

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation



Felicia D. Fordyce¹, Michelle McCraney², Glenn R. Penny³, Sunddip Panesar-Aguilar⁴,
Chris Cale⁵

^{1,2,3,5}Walden University, Minneapolis, MN

⁴Univeristy of St. Augustine for Health Sciences, St. Augustine, FL

ABSTRACT: A problem at three elementary schools in an Appalachian state was that some or all instructors were struggling to implement differentiated instruction in the classroom. Because differentiation is a research-based best practice, teachers should be consistently using this strategy to meet the varying needs found within the inclusive classroom. The purpose of this qualitative case study was to investigate perceptions of third- and fourth-grade teachers on their knowledge, implementation, and self-assessment of using differentiated instruction in classrooms in three elementary schools in one Appalachian state. The two research questions that guided this study asked how third- and fourth-grade teachers used differentiation to support all students and what perceived opportunities and struggles these teachers believed affected their ability to implement this strategy. Nine out of the 14 third- and fourth-grade inclusive teachers who volunteered were asked to participate in semistructured phone interviews and lesson plan analysis. Data were hand coded and analyzed using a spreadsheet to look for reoccurring categories and themes. Six themes emerged within the collected qualitative data to include ability grouping, technology, planning for differentiated instruction, professional supports, lack of training, and instructional support. With the findings, specific professional development was created to help the teacher more consistently use differentiation in the classroom. This study has positive social change implications because it might lead to a stronger administrator and teacher understanding of the perceived uses of differentiation as well as the perceived opportunities and struggles to fully implement the strategy.

KEYWORDS- Differentiation, English Language Learners, Inclusion, Special Education, Teacher Education.

I. INTRODUCTION

Before 2004, most classrooms were teacher centered and led by direct instruction. Students who struggled were placed in remedial classes with lowered expectations. The No Child Left Behind Act (NCLB) enacted in 2002 provided insight into where students needed additional support (U.S. Department of Education, n.d.) [1]. But the Every Child Succeeds Act signed into law by President Barack Obama was the first time that students were required to be prepared to standards that would help them succeed in college and careers (U.S. Department of Education, n.d.) [1]. Introduced in the Individuals with Disabilities Education Act in 2004 and reaffirmed in Every Student Succeeds Act in 2015, inclusive education ensured a free appropriate public education for all students including those with disabilities requiring students with special needs to be placed in their least restricted environment (Borosan, 2017) [2]. The least restricted environment is known as the inclusive classroom, which includes general education and special education students led by the general education teacher teaching the state's mandated curriculum (Florian and Beaton, 2017) [3]. Statistically, 95% of students with disabilities (SWDs) will be placed within the inclusive setting (U.S. Department of Education, n.d.) [1]. Student disabilities can include emotional disorders, physical disabilities, and learning disabilities along with autism and hearing and visual impairments.

Faced with new challenges and rapid changes in curriculum, some schools have turned to differentiation to meet these varying needs. Differentiated instruction (DI) is one of the most commonly used instructional strategies to help close the academic achievement gaps aiming to meet the individual learning needs of each student based on their specific academic need by providing on-level instruction (Avery, 2017) [4]. For example, research has shown a positive effect on achievement scores in English language arts (ELA) and mathematics when students were grouped based on ability in each subject for small group instruction after whole group instruction had occurred (Deunk, Smale-Jacobsel, de Boer, Doolaard, and Bosker, 2018) [5].

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

DI in education is an ongoing process that takes planning, dedication, and an open mind (Bushie, 2015) ^[6]. It is a proactive process requiring the teacher to assess students and plan lessons with varied approaches to student differences in readiness, interest, and learning needs (Tomlinson, 2001) ^[7]. Thus, DI is rooted in assessment and is for all students within the general education classroom (Tomlinson, 2001) ^[7]. The flow of instruction in a differentiated classroom can be seen by the repeated process of whole class preparation, review, and sharing followed by an opportunity for individualized or small group exploration, extension, and production (Tomlinson, 2017) ^[8]. DI is organic in nature as teachers should be reflective of their practice and the learning of their students while accommodating the learning needs as these arise. Because differentiation is a teaching strategy used to meet the needs of all learners in the elementary general education classroom, teachers should hold high expectations for all learners requiring each student to meet mastery of the grade-level content (Tobin and Tippett, 2014) ^[9].

Although instructional needs are the main focus of DI because of the varied student population now in the inclusive classroom, teachers are asked to be proficient in other aspects of education including classroom management, content, communication, and assessment (Deunk et al., 2018) ^[5]. When teachers have an extensive background in content, experience in diagnostic, didactical and pedagogical knowledge, higher results will follow (Smeets, Ledoux, Regtvoort, Felix, and Moi Lous, 2015) ^[10]. For teachers with less developed knowledge and skills, implementing differentiation can be difficult and can lead to inconsistent implementation (Prast, Van de Weijer-Bergsma, Kroesbergen, and Van Luit, 2018) ^[11]. The ability to make decisions about the content being delivered, the process of delivery, and the assessment or product to show student mastery is contingent upon a successful interpretation of the curriculum and the teacher's level of comfort with the components of differentiation (Tobin and Tippett, 2014) ^[9]. For teachers to be consistent with this strategy, they should be knowledgeable of the strategy with a high sense of self-efficacy (Tomlinson, 2001) ^[7]. But because differentiation has many components and is embedded into already existing pedagogy (e.g., Bloom's taxonomy, culturally relevant instruction, learner-centered pedagogy), teachers could misinterpret and unsuccessfully implement differentiation. Teachers might also face other barriers when trying to implement differentiation successfully.

