BREAKING THE MOLD: ADDRESSING THE RESPONSIVENESS TO THE DIVERSE NEEDS OF STUDENTS

A Disquisition presented to the faculty of the Graduate School of Western Carolina University in partial fulfillment of the requirements for the degree of Doctor of Education

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ABSTRACT

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Western Carolina University (March 2019)

Chair: Dr. Brandi Hinnant-Crawford

The purpose of this improvement initiative, providing effective professional development focused on differentiated instruction, was to increase teacher capacity in addressing the needs of individual students at Swain County Middle School. This disquisition introduces the problem of practice, context of the problem, improvement initiative, and the iterative process to evaluate the effectiveness of the initiative.

In response to laws that promote equitable access to high quality content and standards, schools are abandoning homogenous groupings. Students from a variety of ethnic, economic, and educational backgrounds learn together in arguably the most culturally diverse classrooms in the history of education. However, instruction has not responded well to the increased diversity and the achievement gap has been slowly closing but remains pervasive and persistent. Swain Middle School (SMS) mirrors society with its gaps in achievement.

In order to increase student achievement at SMS, a team of faculty facilitated professional development focused on differentiated instruction. This disquisition describes the three rounds of professional development, the improvement science method used, and the practical measures that gauged the effectiveness of the improvement initiative.

INTRODUCTION

BACKGROUND

Today's K-12 public education classrooms can be defined by diversity. Students with learning difficulties, advanced learners, students whose first language is not English, students from diverse cultures, and students from a variety of economic backgrounds make up today's classrooms (Tomlinson & Brighton, 2003). As depicted in the political cartoon in Figure 1, teachers are challenged to meet the needs of increasingly diverse students with limited resources while accountability sanctions loom. The desks in the classroom represent diversity beyond race, religion, gender, culture, and learning abilities that teachers must address (Bennett, 2016). All students, regardless of background or difference, have the right to thought-provoking, enabling instruction that adapts when progress is not made (Wiggins, 1992).

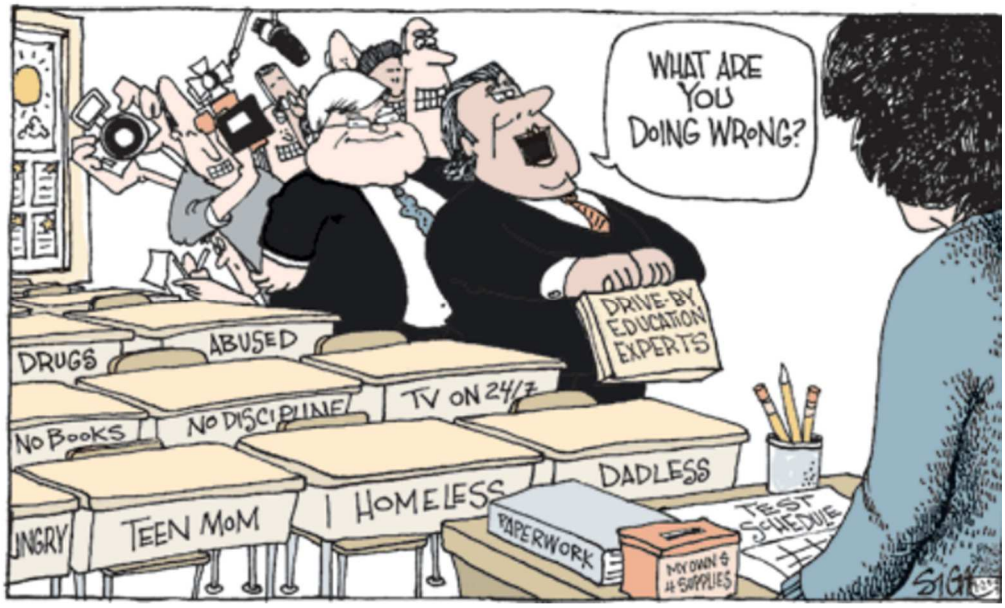

Figure 1. American Education System. From Special education: Classroom composition, inclusion and teaching in today's classrooms. Washinton, DC. Retrieved from http://www.researched.org.uk/wp-content/uploads/2016/12/rEDDC_PaulBennett.pdf

As advocates such as Grant Wiggins push for more equality in opportunities to learn, schools are abandoning homogeneous grouping of students by ability, sending learners that are more diverse into regular heterogeneous classrooms (Tomlinson, 1995). This call for inclusive education is in response to the "devastating effects" of exclusive practices and Public Law 94-142 (National Education Association of the United States, 1978; Villa &Thousand, 2017, p. 13).

Villa and Thousand (2017) argued that exclusive practices create a culture that promotes belonging as something that is earned and not a human right. Inclusion is defined as educating each child to the extent possible in the regular education environment by bringing support services to the child, not moving the child to the services. Inclusion increases the opportunity for valuable life lessons such as value, respect, and welcoming differences (Stout, 2001; Villa & Thousand, 2017). Thus, to create a culture of belonging, all students should have their needs meet within the regular education classroom to the maximum extent possible.

In 1975, Congress passed Public Law 94-142 that guaranteed students with disabilities would receive a free and appropriate public education (FAPE) and participate in the least restrictive environment (LRE) (National Education Association of the United States, 1978). Public Law 94-142 was reauthorized in 1990 as Individuals with Disabilities Education Act (IDEA) and saw amendments in 1997 and 2004 (IDEA, 2004). As a result, an increasing number of students with disabilities are educated in general education environments. No Child Left Behind (NCLB) enacted in 2001 and Individuals with Disabilities Education Act (IDEA 2004) legislated that students need access to the general education curriculum regardless of when and where special education and related

services take place. In 2010, President Obama signed Every Student Succeeds Act (ESSA) into law. ESSA strengthened the need for inclusion by requiring every student be taught to high academic standards that will prepare them for college and careers. ESSA advances equity for America's disadvantaged and marginalized students (Every Student Succeeds Act, 2015).

Due to the push for equality in opportunities to learn and federal laws, students identified with a disability have increased from approximately 8% to almost 15% from 1970 to 2014 (Digital Promise Global, 2016). The percent of students with disabilities served in the general classes has increased from 33% in 1990 to 62% in 2014 (NCES, 2017). During this same period, students who spent less than 40% of their time in the general classroom has decreased from 25% to 14%. Students with speech-language impairments are served in the general education classrooms most frequently (87%). Most students, almost two-thirds, with learning disabilities (69%), visual impairments (66%), other health impairments (66%), and developmental delays (64%) spend most of their day in the general education classroom (NCES, 2017). Figure 2 illustrates the distribution of students with disabilities. Most students with disabilities spend 80% or more of their time in the general education classroom.

