Differentiated Instruction in the Elementary Classroom

by

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Introduction

This research examines differentiation and how the concept of differentiation is applied in elementary school classrooms. The positive impacts of differentiated instruction on student success, motivation, and engagement are unquestionable. Differentiation must not be overlooked in any classrooms, preschool through college-level. This research project included thorough review of the literature as well as qualitative research. Ten interviews were conducted in which I obtained substantial qualitative research. All interviews were conducted with Frederick County Public Schools (FCPS) employees in Frederick, Maryland. Participants were purposefully selected to represent a range of positions and experiences within elementary education. An interview protocol was used to gather information from participants in order to examine their views on differentiated instruction in elementary school classrooms.

Study participants

Amy Struntz, Supervisor for Employee Induction and Professional Learning for FCPS, has worked with the county for 24 years. Originally, Struntz worked as a kindergarten and 2nd grade teacher in several Title I schools. After several years as a classroom teacher, Struntz became a reading specialist after obtaining her master's degree in Reading Specialization. During her time as a reading specialist, Struntz recognized the impact she was having on the teachers, which resulted in support for all of the students in these teachers' classes. Struntz explains this as the "multiplier effect" (Struntz, 2020). Struntz began teaching MSDE (Maryland State Department of Education) courses, which led to her position as a Teacher Specialist in the Office of Professional Learning. Struntz's role in this department grew when she became the Lead Teacher Specialist and now as the Supervisor of the department. During her growth in this department, Struntz obtained two administrator degrees. Struntz's vast experience in the

classroom and in the Department of Professional Learning significantly impacts her ability to support teachers' paths to differentiate instruction to meet the varied needs of the students in their classrooms.

Kristen Canning is one of the Elementary Instructional Directors for FCPS. In her position, Canning leads a variety of schools and principals within the county. Prior to becoming a Director in 2020, Canning was a school-based administrator, principal and assistant principal, for 12 years. As a principal at Title I schools, Canning supported teachers and staff working with diverse populations. Canning has over 18 years of classroom experience, in which she worked as a classroom teacher in first grade and fifth grade and as a reading interventionist.

Melissa Desmond is currently an FCPS Assistant Principal at Hillcrest Elementary School. Previously, Desmond was the Coordinator for Specialized Programs, in which she managed the pre-Kindergarten (pre-K) inclusive programs within FCPS. Desmond's early career as a Special Education teacher and Teacher Specialist for Specialized Programs allowed her to work with a variety of special education programs, including Pyramid, Learning for Life, Challenges, and Inclusive pre-K.

Amy Routzahn, current FCPS principal at Deer Crossing Elementary School, has extensive classroom and administrative experience. Before becoming a school-based administrator, Routzahn was a literacy specialist at a Title I school in Frederick County. As a former first grade, 4th grade, and 5th grade teacher, Routzahn has worked with a wide range of students.

Heather Lyons' current position as a math intervention teacher has provided her with numerous opportunities to work with diverse learners. In her 31 years working in the field of

education, Lyons has experience teaching Kindergarten through 6th grade and gifted and talented students prior to becoming a math interventionist.

Jennifer Abrecht has taught with FCPS since 1996. In her 24 years in the school system, Abrecht has remained at Kemptown Elementary School at a variety of grade levels. Most recently, Abrecht completed her 12th year teaching Kindergarten, preceded by several years teaching first grade, fourth grade, and fifth grade, revealing her knowledge of differentiation across grade levels and curriculum.

Katherine Zentz, a special educator in FCPS, has experience working in a variety of school settings for the past 11 years. Currently, Zentz works with students at grade levels Kindergarten through 5th grade at Ballenger Creek Elementary School. All of the students on her caseload have an IEP (Individualized Education Plan). Additionally, she supports students struggling with academics and with emotional/behavioral regulation.

Michelle Lebo is currently an elementary school math specialist who supports teachers and students in pre-K through 5th grade. In her current position, Lebo works with students needing academic support as well as academic enrichment. Previously, Lebo taught 2nd and 5th grade. Lebo has experience supporting teachers on their quest to differentiate instruction in their classrooms.

Jessica Fachler, currently a first grade teacher at Deer Crossing Elementary School, has over 24 years of experience teaching first and second grade. Fachler has experience working at Title I schools in the past. Fachler obtained a master's degree in reading specialization and uses this knowledge to differentiate instruction in her classroom.

Christine Clark has a variety of special education experiences in the state of Maryland. Clark has worked as a part-time and full-time special educator within FCPS for 13 years,

currently working full time. Prior to working in Frederick, Clark started her career in Annapolis, Maryland at a private special education school. Clark's expertise lies with supporting the learning needs of a diverse population of students.

Interview Protocol

Interviews were conducted individually via email and Zoom calls. Interview participants were emailed the questions prior to the interview (see Appendix A). Five interview participants responded via email; however, I met with three participants on a Zoom call. The Zoom calls were recorded to maintain the authenticity of information and direct quotations. Two interviews were conducted via face-to-face communication and were audio recorded. The audio recordings and email text were analyzed.

Driving Theories

Education is centered around theories. Theories guide the instructional strategies and techniques that teachers use in their classrooms. Two important lines of research that have greatly impacted classroom instruction include Lev Vygotsky's work and findings from neuroscience.

Lev Vygotsky, a psychologist, is known for his sociocultural theory, which emphasizes the influence of social and cultural events on a child's development (Henniger, 2018). Interactions are critical as children learn about the world around them. The Zone of Proximal Development (ZPD) is a main concept produced by Vygotsky. ZPD is best defined as "the developmental area between the child's independent performance of a task and those tasks he can perform with a more skilled peer or adult's help" (Henniger, 2018, p. 94). Tasks that fall within a child's ZPD build further knowledge through guidance; however, tasks outside a child's ZPD can be completed independently or are too difficult even with additional guidance. The

most effective instruction occurs when students are reached within their ZPD to expand on their prior knowledge. The zone of proximal development "links that which is known to that which is unknown" (Riddle and Dabbagh, 1999, as cited in Subban, 2006, p. 937) and "can only be extended or enriched through meaningful adult interaction" (Blanton, 1998; Riddle and Dabbagh, 1999; Rueda et al., 1992, as cited in Subban, 2006, p. 937). The research literature also finds that "students will learn best when supportive adults push them slightly beyond where they can work without assistance," which is their ZPD (Tomlinson, 2000b, p. 6). Research has shown "that in classrooms where individuals were performing at a level of about 80% accuracy, students learned more and felt better about themselves and the subject area under study" (Fisher, 1980 in Tomlinson, 2000, as cited in Hatfield, n.d., p. 3). It is clear that the research literature supports Vygotsky's Zone of Proximal Development and its usefulness in the classroom environment to promote students' growth and development.

In recent years, research in the neurosciences has greatly influenced the field of education. This research has been used, along with other theories, to improve instructional strategies in current classrooms. There are three broad areas from neuroscience research that influence classroom instruction. First, "the learning environment should be safe and non-threatening to encourage learning" (Tomlinson and Kalbfleisch, 1998, as cited in Subban, 2006, p. 939). Additionally, each student must be challenged appropriately in the classroom rather than receiving tasks that are too difficult or too easy (Tomlinson and Kalbfleisch, 1998, as cited in Subban, 2006). Finally, students "must be able to make meaning of the ideas and skills through significant association" (King-Friedrichs, 2001; Tomlinson and Kalbfleisch, 1998, as cited in Subban, 2006, p. 939). Students must be able to relate the new information they are learning to information that they already have mastered. Instruction should be designed to

extend further than the student's current level of knowledge, in order to build on what they already know to reach a new level of understanding and application.

Differentiated Instruction

Differentiated Instruction (DI) or Differentiation is a hot topic in education. A typical elementary classroom in Maryland has 20 to 30 students with varying backgrounds and constantly changing needs. Classrooms are growing more diverse as students with disabilities, English language learners, and/or gifted and talented students are included in the general education classroom (Mulroy and Eddinger, 2003; Tomlinson, 2001b, 2004a as cited in Subban, 2006). Differentiated instruction is an effective method of education that attends to the differences among classmates and "assists each student in experiencing a degree of triumph while encouraging them to be all that they can be as individuals" (Fischer and Rose, 2001; Mulroy and Eddinger, 2003; Stronge, 2004; Tomlinson, 2000a as cited in Subban, 2006, p. 938). Tomlinson's model of differentiation was developed in 1995 and continues to be utilized and grown in the field of education (Tomlinson, 1995, as cited in Allan & Goddard, 2010). A key premise of differentiated instruction is that all learners have strengths and needs and therefore, instruction must acknowledge that all students are different in order to improve student achievement. Originally, differentiation was geared towards gifted/talented students and special education however, the scope has been broadened to include all students (Allan & Goddard, 2010).

Excellent teaching "focuses on the understandings and skills of a discipline, causes students to wrestle with profound ideas, calls on students to use what they learn in important ways, helps students organize and make sense of ideas and information, and aids students in connecting the classroom with a wider world" (Brandt, 1998; Danielson, 1996; Schlechty, 1997;

Wiggins &McTighe, 1998, as cited in Tomlinson, 2000b, p. 7). In order for these tasks to be possible for all students, curriculum and instruction must be adapted to fit the "experiences and interests of the individual" (Tomlinson, 1995, 1999, as cited in Tomlinson, 2000b, p. 7). The curriculum is very structured; however, students cannot be expected to change themselves to accommodate the curriculum. The instruction can be modified by teachers to fit the students. By working with individual students or small groups of students, a teacher is differentiating by creating "the best learning experience possible" for the students (Tomlinson, 2000a, p. 2) and to "maximize the learning of all students" (The Iris Module, 2010, Defining Differentiated Instruction section).

The curriculum is deeply connected to differentiation in each classroom. Tomlinson states, "curriculum tells us what to teach: Differentiation tells us how" (Tomlinson, 2000b, p. 9). Similarly stated, "the core of what the students learn remains relatively steady. How the students learn -- including degree of difficulty, working arrangements, modes of expression, and sorts of scaffolding-- may vary considerably" (Tomlinson, 1999, The First Step Is the Compass, para. 4). When teaching based on a given set of standards, differentiation supplies students with a variety of approaches to learning the same standard. The standard is a central focus when differentiating. The instruction becomes differentiated when students are given a variety of tasks or materials that are specific to challenge each student. Additionally, tasks may be differentiated "with varying degrees of scaffolding, through multiple instructional groups, and with time variations" (Tomlinson, 2000b, p. 9). Students' interests are often taken into consideration as well. Other practices that backbone differentiation can "include effective classroom management procedures, promoting student engagement and motivation, assessing student readiness, ...grouping students for instruction, and teaching the student's zone of proximal

development" (Allan and Tomlinson, 2000; Ellis & Worthington, 1994; Vygotsky, 1978, as cited

in Huebner, 2010, para. 3). Overall, differentiation does not change the skills taught: "even

though students may learn in many ways, the essential skills and content they learn can remain

steady. That is, students can take different roads to the same destination" (Tomlinson, 1999,

para. 1).

Differentiation is not a "recipe for teaching"; therefore, it will look different in every

classroom. According to Tomlinson (2000b), there are a set of beliefs that can accompany

differentiation, including:

- Students who are the same age differ in their readiness to learn, their interests, their styles of learning, their experiences, and their life circumstances

- The differences in students are significant enough to make major impact on what students need to learn, the pace at which they need to learn it, and the support they need from teachers and others to learn it well

- Students will learn best when supportive adults push them slightly beyond where they can work without assistance

- Students will learn best when they can make a connection between the curriculum and their interests and life experiences

- Students will learn best when learning opportunities are natural

- Students are more effective learners when classrooms and schools create a sense of community in which students feel significant and respected (might have used elsewhere)

- The central job of schools is the maximize the capacity of each students (pp. 6-7)

Each year in a typical U.S. elementary school, teachers receive a new class roster with minimal information about their future students. Differentiation asks teachers to familiarize themselves with each student and to "acknowledge various student backgrounds, readiness levels, language, interests, and learning profiles" (Hall, 2002, as cited in Subban, 2006, p. 940). Struntz believes "differentiation is knowing your students, knowing where your students are, understanding their strengths and weaknesses, and then adapting your instruction to move them forward from where they are" (2020). All students need to be recognized for their strengths and be provided numerous opportunities to show what they know. The change in teaching can energize teachers and make them excited because it is different from how they are familiar with teaching (Hess 1999, as cited in Subban 2006).