Teachers have also stated weak administrative support, low parental support and resistance, lack of time, lack of funding leading to shortages in learning resources, grading concerns, and the fear of losing control from the lack of training skills to be the main causes of unsuccessful DI in the inclusive setting (Gaitas and Alves Martins, 2017) ^[12]. Research has also identified the lack of preservice and in-service training as a contributing factor to the unsuccessful implementation (Gaitas and Alves Martins, 2017) ^[12]. Furthermore, current research has suggested the importance of looking deeper into barriers and teacher struggles to address the learning needs found within the inclusive classroom to help students reach their fullest potential by teachers fully and consistently implementing DI (Smets, 2019) ^[13].

II. RESEARCH PROBLEM

DI is a best practice found within inclusion to help teachers meet the varying needs of all students. This instructional strategy is mandated in all classrooms within the research site as inclusion is practiced in every room as it is also statewide. Even though most teachers have had some professional development (PD) on this strategy, there seems to still be a reluctance to fully and consistently implement DI. The research addressed the problem that was identified through conversations with administrators and some faculty who believe some or all third- and fourth-grade instructors may be struggling to implement DI in the classroom.

The study site used for this study consisted of three elementary schools found within one north-central county in an Appalachian state containing 14 third- and fourth-grade inclusive classrooms. Third- and fourth-grade teachers were chosen for this research study because third grade is when students first take the General Summative Assessment (GSA) and learning gaps start to become evident in the classroom. These 2 years are also the last years within the elementary school setting before students move to the middle school setting within the county.

According to the special education county coordinator, the third- and fourth-grade classrooms within the county served 351 students in which 83 students from all 14 classrooms receive special education services. These services included supports within the general education classroom and outside to specifically address more intensive learning needs. A typical inclusive classroom within the research site would include 24 to 28 students with 28 being the maximum amount by law. Legally only 30% of these students were allowed to have an individualized education plan (IEP) and receive modifications that are also oftentimes met within each classroom. With such a high special education rate within the county, one principal reported teachers expressing frustration as they were being tasked with designing and preparing lessons to meet all student needs in the elementary classroom.

To be successful and consistent when implementing DI, it is important to have student-teacher relationships, the familiarity of students' successes and interests, and repetitive formative assessment to drive differentiation (Smets, 2019) ^[13]. Curricular elements related to a teacher's teaching philosophy, the level of pedagogical training, and the interactional natural elements of the classroom can also affect the consistency of the use of differentiation (Frunzã and Petre, 2015) ^[14]. Although these aspects have been addressed through county-wide initiatives within the research site with greeting students at the door, writing postcards to families, implementing digital communication tools, and specific PD, a lack of implementation has been documented through observational feedback and school wide audits.

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

III. PURPOSE STATEMENT

The purpose of this qualitative case study was to investigate perceptions of third- and fourth-grade instructors on their knowledge, implementation, and self-assessment of using DI in classrooms in three elementary schools in the identified Appalachian state. The following research questions provided further guidance to district and local leaders about how teachers perceive their use of differentiation and if any perceived implementation barriers exist:

Research Question 1: How do third and fourth grade teachers use differentiation to support all students?

Research Question 2: What perceived opportunities and struggles do third and fourth grade teachers believe affect their ability to implement differentiation?

IV. LITERATURE REVIEW

Inclusion

Due to the implementation of inclusion as found within the Individuals with Disabilities Act, schools are tasked with finding ways to meet all instructional needs within the classroom and provide SWDs access to the same opportunities as their non-disabled peers (Gilmour, 2018) ^[15]. But the interpretation of inclusion varies within schools throughout the United States (Haug, 2016) ^[16]. However, a common interpretation of inclusive practices suggests that SWDs should be fully included in the general education classroom with typical students (Bemiller, 2019) ^[17]. The idea is that all students should be exposed to material that is on their level and related to their interests (Anastasiou, Kauffman, and Di Nuovo, 2015) ^[18]. However, no legislation has determined what the least restrictive environment entails, leaving a wide variety of uses. For example, some schools implement partial inclusion where students with special needs spend part of their time in the general education classroom and part of their day in a special education classroom. Statistically, more than 60% of all SWD spend 80% or more of their school day in regular classrooms (Ozaydin, 2015) ^[19]. Other districts use reverse mainstreaming in which students without disabilities enter the special education classroom to socially engage with SWDs (Ozaydin, 2015) ^[19]. Regardless of interpretation, all stakeholders in education can agree that some level of inclusion is beneficial for students.

With these mandates, teachers are tasked with designing lessons to meet varying needs, but they have a multitude of strategies they can employ. DI and other multifaceted teaching practices can be used to address student needs (Coubergs, Stryven, Vanthournout, and Engels, 2017) ^[20]. Using an inquiry-based lesson with a pre-assessment to determine baseline data, teachers can differentiate the lesson based on the student's needs (Coubergs, Stryven, Vanthournout, and Engels, 2017) ^[20]. Other alternative forms teachers can use to meet varying academic needs include a flipped classroom, universal design for learning, alternative discussion strategies, and innovative homework. Peer collaboration is another popular strategy in which students in an inclusive classroom are given tasks in groups to not only develop academic development but social as well (Ncube, 2011) ^[21]. Research also suggests teaching with *big questions* can help students think and relate materials to existing knowledge. Centers allow groups of students to work on different tasks at the same time, which then allows the teacher to work with students as needed. Goal-setting can also be used to help students meet IEP mandates while creating a unique learning experience for each student. Lastly, teachers can include diverse content, materials, and ideas into the classroom while also encouraging a growth mindset. It is important to be data-driven but notice other differences such as language, culture, and personal interests as factors that could influence instructional needs (Tomlinson, 2001) ^[7].