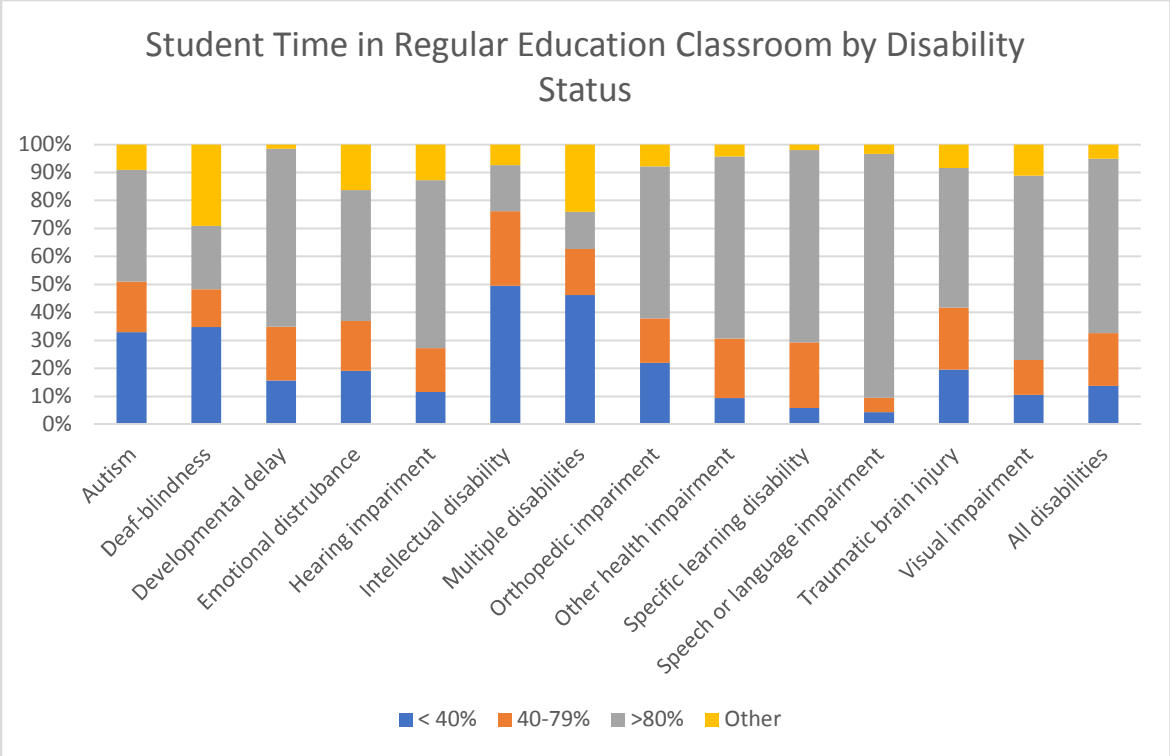

Figure 2. Student time in regular eduation classroom by disablity status. National Center for Educational Statistics. (2016, November). *Table 204.60*. Retrieved from Digest of Education Statistics: https://nces.ed.gov/programs/digest/d16/tables/dt16204.60.asp

Beyond diversity in cognitive function and physical ability, ethnic and racial diversity are prevalent in public school classrooms. Tomlinson et.al (2003), predicted "by 2035 students of color will be a majority in our classrooms" (p.120). In the Fall of 2014, Caucasian students made up less than 50% of the total school population, whereas Hispanics represented 25% (NCES, 2017). Today's classrooms have changed over the last century and are on their way to being composed of no majority racial or ethnic group (Crouch, 2012; Digital Promise Global, 2016). The predictions from the NCES confirmed Tomlinson's 2003 predication that students of color will represent the majority of students in public school classrooms (NCES, 2017; Tomlinson, et al., 2003). Figure 3,

NCES projections, racial diversity is expected to increase over the next ten years (NCES, 2017; Office of Civil Rights, 2011-12).

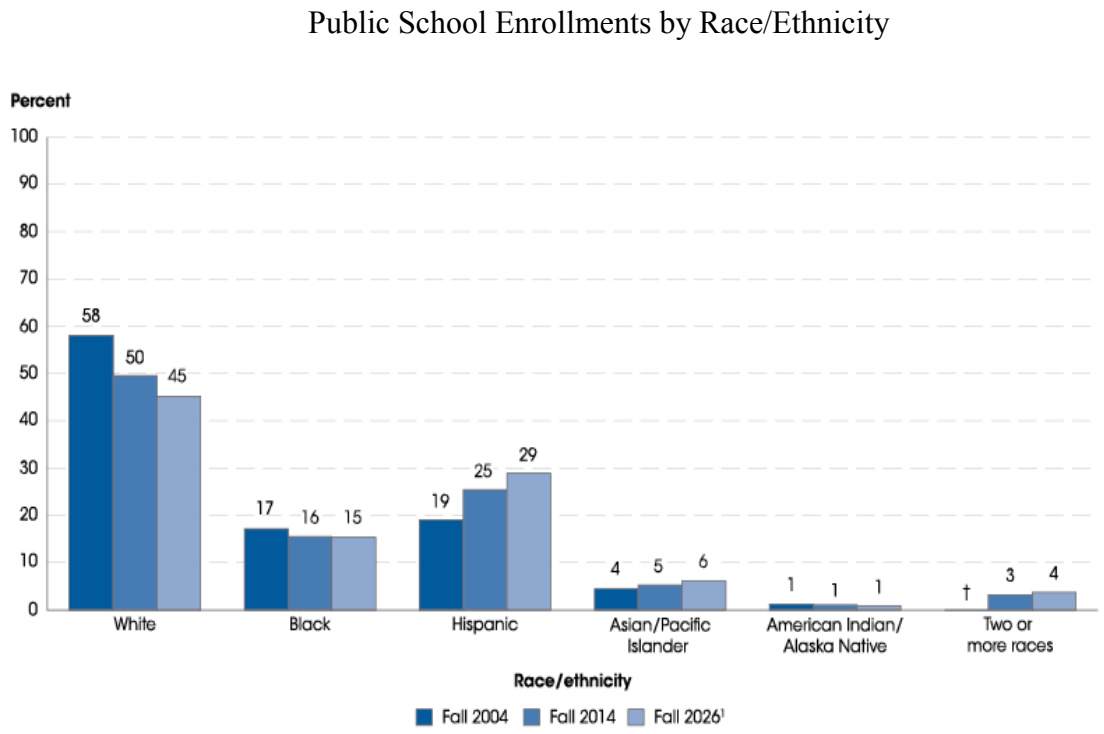

Figure 3. Public school Enrollments by race/ethnicity. National Center for Education Statistics. (2017, May). Racial/ethnic enrollment in public schools. Retrieved from The Condition of Education: https://nces.ed.gov/programs/coe/indicator_cge.asp.

Diversification of classrooms has been trending upward since the 1970's and continues to climb as student population increases in size and varying levels of diversity. Not only are today's classrooms diverse in race/ethnic makeup, but also U.S. public schools are seeing an increase in socioeconomic and linguistic diversity. Also, there has been a steady increase in the number of students that are English Language Learners (ELL) (Digital Promise Global, 2016). Students from poverty account for more than 20% of the U.S. student population; this is up from approximately 14% in 1970. In 2014,

almost 10% of students were English Language Learners, up from 4% in 1970 (Digital Promise Global, 2016).

While the trend in student population diversity has grown sizably, student instruction has not responded quickly or sufficiently enough to support the needs of all students. Inequality in education has been an obstacle for many students in the United States. *Brown vs. Board of Education* (1954) ended *de jure* racial segregation in public schools; however, the United States has seen "slow, uneven, and incomplete" progress in improving racial educational disparities (Stanford CEPA, 2013). Data from the National Assessment of Education Progress (NAEP) indicates that students of color are showing greater gains in academic performance than their White counterparts and are closing the achievement gap, but African American and Hispanic students are not scoring as well as White students or Asian Americans (NCES, 2017).

Teachers are serving classrooms that are more diverse than ever and are being held accountable for student success no matter their background characteristics. Also, teachers are charged with preparing *all* students to compete in a global economy that requires an increasing level of knowledge and skill (Wormeli, 2007). O'Brien and Guiney (2001) argued that all students can learn, all children have the right to a high-quality education, all students are expected to show progress, that progress should be rewarded and recognized, and all learners have common needs and individual needs.

Despite growing diversity in classrooms, instruction tends to be teacher-centric and didactic. Accountability measures have created an environment conducive to educational triage. Booher-Jennings (2005) explains how schools may divide student into three groups: safe cases, suitable for treatment, and hopeless cases. Resources are

rationed to target the students that are most likely to improve the school's scores (Booher-Jennings, 2005). Unfortunately, many schools and teachers are meeting the demands of increased accountability by focusing their attention on the students that have the best chance of "passing the test" creating a climate that privileges some students at the expense of others (Booher-Jennings, 2005).