Growth Mindset

Carol Dweck, an American psychologist, introduced the concept of growth mindset. This concept has been applied to the field of education as a powerful method to help all children achieve success. Dweck defined growth mindset in the following way: "students understand that their talents and abilities can be developed through effort, good teaching and persistence. They don't necessarily think everyone's the same or anyone can be Einstein, but they believe everyone can get smarter if they work at it" (Dweck, as cited in Morehead, 2012). Growth mindset pairs with differentiated instruction in that students begin to realize that everyone can learn with hard work. Adding growth mindset to differentiation is a newer idea that supports the general understanding of differentiated instruction. Growth mindset instills and empowers students and teachers to believe that everyone can learn.

From a young age, comments from teachers, peers, and other adults shape the way students see themselves. Some students consistently receive praise and statements rewarding

their intelligence. Other students are consistently met with doubts regarding their abilities.

Teachers have the ability to instill a growth mindset in their students and encourage the power of

yet. Students with a fixed mindset are devastated when they are faced with challenging tasks;

however, students with a growth mindset are excited for the challenge and they understand "that

their abilities could grow through their hard work" (Dweck, 2014). To move from a fixed

mindset to a growth mindset, teachers must be mindful about their praise to students. Rather

than praising their correctness or talent, teachers must praise the hard work they see in their

classrooms and the perseverance when struggles occur (Dweck, 2014).

For many students, there is extreme pressure to consistently bring home A+ grades on all

assignments, exams, and report cards. Grades have taken over the field of education and have

become more important than the task of learning. To combat this obsession with grades, a new

concept has been created: "Not Yet" grades. When a student fails a project or assignment, there

is often no chance for growth after a feeling of defeat. When a "Not Yet" grade is given, the

student and the teacher work together. In this opportunity, "they're processing the error deeply,

learning from it, and correcting it" (Dweck, 2014). A "Not Yet" grade provides a student

additional experiences to expand their abilities and knowledge. By using the words yet and not

yet, greater confidence and perseverance is instilled (Dweck, 2014). When a student experiences

difficulty, it does not mean they will never master the concept, it simply means they have not

mastered the concept YET.

Classroom environments can strongly influence the mindsets of their students.

Environments that emphasize the growth mindset model allow for greater equity because all

students are seen as capable learners. Teachers, staff, and students must be aware of student

potential; however, the powerful impact of a teacher cannot be underestimated (Canning, 2020).

All students need to be provided opportunities where they can be successful. For this reason, teachers must work from an "ability model" rather than a "deficit model" to ensure they are focusing on the capabilities of their students (Canning, 2020). In a lecture, Dweck provides several examples of the power of growth mindset on students. Her first example includes a kindergarten class from Harlem, New York, that contained students who could not hold a pencil or threw extreme temper tantrums; however, they worked to be in the 95th percentile on the National Achievement Test by the end of the year (Dweck, 2014). Many teachers would set low expectations for these students at the beginning of the year, hoping for any small accomplishments; however, these students needed a teacher who saw their full potential from the beginning and worked to get them there. Lenz (2014) explains that "there is a sweet spot in education, where educators provide the optimal environment, support and standards and students find the motivation and purpose to one their education and work hard for success." This sweet spot connects to Vygotsky's theory of Zone of Proximal Development because students are met exactly where they can be pushed one step further in their growth.

Frederick County Public Schools (FCPS) in Frederick, Maryland has a diverse range of school populations. With 38 elementary schools, 13 middle schools, 10 high schools, and several specialty schools, FCPS includes students from rural, suburban, and urban communities (FCPS, 2021). To encourage a growth mindset among staff, teachers are encouraged to visit other classrooms around the county. Amy Struntz explains that the main reason for these classroom visits is to "take the excuses off the table" (2020). Struntz has heard many teachers express that "in my school, kids can't do that"; however, the classroom visits take teachers to classrooms with similar populations with kids who can and are doing (2020). Teachers observe other classrooms to gain new ideas, classroom management strategies, and methods of speaking

with students that they can take to their classrooms for effective teaching. This method of professional learning instills a growth mindset in teachers that all of their students are capable of learning and it is their job to determine what methods will allow each student to reach their full potential. Teachers are difference makers for students: "We, as your teachers, will set high standards for you, and we will give you what you need to succeed" (Dweck, as cited in Lenz, 2014). Dweck exclaims, "let's not waste any more lives because the more we know that basic human abilities can be grown, the more it becomes a basic human right for kids - all kids, all adults - to live in environments that create that growth, to live in environments filled - overflowing- with yet" (2014). Differentiation is not a set system that works the same in each classroom. Students and teachers are continuously working together to find the best ways to teach and learn. Adjustments will need to be made as the teacher learns more about his/her students, so everyone is working together to find the best strategies ("7 Reasons," 2017).

The Importance of Differentiation

One size does not fit all; however, many current classrooms teach all students using the same methods and materials for all children. Often called teaching to the middle, a one-size-fits-all curriculum does not meet the needs of the growing diverse populations in classrooms (Forsten, Grant, and Hollas, 2002; McBride, 2004; McCoy and Ketterlin-Geller, 2004; Tomlinson, 2002; Tomlinson and Kalbfleisch, 1998, as cited in Subban, 2006). Canning voiced that teaching to the middle only meets the needs of one-third of students (2020). What does that mean for the remaining two-thirds of students who are not receiving instruction geared to their needs? Ignoring the needs of all students can be detrimental. Some students may fall behind or lose motivation if they are continually unsuccessful, while other students may become bored if not challenged (Tomlinson and Kalbfleisch, 1998, as cited in Subban, 2006). Overwhelmed by a

strict curriculum, teachers are often focused on keeping up with the standards rather than addressing the needs of their students. Students of all ability levels require tasks that will challenge them; however, each class contains a wide range of levels. Providing tasks that promote thinking in each student's zone of proximal development is critical to their learning.

Although teachers are aware of the diversity among their students, research has shown that very few teachers actually accommodate or take these differences into consideration while teaching (Gable, Hendrickson, Tonelson, and Van Acker, 2000; Guild, 2001, as cited in Subban, 2006). There is a focus on uniformity rather than considering the diverse population (Gable et al., 2000; Guild, 2001; Sizer, 1999, as cited in Subban, 2006). Theories that discuss how students learn best, like Vygotsky's ZPD and brain research, have pushed educators to consider how they can meet the specific needs of their students. Teachers can be proactive when they are aware of their students' needs because they will plan with the needs in mind, rather than revising their plans later ("7 Reasons," 2017). Differentiation is a reciprocal cycle between teachers and students because they are working together to learn what will work best, adjustments will need to be made ("7 Reasons," 2017).

Every student varies; therefore, teachers must be aware of the differences among their students in order to push them to reach their potential (Tomlinson, 2000a; Tomlinson, 2000c). Students are more receptive to new knowledge when it is taught in a way that allows for connection. When connections are made, the concepts and information become more meaningful to the student and can be mastered more easily. Different methods of instruction may be needed to impact all students because not all students will learn content the same way nor express their understanding in the same way (Desmond, 2020).

All students can benefit from differentiated instruction, including students with disabilities or gifted and talented students. A study was conducted to determine the effects of differentiation in a variety of Kindergarten-grade 12 classrooms in Alberta, Canada. During the study, it was found that differentiation consistently had a positive impact on the students (Huebner, 2010). When focusing on students with learning disabilities, they "received more benefits from differentiated and intensive support, especially when the differentiation was delivered in small groups or with targeted instruction" (McQuarrie, McRae, & Stack-Cutler, 2008, as cited in Huebner, 2010, para. 4). This small group instruction targeted specific needs. In another study, high-ability students were given a pre-assessment to determine any prior knowledge, which was then followed with differentiated instruction in small and purposeful flexible groups (Tieso, 2005, as cited in Huebner, 2010). The gifted students' performance improved, displaying the importance of differentiating for all students.

After interviewing a variety of educators in Frederick County Public Schools, all participants agreed that one-size does not fit all students (Lyons, 2020; Routzahn, 2020). Regardless of where a student is on the continuum of learning, it is the teacher's job "to move them toward progress" (Routzahn, 2020). Classrooms may be full of students spread across the grade level expectations. All students have individual abilities, strengths, and weaknesses. Students need to be met where they are in order to "fill in gaps or missed skills" that they may have, which will lead to continued progress and building from their current level. (Canning, 2020; Lebo, 2020; Zentz, 2020). Immediate and specific feedback can clarify any misunderstandings on the spot (Zentz, 2020).

Student engagement increases when differentiation occurs because students are working on tasks that are meaningful to them. Students are more likely to have behavior problems when

given tasks that are not at an appropriate level because they will be bored or off task, likely because they are uninterested or unsure how to complete the work (Canning, 2020). Engaged students are less likely to cause classroom disruptions and independence can increase (Desmond, 2020). All students will be engaged in a common learning goal to achieve mastery of a concept (Clark, 2020). A positive cycle can be created when students begin to be successful. These students will contribute and engage during class, leading to success, therefore, the same students will want this success to continue and engagement will remain high (Clark, 2020). Some students may need to be challenged with extension activities while other students may need to spend more time on a concept and engage in reteach groups (Abrecht, 2020). Assigning more work to advanced learners is not effective because this is not meeting the students in their ZPD ("7 Reasons," 2017).

All students bring different prior experiences to their classroom. Differentiation is essential because "every student is different, every students' story is different, every student's background is different, [and] what every student brings to the table in terms of the learning environment is different" (Struntz, 2020). All students come to school from different home environments, which affect how each student learns in the classroom. Educators must take into account a student's ability to access materials or any trauma in a student's life because "that might affect how we differentiate for them" (Struntz, 2020). Educators may not expect the same exact product from all students; however, there are expectations for all students. Every child has their own story, and this story needs to be known and taken into account by every teacher (Struntz, 2020).

Implementation of Differentiation

Differentiated Instruction will look different in every classroom because student needs differ among classrooms. Instruction must be tailored to students in order to optimize their strengths and support their areas of need. Students' needs vary "across content areas, within content areas, and across the school year" which emphasizes the necessity for differentiation as well (The Iris Center, 2010, General Principles section).

Interests

To differentiate, interests, learning profile, and readiness should be taken into account. At the beginning of a school year, teachers need to take the time to get to know their student, including their interests and ability levels (Hatfield, n.d.). Students' interests vary, but they can be used as a motivator in the classroom. The Iris Center states that "interest refers to topics, skills, or activities that pique a student's curiosity or inspire him or her" (2010, Know Your Students section). For this reason, teachers must take the time to build relationships with each student in order to gain information about enjoyable topics or activities they are involved in outside of school (The Iris Center, 2010). This information can be determined through discussions, surveys, journaling, or icebreaker activities (The Iris Center, 2010). To engage all students in instruction and activities, teachers can incorporate an array of interests throughout the day (MacGillivray & Rueda, 2001, as cited in Subban, 2006). Activities and discussions that are relevant to students maintain engagement and become more meaningful to students (Bosch, 2001; MacGillivray and Rueda; McBride, 2004; Tomlinson 2000b, 2001a, as cited in Subban, 2006). Struggling students' sense of failure decreases as they have opportunities to explore their passions (Lawrence-Brown, 2004, as cited in Subban, 2006). By acknowledging interests, each student will feel accepted in the classroom community.

Learning Profiles

Along with interests, student learning profiles are an essential component of each individual that must be considered. The Iris Center states that "learning profile refers to a student's preferred method of learning new information or skills (e.g., visually, hands-on, through deductive means) and to environmental factors that influence a student's learning (e.g., small group, bright lights, no distractions)" (2010, Know Your Students section). Often, a student's learning profile is influenced by their gender or culture (The Iris Center, 2010). A teacher who is aware of his/her students' learning profiles has a greater perspective into the specific needs of each student (Lawrence-Brown, 2004, as cited in Subban, 2006, p. 941). With this knowledge, the teacher and student can work together to develop activities that will encourage the most productive learning for each student. Options can be provided for group instruction or individual instruction. Modification of content, process, and product (discussed below) meets the needs of students with diverse learning profiles. An interesting finding from current research is that attention to a person's self-described learning preferences does not necessarily translate into greater academic achievement. Research finds that universal strategies may be more effective than a reliance on attention to learning styles (May, 2018).

