differentiated instruction scale that was developed.

Based on the statistical results and variance the authors revealed that only 45% of teachers accommodated content and process to suit student needs and only 38% of educators differentiated assessments. The researchers mentioned that this result was very similar to other researchers whose studies showed that educators seldom used strategies that needed too much preparation and tailoring. Roy et al. (2013) noted that 60% of educators made data driven decisions for instructional changes. The DIS was refined after the initial EFA and the CFA results agreed with the initial

hypothesis that suggested that both instructional adjustments and regular assessments of progress were important for better student success. Roy et al. (2013) concluded that the differentiated instructional practices used by the educators showed a positive impact and the correlations between differentiated instruction, school management support, and teacher autonomy were all encouraging.

Many researchers have suggested that students with special needs were able to cope and developed better in a general education environment when they were given the right kind of support and assistance. Siam and Al-Natour (2016) noted that examining the educators' approach to create enriched activities in the inclusive classroom became a need since some children in the classroom required more than what was offered in the current environment owing to their personal development or growth. The authors conducted a study that explored the DI practices of teachers in Jordan and the barriers they encountered while they taught children with learning disabilities. Providing students with special needs equal opportunities and an environment with other typical children in the general education system was demanded by law in Jordan. After this law came into effect Jordan had seen an increase in students with disabilities in schools and this had increased the pressure on educators to provide effective inclusive curriculum in the classrooms.

A research study conducted by Siam, and Al-Natour (2016) aimed to see what different DI practices were employed by teachers in the different areas namely process, product, content, assessment, and environment while they taught students with special needs. Secondly the study identified barriers in their differentiated instructional journey and lastly compared to check for variances that existed based on the type of educational organization. The participants for the study included 194 Jordanian educators who worked with students with special needs in grades 2 through 8. The targeted population included teachers who were trained and had undergone professional

development in differentiated instruction and worked in schools that were particular about incorporating new and innovative teaching strategies. The teachers in the participant pool taught English, Arabic, Math, and science. Teachers answered two surveys, the first one had 65 statements that were questions in six different domains of differentiated instructional practices. They included questions about content and curriculum differentiation, differentiating the process of learning, methods of monitoring progress through assessments and differentiating teaching resources and classroom management. The participants responded based on a three-point Likert scale. The second questionnaire comprised of 14 questions that focused on the challenges and barriers that teachers face while they differentiated to the needs of children with disabilities. Siam, and Al-Natour (2016) noted that, the survey was sent to 30 teachers outside the target group and a Cronbach's alpha coefficient was checked that proved positive for consistency.

In addition to the two surveys the teachers were asked open ended interview questions about the implementation of DI in their specific environments. Siam, and Al-Natour (2016) systematically video recorded and then transcribed the interviews which were later reviewed by teachers for validation purposes. The analysis of data indicated a very low level of knowledge and instructional practices in all the six domains of DI that were considered in the questionnaire. Siam, and Al-Natour (2016) noted that the practice of using DI in Jordanian schools was just catching up and a lack of experience and high workload had contributed to the low rating. The teachers were also faced with challenges that included limited access to necessary resources, time constraints, inadequate PD programs for teachers, and increased administrative duties that hindered their instructional practices.

Siam, and Al-Natour (2016) mentioned that the teachers expressed a lack of support and encouragement from the administrative team that added to their inability to differentiate instruction

in their classrooms as expected. Owing to the complex nature of DI the authors recommended that teachers participate in required regular professional training from time to time to support implementing differentiated instruction. Siam, and Al-Natour (2016) added that regularly monitored instructional practices with observatory notes and feedback would promote effective implementation. Siam, and Al-Natour (2016) also encouraged peer observation and feedback for improved efficacy.

Inclusion in education is not just meant to accommodate or adjust the environment for children with special needs. It also implies the accommodations of all students who were diverse in their cultural background and abilities. Pozas et al. (2021) conducted a research study that examined student's perspectives of their educators differentiated instructional practices and their own personal encounters in an inclusive classroom environment. The authors noted that there were several researchers that studied educator and leadership perspectives around the area of DI and student achievement, but there were very few that have taken student voices into consideration.