Other barriers to successful inclusion include lack of training, lack of staff, prioritization concerns, and lack of time (Silveira-Zaldivar and Curtis, 2019) ^[22]. Teachers and parents have also reported the unwillingness of general education teachers to want to be trained in this area where most trainings were mandated (Silveira-Zaldivar and Curtis, 2019) ^[22]. Even though teachers know the benefits of inclusion, teachers have reported having limited resources, difficulties in individualizing the curriculum and therefore rated their own perceived attitudes and performance with inclusion low (Yu, 2019) ^[23].

Role of the Teacher

Current teachers face three present-day challenges. First, teachers answer the continued call for more differentiation in education to meet the needs of both low achieving and high achieving students (Haelermans, Ghysels, and Prince, 2015) ^[24]. In past classrooms, teachers taught to the average population with a current shift to bridge the learning gaps between these two groups. Second, as the population decreases in rural regions, classroom sizes increase, leading to lower quality instruction and less differentiation (Haelermans et al., 2015) ^[24]. This increase in class size is identified in many research articles as the main concern for educators. Lastly, schools are turning more toward a technology-based curriculum to encourage student motivation and engagement (Haelermans et al., 2015) ^[24]. If teachers are not familiar with their roles in this system of learning, they may be reluctant to implement the change or not implement the program effectively. Knowing that differentiation can take on many forms and as technology advances, teachers can use these tools to differentiate more easily to meet varying needs.

The teacher plays the main role in the process of differentiation in which they create the learning opportunities to meet the needs of each student based on assessment data taking the role as the facilitator. To differentiate, teachers should know their students in three main ways: readiness level, interest, and learning profile (Gaitas and Alves Martins, 2017) ^[12]. Then, three general principles

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

should guide the differentiation process: designing challenging tasks, flexible groupings, and classroom arrangements, and ongoing assessments and appropriate scaffolding (Gaitas and Alves Martins, 2017) ^[12]. The teacher should encourage students to question, challenge, and guide student investigations by exploring their ideas, opinions, and conclusions (Wan, 2017) ^[25]. These designed tasks should challenge students to learn while challenging students to question what they know and to stretch their knowledge while providing feedback to help students consolidate and review what they have learned (Cooney, 2019) ^[26].

For differentiation to be effective, teachers should reflect on their own practices, asking themselves what needs the students have, what differentiation will they require, how are they preparing themselves to differentiate for their students, how knowledgeable are they on the topic, and how can the passion from the teacher be used as a tool in their classroom (Bagot and Latham, 2019) ^[27]. Instructional leaders (teachers, instructional coaches, or administration) should be determined to monitor, mentor, and model effective teaching and learning practices for teachers in the classroom (Lang, 2019) ^[28]. As new legislation is passed stressing student accountability, teachers need instructional guidance and feedback to implement differentiation successfully. Although some teachers might be reluctant to implement differentiation, generating awareness of instructional leadership practices can better direct administrative support to where it is needed (Lang, 2019) ^[28].

Tomlinson (2017) ^[8], the leading developer for this strategy, argued differentiation can occur in five instructional dimensions. These include the curriculum such as grouping styles, process, resources, learning activities, and student outcomes. Every teacher will have different ideas about how to deliver differentiation in their classroom (Bagot and Latham, 2019) ^[27]. Because of these diverse perspectives, principals might consider the possibility to have collaborative time for teachers to share their ideas while extending their own knowledge and creativity with others.

Teacher Preparation

Learning to teach does not stop after teachers earn their degree but is an ongoing developmental process that occurs in multiple settings over multiple years (Dack, 2019) ^[29]. Preservice teachers learn pedagogy and teaching strategies in the university setting, but research has found a disconnect between pedagogical practices within the schools and suggests the complexity and interpretation of differentiation may be the cause (Dack, 2019) ^[29]. Dack (2019) ^[29] also found teaching programs should be constructed to be coherent in reinforcing learning in other courses while addressing misconceptions and concerns arising from pre-service teachers. Many teachers exiting the profession still only claim minimal exposure to teaching strategies like differentiation and report little observed differentiation during clinical experiences. When novice teachers are then placed in their own classroom, they are tasked with learning differentiation on their own: a complex topic with many components used to meet the varying needs within the classroom. Bagot and Latham (2019) ^[27] explained in addition to providing student teachers with theories about differentiation, teacher educators should be offered practical training on campus under supervision while helping these preservice teachers relate their knowledge within their own practices. This idea is supported through experience in Chile, Cuba, Finland, Norway, and the United States, suggesting the most effective teacher education programs integrate both theory and practice (Jenset, Klette, and Hammerness, 2018) ^[30].

Preservice teachers have many opportunities throughout their higher education experience to connect educational theory to practice as they look for a pedagogical practice that blends with their own personal styles in the attempt to create meaningful learning opportunities for all students (Parks, 2019) ^[31]. During field experiences, preservice teachers move to conceptual understanding, focusing on student learning and individual needs to keep students engaged and motivated (Coubergs, Stryven, Vanthournout, and Engels, 2017) ^[20]. During field experience discussions, teachers were able to articulate the importance of DI but struggled to identify differentiation in action and to create lessons that provided meaningful learning opportunities for all students (Parks, 2019) ^[31]. Without being able to articulate and identify differentiation in the setting, teacher preparation programs are not fully preparing teachers for successful classroom implementation.

The quality of teacher preparation programs is a good indicator as to how teachers will perform in the classroom. As a result, the performance of the teacher indicates the quality of education (Silveira-Zaldivar and Curtis, 2019) ^[22]. Teachers should be taught to value diversity while learning about inclusive practices through modeling (Silveira-Zaldivar and Curtis, 2019) ^[22]. While teacher education programs teach about inclusion, there still seems to be a disconnect between the implications and applications in the classroom. Ozaydin (2015) ^[19] suggests even though reform efforts have been made within many programs, there is evidence that teachers from urban areas and high socio-economic backgrounds have better access to quality teacher-education programs and therefore, are better performing with the implementation of inclusion. As inclusion is the foundation of DI, teachers should be knowledgeable of the impact of inclusion and the strategies associated with meeting student needs.