Readiness

Readiness is the third component of all students that affects differentiation in each classroom. The Iris Center states that "readiness refers to a student's knowledge and skill level regarding given content" (2010, Know Your Students section). Readiness is an essential component of differentiation because it identified the starting point of each student. Students may be performing at grade level standards, whereas other students are performing below grade level or far above grade level (Tomlinson, 2001a, as cited in Subban, 2006, p. 942). It is critical to keep in mind that a student may be performing above grade level in mathematics; however,

they may be performing below grade level or on grade level in reading/language arts. A

student's readiness level "may be influenced by his or her background knowledge, life

experiences, or previous learning" (The Iris Center, 2010, Know Your Students section). Due to

this variance in student readiness, teachers must be aware of each student's ZPD in order to

provide the most appropriate instruction because "students are optimally engaged when

academic tasks are slightly beyond what they can do on their own" (Vygotsky, 1978, as cited in

"Differentiating Instruction," 2011) . The most effective instruction includes tasks that are

"neither too easy, not too challenging" (Tomlinson, 2001a, 2003, as cited in Subban, 2006, p.

942). Students become frustrated when work is too challenging and bored when work is too

easy. Readiness level is most commonly determined via informal or formal assessment (ex.

observations, pre-exams, work samples) (The Iris Center, 2010).

After becoming aware of students' interests, learning profile, and readiness, there are four

major components that are taken into account when differentiating. The four components

include content, process, product, and learning environment. Differentiation involves "making

changes to one or more of these elements" based on the needs of the students and the content

(Lyons, 2020; The Iris Center, 2010, Differentiate Instructional Elements section). Teachers

must have a "repertoire of teaching strategies" and instructional approaches that can be

implemented to meet the needs of diverse learners (Hatfield, n.d.; The Iris Center, 2010).

Content

Content refers to "what the student needs to learn or how the student will get access to

the information" (Tomlinson, 2000a, p. 2). All tasks and objectives need to be aligned to

learning goals and standards because the standard continuum shows future instructional steps for

all learners (Hatfield, n.d.). "Instruction is concept-focused and principle-driven," which means

that instruction is not detail oriented (Hatfield, n.d., p. 2). Instruction for all students should address the same concepts and skills; however, "the degree of complexity" is adjusted to meet the needs of the diverse learners (Hatfield, n.d., p. 2). Differentiating content can look very different across classrooms; however, some examples include: reading materials at a variety of readability levels, listening to text, variety of spelling lists, providing instruction via auditory and visual means, meeting with small groups as re-teach groups or extension groups (Tomlinson, 2000a). By providing a variety of different materials, students can access the information in a way that works best for them which may include numerous texts about the same topic, magazines, CDs, or videos (The Iris Center, 2010). Students are provided choices. Scaffolding is "a process through which a teacher adds supports for students in order to enhance learning and aid in the mastery of tasks" (The Iris Center, 2010, Differentiate Content section). Scaffolding occurs when additional supports are provided based on prior learning/understanding, and then the supports are gradually removed as mastery is approached (The Iris Center, 2010). Some examples of scaffolding supports include the use of graphic organizers, including KWL charts, word webs, and story maps, as well as think aloud, retelling activities, and teacher modeling (The Iris Center, 2010). These supports break/chunk the content into accessible pieces. "Compacting the curriculum" is used for learners who understand a concept prior to instruction (The Iris Center, 2010, Differentiate Content section). Enrichment activities are created after their knowledge is assessed to address any needs and extend their prior knowledge. Differentiation of content often asks teachers to look at the students' background knowledge (Lyons, 2020).

Process

Process refers to the "activities in which the student engages in order to make sense of or master the content" (Tomlinson, 2000a, p. 2). When planning, teachers can ask themselves the following questions: "what do they need to know in order to be successful?" and "what is the big take away idea they all must know and how will I get them to that understanding?" (Lyons, 2020). Tiered activities are commonly used in elementary level classrooms in which all students are working on the same standard/skill; however, the teacher provides varying levels of support for students (Tomlinson, 2000a). During tiered activities, all students are challenged due to "varying levels of complexity or expected depth of information" (The Iris Center, 2010, Differentiate Process section). Often, tiered activities split students into three groups. Figure 1 includes supports or suggestions to tier a lesson for three reading groups: struggling students, average students, and advanced students (The Iris Center, 2010, Differentiate Process section). Students are working at their ZPD to build further knowledge with an appropriate level of guidance. Teachers can provide hands-on activities or manipulatives to students who benefit from tactile experiences (Tomlinson, 2000a). Flexible grouping is used in classrooms with differentiated instruction in order to provide appropriate activities to groups of students after whole-group instruction. Learning centers, interactive journals, and jigsaw groups are used in classrooms for students to practice and master a skill at different levels, communicate their understanding to their teacher, and become "experts" on certain topics (The Iris Center, 2010, Differentiate Process section). These enjoyable activities are motivators for student learning. The use of manipulatives (ex. Unifix cubes, clear chips) assists students to "make the explicit connection between the concrete object and the abstract concept being taught" for deeper understanding (The Iris Center, 2010, Differentiate Process section). Mini lessons are available

after whole-group instruction to focus on re-teaching a concept or extending a concept for

enrichment ("Differentiating Instruction," 2011).

      Graphic organizers, as shown in Figure 1, are used to differentiate the process of learning

because they allow students to organize information in a way that allows them to easily process

and master the content (The Iris Center, 2010, Differentiate Process section). Graphic organizers

should be simple and easy to use for students and teachers should allow students to choose the

organizer that they prefer as well as how they prefer to complete the organizer, either with

illustrations or text (The Iris Center, 2010, Differentiate Process section). An organizer is for

student-use. Therefore, it should be student-centered so students can maximize their own

understanding. Graphic organizer types may include Venn diagram, Frayer model, KWL chart,

tree diagram, word web, among others.

Group 1: Students who are struggling with a topic
- Requires less difficult independent reading.   - Has materials based on the average reading level of the participants, which is usually below grade level.   - Has spare text and lots of graphic aids.   - Has a low level of abstraction (i.e., is as concrete as possible).   - Requires fewer steps to complete the assignment   - Converges on "right answers" to solve problems.   - Requires only knowledge and comprehension levels of thinking for independent work.   - Includes supportive strategies, such as graphic organizers or teacher prompting to help students infer and draw conclusions. (i.e., use higher level thinking skills)
Group 2: Average learners

- Includes independent reading materials from the textbook or other on-grade level sources.
- Uses concrete concepts to help students transition to more abstract concepts.
- Includes questions or problems that are a mix of open-ended and "right answers."
- Can have more steps.
- Expects students to infer and draw conclusions with less teacher support. Teacher should count on being on hand if necessary to prompt students in this area.
- Ensures that students can be successful with knowledge, comprehension, and application on their own, and that with help they can address some of the high levels of thinking

Group 3: Advanced or gifted learners

- Includes reading materials from sources more complex than the textbook, if possible.
- Requires more lengthy sources because students can read faster than lower or average students.
- Focuses on abstract concepts as much as possible and uses open-ended questions exclusively.
- Requires students to infer and evaluate.
- Assumes students have knowledge, comprehension, and application abilities, and that they will be challenged only if you ask them to analyze, synthesize, and evaluate.

Figure 1. Tiered Reading Instruction

Product

Product refers to the "culminating projects that ask the student to rehearse, apply, and extend what he or she has learned in a unit" (Tomlinson, 2000a, p. 2). Teachers who differentiate provide a variety of opportunities to show what they have learned (The Iris Center, 2010). Providing students a choice of how to express their learning motivates students. Choices may include writing letters or essays, creating posters or brochures, orally relaying information, or creating a skit. Students should be encouraged to create their own product idea as long as it meets the assignment requirements; however, teachers must explain "that their students cannot

always choose to complete the same type of product assignment" (The Iris Center, 2010, Differentiate Product section). Additionally, students may have the option to work independently or in small groups on their product (The Iris Center, 2010; Tomlinson, 2000a). The expectations from each students' product will vary. Student products are evaluated and used in the future to differentiate based on interest, readiness, and learning profile. If a test is used as the product to evaluate the students' understanding, diverse and straightforward question types must be used and test vocabulary and key words must be pre-taught (The Iris Center, 2010).

There are several common ways to provide choice options for students: Learning Menus, Choice Boards, and Tic Tac Toe boards (Canning, 2020; The Iris Center, 2010). On these menus and boards, a variety of assignments and projects are listed that all address the key concepts and skills learned. The choices may be the same for all students, with a different level of support provided in order to complete activities (Canning, 2020). Students are expected to complete a row of activities or they are given a particular number of activities that must be completed. Different versions of the boards may be created to address diverse needs. Some examples of product choices, among others, include videos, posters, news reports, skits/puppeteer shows/plays, songs, powerpoints, diagrams, ad campaigns, models, worksheet, essay/research paper, brochure, or creation of a game ("Differentiating Instruction," 2011; The Iris Center, 2010). Students are motivated by choice and "willing to try harder if they have a vested interest" in the activity (Canning, 2020; Lebo, 2020). Some learning menus are presented similarly to a dinner menu, asking students to complete one "entree" task, two "side dish" tasks, and a "dessert" task, which may be an optional extension activity (The Iris Center, 2010, Differentiate Product section). Teachers should establish "a balance between teacher-assigned and student-selected tasks" (Hatfield, n.d., p. 3).

Learning Environment

Learning environment refers to "the way the classroom works and feels" (Tomlinson, 2000a, p. 2) and "the organization and atmosphere of the classroom (The Iris Center, 2010, Differentiate Instructional Elements section). A requirement in all classrooms is space for quiet, independent work, as well as a place that invites group participation and collaboration (Tomlinson, 2000a). When differentiating, the seating, room arrangement, and lighting must be considered ("Differentiating Instruction," 2011). Students need space in the classroom where they feel comfortable working on their assignments; however, this space may change depending on the assignment or day. Routines are critical when developing the learning environment (Tomlinson, 2000a). What is a student supposed to do when they have a question but the teacher is working with another student? Examples of routines that address these questions may include an Ask 3 Before Me sign/rule or pictorial direction cards used to introduce an assignment and then left on the board for later reference. Students must be made aware that everyone learns differently, so Student A may need to lay on the floor to work with a partner, while Student B may need to work at their desk with headphones and an office (manila folders to minimize distractions) in place. Learning environments may support differentiation if multicultural materials are provided or places are created for independent work and group work among other strategies (The Iris Center, 2010).

Response to Intervention and Differentiation

Response to Intervention (RTI) was created in 2004 as part of the Individuals with Disabilities Education Improvement Act (IDEIA). RTI provides early identification of struggling readers and mathematicians and includes "increasingly intensive levels (or tiers) of support depending on how students respond" (National Center on Response to Intervention, n.d.,

as cited in Allan & Goddard, 2010, Different Origins, Identical Goals section, para. 2). With the

introduction of RTI, emphasis was placed on the importance of early identification, which leads

to early intervention and support. This intervention approach focuses on providing intervention

for all students as they begin to develop their reading and writing skills (Vacca et al., 2018). The

goal of RTI is to "improve an identified child's academic performance" (Gillet et al., 2017, p.

23). In many RTI settings, "K-3 students are screened to determine if they are at risk of not

meeting prescribed benchmarks. If students do not meet benchmarks after scientifically valid

interventions are applied, the RTI models provide for interventions in small groups to provide

additional assistance" (Gillet et al., 2017, p. 23).

RTI programs are centered around a multi-tiered system usually consisting of three tiers.