The federal government, state governments, schools, and organizations are expecting teachers to teach diverse classrooms in ways that meet individual needs and accommodate learning differences (Tomlinson, 2005). In 2015, Every Student Succeeds Act (ESSA, P.L. 114-95) replaced No Child Left Behind. ESSA reauthorized the 1965 Elementary and Secondary Education Act (ESEA; P.L. 89-10) and maintained ESEA's legacy as a civil rights law by

-holding states and schools accountable for the progress of every student subgroup.

-providing resources to support students with disabilities, English learners, children from

low-income, homeless, and migrant workers.

-requiring schools to use evidenced-based interventions.

Although the expectations are to provide every student with a high-quality education, teachers are struggling to meet the needs of all students. Tomlinson (2005) indicated that the tendency is to "teach to the middle" or to "develop and deliver a one-size-fits-all curriculum with little modification for gifted or struggling learners (p. 47)."

The consequences of unresponsive instructional practices are too great to be overlooked. Student achievement is predictive of a variety of life outcomes and lack of

proficiency has major life consequences. For example, three out of five American prisoners cannot read; 85% of juvenile offenders have reading difficulties (Literacy Project Foundation, 2016). Differentiated instruction is one-way teachers can address the diversity in today's classrooms and improve life outcomes. Differentiated instruction refers to classroom practices that accommodate differences in student learning styles, interest, prior knowledge, socialization needs, and comfort zones (Benjamin, 2002).

PROBLEM OF PRACTICE

DEMOGRAPHICS

Swain County is a small, rural county located in Western North Carolina. Swain County has a population of 14,000 and a 16.7% poverty rate (United States Census Bureau, 2016). The Cherokee Indian Reservation and Great Smoky Mountain National Park account for 76% of the total acreage in Swain County. There are five schools in the district—one pre-Kindergarten, two elementary, one middle, and one high school. Swain County Schools (SCS) serves students from the towns of Almond, Bryson City, Cherokee Indian Reservation, and Whittier. The majority of SCS students (60%) receive free or reduced lunch, with 32% of students living in poverty. The racial makeup of SCS is 6% African American, 24% Native American, 66% Caucasian, 3.8% Hispanic, 4.1% multi-racial, and 1% Hawaiian/Pacific Islander. Swain County has seen an increase in population for the past 17 years. Per the US Census Bureau (2016), Swain County was the home of 13,031 people in 2000. Swain County's population had grown by 14.7% since 2000 to a population over 14,953. Swain County is projected to have a population of 15,435 by 2020 (NC Budget and Management, 2017). Because of the population growth of Swain County, the schools are also seeing an increase in enrollment. From

2007 to 2015 the enrollment of Swain County Schools has grown by 905 students. In 2007, Swain County Schools served 1,176 students, and in 2015 the enrollment had grown to 2,081.

Swain County Middle School (SMS) reflects the demographics of Swain County Schools as demonstrated in Table 1. The SMS student population is mostly Caucasian (66%). Native Americans represent one-quarter of the student population while, Asian, Hispanic, and Pacific Islander equal less than 10% of the total school population. The majority of SMS students, 60%, are economically disadvantaged, whereas 49% of the students across North Carolina are economically disadvantaged. Of the 399 students at Swain Middle School 5% are considered homeless. Table 1 displays the female/male racial demographics of SMS for the 2015-16 school year.

Table 1
2015-16 SMS Racial Demographics

Race	Female	Male
American Indian	38	62
Asian	2	1
Hispanic	10	6
Black	1	1
White	119	144
Two or More Races	7	7
Pacific Islander	1	0
Total	178	221

The vision of Swain County Schools (SCS) is, “All Swain County students will graduate ready for college and/or a career”. Unfortunately, not all SCS’s students are graduating career and college ready. Swain County High School has an 84.3% cohort

graduation rate and 64% of Swain County students score 17 or higher on the ACT. Nearly 55% of students score a level 3 or higher on end-of-grade tests. North Carolina uses a 1 to 5 rating scale for end-of-grade assessments or EOG's. A score of 3, 4, or 5 indicates that a student is grade level proficient. North Carolina describes a score of a 4 or 5 as college/career ready (NCDPI Division of Accountability Services, 2014). According to this assessment data, 45% of Swain County students are not grade level proficient.

To accomplish this vision, Swain Middle School (SMS) must address student achievement. Scores on North Carolina End of Grade (EOG) tests have improved from 38% proficient to 59.1% on grade level proficiency from 2014 to 2017. Grade level proficiency is scoring a level 3, 4, or 5 on the NC reading or math EOG. Swain Middle School has failed to meet growth during the 2015-16 and 2016-17 school years. North Carolina uses Education Value-Added Assessment System (EVAAS) to determine school growth. EVAAS is a value-added growth model that uses EOG and EOC assessment data. Failing to meet growth indicates that SMS students are not achieving the expected scores on EOG's (NCDPI Accountability Services Division, 2014). As a result, SMS has received a "C" rating according to the NC Report Cards (NC Public Schools, 2017).

Tables 2 and 3 highlight cohort percent proficient on reading and math EOGs, respectively. Cohorts are not demonstrating consistent growth from year to year. The cohorts have shown a negative trend from 2014-15 to 2016-17 in reading and math. In 2014-15, 62.5 percent of the students in sixth grade were grade-level proficient in reading. That same cohort was 52.6 percent proficient on eighth grade reading standards at the end of the 2016-17 school year. That decline indicates that 13 students that left

sixth grade proficient in reading did not remain proficient at the end of their eighth-grade year. That same cohort fell from 51.9% proficient in math to 38.3% proficient by the end of their eighth-grade year.

Table 2
Reading EOG Percent Proficient

Grade	2014-15	2015-16	2016-17
4	64.6		
5	55	54.7	
6	62.5	54	59.1
7		63.4	58.5
8			52.6

Table 3
Math EOG Percent Proficient

Grade	2014-15	2015-16	2016-17
4	63.3		
5	42.1	60.4	
6	51.9	48.2	52.8
7		51.1	47.2
8			38.3

In 2017, 59.1% of all students scored grade-level proficient on reading, math, and science EOGs. All females had the highest rate of proficiency (63.4%), followed by Caucasian students (63.35%). All male students were 54.9% proficient. Native Americans (48.8%), economically disadvantaged students (51.7%), Hispanic (39.2%), and students with disabilities (19.3%) scored significantly lower than their Caucasian peers. If SMS is going to reach the goal of every student career and/or college ready, staff must address the discrepancies in student performance.

HISTORY

SCS has many innovations but the innovations lack the depth needed to lead to deep change and coherence, thus not meeting the basic needs of students (Fullan, 2001). To accomplish the SCS vision, "All students will graduate career and/or college ready", Swain County school administration participated in a book study on *Annual Growth for All and Catch Up Growth for Some* (Fielding et.al, 2007). This book study prompted the adoption of a 90% literacy goal. The goal stated 90% of Swain County students would be reading at or above proficient as measured by EOG and EOC's by 2014. The school system adopted several reading interventions. These interventions include mClass, a kindergarten to third grade state mandated reading assessment (Amplify, 2019), Letterland, a kindergarten to second grade reading program (Letterland, 2018), and an uninterrupted 90-minute reading block in all elementary classrooms. Language! (Language! 2018) and SRA Corrective Reading (Corrective Reading, 2008), reading programs aimed at grades 3-8, were adopted. County administration also selected Content Literacy Continuum (Content Literacy Continuum Overview, 2008) as a reading intervention for grades 6-12.

According to 2016 assessment data, appropriately 55% of Swain County students are scoring at or above proficient. However, the elementary schools are no longer requiring the 90-minute uninterrupted reading block, Swain County High School has quit using the Content Literacy Continuum interventions, and the system has failed to achieve the 90% reading goal.