Differentiation is a complex teaching strategy that incorporates many aspects of teacher discretion. Teacher training before teaching in the inclusive classroom can greatly impact the success of differentiation.

Teacher Perceived Struggles

Many different factors have been identified as to why teachers struggle to use DI in an inclusive setting. Wan (2017) ^[25] identified four critical factors influencing the implementation of DI in schools which include: teacher preparation, teaching beliefs, school support, and team collaboration. Teacher mindset toward differentiation and the impact on learning can also hinder the

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

successes found in the classroom (Coubergs et al., 2017) [20]. Bodovski, Byun, Chykina, and Chung (2017) [32] found differentiation as an early intervention was more beneficial than differentiation at the later stages of education. If teachers feel this strategy is irrelevant and not important, they are less likely to fully implement the strategy within their instruction.

Other commonly cited barriers to the implementation include lack of time, heavy workload, large class sizes in regular schools, lack of resource materials, and lack of skills in differentiating instruction (Taole, 2019) [33]. Teachers also report the stress associated with high stakes testing. Serving SWDs and general education students, teachers should find a way to present information to all learners through differentiation to meet adequate progress (Frunzã and Petre, 2015) [14]. With these mounting struggles, teachers tend to leave the profession, resulting in newer, less experienced teachers in their place (Jenset, Klette, and Hammerness, 2018) [30]. This is also true for special education teachers; they are exiting the profession when there is already a nationwide shortage of highly qualified teachers leaving the school and teachers with a lack of resources and services for their SWDs (Coubergs, Stryven, Vanthournout, and Engels, 2017) [20].

It is important to note DI should be used in the classroom to help all students learn. General education students who are meeting academic expectations should still be receiving instruction on their development stage. SWD should be receiving instruction on their level but also working toward the same educational objectives as their peers. Lastly, gifted students should also be given meaningful assignments while also still developing their understanding of the same learning concept more deeply. Brigandi, Gilson, and Miller (2019) [34] found teachers believed gifted learners were the group of students most often left behind stating little to no training had been provided during preservice teaching experiences and little PD specifically for this group once in a teaching position. Teachers also stated that even if PD was given, concentration on struggling students often took priority due to a lack of time and resources for gifted students (Brigandi et al., 2019) [34].

Despite the research-based associated positive outcomes, 83% of surveyed teachers reported differentiating instruction daily as being somewhat too very difficult and 73% stated the gifted students were bored and under-challenged in schools (Brigandi et al., 2019) [34]. Similarly, Wan (2017) [25] in his two-factor quantitative analysis found teachers are ready to differentiate using the student center model but seem to be more ready to use the teacher center model when first entering the profession. Teachers stated three obstacles toward DI: class size and diversity, time, and understanding of teaching strategies (Wan, 2017) [25]. Similarly, Siam and Al-Natour (2016) [35] in their mixed methodology study of 194 teachers found the mean scores of the six domains of differentiation (content, process, resources, product, assessment, and learning environment) were low for the preparedness of DI. This study suggested there was no correlation between experience and the overall implementation of differentiation finding the main challenges were weak administrative support, low parental support, lack of time, and shortages in learning resources for all educators (Siam and Al-Natour, 2016) [35].

As most teachers are willing to differentiate, many barriers hinder a more positive outlook. These motives include a lack of planning time, inadequate time blocks in the schedule, lack of funding appropriate materials and resources, parental resistance, grading concerns, fear of loss of control, and lack of training skills (Siam and Al-Natour, 2016) [35]. Further research has shown teachers believe the training they received in preservice and in-service do not prepare them to meet the diverse needs within everyday classrooms (Siam & Al-Natour, 2016) [35].

Teachers need both material support and psychological support to make DI effective (Bondie et al., 2019) [37]. Bondie et al. (2019) [36] found teachers who worked in schools with encouraging and supportive administrators who helped provide resources such as incentives for staff development opportunities and extra planning time were more likely to differentiate their instruction. This finding indicated teachers should be motivated to change their practice and supported for differentiation to happen.

V. METHODOLOGY

The current study used a qualitative case study approach. Using this approach, perceptions of third- and fourth-grade instructors on their knowledge, implementation, and self-assessment of using DI in classrooms in three elementary schools in one Appalachian state were investigated.

A. Participants

The study site was in a small county containing three elementary schools, one middle school, and one high school. The elementary school setting served grades prekindergarten to fourth grade. All third- and fourth-grade teachers were recruited as participants within the three elementary schools. Of the 14 third- and fourth-grade classrooms, all were inclusive, and all teachers were certified in the area holding a valid teaching certificate. Regardless of the participants' perceived comfort and mastery of DI, all were invited and allowed to participate in the research. Inviting all 14 of the teachers for the study increased the possible number of participants and allowed for generalization of the data collected.

B. Data Collection

The data collection occurred in two phases of gathering lesson plans and interviews. The collection and analysis occurred over a 2-week period during which common themes emerged. The validity of the data was ensured through transcript review and member checks. The semistructured interview consisted of 13 researcher-produced interview questions and lasted between 20 to 30 minutes

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

for each participant (see Table 1). These data provided individual third- and fourth-grade teachers' perspectives on their knowledge, implementation, and self-assessment of using DI in the inclusive classroom.