As seen in Figure 2, Tier One is the General Education Program taught by a teacher in a general

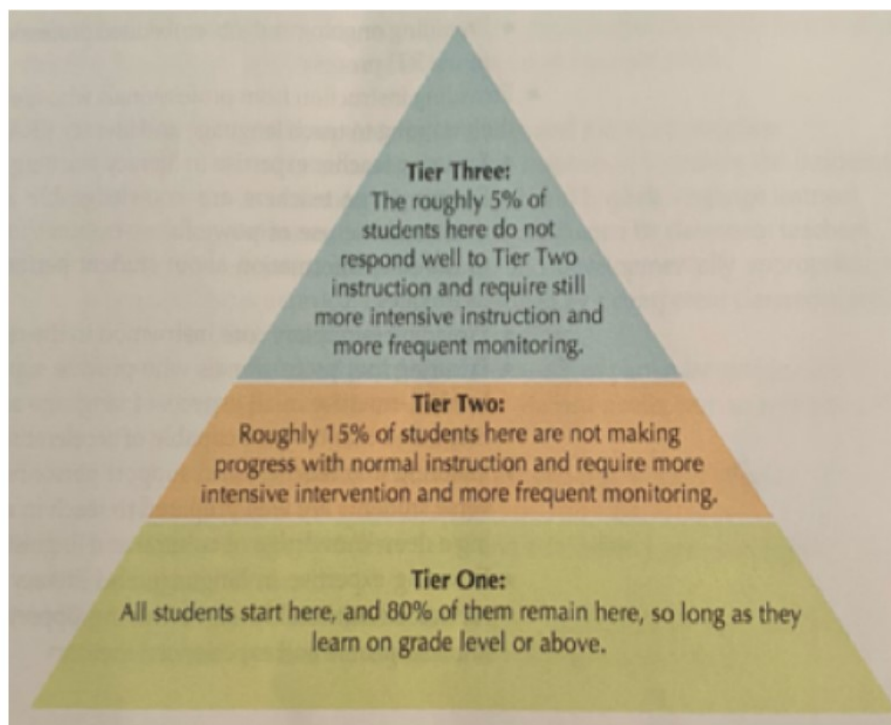education classroom (Gillet et al., 2017, p. 26).

Figure 2. RTI Tiers

In this tier, all students receive "effective core reading instruction" which includes "phonemic awareness and phonics instruction, fluency instruction, vocabulary instruction, and comprehension instruction" (Taylor, 2008, as cited in Gillet et al., 2017, p. 26). All students are placed in Tier One until assessment proves a student requires more intensive instruction. Tier Two intervention requires progress monitoring. Progress monitoring consists of a variety of regular, continuous assessments as students work. When growth is apparent through progress monitoring, students can return to Tier One (Fuchs & Fuchs, 2008, 2009, as cited in Gillet et al., 2017, p. 26). Tier Three includes more intensive support after a lack of success in Tier Two. Tier Three intervention is often provided by Special Education teachers. More explicit and thorough instruction in an individual or small group setting is required (Fuchs & Fuchs, 2008, as cited in Gillet et al., 2017). RTI provides increasingly differentiated and individualized instruction based on individual student needs.

Although RTI and Differentiated Instruction began from different origins, they share a common goal: "to modify instruction until it meets student's individual needs and thus nurtures their success" (Allan & Goddard, 2010, Emphasize the Convergence, Not the Difference section, para. 1). Both initiatives can look different in every classroom because they are flexible to fit the students in each classroom. RTI and DI are "built on two basic concepts: that education is most effective when we treat students as individuals with different levels of readiness, learning profiles, and interests; and that teachers have a professional obligation to help all students succeed" (Allan & Goddard, 2010, Different Origins, Identical Goals section, para. 4). Both models are student-centered in order to help each individual reach their highest potential.

RTI and DI can coexist during instruction in every classroom. Instruction should never be a one-size-fits-all approach; therefore, "differentiation should occur naturally within each tier"

of RTI (Allan & Goddard, 2010, How DI and RTI Fit Together section, para. 1). In Tier One, the general education classroom, differentiation should be occurring during each lesson. Differentiation may include a variety of learning settings. For example, instruction may occur in a whole group, small group, or individual setting, and may be based on a variety of student factors (Allan & Goddard, 2010). RTI is incorporated in Tier One as "the teacher keeps detailed records to monitor the progress of students who are struggling and who may need more intensive Tier Two support" in addition to the assessment already occurring in the classroom (Allan & Goddard, 2010, How DI and RTI Fit Together section, para. 3). As seen in Figure 2, Tier Two and Tier Three of RTI focus on smaller groups of students; however, differentiation still must occur within the small groups of students (Gillet et al., 2017, p. 26). Tier Two of RTI specifically addresses students' needs. These students may receive "structural differentiation," which pulls students out of the classroom to work with other resources like a reading specialist, and more frequent assessment is required than when a teacher is using just differentiation (Allan & Goddard, 2010). Tier Three is more extensive than differentiation, but "the philosophy remains the same: regarding each student as an individual, asking what each student needs to be successful, and then using whatever services or structures are needed to support that success" (Allan & Goddard, 2010, How DI and RTI Fit Together section, para. 5). RTI and differentiation both aim for the success of all students by using knowledge about the students' abilities.

Differentiated Instruction addresses all students, which includes students who need additional support. RTI focuses on these students who need support to guarantee their success (Allan & Goddard, 2010). For this reason, RTI can be seen as "a subset" of differentiated instruction (Allan & Goddard, 2010).

Planning for Differentiation

Successful differentiation requires specific, intentional planning. Transitioning to a differentiated classroom is not an overnight process. A teacher must "create a mental image of what you want your classroom to look like" (Tomlinson, 2000a, p. 5). Creating a mental image allows the teacher to become aware of the aspects of the classroom and their instruction that need to be modified. Although there will be several aspects that the teacher will want to modify, Carol Ann Tomlinson recommends "beginning in small ways and making sure that you're purposeful in doing small things, not waiting for the cataclysm to happen, but are moving at a measured pace makes many teachers feel much better" (The Iris Center, 2010, Classroom Implementation section). Teachers cannot be expected to change their entire classroom at once. Instead, differentiation in a few aspects of the classroom must be mastered before adding more aspects with time. To maintain an appropriate pace, "you might begin with just one subject, just one time of the day, or just one curricular element (content, process, product, or learning environment)" (Tomlinson, 2000a, p. 5). When incorporating differentiation in her classroom, Michelle Giddens explained that she began with reading because of the wide range of readiness levels in this content area (The Iris Module, 2010). Her reading groups were created based on assessments and students had tiered activities at reading rotations, which were flexible based on successes or needs (The Iris Module, 2010).

Knowledge and understanding of students in a class is imperative when planning for differentiation (Geoffroy, n.d.). The teacher must take time to learn about their students to effectively plan instruction that will meet their specific needs and interests. Students are not the only people learning during this process; "students and teachers are learners together" and adjustments to instruction and interaction are made as needed ("7 Reasons," 2017, para. 7).

Lesson plans are just a guide to instruction, so pre-planned lessons can be modified based on the students' needs (Geoffroy, n.d.).

When planning to begin differentiation, it is critical to prepare students and families for the change. There will be a large shift in the classroom, so it is important to make students aware of why these changes are being made (Tomlinson, 2000a). Teachers will need to communicate that students may be working on different assignments and that activities will become more student led (The Iris Center, 2010). This format of instruction may be familiar to some students and unfamiliar to other students so the benefits need to be discussed. To develop an understanding of differentiation, The Iris Center (2010) suggests that teachers can ask their students these questions:

1. Is everyone good at the same things?

2. Should I teach everyone the same way?

3. What will classroom instruction be like?

4. How can I find out about what you need to learn best?

5. How is it fair if we are all doing different things to help us learn?

6. How will we measure success? (Communicate with Students and Parents section)

By asking these questions, students begin to understand that they have commonalities and differences among their classmates and that everyone has different needs that are addressed with an array of strategies (Geoffroy, n.d.; The Iris Center, 2010). When addressing these questions, a sense of community is established that makes each student "feel significant and respected" (Tomlinson, 2000b, p. 7). Minimal emphasis will be placed on formal, high-stakes testing, leading students to understand that success is found with hard work and growth (The Iris Center, 2010).

Communication with parents is crucial during a transition to a differentiated classroom. This is the ideal opportunity for parents/families to share information about their child with the teacher. This information provides insight about "individual strengths and needs" (The Iris Center, 2010, Communicate with Students and Parents section).

Classroom management systems and classroom routines are essential to establish before easing differentiation into the classroom. Routines may include explicit processes for giving directions or instruction about how to utilize the classroom and the resources in the classroom (Tomlinson, 2000a). When implementing new routines, direct instruction to teach the students is critical for success along with opportunities to practice the routine (The Iris Center, 2010). After teaching the routine, the teacher must monitor, then discuss the success of the routines with the students (Tomlinson, 2000a). Classroom routines and procedures should be in place during all classroom activities to maintain consistency throughout the day (The Iris Center, 2010). Students will feel more responsible and will be more likely to follow procedures if they are involved in creating them. At the beginning of the year, the teacher and students can brainstorm ideas together, create a class contract, and sign it as an agreement.

In a classroom with differentiated instruction, "there's so much fluidity," which can easily turn into chaos if the classroom is not managed appropriately (Giddens, as cited in The Iris Module, 2010). There will be students who are working in groups with the teacher, students who are working in a separate group, and students who are working independently, leading to increased movement in the classroom and a high need for clear expectations (The Iris Module, 2010). While students are working in a group supported by the teacher, other students must be prepared to work independently. To hold students accountable, a checklist can be created to keep students on track and aware (The Iris Module, 2010). To manage the increased movement

and variety of student activity, appropriate noise levels must be identified through discussion and demonstration (The Iris Center, 2010). Noise meters are commonly found in elementary classrooms to display the appropriate noise level expected during the current learning activity.

Classroom organization is another factor to consider when planning for differentiation. Activities may require students to work with groups, partners or individually; therefore, space must be designated effectively for all these options (The Iris Center, 2010). Work areas may include floor space, tables, or desks with chairs. Small group areas may be strategically placed away from individual workspaces to separate the noise level differences.

Preparing for transition time between activities makes a difference because transitions can become chaotic with students shifting to new activities. Several routines and procedures can be implemented to ease the chaos of transitions. Teachers must be aware of the time in order to provide cues before a transition occurs (The Iris Center, 2010). A "heads up" allows students to finish what they are working on and begin cleaning up their area. Additionally, teachers can plan for transition periods by organizing and laying out materials in a designated area (The Iris Center, 2010). For example, activity one materials can be found at the rocking chair, activity two materials can be found on table group two, and activity three materials can be found on the back table. While introducing the activities, the teacher can point out where the materials are located and specify which materials are needed by each group. To avoid questions regarding "which activity do I go to next," the teacher can plan for differentiation by creating a rotation chart (Abrecht, 2020). Abrecht (2020) uses a rotation chart during reading groups during her ELA block which prompts her students to rotate to different activities when they hear her ring her bell, as seen in Figure 3. To differentiate materials for reading groups, the teacher can have specific color-grouped folders at each activity location. For example, students in each group

may be working with different sight words. At the Word Work station, the teacher can prepare

one yellow folder, one green folder, one red folder, and one blue folder that are specific to each

color group listed in Figure 3.

	9:40 - 9:55	9:55 - 10:10	10:10 - 10:25	10:25 - 10:40
(yellow)	Mrs. Abrecht	Seatwork	Read	Word Work
(green)	Word Work	Mrs. Abrecht	Seatwork	Read
(red)	Read	Word Work	Mrs. Abrecht	Seatwork
(blue)	Seatwork	Read	Word Work	Mrs. Abrecht

Figure 3. Reading Rotation Schedule

Differentiating instruction is based on students' current knowledge and future needs. For

this reason, pre-assessment is an essential step in the differentiation process (The Iris Module,

2010). After examining the students' understanding of topics, instruction can be differentiated

based on needs, and formative assessments can be continued to evaluate progress (Tomlinson, as

cited in The Iris Module, 2010). Teachers must plan for their three groups of learners:

"[students] who already know what you are getting ready to teach, [students] who have some

understanding and needs more, and [students] who are lacking the prerequisite skills to access

what you are going to teach" (Canning, 2020). With these three groups in mind, effective

instructional strategies can be planned prior to instruction.