Pozas et al. (2021) chose Mexico for their research study as there had been a lot of development and changes in the educational system there. The educational system observed a vast diversity as the students came from homes that spoke 68 different languages and more than 360 dialects and saw 20% of students from rural locations. Classrooms also had students with special needs and many times teachers were teaching multi-grades. According to the Pozas et al. (2021), Mexico observed lower percentages of inclusion in schools and above average student achievement in comparison to the other Latin American countries. As private schools were self-funded, they offered no additional support to students with special needs and required parents to pay over and above the regular fees to accommodate special education. Pozas et al. (2021)

mentioned that since schools could not deny admission for children with special needs by law, they went to both private and public schools in their locality.

Through this study the Pozas et al. (2021) explored students' views about how teachers used DI and investigated the potential differences in practices and teaching methods that existed between primary and secondary schools as well as private and public schools. The participants for this study included 101 students from primary and secondary schools in Mexico. Fifty-nine percent attended public schools while the rest attended private schools and 5% of the total students were children with special needs. After taking the necessary consents required from parents, the children answered an online survey. The survey questions were designed based on previous researcher's studies and some other researchers who had conducted a similar study. Based on these questions Pozas et al. (2021) designed around "six DI categories of practices: tiered assignments, intentional composition of student groups, tutoring systems, staggered non-verbal aids, mastery learning and open education/granting autonomy to students" (Pozas et al., 2021, p. 5).

The results indicated that the students' perspective and ratings of their teachers' DI practices showed no variance between private and public schools. However, the secondary school students rated their teachers' DI practices higher than that of their primary school counterparts. Based on the findings Pozas et al. (2021) revealed that all teachers regularly practiced mixed ability grouping and grouping based on learners' interests. Students were also given enough time to gain mastery and teachers also employed peer tutoring to improve motivation. The students also expressed that tiered assignments were a seldom used strategy. While comparing primary private schools and public schools Pozas et al. (2021) revealed that both private and public-school teachers adapted mixed ability grouping however, tutoring systems were more prevalent in private schools while grouping based on interests were adapted in public schools. In the secondary school system,

the public-school children reported mastery learning as an additional practice along with mixed ability grouping and peer tutoring practices as preferred methods to differentiate. The private secondary schools adapted peer tutoring and heterogeneous grouping as their methods to differentiate instruction. Pozas et al. (2021) noted that though the results indicated that secondary teachers implemented DI more often than primary teachers, the authors suggested that this variance may be due to the lack of methodical knowledge of primary children owing to their age. Nonetheless, the fact of the matter remained that Mexican teachers differentiated instruction for their children using different strategies though not all DI practices.

Challenges in Implementing DI

Though teachers recognized the importance of differentiated instruction, the challenges in implementing these strategies prevented them from using them effectively in the classroom. The study conducted by Aldossari (2018) surveyed nearly 275 educators in Dammam city, Saudi Arabia to understand the most significant challenges that restricted teachers from using DI in their classrooms. The author utilized a descriptive and analytic method based on digitally quantifying and analyzing the collected data. The questionnaire had 51 paragraphs divided into five sections with questions measuring the challenges faced by teachers during the implementation of DI. The survey had a five-fold response scale based on the Likert scale ranging from 1 to 5 with 1 being low and 5 being a high rating. A random distribution of the survey was conducted before applying it to the target sample. Aldossari, (2018) revealed that the resistance was in the medium range, the lack of understanding among students about the significance of DI, the large class sizes, inconsistent teacher training and non-availability of necessary equipment required for differentiation were few of the most prominent obstacles. Aldossari (2018) also noted that as students and teachers were used to the traditional methodologies, they found it extremely difficult

to migrate to new strategies. Like how the doctor identified a problem and suggested a treatment the author recommended that professional development programs for teachers, school leaders, and administrative staff in exploring and implementing modern educational solutions that are practical for the school environment was the next logical step.

Along with professional training and administrative support Moosa and Shareefa (2019) mentioned that teachers' preferences also had a direct impact on the instructional strategies used in the implementation of DI. Based on previous research the authors focused on understanding the impact of teachers "knowledge, perception and sense of efficacy" (Moosa & Shareefa, 2019, p. 1) on implementation of differentiated instruction. Many a times the intricacy in the DI strategies could become a major factor that prevents teachers from using DI in the classrooms.

Moosa and Shareefa (2019) mentioned in their study that many researchers were in favor of Bandura's (1977a, 1997) theory of self-efficacy which revealed that there was higher usage of differentiated strategies in classrooms where teachers had greater self-efficacy. Given the fact that DI required meticulous planning and deep understanding of students needs and progress Moosa and Shareefa (2019) expressed that only teachers who were persistent in their efforts towards positive student outcomes demonstrated self-efficacy. The authors aimed at understanding the connection between teachers' knowledge, perception and sense of self-efficacy with the use of DI.