During 2013, the superintendent also embarked on a journey to create a one-to-one (1:1) learning environment in our schools. A 1:1 learning environment means that

there is one computer/device per student. SCS received a GoldenLeaf (Golden Leaf Foundation, 2019) grant that allowed Swain County Schools to purchase enough devices for each of our fourth through twelfth-grade students. Extensive planning took place to receive this grant including the creation of a five-year technology plan. A STEM director was hired to find resources and professional development to support teachers, and a technology facilitator was hired for each of the schools to support teachers, model lessons, and deliver professional development. SCS hired technicians to ensure the devices were deployed properly, were maintained, and repaired when necessary.

All teachers were provided a laptop by the school. All classrooms were equipped with an interactive board, a document camera, and at least four student desktop computers. All schools had at least one computer lab with a minimum of 28 desktop computers. Before the deployment of devices to students, teachers received professional development regarding handling and operation of the devices, as well as resources available such as Google Classroom. Students received training on how to operate the devices and safe handling techniques.

The 1:1 initiative has sparked a surge in STEM (science, technology, engineering, mathematics) programming. All schools now have a working makerspace in which students enjoy creating projects, developing ideas, and using robotics among other things. Devices are now provided to all third through twelfth grade students. Although Swain County Schools have implemented many initiatives, student achievement has slightly improved.

Swain County Schools are “entering a cusp of change” by offering “unique opportunities for transforming an organization through innovation” (Goldstein, Hazy, &

Lichtenstein, 2010, p. 48). The superintendent is committed to fostering collective learning through his requirement of weekly technology professional development. All schools offer a professional development opportunity each week that focuses on timely resources and information. Each school has weekly professional learning community (PLC) meetings in which support staff work with teachers to review data to determine how to boost student engagement and achievement.

Since the inception of the 90% reading goal, Swain County Schools also continued to increase its budget by introducing a 1 to 1 initiative for grades 3-12, offering substantial professional development for Swain Core, and implementing The Leader in Me PreK-12. As quoted in *Leading in a Culture of Change* (Fullan, 2001, p. 35), Bryk and Rollow would define SCS's as a "Christmas tree school". Bryk and Rollow (1992) stated,

> Currently, Chicago is awash with "Christmas tree" schools where large amounts of discretionary money have combined with private gifts to add new programs and more equipment, a bit like hanging dazzling ornaments on a tree. Unfortunately, the tree itself and its basic needs have gone unattended (p. 7).

REVIEW OF THE PROBLEM

According to National Assessment of Educational Progress (NAEP) data, North Carolina fourth, eighth, and twelfth-grade students have not shown a difference in achievement level percentages and average score results in twenty years. An average of 66% of students in these grades fall below proficiency on NAEP assessments. There has not been an increase or decrease in student proficiency over the last twenty years. North

Carolina end-of-grade test data and ACT result shows similar findings with no substantial change over the past three years (Table 4).

Table 4
NC EOG Assessment Data

Year	Math, Reading, Science EOG	ACT Scores
2014	55.7%	
2015	56.3%	59.7%
2016	58.2%	59.9%

Students who are impoverished, score much lower in reading and math than students that come from higher socioeconomic status. Figure 4 compares North Carolina Schools' math grades by the school poverty level. Figure 5 compares North Carolina Schools' reading grades by the school poverty level. This indicates students from low socioeconomic status need differentiated instruction in order to experience success. Success is defined in North Carolina as being college and/or career ready (NC State Board of Education, 2017). Roughly 50% of schools serving impoverished students are receiving school grades of Ds and Fs. Schools with less than 50% of their students living in poverty are less likely to receive a school grade of a D. The data indicates that in 2015-16 only 4% of the schools that have less than 50% of their students living in poverty receive a D or F school grade (NCDPI Accountability and Testing Division, 2017).

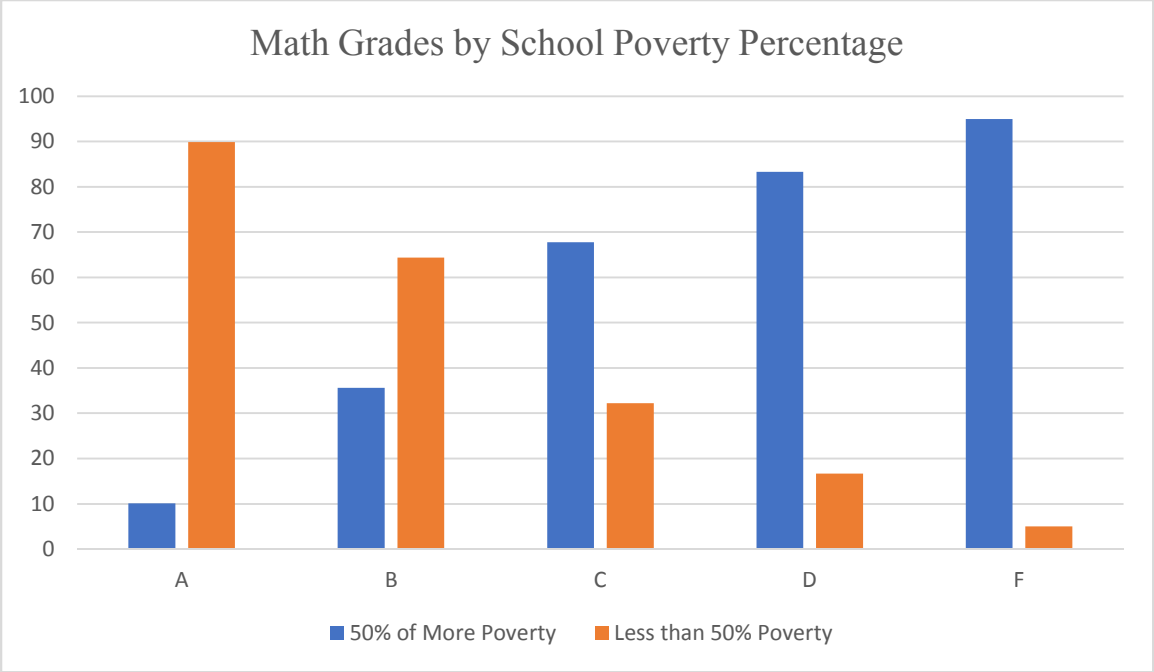

Figure 4. Math Grades by school poverty percentage. Retrieved from North Carolina State Board of Education. (2016). *Executive Summary.* http://www.ncpublicschools.org/accountability/reporting/

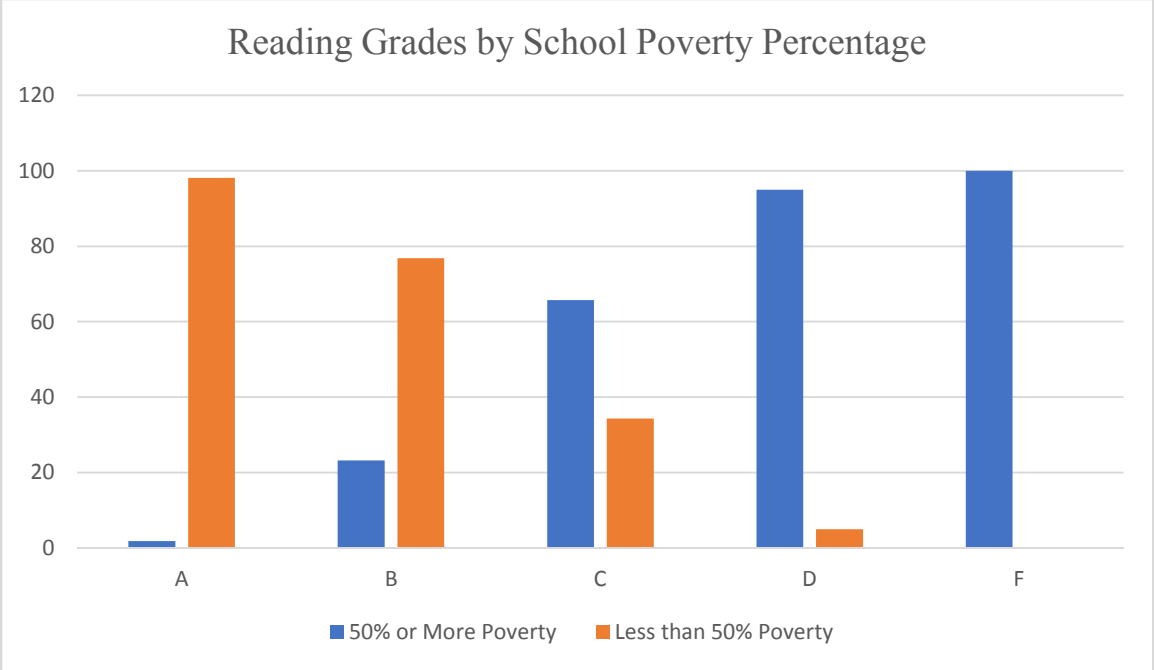

Figure 5. Reading Grades by school poverty percentage. Retrieved from North Carolina State Board of Education. (2016). *Executive Summary.* http://www.ncpublicschools.org/accountability/reporting/