All students should be working at an appropriate, challenging level at all times when in the classroom. Students should feel interested and focused on their specific skill by working on a worthwhile task (Tomlinson, 2000c). Gifted and talented students should not be receiving more of the same work, they should be receiving modified work that extends on the current objectives and standards to challenge them. For all students, "there should not be a group of students that frequently does 'dull drill' and another that generally does 'fluff'" because all activities should reach a student's ZPD and further their understanding (Tomlinson, 2000c). Students who need extension activities are often overlooked because of their independence; however, these students need the same amount of differentiated instruction (Lebo, 2020).

In order to differentiate for all students, including students working above, below, and on grade level standards and objectives, teachers must be knowledgeable about their specific content area and the surrounding curriculum (Geoffroy, n.d.; Zentz, 2020). Understanding the curriculum includes the grade level standards above and below the specific grade level of a teacher's class. Zentz explains that "[her] knowledge of the curriculum for different grades allows [her] to map how to support" students and clarifies the expectations (2020). With the knowledge of the entire curriculum, teachers can create long range plans and a path to move their students forward. In a differentiated classroom, all students, "regardless of his or her skill level, should work on respectful tasks" (The Iris Center, 2010, General Principles section).

Challenges of Differentiation

The concept of differentiated instruction has faced several setbacks. It has proven challenging to maintain a differentiated classroom with all the other expectations that teachers are required to meet and sustain.

Standards-based teaching and high-stakes testing have become a phenomenon in education that has overpowered other forms of education (Tomlinson, 2000b). "For many teachers, curriculum has become a prescribed set of academic standards, instructional pacing has become a race against a clock to cover the standards, and the sole goal of teaching has been reduced to raising student test scores on a single test, the value of which has scarcely been questioned in the public forum" (Tomlinson, 2000b, p. 7). Unfortunately, teachers are pulled in two directions: "they are admonished to attend to student differences, but they must ensure that every student becomes competent in the same subject matter and can demonstrate the competencies on an assessment that is differentiated neither in form nor in time constraints" (Tomlinson, 2000b, p. 7). These opposing viewpoints of education are causing conflict for teachers. "The conflict between focusing on standards and focusing on individual learners' needs exist only if we use standards in ways that cause us to abandon what we know about effective curriculum and instruction" (Tomlinson, 2000b, p. 6). Teachers must ensure "standards-based teaching practice does not conflict with best teaching practices" (Tomlinson, 2000b, p. 8).

Due to high-stakes testing, some students are easily forgotten in a classroom full of students. Unfortunately, there are several cases in which differentiation does not occur and students do not receive the instruction they need. In one district, students were split into three groups: definitely, maybe, and no hope. These three groups identified how likely the students were to pass the standardized tests. The teachers explained that "there was no point in worrying about students who already knew enough to pass the test, and there was no point in wasting time on students who could not be raised to the standard" (Tomlinson, 2000b, p. 8). Teachers have abandoned their knowledge of effective instruction in an effort to improve their school or

district's appearance on standardized tests. All students need to receive instruction that will

allow them to continually "make progress wherever they are functioning, below, on, and above

grade level" (Routzahn, 2020). When teachers differentiate instruction and teach, instead of

teaching to the test, students "learn more on the way to the test, and they also develop more

confidence as a learner" (Tomlinson, as cited in The Iris Module, 2010).

  Differentiation carries several misconceptions: most commonly, teachers and others

believe differentiation takes too much time to plan and too much time to implement in the

classroom. Tomlinson discusses the amount of planning time and mentions that "differentiation

doesn't say spend an hour planning tonight like you always did and then add differentiation to it.

What it would say is, if you have an hour to plan, think about how you can do that in a way that's

going to work for kids" (Tomlinson, as cited in The Iris Module, 2010). Rather than planning

and modifying your plans to meet the students' instructional needs, the teacher can plan activities

while thinking about how to meet students' needs. Taking the time to learn about each students'

needs saves time in the end because it provides insight on how to support students and can be

taken into consideration during planning and instruction (Zentz, 2020). Being proactive takes

less time because lesson plans take into consideration the different learners ("7 Reasons," 2017).

Additionally, planning with differentiation in mind can minimize time needed to backtrack

during lessons (Clark, 2020). Educators are knowledgeable about what their students already

know and where they can start with each small group. When implementing differentiation into

the classroom, students have more opportunities to work with a concept and master the

information. The implementation does not take more time in the classroom. Tomlinson

emphasizes that "it doesn't take long just to tell kids things or just to cover standards, but we also

don't have evidence that students come away with understanding or the capacity to use what

they've learned to transfer knowledge" (Tomlinson, as cited in The Iris Module, 2010). For this reason, differentiation may take more time in the classroom because students are actually learning the information, mastering the information, making meaning, and applying the information, as well as saving time in the long run because mastered content will not require reteaching. Lecturing students may be a quick process to race through the standards; however, the students' level of mastery and knowledge is diminished. Incorporating differentiation into the classroom can be a process over time. Students build a foundation so they begin to be engaged in their own learning, then they learn about their strengths and weaknesses in order to ask questions when they are in need or to express their mastery (Clark, 2020). Jennifer Abrecht mentions that preparing the materials for multiple groups can take more time because the teacher cannot just create one activity for all students (2020).

When a teacher decides to differentiate his/her classroom, there are major changes that will challenge the teacher. Differentiation is not a complicated concept; however, many teachers develop "ruts and routines" initially that become difficult to break out of; therefore, "it really is not so much adopting a new thing but shedding the old thing that really is the challenge" (Tomlinson, as cited in The Iris Module, 2010). For example, teachers are very comfortable with giving one assignment to all of their students for consistency in the grade book and consistency in their plans; however, differentiation creates a new way of thinking that pushes teachers to provide an array of tasks that meet their learners' specific needs.

Class size and reducing class size has been of interest in the United States, with the intention of being more aware of student needs. During an average year, class sizes can range dramatically depending on the school district, school size, and grade level. In general, "it's simply easier to know students and follow their progress if there are fewer of them;" however, if

a teacher is dedicated to differentiate for his/her students, then differentiation will occur regardless of the size of the class (Tomlinson, 2010, para. 1). Teachers who are purposeful and "mean to attend to student differences" will differentiate for their entire class regardless of class size (Tomlinson, 2010, para. 1). These teachers are aware of the positive impact that differentiation has on their students and are motivated to help their students. It is important to keep in mind that differentiation is not asking a teacher to develop an individual activity for every student in the class. Instead, teachers are encouraged to look for patterns that represent multiple students in the class. Therefore, the same needs may exist in a small class or a larger class, resulting in a similar plan for differentiation. For example, a teacher may notice that five students struggled with identifying the characters in a text. This need can be addressed in a reteach for the five students, while other students are working on a variety of tasks that will extend their knowledge. Tomlinson explains her belief that "reducing class size has the potential to be beneficial in a number of critical ways;" however, she does not believe that "reducing class size along is a sufficient catalyst for us as teachers to jettison our old instructional habits or to help us adopt more fruitful ways of thinking about and acting on the multiple needs that students inevitably bring to the classroom" (Tomlinson, 2010, para. 4).

Experienced teachers face challenges when attempting to differentiate in their classrooms. Heather Lyons explains that finding "various levels of rich reading text to teach the same standard" can be time consuming (2020). Differentiating the product proves difficult because it is essential that all products allow students to demonstrate if they have mastered the learning target (Lyons, 2020). Additionally, experienced teachers often use teaching strategies and activities that have worked for them and most of their students in the past. Michelle Lebo expressed her largest challenge: "finding out what is going to work best for a child and not doing

the same thing over and over again" (2020). Teachers can pull new ideas from numerous sources, provided by the school district or found online. Collaboration between teachers and other staff is essential. A teacher may discover a method for teaching a concept that reached a student when they were struggling, and this idea can be shared with colleagues; however, this is not a weakness of other teachers.

Differentiation During COVID-19

Currently, during the COVID-19 pandemic, students and teachers are experiencing distance learning for the first time in this school system. Unfortunately, most students have not met their teachers and all instruction has been conducted via Google Meet and Schoology (virtual learning website). This has been a major challenge for teachers and students. Body language is a major indicator of student engagement, feelings, and motivation within the classroom setting, which is taken into account when planning for differentiation (Struntz, 2020). A teacher can look around his/her classroom and notice that Student A appears defeated while working with Doubles Addition and may need to join a re-teach group the following day during math. Unfortunately, in the virtual setting, it is difficult to see body language and it is much less clear than in the physical classroom. Visual cues are not as evident, so teachers must determine other methods of observation and assessment that can indicate student needs.

During this time, most students are isolated in their homes with their family. Some students have a parent sitting next to them for the entire day of instruction, whereas other students are placed in their bedroom and receive no academic assistance. The variance in guidance has proved challenging when creating small groups and academic activities. It is difficult for teachers to determine what work has been completed independently versus work that has been edited profusely by the parents before submitting to the teacher. For this reason,

creating level-based small groups has been challenging because it is unclear which students have parents whispering answers to them. Additionally, some students are receiving no guidance at all, leading to incompletion of assignments or incorrect completion.

Another challenge of differentiation during distance learning in this school system is the drastic amount of time needed to provide feedback. Unlike in-person learning, a teacher cannot walk past a student and provide immediate and specific feedback. General feedback can be provided during whole-group online instruction; however, the effectiveness of this feedback is not as high. Students are submitting multiple assignments on Schoology daily. After instruction, teachers are spending hours providing comments and feedback to the student work. Unfortunately, teachers are not receiving a break because there are always more assignments submitted that require feedback.

Assessment

Assessment drives instruction in every classroom. Assessment is an ongoing, continuous process that is used to differentiate instruction, addressing the needs of each student (Huebner, 2010; The Iris Center, 2010; Tomlinson, 2000a). Differentiation "is rooted in assessment," so it is critical to understand how assessment can affect instruction ("7 Reasons," 2017, para. 3). Any information that teachers can take away from assessment "helps the teachers plan next steps in instruction" in order to reach students at their current level (Tomlinson, 2000c, para. 5). Assessment data can show if gains were made by students based on their starting point, and if no gains were made, teachers need to ask themselves "why" (Lebo, 2020).

In the field of education, there are a variety of assessment types, all used to gain information about students. The main types of assessment include diagnostic, formative, and summative assessment. Diagnostic assessments, often known as pre-assessments, are given prior

to the start of a unit to determine students' prior knowledge ("7 Reasons," 2017). Formative

assessments include "tools that check the status of the students' development during instructional

activities" in order to identify student misconceptions regarding the content (Duckor, Holmberg,

& Rossi Becker, 2017; Hattie, 2009; Popham, 2008; William & Leahy, 2015, as cited in Van de

Walle et al., 2019, p. 84). Summative assessments "are cumulative evaluations that take place

usually after instruction is completed" (Van de Walle et al., 2019, p. 84). A typical end-of-unit

test can be categorized as a summative assessment; however, summative assessments and

standardized tests cannot be the only source of data used to display what students know. Van de

Walle et al. (2019) states "if summative assessment could be described as a digital snapshot,

formative assessments like streaming video. One is a picture of what a student knows captured

in a single moment of time; the other is a moving picture that demonstrates active student

thinking and reasoning" (p. 84). Teachers take into account all three types of assessment;

however, emphasis is placed on diagnostic and formative assessment because they provide more

insight about each students' thoughts and current knowledge.

Most teachers begin with pre-assessments. Pre-assessments determine what their

students already know and what they do not understand yet. This information is used to plan for

their growth. Differentiation cannot occur if student knowledge is unknown because teachers do

not know their exact needs. Pre-assessments should never be graded considering the sole

purpose is to gauge student knowledge.

Some assessments are not an accurate depiction of student knowledge, leading to an

inability to differentiate student needs. For this reason, "it is critical to have a true assessment

that will only assess what we are trying to look at" (Zentz, 2020). For example, students are

often provided math tasks that have story problems and written instructions. Student A may

understand the math aspect of the task completely; however, if the student is unable to read the story problem, the likelihood for success is not high even though the student has mastered the math concept. To combat this issue, story problems and directions can be read to students along with an explanation of the assignment.