Moosa and Shareefa (2019) sent out the survey to 130 educators who taught at the elementary public institutions in Maldives. They received 110 responses. The researchers used a non-experimental methodology for this study and the survey questions were formulated from other studies which were validated stringently. The survey used a 5-point likert scale statements and the collected data was analyzed using SPSS statistical software.

Moosa and Shareefa (2019) presented a hypothesis saying that there was a positive correlation between knowledge, perceptions and teachers' self-efficacy and the fixed variable that was DI implementation. The findings revealed that there was a positive influence of knowledge and teacher's self-efficacy on the implementation of differentiated instructional strategies. However, the results showed not much correlation between perception and DI implementation. Moosa and Shareefa (2019) applied Pearson correlation to understand the relation between knowledge based on content, process, product, and environment differentiation and DI implementation. The regression analysis showed that knowledge alone showed 35% of variance in DI implementation. This suggests that a thorough theoretical and practical understanding of DI strategies and theory is a crucial element in implementing DI. Moosa and Shareefa (2019) mentioned that teachers should undergo extensive professional development to be able to apply these strategies in their classrooms. The data did not show much correlation between perception and implementation of DI, however, since there was a highly positive correlation between self-efficacy and the implementation of DI, the author expressed that teacher's beliefs were very much connected to their abilities to do a certain task. Since teachers who worked tirelessly to accommodate needs of students perceived that DI was a beneficial approach there was a lot of intersection in understanding perspectives and self-efficacy regarding implementation of differentiated instruction. Moosa and Shareefa (2019) concluded that knowledge, perception, and efficacy combined had very positive influence on implementation of differentiated instruction. Which also suggests that these three variables are vital in contributing to the educators' behavior and actions towards DI implementation.

Similar studies done by Suprayogi et al. (2017) indicated that teacher training, self-efficacy and large classroom size were contributing factors affecting their implementation of DI. The

participants for this study was comprised of all teachers in the Jakarta Province, Indonesia who worked for Grade- A level accredited educational institutes. A total of 604 teachers from 145 schools were involved in this study. The study was conducted using four research parameters that included a questionnaire based on teacher background and demographics, DI implementation, teacher self-efficacy, and beliefs. There were 15 items on the DI implementation scale, 15 questions on teacher self-efficacy, and 14 items that were related to the teachers' belief system. As the study was conducted on a larger scale, necessary permissions were taken by the authors from the provincial authorities.

The results revealed that adaptation and implementation of DI was more prevalent in teachers with more than 5 years of experience compared to teachers with less than 5 years of experience. To understand the relationships among the variables, Suprayogi et al. (2017) used a linear regression analysis. Based on the investigation of the professional development experiences of teachers, it was noted that they were not exposed to any content that truly focused on DI. The analysis also revealed that 30% of teachers did not possess the necessary teaching licenses or certification and 27% of teachers did not participate in any PD. Suprayogi et al. (2017) made multiple references to the onion model by Korthagen (2004) which emphasized that "there should already be a 'fit' between layers of, behavior, competence, and beliefs, while coping with the demands of the instructional environment, and therefore it should also align to their further layers, the identity and the mission. Weaker professional development, adherence to teacher-centered beliefs or weak development of self-efficacy beliefs to tackle differentiated instruction reflects a misalignment and might predict a weaker adoption of DI" (Suprayogi et al., 2017, p. 4).

The study conducted by Suprayogi et al. (2017) was specifically developed to link the layers of the onion model to the variables of DI implementation. The findings did not indicate any

significant correlation between teacher experiences and DI implementation, however the study showed that teachers who were an expert in their subject and pedagogy could build on their DI self-efficacy. Suprayogi et al. (2017) concluded that there is no doubt that DI implementation was challenging, but the level of professional development, self-efficacy, beliefs, and teacher characteristics had a significant impact on how DI was used in the classrooms.

Educational evolution and growth are a necessity in today's day and age where technology has made it easier to smash many boundaries. Access to information and knowledge and the exchange of this knowledge is beneficial to people all around the globe. Heng and Song (2020) pointed that the benefits of knowledge and experiences of others was often adopted by people around the world. This kind of knowledge transfer occurred in many ways such as, external experts who came for training, exchange programs, distance education, and educational trips. The advancement and development in technology and transportation had enabled people and ideas to move around. Heng and Song (2020) expressed that it was extremely vital to consider many factors that made it effective for the receiving party while engaging in educational transfer. The authors added that if the intent, context, and ability to implement the change did not match, the purpose of the endeavor suffered and lead to the dismissal of the idea.