More North Carolina students in grades three through eight (56%) not identified with a learning disability were proficient on end-of-grade assessments than North Carolina students identified as having a learning disability (13%) (North Carolina Department of Public Instruction, 2015). The students not scoring proficient on NC EOGs were not given the skills needed to be college and career ready. This data supports strengthening the call for differentiated instruction within classrooms.

According to North Carolina Department of Public Instruction, 10,889 students dropped out of North Carolina schools during the 2015-2016 school year. During the 2014-2015 school year 11,190 students dropped out of North Carolina schools. Research shows that education institutions fail to provide quality instruction to all students, leading to an achievement gap (Stavroula, Leondia, & Mary, 2011). Differentiation is providing quality instruction to all students. The drop out data and NC EOG/EOC data indicates that not all North Carolina public schools are meeting the State Board of Education vision that every student will graduate ready for college and/or work prepared to be a globally engaged and productive citizen (NC State Board of Education, 2017). Educators are failing to give students the right tasks at the right time (Earl, 2003).

THEORY OF IMPROVMENT

THEORY

The challenge of schooling remains what it has been since the modern era began two centuries ago: ensuring all students receive their entitlement. Grant Wiggins, 1992, pp. xv-xvi

Students have differences related to language, culture, religion, gender, race, abilities, and socioeconomic status. These differences are often seen as a problem and not as an opportunity for learning. Schools will not be effective until faculty stop seeing diversity as a problem (Wiggins, 1992). The current educational system that “teaches to

the middle" destroys the self-esteem of the students that do not "fit the mold" while neglecting to meet the needs of the high achievers (Villa & Thousand, 2017, p. 13). Schools are challenged to meet the increased public expectation that there is equal opportunity and academic excellence for all through high educational standards.

The goal of this disquisition was to improve student achievement at Swain County Middle School. Teacher knowledge of students, teacher ability, and teacher beliefs were identified as the primary drivers to increase teacher responsiveness to the needs of individual students. Providing professional development focused on differentiated instruction will have the largest effect on increasing teacher responsiveness to the needs of individual students. In the initial 90-day cycle teachers worked to increase their responsiveness to the needs of individual students.

Effective professional development helps teachers develop collective, individual, and leadership capacity to differentiate instruction. Professional development needs to address weakness and shortcomings of previous pre-service and in-service training. Effective professional development practice helps teachers identify with why change is needed so that they are more inclined and willing to invest in the change process. Next, the professional development must be designed around clear goals and expectations that lead to consensus on the meaning of differentiated instruction. Professional development also must be continued and ongoing, so teachers build the capacity to differentiate instruction. Increased capacity leads to an increase of differentiated instruction within classrooms. When students have access to differentiated instruction, their achievement improves.

DIFFERENTIATED INSTRUCTION DEFINED

Differentiation is defined in several ways by different instructional design scholars. Earl (2003) author of *Assessment as Learning: Using Classroom Assessment to Maximize Student Learning*, defined differentiation as "making sure that the right students get the right learning tasks at the right time" (p. 1438). Tomlinson (1999) defined the right time and right tasks by engaging students through various learning modalities, appealing to interests, and instructing with varying degrees of complexity. Tomlinson (2014) outlined that teachers can differentiate through content, process, and products. Content is what the teacher plans for students to learn and how the student will access the knowledge, skills, and understanding. Process or activity is how the student comes to make sense of the key concepts, generalizations, facts, and skills. Product refers to the work samples that students produce that demonstrate their understanding (Tomlinson & Allen, 2000). To differentiate content, process, and product a teacher must identify a student's readiness, interest, and learning profile. Adjusting to a student's readiness requires teachers to adjust the difficulty of a task, scaffolding, and using a direct and small group instruction. Tomlinson and Allan (2000) also suggested that teachers align skills and material needed for understanding to student interest. Aligning skills and materials to student interest may be done by connecting concepts to real world examples that interest students. Tomlinson and Allan (2000) encouraged teachers to build student learning profiles to account for learning styles, talent, and intelligence. Understanding student learning profiles will allow teachers to present information to best support learning.

The goal of differentiated instruction is to meet the needs of all learners in a diverse classroom. Tomlinson (2003) emphasized that effective differentiation is a proactive rather than reactive response. Teachers must consistently reflect on student readiness, interest, and learning profile in preparing for the delivery of information, student practice, and sense-making (Tomlinson et al., 2003).

The work of Vygotsky and Howard on learning theory supports differentiation. Vygotsky (1978) theorized that individuals learn in his or her "zone of proximal development" or ZPD. The ZPD refers to the zone in which a learner cannot successfully function without assistance or support. Current brain research reaches a similar conclusion as Vygotsky and suggests for learning to occur students must be working at a moderate challenge (Howard, 1994; Jenson, 1998; Sousa, 2001; Wolfe 2001). These theories suggest if a task is too challenging or too simple, learning will not occur. Providing instruction at a student's ZPD is the goal of differentiated instruction. Tomlinson and Allan (2000) concluded that the desired outcome of a differentiated classroom is to maximize student growth and individual success because learning is more effective when a teacher matches the task to the student's level of development. Research by Fisher, Berliner, Filby, Marliave, Cahen, and Dishaw (1981) found that students' learning will not improve if asked to practice activities in which the student experiences high success rates and achievement can be negatively impacted if activities are too frustrating. However, instruction has remained a "one-size-fits" all model, where teachers are teaching to the middle and matching activities to the needs of the students that have the best chance of passing the test (Booher-Jennings, 2005; Tomlinson, 2005). This model of teaching is not challenging enough for gifted learners and can cause frustration

in learners that are struggling. The “one-size-fits-all” model is not ensuring students are getting the “right learning tasks at the right time” (Earl, 2003, p.1426).

There is an abundant supply of literature supporting the need for differentiated instruction available for examination. Servilio (2009) examined the effectiveness of differentiated instruction to motivate students to read. The study differentiated content, process, and product by allowing students to pick their related reading material, choices for reflection, and ways to show a connection. The study found that 83.4% of students' grades improved when given these choices. Butler and Van Lowe (2010) compared students who received differentiated instruction in a math class to students who did not receive differentiated instruction. The students that received differentiated instruction performed better than their peers who did not receive differentiated instruction on a final assessment. Tomlinson, Callahan, and Lelli (1997) examined a 4-year period which teachers in a low socioeconomic area addressed student learning preferences through identification, strategies, and nurturing. The study found that the strategies have a positive impact on student performance. Bailey and Williams-Black (2008) decided using differentiated instruction would prevent students who typically “fell through the cracks” find success. Andradre, Huff, and Brooke (2012) stated, "when assessment is student-centered, it can promote learning and even motivate” (p.46). Additionally, Andradre, Huff, and Brooke found that when students are included in the creation of the learning process, set goals, and self-monitor they will find ways to fill in their knowledge gap.