Ongoing, frequent formative assessments are essential in every classroom because "teachers can use that information to develop and refine instruction to meet the students' shifting needs" (The Iris Center, 2010, General Principles section). For this reason, ongoing assessment is evaluated as needed rather than on a structured schedule. Formative assessments do not need to be graded; however, each assessment can be used to collect data about each student (The Iris Center, 2010). Record keeping, either online or print, of all assessments is critical to show growth and achievement over time (Routzahn, 2020; The Iris Center, 2010). There are an extensive number of examples of formative assessments that can be used to differentiate instruction. Some of these include work samples, small-group or whole-class discussions, follow-up questions, exit tickets, quizzes, student conferences, quick answers on a dry-erase board, or thumbs up/down/sideways (Struntz, 2020; The Iris Center, 2010). Assessments should be "low to no stakes" so students can perform their best in a natural setting (Struntz, 2020). Portfolios are another example of a low stakes assessment technique. A portfolio is a "collection of work samples," which can be collected by the teacher, the student, or both (The Iris Center, 2010, Evaluate and Grade Student Performance section). Portfolios can be beneficial because it shows student work over a vast period of time, often throughout the entire school year. Portfolios display student growth and achievement, which can have a positive impact on students of all levels (The Iris Center, 2010).

Observing students is one powerful formative assessment technique used continuously in every classroom. Observation of students can occur formally or informally. A teacher can observe students during whole-group instruction as they turn and talk with a partner. Teachers can gain greater understanding about their students' knowledge as they circulate during this partner time and use this information to create small groups. Additionally, observation can occur as students are working independently or in small groups. As students are working independently, the teacher can observe different strategies that are being used or where students are struggling on an assignment. In a small group setting, the teacher can observe as students work together to share different ideas. Conversations between students and classroom discussions can provide insight about each student's understanding ("7 Reasons," 2017). Observations can be more formal if they are planned in advance with a specific goal in mind. Checklists can be created, and anecdotal notes can be taken to gain more specific information about a child. All of the data obtained through observations "can be combined with other data and used in planning lessons, providing feedback to students, conducting parent conferences, and determining grades" (Van de Walle et al., 2019, p. 86).

Self-assessment allows students to become "owners of their own learning" because they are developing awareness of their own strengths, weaknesses, and understanding (William and Leahy, 2015, as cited in Van de Walle et al., 2019, p. 98). Self-assessment can be conducted in a variety of methods, often depending on the students' ability to self-regulate and their grade level. Students may be given a checklist or rubric to evaluate/assess their own work. Another common technique is thumbs up, thumbs in the middle, and thumbs down. This asks the student to evaluate their understanding and also gives a signal to the teacher of potential student needs. Similarly, students may be given a sticky note to place on a chart with two columns labeled "Got

It" or "Not Yet" (Van de Walle et al., 2019, p. 98). Self-assessment may be conducted when the teacher asks specific students open-ended questions to gauge their own understanding and mastery of a topic (Van de Walle et al., 2019). Students are challenged to tap into their metacognition when asked questions about their understanding because they must determine where they stopped understanding and what they need to be done differently in order to gain understanding (Struntz, 2020).

Assessment is a critical aspect of every classroom because it continuously affects how instruction is planned. Informal assessments are one method to "determine what and when to differentiate" (Clark, 2020). Assessing students during the middle of a lesson can affect how the remainder of the lesson flows. Struntz explains that assessment "allows you to adapt your pace … [and] you can say ok I was planning in my lesson to go forward but I can see from my formative assessment and the looks on the faces of my students that they're not ready" (2020). After realizing this, teachers can easily stop their lesson and "pivot" to change the remainder of the instruction for the day (Struntz, 2020). The students may need more time, review, and practice with a prior concept to gain a solid understanding before moving on (Struntz, 2020). Formative assessments "check the effectiveness of the lessons and activities to determine whether children are understanding" (Henniger, 2018, p. 304). Assignments and exit tickets show whether students have mastery of the content or need continued support (Lyons, 2020). Teachers can modify and plan instruction for the next day based on students' success on the current day. Assessments should be analyzed "to see what the child's mistakes or even strengths are so that you know where to meet their needs" (Lebo, 2020). Diagnostic and formative assessments lead to the creation of flexible groups.

Flexible Grouping

Grouping in a classroom with differentiation is key to the success of all students. After formative assessments have been conducted and student knowledge and understanding is apparent, small groups can be created to reach the different needs of all students. Depending on the content, groups will always be changing and different grouping formats will be used - "flexible grouping is a hallmark of the class" (Tomlinson, 2000a, p. 4). Teachers must be able to explain how they created their small groups and why they created them in that way (Desmond, 2020).

Throughout every day, students should have opportunities to work in a variety of group types. Instruction and activities may occur in whole-group, small-group, partner group, or independent settings. When creating small groups, students with similar needs are often grouped together. On the other hand, small groups can be composed of students with different needs, encouraging each student to bring different strengths to the group (The Iris Center, 2010). Student needs never remain stagnant; therefore, student groups should never remain stagnant. Small groups should be created with the notion that students will switch groups constantly to best fit their current needs. Teachers must be aware of the strategies that work best for their students so they can create lessons and choice for all students with these in mind (Desmond, 2020).

Students should work with a variety of their peers throughout their day at school. In addition to similar ability level groups, students may also work with others who have similar interests, different interests, randomly-selected students, or students who learn in a similar way (Tomlinson, 2000c). Additionally, students may have opportunities to choose their own peers for small groups or partners. Flexible groups are essential because they "allow students to see themselves in a variety of contexts and aids the teacher in 'auditioning' students in different

settings and with different kinds of work" (Tomlinson, 1995, 1999, as cited in Tomlinson, 2000c). Fluid grouping provides more opportunities for students to show what they know.

Although ability-grouping can provide specific and explicit instruction directed to student needs, there are several negative factors. Ability grouping, specific to reading instruction, "lowers self-esteem and reduces motivation among poor readers, restricts friendship choices, [and] widens the gap between poor readers and good readers" (Calfee & Brown, 1979; Good & Stipek, 1983; Hiebert, 1983; Rosenholtz & Wilson, 1980, as cited in Vaughn et al., 2001, para. 4). Students are aware when they or their peers are in the 'low' reading group. Often, students who spend the most time with one another become friends, therefore, if students are constantly in ability-groups with the same people, they are having fewer interactions with other peers. According to Vaughn et al. (2001), the gap between strong and poor readers continues to widen because the "students who were the poorest readers received reading instruction that was inferior to that of higher ability counterparts in terms of instructional time (Hunter, 1978); time reading, discussing, and comprehending text (Allington, 1980; and appropriateness of reading materials (Gambrell, Wilson, & Gantt, 1981; Juel, 1988)."

Whole-group reading instruction is most effective when all students are involved through turn-and-talk exercises because all students are engaged, and the teacher is able to gauge student understanding by observing students during this time. Think-Pair-Share activities during whole group instruction are a great way to incorporate differentiation because they allow each student to think for themselves before sharing their thoughts with a partner and the class (McTighe and Lyman, 1988, as cited in Vaughn et al., 2001). Sharing with a partner is low stakes and the teacher can use this opportunity as informal assessment during whole group instruction. To support all students' learning during whole group instruction, summaries can be provided at the

end of instruction (Schumm et al., 1997, as cited in Vaughn et al., 2001). Summaries serve as a recap for students and are a great sample for teachers to determine if their students are taking away the essential information or if reteaching is necessary. During whole-group math activities, students use a whiteboard during instruction. Rather than having students watch their peers or the teacher, all students are engaged in practicing the math concept independently in the whole group setting. The teacher can observe as students work to determine strengths, strategies used, and future needs.

Small groups offer "an environment for teachers to provide students extensive opportunities to express what they know and receive feedback from other students and the teacher" (Vaughn et al., 2001, Small-group Instruction section, para. 1). It is easier to support and address the direct needs of small groups of students (Goldenberg, 1993, as cited in Vaughn et al., 2001). Small group instruction is most beneficial when used as a reading group, while other students are working at other centers or completing activities (Vaughn et al., 2001). Often, reading groups and other small groups remain the same throughout the whole year; however, flexible small groups are most beneficial for all students because it "addresses the specific needs of students without restricting their engagement to the same group all the time" (Radencich &McKay, 1995, as cited in Vaughn et al., 2001, Small-group Instruction section, para. 10). The small group setting allows for immediate feedback and the introduction of new concepts, manipulatives, or materials (The Iris Module, 2010). Immediate feedback during instruction and practice ensures students are not practicing incorrectly for an extended period of time (The Iris Module, 2010). To avoid stagnant groups, teachers can create their groups in a variety of ways. Small groups can look very different in every classroom; however, students can be grouped based on their "skills, prior knowledge, or interests" (Vaughn et al., 2001). Although sometimes

it is necessary to group students with peers of the same skill level, it is essential to create groups

based on other factors that will increase the interaction of all students meanwhile satisfying their

needs. Small groups are most often created based on interest or ability level (Anderson, 2007;

Rock, Gregg, Ellis, & Gable, 2008; Tomlinson, 2000, as cited in Huebner, 2010).

After formative assessment data is collected and examined, flexible groups can be

created. Observation on a Monday may affect the way a teacher creates math groups for class on

Tuesday. All assessments "let you see how you need to restructure groups" because they

explicitly define which students need support and extension regarding the specific content (Lebo,

2020). Through observations, self-assessment, and assignments, teachers can easily acquire a

sense of which students have mastered the standard. Fluid movement between groups occurs

"based on [students] demonstrating their understanding of a skill" (Canning, 2020). Therefore,

reteach and extension groups are generated to meet the needs of the wide range of students (J.

Fachler, 2020). Based on prior formative assessment, teachers can create flexible groups on a

day-by-day basis. These groups will address specific skills that may need extra support to reach

mastery. Flexible small groups will also be created for students who are excelling with content

and need an additional challenge. Reteach and extension small groups are flexible because they

are changing based on the current or prior day's evaluations. Flexible small groups are

intentional and are planned to create a space for feedback for the students (Routzahn, 2020).

Flexible small groups may be created on the spot if a teacher notices several students with a

specific need during whole group instruction. Then, during one of their rotation activities,

students could meet with the teacher to receive "time specific feedback" that will propel students

forward on their "individual continuum" (Routzahn, 2020). Differentiation does not stop when

small groups are created. In fact, differentiation continues during small groups as the teacher

modifies the "delivery of instruction" for each student in the group (Lyons, 2020).

Traditional Classroom versus Differentiated Classroom

When administrators and educators walk into classrooms in a school, there is a clear

distinction between a classroom with differentiation versus a traditional classroom without

differentiation. In a differentiated classroom, "successful teaching requires two elements:

student understanding and student engagement" (Tomlinson, 1999, Thinking About the Two

Classroom section, para. 2).

Differentiated classrooms have higher motivation, success, and engagement (Canning,

2020; Desmond, 2020). As seen in Figure 4, differentiated classrooms assign tasks that

challenge and engage all the students in the classroom (The Iris Center, 2010). When

differentiation occurs, "all students are engaged in an appropriate amount of productive struggle"

because the tasks were created to meet their specific learning needs (Canning, 2020).

Classrooms without differentiation may appear to have all students engage in learning; however,

some of these students are simply completing the tasks handed to them. Students in need of an

increased challenge are being compliant as they "complete what is asked of them;" however,

little to no cognitive engagement is achieved during these tasks because students are all working

at the same task, at the same academic level (Canning, 2020). Often, the change in group types,

as seen in Figure 4, and activities leads to higher student engagement as well (Routzahn, 2020).

Engagement occurs when students are learning or are provided a task focused on something they

do not already know. Student engagement soars when students "have a role in their learning"

(Desmond, 2020). When students are challenged appropriately, they are met with high levels of

success, leading to a feeling of empowerment. Differentiation provides the support to lead all

students to success and allows all students to feel confident in their learning.

Increased student engagement leads to strong classroom management. Although there

are more activities occurring in the classroom, differentiated classrooms are not more chaotic ("5

Fallacies," 2017). There is an increase in "purposeful student movement" and "purposeful

student talking;" however, neither cause disruption ("5 Fallacies," 2017, section 2).   When they

are challenged and understand their task, students are more likely to be focused in the classroom.