The qualitative study conducted by Heng and Song (2020) looked into the aspect of the idea of 'policy borrowing' that was dependent on the proper reception, skill set, and background of the key employees of the organization that borrowed and used the policy. Heng and Song (2020) examined the obstacles involved and perception of teachers in implementing differentiated instruction in Singapore where the educational concept was borrowed from the U.S. Due to the constant increase in immigrants coming into Singapore the Ministry of Education of Singapore saw the need for DI to help teachers reach out to the diverse needs and abilities of students. The

participants for this study were teachers who attended two different graduate level programs where the authors had taught. A total of 30 participants were chosen out of which twenty-four were females and six were male teachers with a minimum of three years of teaching experience. The group comprised of a mix of teachers, administrators, and officers from the Ministry of Education.

Heng and Song (2020) engaged the participants in discussions about diversity, implementation of DI, misconceptions about DI, and other elements that concerned DI. Heng and Song (2020) met the participants regularly for one semester which lasted 13 weeks with a break for 1 week. They met for 3 hours per week to understand the various aspects of DI and the challenges and issues that resulted in the process. All the data was coded and in the final week the participants were divided into two groups, and they debated on the topic of whether DI was helpful and if it made a difference. Data was gathered firstly through a survey questionnaire that focused on teacher demographics. Secondly the weekly discussions were recorded and transcribed by Heng and Song (2020). Finally, the participants were asked to write a reflective journal that revealed their perception of DI before and after the course. The participants reflected on the challenges they expected to see while implementing DI in their classrooms. The authors' reflections were collected through memos.

Heng and Song (2020) mentioned that they used "inductive analysis" (Hatch 2002, p. 161). The data was categorized into three groups, "technological, political, and cultural perspectives of educational change" (Heng & Song, 2020, p. 5). The words indicated by the participants in their reflective journals were grouped into these three categories and coded. The qualitative research was also examined and reviewed by experienced individuals to improve authenticity. The findings showed that the teachers saw a lot of challenges in implementing an instructional phenomenon from a different culture. Heng and Song (2020) noted that the drastic change in the mind-set made

it extremely cumbersome to incorporate the new instructional approach and change in social beliefs. The teachers were used to a more teacher centric and authoritative instructional approach and were uncertain about how teachers and students would adapt to DI which was more student centric. Heng and Song (2020) mentioned that the teachers perceived this shift in “controls” could lead to classroom disruption. Culturally teachers were habituated by the idea that effective classroom teaching happened only when the teacher was in full control of the class. The participants expressed that convincing the teachers that an environment that catered to active learners through student autonomy was a challenging task. The idea of fairness according to the teachers in Singapore was standardization and regulation.

DI placed a lot of emphasis on equity by providing resources based on learner needs instead of equality. Heng and Song (2020) pointed that the participants felt that the concept of equity was seen as being unfair based on the cultural background and mindset in their educational system. Singapore had a more result and achievement oriented educational approach and the participants felt unless the results were measured, and objectified teachers found it hard to switch to DI as an instructional methodology. The authors mentioned that the mindset of teachers who believed in “teach as they were and have taught” (Heng & Song, 2020, p. 15) and “Learn as I have learnt” (Heng & Song, 2020, p. 15) and the unfamiliar territories of DI were all observed as possible roadblocks.

The large class size, inadequate space, and lack of preparation time were other factors that contributed to questioning the viability of implementing DI. The unwillingness to embrace DI was also attributed to the lack of confidence in teachers and students dwelling into new areas. Another important aspect was that they were unsure of how much support they might receive from the leadership team as teachers were never given autonomy. Based on the findings and data Heng and

Song (2020) concluded that when considering educational knowledge transfer it was beneficial to apply it in different contexts so that when ideas crossed borders, they could be made effective and easily embraced.