Although there is much scholarship illustrating the benefits of differentiation, there is also evidence that differentiation is not widely used in today’s classrooms (Robinson, 2014). Differentiated instruction provides a means to address learner variance

and avoid the negative effects of a one-size-fits-all curriculum while being built around research into the workings of the human brain supporting multiple intelligences and learning styles (Subban, 2006). Studies have found that teachers see the value in differentiated instruction; however, it is not a commonly used practice (King, 2010).

The lack of instructional differentiation in today's classrooms stems from a variety of causes, including but not limited to: lack of time and resources, teachers' attitudes and beliefs, pre-service training, poor professional development, and the complexity of differentiated instruction (Hellman, 2007; King, 2010; Robinson, 2014). The following fishbone diagram illustrates the factors that affect differentiated instruction implementation (Figure 6).

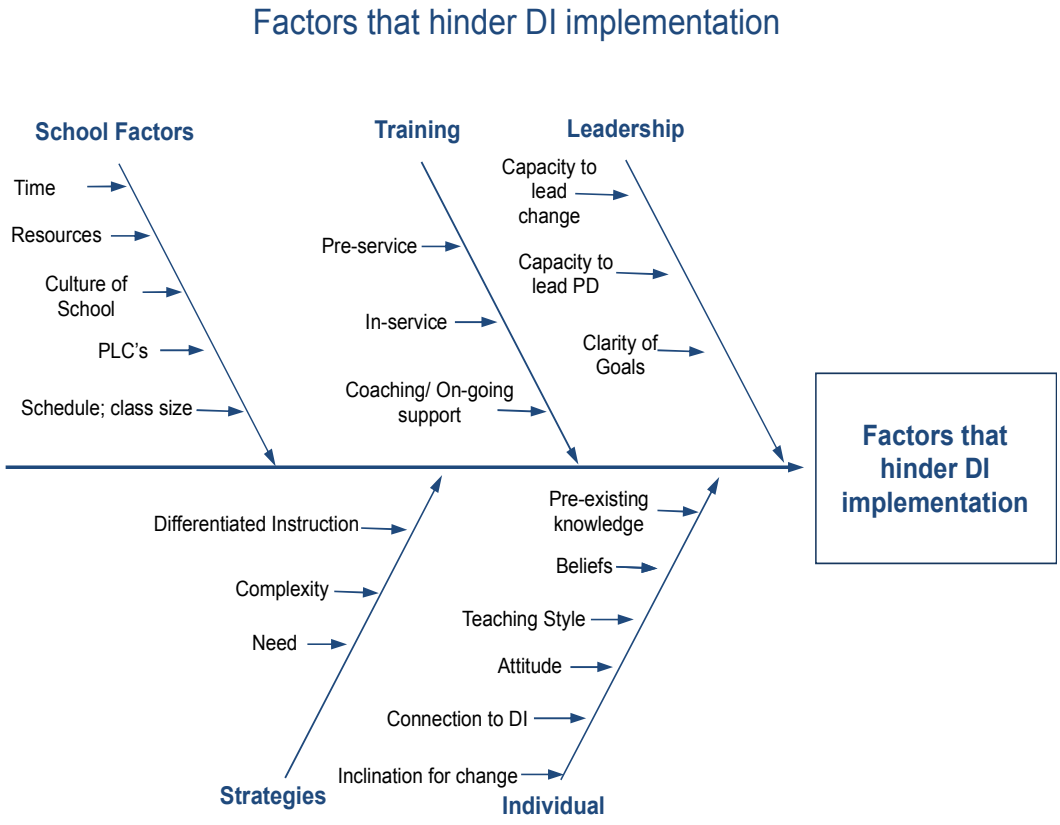

Figure 6. Fishbone diagram of the factors that hinder differentiated instruction implementation.

FACTORS EFFECTING IMPLEMENTATION OF DIFFERENTIATED INSTRUCTION

As Tomlinson (1995) followed one middle school's journey implementing differentiated instruction, she discovered the need for teachers to realize that the "single-size" or "status quo" practices are not working for all students. Teachers see the need for differentiated instruction and are trying to meet the needs of all their students, but the complexity and lack of clarity about differentiated instruction prevent them from moving forward (Tomlinson, 1995). Educators fear and often believe that differentiated instruction means a lesson plan for every student. As Carolan and Guinn (2007) stated, "a classroom functions like a dinner buffet" (p.44). To combat this confusion and complexity, schools need to build consensus around a common definition of differentiated instruction (Tomlinson, 1995). For the middle school Tomlinson (1995) observed, to move forward the staff had to come to a consensus on a common understanding and definition of differentiated instruction. Tomlinson (1995) and Pettig (2000) highlighted that change is a long journey.

INDIVIDUAL FACTORS

Teachers are the greatest factor of student achievement within the school environment. Unfortunately, teachers do not see their value in the overall operations of a school. For schools to be effective, teachers must contribute to the overall school environment (Barth, 2001). Teacher attitudes, beliefs, pre-existing knowledge, teaching style, and connection to differentiated instruction have been identified as factors that impede the implementation of differentiated instruction (Dijkstra, 2017; King, 2010; Logan, 2011; Nicolae, 2014; Robinson, 2014). Since teachers have the greatest influence on student achievement within a school environment, the factors that impeded the

implementation of differentiated instruction must be addressed. Tomlinson (1995) advised potential implementers to identify the conditions seen by teachers as barriers as essential in developing a plan of action that creates classrooms that meet individual student needs. Many teachers see differentiated instruction as another fad (Tomlinson, 1995). However, differentiation has become a researched-based approach to addressing the diversity in today's classrooms (King, 2010). King (2010) found teachers that are confident in their knowledge and skill are more likely to implement differentiated instruction. King included research from Tomlinson that indicated that teachers see value in the differentiation but are hesitant to implement due to a lack of pedagogical knowledge and skills.

Many teachers favor traditional approaches to teaching and learning. Teachers rely on direct instruction, lecture, and whole class seatwork (Tomlinson et. al. 2003). This approach teaches to the middle or students on grade level without adequately meeting the needs of advanced and struggling learners (Nicolae, 2014). Differentiated instruction challenges teachers' current beliefs about teaching and learning (Tomlinson et al. 2003). Differentiated instruction requires teachers to be flexible, match student readiness to the activity, move from a teacher-centered approach to a student-centered approach, and to learn to manage a classroom when students are involved in multiple activities (Robinson, 2014; Tomlinson, 1995).

SCHOOL FACTORS

Not only are there individual factors that impede the implementation of differentiated instruction, school factors such as time, lack of resources, class size, and school culture have all been identified as barriers to implementing differentiated

instruction (King, 2010; Logan, 2011; Robinson, 2014). These potential barriers need to be considered by a school or individual moving towards a differentiated classroom.

As teachers move beyond the "one-size-fits-all" model, schools will need to ensure sufficient time in learning about differentiated learning and that teachers have the time to plan for more student choice, flexible grouping, and enrichment activities (Tomlinson, 1995, p. 47). This transition will require on-going professional development and opportunities for teachers to create lessons that can be used in the classroom (Robinson, 2014; Subban, 2006; Tomlinson et al. 2003).

Another school factor that can be considered when implementing differentiated instruction is the schedule and class size. Lack of proper communication over the implementation of differentiated instruction has teachers questioning where the time will come to deliver individual lessons plans to ever increasing class sizes. Research has found that smaller class sizes allow students to benefit from more active, individual attention from teachers (King, 2010). Teachers spend more time addressing off-task behavior in larger classes, and thus reducing the attention to teaching and learning. In theory, small class sizes allow for teachers to engage in more differentiated instruction; however, research has found that often teachers do not adjust their teaching styles to capitalize on smaller class sizes (Blatchford, 2010). Blatchford (2010) found that there is often less group work in smaller classes and that often teachers do not take advantage of the opportunity to differentiate instruction with fewer students. Although schools may lower class sizes through creative scheduling, teachers will need support while looking for potential benefits.