"Clear modeling of expectations" allows students to understand their tasks, limiting the number

of questions and other behaviors in the classroom. When students are appropriately challenged

"there are less behavior problems… because students are working at their readiness level"

(Giddens, as cited in The Iris Module, 2010). Frustration and boredom can quickly turn into

unpleasant behaviors (Desmond, 2020). Teachers have the responsibility to develop the routines

and procedures to support their differentiated classroom because of the variety of tasks being

completed at one time. Students working independently or in partners must understand their

work in order to allow the teacher to work with students in a small group setting (The Iris

Module, 2010). Too many activities with limited expectations will lead to a chaotic classroom;

however, classrooms with classroom management techniques in place will be highly successful

and operational. Collaboration is common in a differentiated classroom because of the variation

in grouping formats, tasks, and engagement techniques. By setting expectations about

collaboration and group work, students in a differentiated classroom are prepared to work with

others in a productive manner. Opportunities for collaboration lead to a strong classroom

community where everyone's thoughts, voice, and opinions are valued (Canning, 2020;

Desmond, 2020). Positive classroom community supports the social-emotional well-being of students and creates a positive classroom climate.

As seen in Figure 4, classrooms without differentiation, traditional classrooms, are centered around the teacher instructing the whole group of students by aligned all instruction to the "middle of the road" students. Traditional classrooms are led by frustrated teachers who are teaching unmotivated and confused students. Success in a traditional classroom is focused on acing tests and receiving the best grades, and this data is often the only information used by teachers. An obvious sign of a traditional classroom is when all students are working on the exact same assignment (Routzahn, 2020). Traditional classrooms are hesitant to notice student differences, leading to stagnant, inflexible groups. Students would be grouped based on their ability level only, often without reevaluation, causing minimal interaction with all peers in their classroom. Traditional classrooms often provide advanced students with "more of the same work" or are provided "the opportunity to answer an extra question" as a means of extension ("5 Fallacies," 2017, section 4). This is not differentiated instruction because students are not being challenged. To combat traditional classrooms without differentiation, teachers need professional development and support to guide this transition.

Traditional Classroom	Differentiated Classroom
Instruction is teacher centered.	Instruction is student centered.
Instruction is largely provided in a whole-group setting.	Different grouping formats (e.g., whole-group, small-group, pairs) are used for instruction.
When teachers assign students to work in groups, the groups are usually static, based on achievement level (e.g., low, middle, and high achievers).	Teachers employ flexible grouping practices based on the students' learning needs and interests.
Teachers target instruction at the level of the middle achievers.	Teachers assign challenging and engaging tasks to everyone in the class.

Instruction is provided one way (e.g., via lecture).	Instruction is provided in multiple ways (e.g., via lecture, modeling, hands-on, visual representations)
Instructional tasks are aligned with grade-level standards.	While aligning with grade-level standards, instructional tasks are designed to address students' needs and differences.
The teacher relies on a single textbook to present information.	The teacher uses a variety of materials (e.g., textbooks from multiple grade levels, computer software) to present information.
The teacher assigns the same assignment to all students.	The teacher offers several assignment choices.
The teacher assesses the students' knowledge of a unit usually with a written test.	Although the teacher may give a written test at the end of the unit, he also provides the students with several options (e.g., written report, model, video) to demonstrate their knowledge.
Teachers use summative assessment to assess the students' knowledge.	In addition to summative assessment, the teachers use formative assessment to guide instruction.
"Fair" means that every student works on the same tasks.	"Fair" means that each student works a task, which may be the same or different than their peers', to meet his or her needs.
"Success" means making a good grade or mastering the material.	"Success" refers to an individual student's academic growth.

Figure 4. Traditional Classroom versus Differentiated Classroom

Support for Teachers

Teacher support can come from a variety of sources, based on state and school systems; however, most teachers will take coursework and will be supported by their administration, school building specialists, and their grade-level team. Professional Development (PD), also known as Professional Learning (PL), is provided through coursework and training to improve teachers' instruction strategies and introduce them to skills that will allow them to meet the needs of all of their students. PD affects differentiation because teachers have the opportunity to learn new teaching strategies and collaborate with others to delve into what might work best in a classroom.

It is critical for teachers to have time "to collaborate with their peers and specialists to understand and plan for instruction" in order to ensure differentiation occurs in the classrooms (Routzahn, 2020). Collaboration with peers allows for a brainstorm or brain dump of ideas. Teachers and specialists may begin with a standard in mind and develop several teaching strategies and activities that will work for a range of students. After collecting assessment data, grade-level teams need time to plan for the diverse needs, generating more ideas through collaboration (Routzahn, 2020). Collaboration between general education and special education teachers is imperative for student success because this allows both teachers to become aware of students' IEPs (Individualized Education Plan) and their required modifications and services (Clark, 2020). With an understanding of student IEPs, teachers can work together to "brainstorm and share ideas as to how to introduce and follow up lessons to all for student access" (Clark, 2020). These conversations may occur during co-planning time, hallway conversations, or emails.

FCPS has a proprietary curriculum website, *Curriculum Now*, that provides teachers with a variety of county-created resources to use in their classrooms. *Curriculum Now* resources cover all content areas and are aligned with state standards and evidence-based practices. These resources include example math problems, book suggestions for standards, formative assessment tools, and pacing guides to keep teachers on track to fully address state standards (FCPS, 2021). Using the resources available in a school system is a great place to begin differentiating (Huebner, 2010).

Administrators, reading specialists, and math specialists provide support to all the staff in their building. Although math and reading specialists in FCPS work with students throughout the day, they also have time to circulate through classrooms. During this time, the teacher and

the students are observed and the specialists can provide specific feedback and suggestions that are based on student and teacher needs (Lebo, 2020). Through observations, the specialists may notice a strategy that works well for some students, and they will also be able to suggest additional strategies that fit the learners in the classroom. Specialists can also be reached through email or simply by stopping in their office to ask questions or dig for more ideas (Lebo, 2020). Reading and math specialists have a "multiplier effect" because they are able to support all the teachers in their school, who each support all the students in each of their classes (Struntz, 2020). Reading and math specialists have additional resources that they can turn to when they are not sure how to help. For example, when questions arose about a new adopted program in FCPS, Stephanie Hausler wanted to provide her teachers with additional information, so she coordinated to have a product representative join their PD meeting (Hausler, personal communication, 2020). Training sessions, as well as job-embedded professional development on how to differentiate, are available on a regular basis (Zentz, 2020).

Administrators must provide extensive support to their staff, while ensuring all students are receiving instruction geared to meet their needs. Principals and assistant principals observe in the classroom setting when their teachers have voiced concerns about meeting their students' needs (Desmond, 2020). After observing, administrators in FCPS provide support using the Danielson *Framework for Teaching* (Desmond, 2020; Routzahn, 2020). This *Framework for Teaching* emphasizes the importance of engagement and differentiation and is the basis for many observations and evaluations. This framework "is the foundation for good teaching and is used to provide teacher feedback" (Routzahn, 2020). The framework highlights the connection between assessment, planning, and teaching strategies. Poor differentiation cannot be ignored by an administrator. To combat ineffective or non-existent differentiation, a teacher can

purposefully be placed in a classroom with effective differentiation as a positive model.

Providing the opportunity for a teacher to observe "a teacher who differentiates well can also be

powerful" and can be extended through a conversation about what was observed (Desmond,

2020). No excuses should exist that "my students can't do that" or "that can't happen in my

classroom" in any classroom (Struntz, 2020). When administrators establish the expectation that

differentiation must occur in every classroom, it is their "responsibility to be present in

classrooms enough to identify where it may not be happening" (Canning, 2020). Therefore,

expectations can only be reinforced if the administrators are aware of what is happening in each

classroom. Administrators look at school data to identify if there is an area of focus that needs to

be prioritized during PD (Canning, 2020). Assessment informs instruction in the classroom and

guides professional learning for all teachers.

Many school systems around the country, including Frederick County Public Schools

(FCPS), offer numerous PD opportunities for new teachers and experienced teachers. The goal

of PD coursework is to retain quality teachers and increase the retention rate of beginning

teachers. Within each of these PD opportunities, a variety of topics are covered, including the

implementation of differentiation in the classroom. Differentiation is an essential topic due to

the increased diversity in classrooms in the United States.

Beginning teachers

According to Struntz, FCPS has a variety of support programs and opportunities for new

hires and new teachers in their school system (2020). These teachers are supported for three

years throughout the tenure process. Struntz noted that there are guidelines and regulations

through COMAR (Code of Maryland Regulations) that FCPS is bound by law to support their

teachers, so they support their teachers in a variety of ways. Each year in August, FCPS holds a

New Hire Symposium, a 4-day training program for all new teachers to FCPS. Struntz also shared that the New Hire Symposium provides new teachers the opportunity to build connections with other new teachers and learn about their grade-specific curriculum and resources provided to them by the county. In addition to the New Hire Symposium, first-year teachers are offered a new-hire course, and they continue to meet with their corresponding master teacher for content-specific support. FCPS assigns a school-based mentor at each school that works with first-year teachers to address any concerns within their school building. During the 2nd and 3rd year of teaching, support is provided through additional coursework, such as online book studies. Through coursework, an array of subjects are covered, including a focus on differentiation. Several courses dive into the importance of using formative assessment to differentiate instruction for students (Struntz, 2020).

Experienced teachers

Teachers in FCPS are required to engage in PD throughout their career, well beyond their first three years as a new teacher. FCPS teacher specialists are the instructors of county-wide PD coursework. These specialists model strategies and best practices during PD that teachers can take back to their individual classrooms. Struntz emphasized the importance of ice breakers during PD because it allows teachers to relax and build relationships, while stressing that "you can take this back and do it with your students" (2020). During PD sessions with principals, activities are purposefully selected so principals will take them back to use during staff meetings, and teachers can take them to their students (Struntz, 2020). Another activity that is used during PD sessions is four-corners. Four-corners can be used with content in the classroom. Students move to an identified corner of the classroom to indicate their response to a prompt. As students are discussing with other students, their dialogue can be used as formative assessment. All PD

courses model strategies that can be used by teachers in their own classrooms. During PD

coursework, FCPS teacher specialists share the newest technologies and platforms that can be

used in classrooms to fully meet the needs of all students. This year, FCPS has been

encouraging several platforms to be used during in-person learning and distance learning that

will be described in depth below.

Accelerated Learning Process

As explained by Struntz, FCPS incorporates time each week for teachers to engage in the

Accelerated Learning Process (ALP) (2020). ALP meetings include a grade-level team and the

school specialists to work together to talk about their students. Each team digs into and unpacks

their grade-specific standards, while generating ideas that do and do not work for their students.

If a teacher is finding success with a standard, the group will work together to determine what

they are doing differently and attempt to implement his/her strategies into other classrooms.

ALP provides teachers an opportunity to talk about their students and develop differentiation

techniques that work with students who need additional support and students who need

additional extension/enrichment (Struntz, 2020).

ALP and PD meetings look different for each school; however, all teachers have the

opportunity to meet with their reading and math specialists. At one school in Frederick County,

each grade-level team has an hour meeting with the math specialists every other week (Lebo,

2020). During this meeting, students' needs are addressed and strategies are shared that will

enable easier implementation of differentiation (Lebo, 2020).

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Using Technology to Differentiate

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Due to the effects of the COVID-19 pandemic, some school districts have transferred all

instruction to an online/virtual format. In this school district, students have received instruction

through Google Meet, with the use of Schoology as an aid, for over seven months. Teachers transformed into "tech-experts" overnight in order to keep their students engaged online and facilitate effective communication with families. The discovery of several technology platforms and apps has made differentiation more manageable during a time when meeting the needs of each student has proven challenging. A variety of technology tools have been pushed out to FCPS teachers through video tutorials and training to enhance the differentiation and interaction occurring in the virtual classroom setting. All of these technology tools can be used in the virtual classroom; however, they will also be critical tools as schools return to a normal, in-person setting.