DI in a Virtual Environment

The innovation that technology has brought to education could be utilized by teachers in various grade levels to differentiate and individualize learning for their students based on their needs. Padlet, Screencast-o-matic, Plickers, Kahoot, Wakelet, Vocaroo and many such tools are easily available for teachers to differentiated instruction. Quick response codes and Vocaroo are tools that can make reading more interactive and engaging. Assessments can also be differentiated using technological tools such as Plickers and Kahoot. These tools are made available for special educators to help differentiate curriculum for students with disabilities. These can be adapted in general education also and promotes differentiation of process, product, and content along with helping students enhance their 21st century skills. Teachers can use technology and technological tools without creating extra work for themselves as they are accommodating the curriculum to suit the learning needs of their students (Mahoney & Hall, 2017). Inclusion of technology implementation as part of teaching and learning in educational institutions has been mandated as per The National Technology Plan (USDOE, 2010). Creation of new standards in education clearly emphasizes the urgency and importance of using digital and technologically advanced tools to enhance the learning experience of students. The COVID-19 pandemic has forced most educational institutions to adapt to a virtual learning environment and this shift has made most educators realize the extent of how technology can enhance a student's learning experience.

During the pandemic, Güvenç (2021) conducted an action research study during the pandemic to understand the attitudes and thoughts of students and teachers concerning the implementation of DI practices on the language learning process in a virtual setup. The study was conducted at a University in Ankara, Turkey and the participants were students from an English preparatory class. Though the sample size was small the action research was carried out for 13 weeks. Güvenç (2021) designed and implemented different DI practices in the classroom based on the students' learning needs. The core lessons of the course aimed at providing students' knowledge of listening, reading, writing, and speaking skills in English. Students were also taught the grammatical usage and comprehension in English. Each of their online sessions lasted for 45 minutes and eight weeks were set aside for DI practices.

The qualitative nature of the study used surveys and questionnaire to understand student's background, learning profile, student feedback, and the researcher's process notes. The students were regularly given exit tickets, end of lesson questionnaires, and end of unit assessments to gauge the progress and effects of the DI practices being implemented. The author's reflective notes included specifics about the DI practices along with aspects and incidents showcasing the success or failures pertaining to DI practices. The data collected by Güvenç (2021) was meticulous, systematic, and anonymous.

Eight different DI activities were implemented for eight weeks by applying differentiation through tasks, deliverables, content, and grouping. The first week was dedicated for reviewing literature, understanding student backgrounds, learner profiles and designing appropriate DI practices. Güvenç (2021) engaged the students in a shuffle and playlist DI activity in the second week. They were given many slides with activities in purple and blue color. The students completed all activities in purple and chose one activity from the blue slides. This was a task

delivery challenge which was executed in pairs in different virtual breakout rooms with teacher supervision. They also filled out an open-ended questionnaire at the end of the session.

The students were engaged in comprehension using a software called Rewordified Text. A chosen passage from the textbook was re-written using a software that included words with meanings and synonyms and some easy-to-follow explanations. Based on random group selection some students were given the re-written text and the rest of the group were given the original text to comprehend. The students solved the comprehension questions and then gave oral feedback about their experiences.

For the next activity Güvenç (2021) gave students exercises on gerunds and infinitives using choices boards. The following week saw a 'Paths as a playlist' activity to practice conditional and wish clauses. Both of the activities were collaborative learning activities that helped students learn from each other and progress as they were guided by a teacher. The participants answered a questionnaire at the end of each session. The students tackled the topic of noun clauses and reported speech through a student learning contract which had a few mandatory tasks and some optional tasks with assigned points.

In week eight, the www.thinglink.com technology was used to create a virtual escape room environment with puzzles and questions for students to solve. Students practiced the topic of relative clauses. The teachers created a digital exit ticket to understand student reflections.

Week 10 was a project-based learning (PBL) activity with assigned roles and responsibilities and the students created a presentation to be presented in the main session. Lastly, a tic-tac-toe activity board was designed as a final activity. The teachers provided effective feedback that was timely, specific, and easily received by the students.

Güvenç (2021) indicated positive responses from students, wherein their feedback often included the words ‘fun, engaging, informative and effective’. As per student feedback it was concluded that the DI activities enhanced their participation and learning process. They appreciated their teacher’s role and expressed that they felt supported throughout the sessions. Güvenç (2021) mentioned that the students also expressed the benefits of peer and team collaboration because of group and paired work. Güvenç (2021) found a steep incline in the students’ communication, enthusiasm, participation, and effectiveness. The reflective notes provided by Güvenç (2021) pointed out that the teachers genuinely felt that DI activities caused students to take ownership of their learning, however, the planning and execution of these activities were time intensive.