King (2010) identified four recommendations for the implementation of differentiated instruction. The four recommendations are

1. Professional development needs to focus on action and less on theory.
2. Schools need to have a plan for ongoing professional development.
3. Teachers need to be supported by instructional coaches.
4. Teachers need time to collaborate and prepare lessons that incorporate differentiated instruction.

As teachers transition from a "one-size-fits-all" approach (Tomlinson et al. 2003, p. 131; Tomlinson, 1995, p. 47), organizations must remember that change is difficult (Langley, Moen, Nolan, Norman, and Provost, 2009). Teachers will need the support of their peers and administrators to implement differentiated learning (Logan, 2011). Hillman (2007) concluded that commitment of teacher time was the only ongoing cost associated with the implementation of differentiated learning using facilitated support groups. To implement with fidelity, school staff must commit time to problem solve solutions to the challenges of implementation (Hillman, 2007). Teachers will need time to collaborate so that lessons can be created, and problems associated with implementation are addressed.

A school must have a culture focused on teaching and learning; otherwise, student learning can suffer (MacNeil, 2009). MacNeil (2009) found “in schools where achievement was high and where there was a clear sense of community” the principal made the difference (p. 76). However, improvement initiatives that are led by one person are often unsustainable (Lambert, 2002). This theory supports the conclusion by Hillman (2007) that facilitated support groups are a solution to the implementation of differentiated instruction. For school improvement, teachers and principals need to

function as “mutual learners and leaders” (Lambert, 2002, p.38). Research dictates in order for a school to sustain implementation, a culture must extend and encapsulate staff members from top to bottom that encourages and promotes continued growth together. Without cohesion between administration and staff, it is possible that information becomes disjointed and the vision of how differentiated instruction can and should work becomes ineffective.

Professional learning communities build capacity to support sustainable improvement (Stoll, 2006). Professional learning communities (PLC) are defined as “a group of people sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented, growth promoting way” (Stoll, 2006, p. 223). PLCs play a critical role in building a shared vison and values. A strong moral vision contributes to the development of school culture that promotes student achievement (MacNeil, 2009). PLCs allow for teachers to support one another, build collective responsibility, and collaborate so that learning is promoted (Stoll, 2006). Because differentiated instruction challenges teachers’ current beliefs about teaching and learning, PLCs will allow teachers to support one another while building capacity to sustain the improvement initiative.

LEADERSHIP FACTORS

To meet the needs of all students, school must have strong leadership. “What standards were to the 1990s, leadership is to the future” (Fullan, 2002, p. 1). This shift shows that standard strategies by themselves are not strong enough to accomplish large scale sustainable reform. This reform must begin by ensuring solid leadership at all levels of the system (Fullan, 2002).

The role of principal has emerged from building executive to instructional leader of a professional community with a focus on learning. Effective instructional leaders put student and adult learning at the center of their leadership and serve as the lead learner. The principal is an educational leader who promotes the success of all students by providing a nurturing and sustainable school culture and instructional program favorable to student learning and professional growth. In the past when the principal focused on teaching, the focus was on the inputs of the instructional process. Today's leader focuses on learning, and thus, shifts their own focus and that of the entire school from inputs to outcomes and from intentions to results. Effective leaders promote student and teacher learning (DuFour, 2002).

Principals affect student achievement indirectly through their influence on school organization and instruction quality. One way in which principals shape school conditions and instruction quality is through their beliefs regarding professional development. Principals can connect their faculty to resources for professional development that concentrates on instruction and student achievement. Principals can provide opportunities for feedback and assistance, and ensure professional development is sustained and continuous (Youngs & King, 2002).

There are five practices, that when principals put into place, make a difference for students.

1. shaping a vision of success for all students, based on high standards,
2. creating a climate of safety and cooperation;
3. cultivating leadership in others so everyone realizes the school vision;

4. improving instruction to enable teachers to teach their best and students to learn at their

best; and

5. managing people, data, and processes to improve the school (Mendels, 2012). With the five practices, principals can restructure schools to promote student success. School restructuring creates new expectations of principals. Transformational leadership practices have significant direct and indirect effects on progress of school restructuring initiatives and teacher-perceived student outcomes.

A goal is a functional, narrowly drawn target that is measured and rewarded. Goals are intended to influence organizational performance by limiting the attention of members to a certain object by defining what actions are relevant, imposing restrictions on the activities and on distribution of resources, and providing rewards based on attainment. Goals originate at the leadership level and filter down through the school. It is the task of the principal to ensure that the goals are tightly adhered to activities. Goals have a strong direct effect on teacher beliefs and capacity, and transformational leadership affects teachers' personal goals both directly and indirectly. School learning is strongly influenced by transformational leadership, and its effectiveness is measured by the degree to which the goals are achieved (Hallinger & Heck, 2002; Leithwood, 1994).

Instructional outcomes are enhanced when staff have clear goals and maintain a common purpose. Goals that are understood and shared by participants yield a more successful organization. However, the concept of an organizational goal is not easily captured. Hallinger and Heck (2002) stated goals are often "multiple, ambiguous,

unstable, and conflicting" (p. 10). Building leaders must unpack these goals as a basis for understanding school effectiveness and school improvement (Hallinger & Heck, 2002).

Principals play a major role in developing professional communities consisting of teachers who guide one another in improving instruction (The Wallace Foundation, 2013). Principals must create and sustain settings in which teachers feel safe to admit their fallacies, to try and fail, and to impart their aspects of teaching (Darling-Hammond & McLaughlin, 1995).

Research has found a link between school leadership and student achievement. Leadership is the second most important school-based factor in student academic achievement. It is difficult to turn around a troubled school without an effective leader. Leadership was second only to quality classroom instruction for student academic achievement (Louis, Leithwood, Wahlstrom, & Anderson, 2010; Mendels, 2012). School leaders influence student achievement by influencing teacher motivation and working conditions (Louis,et. al, 2010).

If a principal has a moral purpose focused on learning, has set goals and a vision for improvement, developed relationships, and created a productive work climate without tapping the talents of teachers, programs often fail, fade away, or lose momentum when the principal leaves (Fullan, 2002; Lambert, 2002). Often teachers, essential to the learning process, find themselves excluded for the processes that determine the direction of the school (Barth, 2001). To sustain continued improvement and address the complex work of a school, leadership should be a "reciprocal learning process that enables participants to construct meaning toward a shared purpose" (Lambert, 1998, p. 18). Teachers' experience and craft knowledge are essential in school improvement. When

addressing school improvement, it is unlikely that one person will have all the expertise needed (Pearce & Manz, 2005). School leaders must design opportunities for principals and teachers to participate together as mutual learners (Lambert, 2002). This distributed leadership perspective builds leadership capacity to create sustainable school improvement, while building morale and increasing the participation and commitment of teachers to carry out the goals of the school (Barth, 2001; Lambert, 2002).

Newman, King and Youngs (2000) found that school capacity is the critical variable in affecting the instructional quality and student achievement. At the heart of school capacity is principal leadership that focuses on development of teacher knowledge and skills, professional community, program coherence, and resources. For change to take place, leaders must have a moral purpose, understand change, build relationships, have knowledge of the changes that need to happen, and coherently put the change elements together. If leaders do this with enthusiasm, hope, and energy, and get commitment from all stakeholders, the results will be positive (Fullan, 2002).

PROFESSIONAL DEVELOPMENT AND BUILDING TEACHER CAPACITY

Effective professional development and ensuring teachers have the capacity to apply skills learned in professional development are essential to shaping school culture and improving student learning. The goal of teachers is to ensure that every student learns effectively and with a sense of satisfaction. This presents teachers with a complex and difficult pedagogical dilemma (Tomlinson, et al., 2003). Differentiation is an approach to teaching in which teachers modify content, process, and product address the diverse needs of students to maximize learning opportunities for every student (Tomlinson, 1999). Barriers to differentiation include lack of time in the daily classroom and teachers

not getting the professional development resources and administrative support needed (Carolan & Guinn, 2007). Without effective professional development, initiatives cannot be sustained (Smylie, 1995).