Table 1. Alignment of Interview Questions to Research Questions and Elements of Differentiation

Interview Questions	Research Questions or Element
1. How do you currently use differentiation in the mathematics classroom? Give an example of process, product, and content.	RQ1: How do third and fourth grade teachers use differentiation to support all students?
2. Give an example of process, product, and content.	RQ1 How do third and fourth grade teachers use differentiation to support all students?
3. How is your classroom arranged to promote student centered learning and differentiation?	RQ1 How do third and fourth grade teachers use differentiation to support all students?
4. What forms of assessments do you use in the classroom to help you differentiate?	RQ1 How do third and fourth grade teachers use differentiation to support all students?
5. How do you provide student choice in the classroom?	RQ1 How do third and fourth grade teachers use differentiation to support all students?
6. How do you differentiate differently for high achieving students in comparison to students with learning disabilities?	RQ1 How do third and fourth grade teachers use differentiation to support all students?
8. In your opinion, how can differentiation be used to help close the academic achievement gap between special education and general education students?	RQ1 How do third and fourth grade teachers use differentiation to support all students?
9. What practices and procedures does the school have in place to help make differentiation be successful?	RQ1 How do third and fourth grade teachers use differentiation to support all students?
10. What do you feel hinders your ability to consistently implement differentiation in the inclusive classroom? a. How often do you feel behavior hinders your ability? b. How often do you feel pull out services hinder your ability? c. time for planning? d. ... previous training, lack of training? e. ... supplies?	RQ2 What perceived opportunities and struggles do third and fourth grade teachers believe affect their ability to implement differentiation?
11. What experiences do you have with differentiation? (training, and education)	RQ2 What perceived opportunities and struggles do third and fourth grade teachers believe affect their ability to implement differentiation?
12. In your opinion is differentiation a useful tool in the classroom? Why or Why not	RQ2 What perceived opportunities and struggles do third and fourth grade teachers believe affect their ability to implement differentiation?
13. What is needed, if anything, to help teachers consistently use differentiation in the inclusive setting?	RQ2 What perceived opportunities and struggles do third and fourth grade teachers believe affect their ability to implement differentiation?

A classroom context was also documented to better understand the classroom dynamics when referring to teachers' perceived struggles. The interviews were audio-recorded and immediately transcribed using Microsoft Office transcription software and Microsoft Word. The transcripts from the interviews were then hand-coded and analyzed for common themes. Once the audio recording was transcribed into a narrative, a copy of both the transcription and summary was reviewed with the participant for accuracy through means requested by the participant such as email, telephone, or in person. This step provided further feedback to ensure accuracy.

A similar process occurred with the review of teachers' lesson plans. The lesson plans were used as a form of archival data for each subject to look for existing planning for differentiation. Findings were indicated as field notes and reflective note taking. Specific components of differentiation were notated in field notes which were then triangulated to the interview data. These components included ongoing assessments, a variety of instructional strategies, evidence of groupings, and student choice in each subject area. Both forms of qualitative data provided insight into the use of differentiation in the classroom and possible barriers teachers are facing when trying to implement the strategy. The timeline of data collection and analysis included a total of one interview, one lesson plan review, and one follow-up meeting with each of the participants over a one-month period.

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

VI. DATA ANALYSIS AND RESULTS

A. Coding

Open coding and memos were created during the bracketing process. Tufford and Newman (2010) [37] described three methods of bracketing in which one was used within this study. They wrote, "One method of bracketing is writing memos throughout data collection and analysis as a means of examining and reflecting upon the researcher's engagement with the data" (Tufford and Newman, 2010, p. 80) [37]. The memos in this case took the form of observational comments that allowed the first author to explore feelings about the research and the process.

Data was broken down into first level concepts, or master headings, and second level categories or subheading. Using highlighting tools within the document, similarities were noted in phrases or words used by each participant. Using different colors for these similarities helped identify emerging themes. Lesson plans were analyzed and then compared to the interview findings concerning the level of use in the classroom.

A spreadsheet was used to organize the qualitative data into common themes. After the interview data were transcribed into a document and color coded with similarities, common colors were copied and pasted into cells under reoccurring themes. As reoccurring phases occurred, codes were assigned and recategorized to identify themes within the data. The transcripts were then reread to ensure all the ideas were captured. Once completed, the codes were organized into categories and developed themes that were addressing each research question. A total of four rounds of coding were completed. Discrepant data was noted during the analysis.

B. Results

The findings showed an overall agreement amongst participants that differentiation was a useful tool to help all students be successful in the inclusive classroom. Also, teachers believed it was easy and relevant to use ability grouping and was the dominant way the county DI in both ELA and mathematics. Ability grouping is a way to differentiate the process of instruction and is most widely used by teachers across all grade levels (Tomlinson, 2017) [8]. Technology was discussed throughout each interview as it is a tool used for easier differentiation. This technique to differentiate could affect the process, content, or product towards meeting unique needs. Teachers expressed the county provided adequate support and programs they could choose which could lead towards more differentiation. However, participants believed certain things could be implemented to better enable teachers to fully implement the strategy. These suggestions included more training on how to use DI in the classroom, having more instructional support, and requested more uninterrupted time during the day. Through data analysis, another key factor uncovered was the lack of actual planning for differentiation to occur within the instructional day.

Six themes emerged from the data in this study: (a) ability grouping, (b) technology (c) planning for DI, (d) professional supports (e) lack of training, and (f) instructional supports. Participants believed that they were adequately differentiating for students in both areas of ELA and mathematics, but further research showed they were just ability grouping for ELA and little for mathematics. Teachers also indicated the use of technology throughout both content areas by using ability-based programs that automatically differentiated based on placement exams. Participants expressed a need for more DI training specifically in mathematics and how to differentiate the content and products within ELA. Teachers indicated being provided little instructional support or feedback during observations and believed their instructional development had not progressed much within the classroom setting. Within this area of concern, lesson plan analysis also showed minimal to no stated differentiation within planned instruction or content. Further, all participants indicated that the number of pull-out services hindered their ability to differentiate effectively for their varied classrooms as they depended on the remedial services provided through Title 1, tutors and the special education department.