Reading and understanding new teaching strategies are inspiring and motivating however, when implemented in the classroom the experiences were challenging mentioned Hersi and Bal (2021). Implementing and applying anything learned in theory gets better with experience and practice. A study conducted by Hersi and Bal (2021) examined the experiences of teachers in Maryland to understand their perceptions of DI practices based on what they practiced in the classroom and what they desired to achieve. Overall, the teachers who actively participated in this research study used DI in their classrooms and were keen about instructional practices that put student learning at the forefront. Hersi and Bal (2021) explored the variances between what the teachers in Maryland wanted to achieve through their differentiated instructional practices and the actual status in the classroom. The researchers also observed the DI practices in the classroom and evaluated the effectiveness and short comings. Hersi and Bal (2021) investigated the extent of professional training required for teachers to better equip them for practicing differentiated instruction in the classroom. This gave an insight on the gaps that existed in the implementation

of DI strategies so that teachers and school leaders could plan for more personalized inquiry among educators. Hersi and Bal (2021) targeted the teachers from Maryland who were part of the teaching season in 2018 – 2019 and the study was conducted during the COVID-19 pandemic. The authors contacted 14,322 educators via email which was acquired through a list of contact information that was purchased. This number of educators represented about 23.88% of the whole teacher community in Maryland. Though 4.8% of the emails bounced back, the survey reached the rest of the teaching community. Due to the school closures that happened because of the COVID-19 pandemic, Hersi and Bal (2021) sent out only 2 reminders during the seven- week period that the survey was opened. They received 742 responses which was 5.43% of the participants. The researchers finally had 555 responses that were usable for data analysis.

The survey prepared by Hersi and Bal (2021) comprised of three sections: 1) teacher demographics; 2) questions on their actual instructional practices and what they hoped to achieve through these practices; and 3) open ended questions based on what improvements were required so that more learner-centered activities were included in classroom instruction. The quantitative study deployed by the researcher adapted “The Desired and Current Use of Constructivist Activities and Techniques survey” based on a survey conducted by Polka (2010). The demographics data was used to analyze the diversity among the Maryland teachers who participated in the survey and the authors compared the data with all the teachers in Maryland. The analysis revealed that 77.8% of the participants were females. Majority of the participants were certified teachers holding a master’s degree. Though the age and experience varied, Hersi and Bal (2021) noted that 78.3% of the total teacher community in Maryland were identified as white. The survey responses showed that the teachers desired to implement student-centric instructional

approaches however, their classroom practices were not as consistent and regular as they should be.

The Hersi and Bal (2021) research gave a lot of insight into some long-term and short-term professional training planning that the teachers and school leadership could undertake to close the gaps. This research was unique as it looked at the implications of differentiated practices in the classroom to give an opportunity to do some reflective thinking and action. Hersi and Bal (2021) recommended similar research to be conducted in different states to understand the gaps that existed between the desired and actual practices of differentiated instruction in schools so that educational institutions could take the right steps to close these gaps.

Chapter III: Discussion and Conclusion

Summary of Literature

The primary focus of this review of the literature was to understand the teachers' perception of differentiated instructional practices and the challenges faced while implementing DI in the classroom. The past two decades have seen many innovations in the field of educational instruction. Many schools have implemented differentiated instruction as an effective instructional strategy to meet the needs of diverse learners in mixed-ability classrooms. The literature review has shown an overwhelmingly positive attitude of teachers toward DI though most educators have expressed challenges in implementing the methodology (Al-Shaboul et al, 2021; Gibbs & Beamish, 2021; Giles & Tunks, 2014; Mengistie, 2020; Merawi, 2018; Roe, 2010; Shareefa, 2019; Wan, 2020;). Misconceptions such as the complexity and time-intensive nature of implementing DI were a few reasons for teachers to develop a negative attitude toward implementing DI as an instructional strategy in the classroom (Lang, 2019). The lack of awareness about DI among educators showed a tendency to reject DI as an effective strategy (Al-Shaboul et al., 2021; Godor, 2021; Moosa & Shareefa, 2019; Siyabi & Shekaili, 2021). Experienced teachers and teachers who had received professional training in DI showed more inclination and confidence toward implementing some of the DI strategies in the classroom (Al-Shaboul et al., 2021; Ginja & Chen, 2020; Mengistie, 2020).