During the New Hire Symposium and first three years of support for new teachers, Schoology is introduced immediately. According to Struntz (2020), a majority of experienced teachers are hesitant to use Schoology, so new teachers are onboarded with Schoology from the very beginning so they become familiar with the platform. As teachers see Schoology modeled during the New Hire Symposium or during PD coursework, they are familiarized with ways that they can incorporate it into their classroom. For example, teachers may initially only use Schoology for grading, then they may begin to communicate with families; however, the ultimate goal of onboarding new teachers with Schoology is so they can take it into their classrooms and school buildings and model if for teachers who may be hesitant to use it (Struntz, 2020). Schoology allows assignments and activities to be assigned to specific individuals or small groups. This allows for impactful differentiation for students with varying interests or ability levels. For example, different small group reading group texts can be posted on Schoology for students in different groups. Additionally, after students have submitted assignments on Schoology, there are several opportunities for grades, comments, and feedback to

be given by the teacher. Grades and comments can be "displayed" to students in their online gradebook or hidden from the students. This feature of Schoology allows teachers to take notes on students' work to be used later to create small reteach or extension groups as needed.

Peardeck, similar to Nearpod, is a technology platform that makes PowerPoint slides interactive for students when embedded into the platform. Peardeck can be used with a virtual learning model or in a traditional, classroom setting. There are several template options offered by Peardeck including multiple choice slides, drag and drop slides, drawing slides, and text slides. Multiple choice and drag and drop slides allow students to choose a selected response to a given question. The drag and drop slides can also provide students with a rating scale or continuum to gauge their comfort with a concept. Drawing slides provide students with an individual whiteboard, with a marker or text tool, where students can answer questions and show their work. Finally, the text slides display a text box for students to type a response. The vast number of Peardeck options keep students engaged during lessons, even virtually. As the students respond through the interactive slides, the teacher is able to collect formative assessment data. The students' responses can be saved at the end of the presentation and used to modify future instruction. Additionally, Peardeck is an effective technology tool to ask metacognitive questions. Struntz (2020) identified questions such as "where are you in your learning today?, why do you think you are here?, what do you need from me?, what do you need to go back and review?" These questions encourage students to take ownership over their own learning and self-assess their progress and understanding (Struntz, 2020).

PlayPosit is an interactive video platform that transforms any video into an interactive experience. Videos are embedded into this platform and edited by the teacher. It allows teachers to stop the video at any point to insert a question. At these embedded stopping points, students

will be required to answer a question, either multiple choice or text response, before continuing the video. Often, students do not pay attention when they are assigned to watch a video, so a PlayPosit requires them to be engaged (Struntz, 2020). PlayPosit incorporates self-assessment because students have the option to rewind the video if they are unable to answer the question (Struntz, 2020). PlayPosit videos can be created by the teacher for whole-group instruction, small-group instruction, or individual work during rotations or other times, virtually or not. A playlist of videos can be created if a student is working independently.

Flipgrid and Padlet have been highly encouraged in this school district during virtual learning to get kids to see each other and communicate with one another (Struntz, 2020). Flipgrid and Padlet create "boards" where students can post video, text, or picture responses to questions. For example, after reading a book with the class, the teacher may ask students to create a video explaining how the main character grew throughout the text. Each student can create a video response sharing their thoughts. After responses are posted, other students and teachers can comment on each response. Both of these technology platforms provide opportunities for formative assessment because student responses are visible and can be evaluated to see what they know (Struntz, 2020). Through commenting and responding to videos, the teacher can provide feedback when they notice a response that is a little off track (Struntz, 2020). Additionally, the teacher can pose a question to the student or ask them to elaborate on their answer to gain more information.

There are several other technology tools and websites that have been incorporated into the virtual learning and the traditional, classroom settings because the material adapts to the students' needs and automatically differentiates (Abrecht, 2020; Struntz, 2020). *LexiaCore5*, an interactive ELA program, and *SplashLearn*, an interactive math program, begin with a pre-

assessment to determine each students' starting point. The instruction level and activities provided are adjusted as students complete activities in these two programs, automatically differentiating based on the students' successes. Progress in both programs can be monitored and teachers are notified when a student is struggling with a concept so direct and explicit instruction can take place.

Chromebooks are a hot commodity in this school district. Some schools have one-to-one technology, meaning that there is at least one chromebook in each classroom for each child. Other schools have more limited access to Chromebooks and use COW carts. COW stands for "Chromebooks on Wheels," and COW carts are often shared by a grade-level team or hallway. The first grade team at a local school rotates the COW cart, so each teacher has the cart for one day of the week. When Chromebooks are not being used, teachers can grab some for their class to use. In one first-grade classroom, Chromebooks are often used for individual or small group activities for research (J. Fachler, 2020). Students assemble teams and use PebbleGo or EpicBooks to learn more about their topic. PebbleGo and EpicBooks are two phenomenal websites that can be used with students of all elementary grade-levels because they represent a vast array of topics and they have a listen-to-reading option on all articles, books, and informational texts. Often, students are placed into small, flexible groups for "research projects." These groups may be differentiated by interests (their topic) or mixed-ability. Chromebooks can also be used during math rotations for independent practice. Students have access to interactive games to practice and master skills, as well as virtual manipulatives (J. Fachler, 2020). Differentiation in math relies on technology because students need a variety of methods to practice the skills. With the use of Chromebooks, students have the opportunity to

work with physical, paper games or online games, as well as physical manipulatives and virtual manipulatives.

Impactful Instructional Strategies

There are an abundance of evidence-based strategies that can be used in classrooms to enhance differentiation. The following strategies are a few, among the many other strategies, that benefit a diverse population of students. The strategies mentioned can be applied to all content areas in order to broaden differentiation. All of the practices suggested draw on research.

English Language Arts

English Language Arts (ELA) incorporates the instruction of reading, writing, speaking, and listening skills. The first evidence-based practice is knowing and understanding your students. Formal and informal assessments lead to an abundance of understanding regarding student needs and strengths. Assessment data is utilized to create effective, flexible small groups that meet that immediate needs of the students. During small groups, many teachers utilize a "Hot Seat" to focus on individual student progress during a text reread (J. Fachler, 2020; Abrecht, 2020). Gradual Release of Responsibility (GRR)/scaffolding are critical when working with small groups of students (Clark, 2020; Zentz, 2020). GRR and scaffolded instruction is "instruction in which teachers model strategies step by step and provide guided practice, followed by independent practice and application" (Vacca et al., 2018, p. 406). All students may be reading the same exact text with a varied amount of support, in order to challenge each student in different ways while still exposing all students to complex texts. Each group of students may need a different level of guidance.

Another strategy to enhance differentiation is the use of differentiated materials. During an ELA instructional block, there are a variety of tools used that can be modified to best suit each student. Based on readiness level, text provided to students will be at differing levels to meet their specific needs (Abrecht, 2020). Students may use highlighting tape or a bookmark to maintain their pacing while reading. Additionally, students may have the option to read or listen to a text (Clark, 2020). Furthermore, Elkonin boxes or unifix cubes can be used with students who are working with the phonemes (sounds) in words to provide visual and tactile supports to an auditory task. Providing a variety of reading manipulatives to students addresses students' needs and student choice.

A literacy-rich, low-risk environment is the final strategy, among many others, that is essential. All students in a classroom must be confident and comfortable to take risks when working with challenging material. Growth mindset must be encouraged in the classroom, so all students know they are all working together to progress forward (Dweck, 2014). A community of readers and writers must be created at the beginning of the year by ensuring that all students see themselves in the books they are reading. This is guaranteed by creating a classroom library with authentic and diverse texts that cover a wide range of topics and ability levels (Vacca et al., 2018). Writing conferences, in which students meet with their teacher to review their writing, and an author's chair, where students sit to read their writing to the class, provide writers with support from the teacher and their classmates.

Math

Overlapping with ELA, the best differentiation practices in math include supporting diverse learners with math tools, providing choice in math, and encouraging problem solving.

One way to support diverse learners is through the use of a variety of math manipulatives. Math manipulatives are "physical objects that students and teachers can use to illustrate and discover mathematical concepts" (Van de Walle et al., 2019, p. 20). Math manipulatives allow students to connect an abstract concept to something more concrete. A variety of tools should be provided to all students, even if not all students will use or need to use them. Some math manipulatives include unifix cubes, base-ten blocks, number lines, 120 chart, and many more. By providing them with a variety of tools, students are able to experiment to find which tools best support their understanding.

Another strategy to positively impact differentiation in classrooms is to provide choice. There are a variety of ways to provide choice during math class. Some teachers provide their students with a sheet of math problems and ask the students to select a certain number, for example eight problems, to complete (de Araujo, 2020). By providing students with "open tasks," there are several opportunities for different strategies and solutions, leading to discussion (de Araujo, 2020). Zandra de Araujo discusses "Choice of Evidencing Brilliance" by allowing students to share their final solution, their "in progress" solution, their "stuck point," or a possible strategy (de Araujo, 2020). By allowing them to share throughout the stages of the math process, students become more comfortable with productive struggle because they can use collaboration to think through their next steps.

As mentioned, problem solving and discourse in math are essential to provide all students the opportunity to make sense of and understand math concepts. Problem solving tasks engage learners because they challenge students. Students need to be taught to read the entire problem provided in order to make sense and begin to solve (Loveless, 2020). Numberless word problems are accessible to all students because it eliminates any reading barrier and increases

confidence because there are no numbers involved (Loveless, 2020). These problems challenge all students to understand that all word problems have meaning. Three Act Tasks is used to differentiate because it increases engagement, provides opportunities to talk about math, and encourages multiple approaches to the same problem. Three Act Tasks include three parts: providing a visual to spark curiosity and estimation, determining other critical information and providing a reasonable estimate, and showing the answer. All three acts allow for discussion of math as different strategies are discussed (Loveless, 2020). Providing students with problems that have several entry and exit points, meaning problems "can be approached in a variety of ways" and "have various ways to express solutions," is critical because students can defend their own strategies and learn new strategies from their peers (Van de Walle et al., 2018, p. 38).

Conclusion

Differentiated instruction in mathematics and ELA, among the other essential content areas in elementary school, is critical to address the changing needs of diverse populations of students today and in the future. Student backgrounds, interests, background knowledge, readiness, and learning profile affect the way each individual learns. Educators must take into account student differences when planning in order to effectively teach all the students in their classroom. As student populations continue to grow more diverse, teachers must be provided with relevant training and the needed resources to enable differentiation in each classroom. Differentiated instruction is a powerful way of teaching that must be incorporated to promote positive outcomes for all children.

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Appendix A

Interview Questions:

<u>For principals:</u>
1. What are the best strategies for differentiation that you have seen in classrooms? Which differentiation strategies do you find most effective? Why do you find these strategies the most effective? Please provide examples if possible.
2. How does differentiation change from primary to intermediate grades? Please provide examples if possible.
3. Explain the difference in the classrooms that have strong differentiation versus classrooms lacking differentiation.
   - Classroom management
   - Class climate
   - Success
   - Motivation and engagement
   - Impact on kids when differentiation does not occur
4. How are you, in your current position, able to support a teacher in their ability to differentiate instruction?
5. How do you support teachers to develop a mindset that ALL kids can learn and that differentiation is important? How do you encourage teachers to want to differentiate in their classrooms?

<u>For teachers:</u>
1. How have you used differentiation in your own classroom?
   - Examples from ELA? Examples from various components of the ELA block?
   - Examples from math?
   - How do you differentiate reading and writing in other content areas (social studies and science)?
2. Explain your comfort level with differentiation of math and ELA? Are you more comfortable with one or the other? Why do you think this is?
3. What parts of differentiation do you find the most challenging or easiest to implement?
4. How do you decide what needs to be differentiated or when to differentiate?
5. How does assessment affect the way you differentiate?
   - How do you use assessment to determine if differentiation was impactful/successful?
6. How does differentiation change each year based on your class? Explain with examples if possible.
7. What are your favorite differentiation strategies? Why are these strategies the most effective?
8. How does differentiation change from primary to intermediate grades?

9. Why do you think differentiation is important? Why does it matter if teachers differentiate?
    ○   Why is it worth the extra time and planning to differentiate?
10. Explain what goes into planning to make differentiation successful?
11. Explain how you use technology to differentiate.

ELA and Math specialist:

1. How do you differentiate for students who need extension activities?
2. How do you differentiate for students who need extra support?
3. What materials do you use to differentiate? Where are good places to find differentiation resources?