Teachers also indicated that they received training in preservice teacher education and minimal PD within the job setting. Specifically, teachers remembered one training a year previous in which the definition of DI was discussed in the context of ELA, but little applicable knowledge received. In the case of mathematics, teachers reported they have received no DI training at all. All participants expressed the need and want for more PD on the topic with actionable ideas to take back to the classroom.

Lesson Plan Coding and Analysis

Third- and fourth-grade teachers were asked to submit one week's lesson plan for review no later than their interview date. All teachers submitted their lesson plans for review. Each lesson plan was labeled with the participants number to triangulate data from the interview.

The review of the lesson plan consisted of looking for specific concepts associated with DI. These included proof of differentiated process, product, and content, evidence of informal assessment to guide instruction, and lists of accommodations/modifications. Acceptable process differentiation could have consisted of instructional techniques like small group instruction, cooperative learning, project-based learning, technology-integrated lessons, or other best practices. Product differentiation could have included interest-based assessments, project-based assessments based on ability, technology-driven assessments, or any kind of product to reflect the individualized student learning. Lastly, teachers could have shown the

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

differentiation of content through the description of ability-based instruction, technology based, tiered assignments, or interests based to name a few.

The analysis of lesson plans showed little to no differentiation across all lesson plans. A few teachers showed some differentiation based on planning for small group instruction, but there was no provided proof of differentiation based on product. All teachers organized their lesson plans into instruction blocks of time and listed SAT and IEP accommodations for each qualifying student. Table 2 shows the overall depiction of differentiation in lesson plans leading to the overall theme of Planning for DI and adding to support the theme of Instructional Support.

Table 2. Coding and Analysis of Lesson Plans

Participant	Accomm-odations List	Planned into Blocks of Time	Proces s ELA	Product ELA	Content ELA	Process Math	Product Math	Content Math	Other
P1	X	X							
P2	X	X							
P3	X	X	X		X	X		X	
P4	X	X	X		X				
P5	X	X							
P6	X	X							
P7	X	X							
P8	X	X							
P9	X	X	X		X	X		X	X

The analysis of the lesson plans showed teachers were unaware of how to plan for differentiation in all components of differentiation. Although teachers stated in their interviews that they did differentiate by using guided reading groups, the lesson was not planned for or notated in a way for instructional support to occur. There was no documented evidence for product in either ELA or mathematics. Teachers who showed evidence of differentiating process through small group instruction also showed differentiation of content through ability grouping students and using the time to remediate lower-leveled learners. Lastly, Participant 9 was the only teacher who showed any other form of differentiation through the planning and implementation of choice board during station rotations.

Patterns, Relationships, and Themes

Because of the uniqueness of the county and the extra support that is received during the school day, teachers felt grateful but were also hindered by the lack of additional support. This research study aimed at exploring teacher's perceptions of DI and potential barriers to full implementation. The qualitative data derived through semi-structured phone interviews and lesson plan analysis revealed six themes within the data: ability grouping, technology, planning for DI, professional supports, lack of training, and instructional support. Table 3 shows Level Four coding analysis into themes. Level three analysis has been included as Appendices B and C for further analysis support. Appendix B includes the interpretation of the data as it pertains to Research Question One, the current implementation strategies in the inclusive classroom. Appendix C shows Level Three coding as it pertains to Research Question Two, perceived barriers to the implementation of differentiation.

Table 3. Round 4 Coding to Theme.

Professional Supports	Ability Grouping	Planning for DI	Technology	Lack of Training	Instructional Support
Title and tutors	Grouping	Goal Setting	Technology	Importance of DI	Instructional Support
Teacher Collaboration	Different Instruction	Learner Inventory	Data driven instruction	Training	Student Needs
Identifying	Choice	Accommodations	Programs	Choice	Interruptions
Pull out services	Student Collaboration	Student Collaboration	Student Tracking	Lack of time	Behavior
Interruptions	Instruction	Instruction		Lack of time	Scheduling
Scheduling	Differentiated materials	assessment		No DI for Product	More Planning
Lossing instruction	Differentiated work	Expectations		Teacher expectations	Administrative help

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

More support		Curriculum		Misconceptions	More support
		Diverse Activities		Choice	No Supplies
		Differentiated materials			
		Differentiated work			
		Supplies			
		Classroom DI			
		Classroom Accommodations			
		Curriculum			
		More Planning			

The six identified themes were identified in both current implementation and barriers. Pertaining to Research Question One, participants were asked how they currently differentiated for both ELA and mathematics. Participants mentioned Title 1 services and tutoring within the research site as the main source of differentiation. This led to the theme of professional supports. Throughout this portion of the interview, participants also had a hard time explaining a way that product could be differentiated in their classroom, which led to the theme of “Lack of Training”. Technology was used throughout the interview process as a way of current implementation through ability-based programs that automatically differentiate content and naturally the process of instruction. Due to the lack of time stated by teachers, ability grouping was used in the majority of ELA blocks with only two teachers finding time to use small group instruction as a form of differentiation in the mathematics time allotment. Lastly, current ways high and low achieving students’ needs were met in the inclusive classroom were analyzed. Again, Title services were mentioned along with giving students extra work and having lower expectations for struggling students. Technology and professional supports became the main focus on how teachers currently differentiate in the inclusive classroom with an emphasis on when differentiation occurred, it was through the use of ability grouping predominately in ELA.

VII. CONCLUSIONS

The purpose of this qualitative case study was to investigate perceptions of third- and fourth-grade instructors on their knowledge, implementation, and self-assessment of using DI in classrooms in three elementary schools in one Appalachian state. Combining interview data and lesson plan analysis, the qualitative data showed teachers expressed they were using minimal DI strategies in ELA and little to no DI in mathematics. Teachers believed the constant classroom disruptions created by pullout services hindered their ability to be successful towards implementation as well as a lack of training.