Teachers who were involved in second language acquisition programs were differentiating content to some extent and provided appropriate scaffolding required to remove language insecurity in children (Petraya et al., 2021; Yavuz, 2020). Similarly, teachers in an inclusive classroom also expressed a positive attitude towards DI, however, the large class size and large group instruction that included both children with special needs and normal students proved to be

difficult (Leballo et al., 2021; Onyishi & Sefotho, 2020; Siam & Al-Natour, 2016). Research recommends that schools must promote training teachers professionally in using culturally responsive pedagogy, and intercultural differentiated practice in inclusive classrooms to improve student achievement (Neophytou et al., 2020; Onyishi & Sefotho, 2020). Differentiated instruction was a preferred methodology to engage gifted learners and teachers mentioned the use of small group instruction and flexible grouping as a more favorable approach (Handa, 2019; Stollman et al., 2021). Multi-grade classrooms and mixed-ability classrooms facilitated peer learning and enhanced confidence in both struggling learners and high achievers (Reed & Westberg, 2003; Shareefa, 2020). Engaging a classroom that is comprised of students from different cultural backgrounds and varied academic capabilities requires appropriate professional development. Most studies expressed the need for identifying gaps in teachers' understanding of DI and providing appropriate theoretical and practical professional development programs to improve the efficacy of DI practices (Al-Shaboul et al., 2021; Gibbs & Beamish, 2021; Giles & Tunks, 2014; Güvenç 2021; Mengistie, 2020; Merawi, 2018; Roe, 2010; Shareefa, 2019; Suprayogi et al., 2017; Wan, 2020). Some long-term and short-term professional training planning that the teachers and school leaders could undertake to close the gaps was another recommended approach (Hersi & Bal, 2021; Suprayogi et al., 2017).

Though differentiated instruction has become a necessity in classrooms, it does present itself with a plethora of challenges for teachers. While schools propose to implement DI as an instructional methodology, teachers express that they do not get adequate time for planning and designing as well as instructional time in the classroom. Since DI requires teachers to design instruction based on the diverse needs of students, the lack of preparation time that arises due to their pre-existing responsibilities and workload de-motivates them from using these strategies (Al-

Shaboul et al., 2021; Gibbs & Beamish, 2021; Güvenç, 2021; Lang, 2019; Mengistie, 2020; Roe, 2010). Implementing any new instructional strategy requires the support of school leaders and management. The lack of encouragement and assistance from school management and supervisors leads to misalignment between students, teachers, and supervisors and results in frustration (Gibbs & Beamish, 2021; Lang, 2019; Siyabi & Shekaili, 2021; Wan, 2020; Yavuz, 2020). Researchers also recommend appropriate professional development and training for school leaders and management (Gibbs & Beamish, 2021; Lang, 2019; Mengistie, 2020).

Many educators have an adequate amount of theoretical knowledge about DI but lack practical experience. Though teachers were implementing DI practices in the classroom, the lack of practical and application-oriented training prevented educators from using the right instructional strategies (Al-Shaboul et al., 2021, Godor, 2021; Turner & Solisb, 2017). The complex nature of DI as well as large class sizes has often been expressed as a matter of concern by teachers while implementing DI. Insufficient time and professional training were voiced by teachers as major factors that challenged the implementation of DI. The research in the literature review reveals that teachers agree that differentiating instruction to meet students' needs is important. The proficiency skills of teachers related to DI vary, therefore, appropriate professional development and adequate support from school leadership are important to overcome the challenges faced by teachers while implementing DI as an instructional methodology in schools.

Limitations of the Research

In this study, the search criteria were narrowed down to include studies that primarily included interviews with teachers and school leaders to understand their perceptions of DI. This did not result in adequate literature to complete the research study and therefore there are few studies that have been included that are quantitative in nature based on surveys. Most of the action

research studies that are reviewed use mixed methods, but the small sample sizes used in some studies may have limitations in the outcome of the study. Articles and journals that examined the challenges and barriers faced by teachers were included in this study. However, any challenges or obstacles faced by students or school leaders while implementing DI have been excluded. The literature search did not include studies based on teachers' perceptions of specific differentiated instructional strategies or any studies that measured student achievement based on DI practices.

This study did not limit the literature search based on geographic location, however, there are very few peer-reviewed action research studies regarding teacher perceptions of DI conducted in the Asian sub-continent. The study includes a few articles that have interviewed teachers who work for schools in the UAE and Singapore but most teachers who worked for schools in the USA, Australia, Europe, and Ethiopia. There were no search results for studies that included interviews or surveys of teachers who worked for schools in India. The primary objective of this study was to hear the teachers' voice and understand the challenges the educators face while implementing DI. This study did not attempt to measure the outcomes of DI implementation or the relationship between DI and student learning.