Because the research is founded within research-based practices and is specific to the learning environment of the research sites, the authors developed a PD that would be specific to the teachers’ needs. When teachers become more aware of how they can improve their practice, they become more knowledgeable and willing to try new things. They also become more confident and knowledgeable in their teaching expertise, ultimately advancing student learning. By using DI, a research-based best practice, instruction will be targeted to the individual students’ needs allowing the student to develop and learn within their capability. Not only would this raise the student’s sense of accomplishment but also an overall achievement. Because PD opportunities tend to improve instruction and raise student achievement specific PD such as this program could cultivate students’ learning and have a positive impact on standardized testing and classroom achievement.

Despite these advantages demonstrated by the research study, one of the limitations identified for this project is funding. If the PD were to be implemented during the school year, substitute teachers would be needed to fill teacher positions during training days. The most cost-effective way to incorporate this training into teacher-prescribed PD would be to implement this program during the first 2 weeks of school during what is known as the “teacher academy” or during the specified days throughout the year set forward for PD.

Teachers also need to have an interest, and administrators should see the purpose of the PD to increase effectiveness through teacher buy-in. The findings from the research study showed specific areas of weakness in the application of DI in instructional practices and lesson planning. Teachers also indicated a lack of PD as being a barrier as well as the number of pull-out services students received and a lack of instructional feedback. Over the past 5 years, teachers have only received one training on DI, raising the question whether differentiation was a concern with administrators and central office personnel. However, because the PD was founded within the research findings specific to the site, teachers need to be interested in learning new strategies that could be implemented toward improved instructional practices, student engagement, and overall student achievement.

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

Another limitation of the study and the proposed PD project is a result of the small sample size of nine teachers. To address this limitation and increase generalizability, the study could be conducted within other grade bands within the school district to further the development of teacher's use of DI and address similar barriers.

Implications for the research study are a change in instructional practices throughout the research site and ongoing PD that addressed DI and implementation barriers. This research study could be implemented at other elementary schools throughout the state where Title 1 services or additional supports are overwhelming teachers. The information gathered throughout this study could be shared with district-level supervisors, continuing education programs, or local universities working with preservice teachers or administrators. Teachers want to be knowledgeable of research-based best practices with supports found within their educational setting to be more effective in the classroom. For additional research, it is recommended to extend the research to include lower elementary teachers, as they also are charged with inclusive practices throughout the identified Appalachian state. It is also recommended to examine why some schools choose to use pull-out versus push-in services or why some elementary schools choose to be compartmentalized rather than being a close classroom.

REFERENCES

- 1) U.S. Department of Education. (n.d.). Retrieved from <https://www.ed.gov/>
- 2) Boroson, B. (2017). Inclusive education: Lessons from history. *Educational Leadership*, 74(7), 18–23. Retrieved from <http://www.ascd.org/publications/educational-leadership.aspx>
- 3) Florian, L., & Beaton, M. (2017). Inclusive pedagogy in action: getting it right for every child. *International Journal of Inclusive Education*, 22(8), 870–884. doi:10.1080/13603116.2017.1412513
- 4) Avery, R. A. (2017). Teacher willingness on implementing differentiated instruction (DI) in the elementary classroom: A multiple case study (Doctoral dissertation). ProQuest Dissertations & Theses Global. Accession number (1964252438)
- 5) Deunk, M. I., Smale-Jacobsel, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018). Effective differentiation practices: A systematic review and meta- analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, 24, 31-54. doi:10.1016/j.edurev.2018.02.002
- 6) Bushie, C. (2015). Literature review: Differentiation in education. *BU Journal of Graduate Studies in Education*, 7(2), 35–42. Retrieved from <http://www.bu.edu/journalofeducation/>
- 7) Tomlinson, C. A. (2001). *How to differentiate instruction in mixed ability classrooms* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development
- 8) Tomlinson, C. A. (2017). *How to differentiate instruction in academically diverse classrooms* (3rd ed). Alexandria, VA: Association for Supervision and Curriculum Development.
- 9) Tobin, R., & Tippett, C. D (2014). Possibilities and potential barriers: Learning to plan for differentiated instruction in elementary science. *International Journal of Science and Mathematics Education*, 12, 423–443. doi:10.1007/s10763-013- 9414-z
- 10) Smeets, E., Ledoux, G., Regtvoort, A., Felix, C., & Moi Lous, A. (2015). Adaptive competencies for inclusive education: Research about competencies in primary school. Nijmegen, The Netherlands: ITS.
- 11) Prast, E. J., Van de Weijer-Bergsma, E., Kroesbergen, E. H., & Van Luit, J. E. H. (2018). Differentiated instruction in primary mathematics: Effects of teacher professional development on student achievement. *Learning and Instruction*, 54, 22–34. doi: .1016/j.learninstruc.2018.01.009
- 12) Gaitas, S., & Alves Martins, M. (2017). Teacher perceived difficulty in implementing differentiated instructional strategies in primary school. *International Journal of Inclusive Education*, 21(5), 544–556. doi:10.1080/13603116.2016.1223180
- 13) Smets, W. (2019). Challenges and checklists: Implementing differentiation: pedagogy provides a solid rationale for differentiated instruction in the History classroom, but this is not always an easy skill for teachers to acquire. *Agora*, 54(2), 22. Retrieved from <https://www.uantwerpen.be/en/research/>
- 14) Frunzã, V., & Petre, C. (2015). Obstacles in learning's differentiation and individualization on primary school. *Procedia - Social and Behavioral Sciences*, 180, 573–579. doi:10.1016/j.sbspro.2015.02.162
- 15) Gilmour, F. (2018). Has inclusion gone too far? Weighing its effects on students with disabilities, their peers, and teachers. *Education Next*, 18(4), 8. Retrieved from <https://www.educationnext.org/>
- 16) Haug, P. (2016). Understanding inclusive education: Ideals and reality. *Scandinavian Journal of Disability Research* 19:206–17. doi:10.1080/15017419.2016.1224778
- 17) Bemiller, M. (2019). Inclusion for all? An exploration of teacher's reflections on inclusion in two elementary schools. *Journal of Applied Social Science*, 13(1), 74–88. doi:10.1177/1936724419826254
- 18) Anastasiou, D., Kauffman, J. M., & Di Nuovo, S. (2015). Inclusive education in Italy: description and reflections on full inclusion. *European Journal of Special Needs Education*, 30(4), 429-443. doi:10.1080/08856257.2015.1060075

Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation

- 19) Ozaydin, L. (2015). Teaching play skills to visually impaired preschool children: Its effect on social interaction. *Kuram ve Uygulamada Eğitim Bilimleri/Educational Sciences: Theory & Practice*, 15(4), 1021–1038. Retrieved from https://www.researchgate.net/journal/1303-0485_Educational_Sciences_Theory_and_Practice
- 20) Coubergs, C., Stryven, K., Vanthournout, G., & Engels, N. (2017). Measuring teachers' perceptions about differentiated instruction: the DI-Quest instrument and model. *Stud. Educ. Eval.* 53, 41–54. doi:10.1016/j.stueduc.2017.02.004
- 21) Ncube, S. (2011). Peer-Collaboration: An effective teaching strategy for inclusive classrooms. *Journal of the International Association of Special Education*, 12(1), 79–80. Retrieved from <https://www.iase.org/publications.htm>
- 22) Silveira-Zaldivar, T., & Curtis, H. (2019). “I’m not trained for this!” and other barriers to evidence-based social skills interventions for elementary students with high functioning autism in inclusion. *International Electronic Journal of Elementary Education*, 12(1), 53–66. doi:10.26822/iejee.2019155337
- 23) Yu, S. (2019). Head start teachers’ attitudes and perceived competence toward inclusion. *Journal of Early Intervention*, 41(1), 30–43. doi:10.1177/1053815118801372
- 24) Haelermans, C., Ghysels, J., & Prince, F. (2015). Increasing performance by differentiated teaching? Experimental evidence of the student benefits of digital differentiation. *British Journal of Educational Technology*, 46(6), 1161–1174. doi:10.1111/bjet.12209
- 25) Wan, S. W.-Y. (2017). Differentiated instruction: are Hong Kong in-service teachers ready? *Teachers & Teaching*, 23(3), 284–311. doi:10.1080/13540602.2016.1204289
- 26) Cooney, P. (2019). Dealing with Difference: Differentiation in the Christian School. *Christian Teachers Journal*, 27(2), 12–15. Retrieved from <https://www.cen.edu.au/index.php/services/christian-teachers-journal>
- 27) Bagot, E., & Latham, R. (2019). Teaching from an overflow: Develop, deliver, differentiate: Tried and tested techniques, combined with a love of history, make differentiated instruction rewarding for teachers as well as students. *Agora*, 54(2), 27–32. Retrieved from <https://agorajournal.squarespace.com/>
- 28) Lang, M. L. (2019). Planning for differentiated instruction: Instructional leadership practices perceived by administrators and teachers in middle schools. *Educational Planning*, 26(2), 29–45. Retrieved from <http://isep.info/educational-planningjournal>
- 29) Dack, H. (2019). The role of teacher preparation program coherence in supporting candidate appropriation of the pedagogical tools of differentiated instruction. *Teaching & Teacher Education*. 78, 125-140. doi:10.1016/j.tate.2018.11.011
- 30) Jensen, I. S., Klette, K., & Hammerness, K. (2018). Grounding teacher education in practice around the world: An examination of teacher education coursework in teacher education programs in Finland, Norway, and the United States. *Journal of Teacher Education*, 2, 184. doi:10.1177/0022487117728248
- 31) Parks, M. (2019). Theory to practice: Differentiation for preservice teachers. *Science & Children*, 57(2), 90. Retrieved from <https://www.jstor.org/journal/sciechil>
- 32) Bodovski, K., Byun, S., Chykina, V., & Chung, H. J. (2017). Searching for the golden model of education: Cross-national analysis of math achievement. *Compare: A Journal of Comparative and International Education*, 47(5), 722–741. doi: 10.1080/03057925.2016.1274881
- 33) Taole, M. J. (2019). Differentiation in response to learner diversity in rural south African multi-grade classrooms. *International Journal of Learner Diversity & Identities*, 26(2), 37–46. doi:10.18848/2327-0128/cgp/v26i02/37-48
- 34) Brigandi, C. B., Gilson, C. M., & Miller, M. (2019). Professional development and differentiated instruction in an elementary school pullout program: A gifted education case study. *Journal for the Education of the Gifted*, 42(4), 362–395. doi:10.1177/0162353219874418
- 35) Siam, K., & Al-Natour, M. (2016). Teacher’s differentiated instruction practices and implementation challenges for learning disabilities in Jordan. *International Education Studies*, 9(12), 167–181. doi:10.5539/ies.v9n12p167
- 36) Bondie, R. S., Dahnke, C., & Zusho, A. (2019). How does changing “one-size-fits-all” to differentiated instruction affect teaching? *Review of Research in Education*, 43(1), 336–362. doi:10.3102/0091732X18821130
- 37) Tufford, L., & Newman, P. (2010). Bracketing in Qualitative Research. *Qualitative Social Work*, 11(1). doi:10.1177/1473325010368316
- 38) Dennis, D., & Hemmings, C. (2019). Making the simple more complex: The influence of job-embedded professional development in supporting teacher expertise in reading. *Literacy*, 53(3), 143–149. doi:10.1111/lit.12172