Implications for Future Research

Differentiated instruction has been growing in popularity and gaining global recognition as a methodology to meet students' needs in a diverse classroom. This study concentrated on understanding differentiated instruction from a teacher's perspective. Student voices and views or challenges faced by students have not been considered. Future research could include analyzing the obstacles students face in a differentiated classroom and throwing light on their attitudes and perceptions. The study also did not focus on any specific DI strategy such as flexible grouping,

giving choices, or using tiered activities. Studying how teachers use various DI strategies and drawing comparisons and understanding their implications could be undertaken in the future.

Educational transfer is a concept of borrowing instructional methodology or borrowing an educational concept from one country and applying it in a different country or educational setup. The effect of the educational transfer of DI as a concept borrowed from the USA and implemented in Singapore was researched by Heng and Song (2020). The study revealed that the culture and background of a country or region have a significant impact on how teachers perceive DI as an instructional strategy. The literature search showed no results for studies that involved any implementation of DI in India. There were no studies that included interviews with teachers who worked in Indian schools to understand their perceptions of DI. Implementation of DI as an instructional strategy in India is still new and hence an action research study on understanding the effect of such educational transfer of DI as a concept in India could be extremely valuable.

Implications for Professional Application

The literature research study has shown that most teachers have a positive outlook towards differentiated instruction. However, when it came to practicing these strategies in the classroom the teacher interviews in many of the studies revealed a lot of challenges. Another point to note is that, in many cases the provision of professional development opportunities caused a significant increase in creating a positive outlook and resulted in teachers gaining confidence in implementing DI strategies. Many educators who have reasonable theoretical knowledge of DI have expressed the need for more targeted professional training to improve their application skills. The literature review mentioned that many teachers do not feel well equipped to plan and execute the various strategies of DI in the classrooms. Hence educators and school management must undertake and make provisions for consistent professional development in implementing DI based on the gaps in

the learning that exists among the educators in the organization. Providing the right kind of professional development can increase the desire to differentiate instruction in the classroom.

Differentiated instruction is a challenging methodology to implement in the classroom consistently and requires adequate planning time. Lack of time and large class sizes were some of the challenges expressed by most teachers based on this literature search study. Most of the classes have multiple divisions with teachers in different divisions. By creating smaller homogeneous or heterogeneous groups to differentiate instruction for some lessons could be a starting point. The planning of these sessions could happen collaboratively among the teachers and the execution can involve extra resources to handle the multiple groups for these specific sessions. Utilizing resources that are available and by planning lessons collaboratively educators can attempt to tackle the issue related to planning time and large classes giving the students more individualized attention to facilitate differentiation.

The primary focus of DI is to cater to the diverse needs of the students in the classroom. This requires teachers to help learners move forward by recognizing each learners' Zone of Proximal Development and then building their capabilities. This will require teachers to make data driven decisions based on students' progress and make consistent modifications in the learning process and goal setting process. This requires the support of supervisors, principals, and school administration. Lack of administrative support has been identified as one of the challenges limiting the use of DI. It is important for teachers, students, and school management to be aligned with the goals and objectives of differentiated instruction to be able to make it a reality. Intervention and appropriate support for learners who are unable to achieve learning outcomes and consistent professional development for the teaching staff must become a priority for school administrators. Every school leader must encourage data driven decision making to promote learning and success

of students. The right kind of support and encouragement from the school administration and appropriate professional training will enable teachers to modify, tailor and deliver lessons to cater to the class dynamics and diverse student population.

Conclusion

Student engagement and teacher motivation are two essential elements that are required for a productive and enjoyable classroom experience. Differentiated instruction is a methodology when applied and implemented effectively can bring back the love for teaching and facilitate engagement in the classroom. The research shows that teachers exhibit positive attitude towards differentiated instruction and show enthusiasm towards implementing it in the classroom with appropriate professional development. This study also reveals some barriers such as large class-size and inadequate time faced by educators in creating quality lessons through differentiated instruction and providing feedback to all students. Ensuring well-equipped teaching staff who put student success at the forefront with the appropriate support from school management would be the ideal atmosphere for differentiated instruction to become an effective methodology. The added support provided for teachers will result in opportunities for every student in the classroom to succeed. Differentiated instruction promotes an environment for teacher autonomy and can involve students in the decision making, thus empowering both students and teachers.

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Appendix

The figure shows the differentiated instruction model by Tomlinson and Imbeau, 2010.