Newmann, King and Youngs (2000) stated "professional development has failed to improve teaching because it is implemented in ways that violate key conditions for teacher learning" (p. 259). These key conditions include concentration on instruction and student outcomes in teachers' specific schools, opportunities for collegial collaboration and support, maintaining teacher creativity, and sustained and continuous experiences rather than short-term and episodic. Professional development is more likely to increase student achievement if it addresses the learning of individual teachers *and* the organizational capacity of the school (Newmann, et. al, 2000).

School capacity includes staff members' knowledge, skills, and dispositions. School staff should be competent in instruction and assessment must be focused on curriculum appropriate for individual students. High expectations should be held for all students' learning. School capacity includes a strong professional community consisting of clear learning goals, collaboration and shared responsibility for meeting those goals, inquiry to address challenges faced by staff, and staff input on policies. School programs for student and staff learning should be coordinated, focus on learning goals, and sustainable. Finally, school capacity requires strong, effective principal leadership (Newmann et al., 2000). Effective principals can sustain high levels of capacity by establishing trust, creating structures that promote teacher learning, and either connect their staff to external expertise or help teachers generate reforms internally (Youngs & King, 2002).

Schools involved in the movement to improve instruction and raise academic standards, must help teachers enhance their knowledge of subject material and learn to use new teaching strategies. For teachers to work effectively in differentiated classrooms, principals must establish a coherent and more effective approach to professional development (Corcoran, 1995).

Effective professional development comes from individuals who apply findings from research to support long-term change in practice by extending learning over time. Individuals integrate a variety of supports for individual teachers, teams of teachers, and schools. These individuals also use constructive feedback and reflection to support continuous improvement in practice (Learning Forward, 2015).

Current professional development practices include formal education activities such as workshops several times a year that focus on "hot" topics. Teachers typically spend a few hours listening, and sometimes leave with practical tips and useful materials. There is seldom any follow-up to the experience. There is currently no consensus in the field about a best practice for professional development, and districts receive little guidance about how to manage and improve these efforts (Corcoran, 1995). Some critics argue that the lack of consensus stems from a general absence of purpose. This absence of purpose comes from lack of planning. One thing on which all groups agree is that professional learning experiences are rarely well planned; professional learning experiences lack purpose, cohesiveness, and direction (Guskey, 2014). Innovators are trying new approaches, and a few states are implementing changes for new teachers, but many districts are doing what has always been done (Corcoran, 1995).

Research suggests that the most promising professional development programs or policies include eight key elements:

1. Professional development is likely to have a greater impact if it is closely linked to school initiatives.
2. Teacher initiatives, as well as school and district, must be supported. Teacher initiatives promote collaboration, internal professional development, and more serious engagement in learning activities. Internal professional development is more cost-effective than contracting professional development services.
3. Professional development should be grounded in "good" teaching, including holding high expectations, appropriate child development practices, curriculum content and design, instilling higher-order thinking strategies, school culture, and shared decision-making.
4. Allowing teachers time to explore and question new ideas in their classroom practice.
5. If teachers are supposed to teach for deep understanding, teachers must be knowledgeable of their curriculum and work regularly with others in their field.
6. Professional development should consider differing degrees of teacher experience and knowledge.
7. Sufficient time and follow-up support for teachers to master new content and strategies and to integrate them into their practice should be provided.
8. Professional development should be viewed as an integral part of teachers' work and expected of all teachers (Corcoran, 1995).

Reforming professional development may seem like an impossible task but engaging all teachers in discussions of good practice and supporting their efforts to learn and use more effective pedagogy is the first step towards increased achievement for all students (Corcoran, 1995). Ongoing support for professional development occurs with ongoing workshops designed to deepen understanding and refine practices. It happens through coaching, reflection, and data analysis (Learning Forward, 2015). Teachers learn by doing, reading, and reflecting, through collaboration with colleagues, through intense student work and data analysis, and by sharing findings. Professional development must allow teachers to share what is known and what is hoped to learn and be able to connect their learning to their teaching (Darling-Hammond & McLaughlin, 1995).

For a school to encourage lifelong learning and to promote the school as a learning organization, all stakeholders—teachers, principals, parents, and students—must become actively engaged in shaping their school. Professional learning becomes an essential change strategy for teachers to shift into critical, reflective practitioners as needs are identified and goals are set (Northern Territory Government, 2017).

IMPROVEMENT DESIGN

DESIGN TEAM

The first step in the improvement design was to build a team of five to six professionals from the different teams within the school. The school has a sixth, seventh, and eighth-grade team comprised of one science teacher, one social studies teacher, one Exceptional Children's teacher, two math teachers, and two English Language Art teachers. There are also six full-time elective teachers and an instructional coach in the school for a total of 28 teachers.

The sixth-grade representative is a veteran teacher that has taught math at the elementary to high school level. She also served as an elementary instructional coach. She is an early adopter of new strategies and routinely differentiates instruction in her class. She uses student menus weekly to differentiate processes for students. Menus are designed to give students choices of tasks, while maintaining each learner's focus on knowledge, understanding, and essential skills (Tomlinson, 2003). These menus also provide students the ability to pick different presentation methods and differentiating products.

The seventh grade has two representatives on the team. One seventh-grade representative has been a math teacher for five years. She is eager to try new things and has strong technology skills. The other seventh-grade representative is a social studies teacher. He has been teaching for 7 years at Swain Middle School. He previously taught in Detroit, Michigan prior to relocating to North Carolina. He is willing to try new approaches and routinely shares research that he has read.

The eighth-grade representative is an English Language Art teacher with seventeen years of service. Her students routinely score well on standardized testing. She has attended the national conference on differentiated instruction, is an Academically/Intellectually Gifted certified teacher, and has previous elementary experience. She uses student data and routinely updates lessons and student groups to maximize student success. She also uses a variety of formats to assess student understanding. She routinely allowed students to select from a written report, artistic representation, and a multiple-choice test for students demonstrate their learning.

The instructional coach has served as the instructional coach for the school for the past ten years. She has over 20 years of service. She provides professional development (PD) and support to teachers. Her focus has been on technology instruction, and her teaching background is in elementary school. She will be an active member in delivering professional development and continued support for teachers.

The team was presented with the literature review and driver diagram. Feedback was gathered to determine if the proposal is feasible and to identify any gaps in the research. Survey data was also collected to measure the team's perceptions of any potential barriers that may impact the implementation plan. The team provided feedback and adjusted the intervention while conducting iterations of the Plan-Do-Study-Act or PDSA cycle (Langley, Moen, Nolan, Nolan, Norman & Provost, 2009).

IMPROVEMENT INITIATIVE

Once the initial theory of improvement was finalized and a common understanding was agreed upon by the improvement team, the team developed a professional development session to build collective sense making from the entire staff. Clarity of the initiative, definition, and a compelling "why" were the initial steps in implementation. To establish a baseline for understanding, the team collected survey data from teachers, walkthrough data on the current use of differentiated instruction, and organized historical data that supported the need for the intervention. The survey was designed to measure the teacher perceptions regarding the definition of differentiated instruction, current use of differentiated instruction, and what barriers were perceived. This data was used to design the first round of professional development for teachers.

Teachers participated in three professional development (PD) sessions. The first round occurred on September 12, 2018. The second round occurred on October 3, 2018 and the third round occurred on November 14, 2018. Professional development sessions lasted from 60 minutes for rounds one and three to two and a half hours for the second PD session.

Teachers were provided the "compelling why" and an overview of differentiated instruction during the first professional development session. Following the professional development, teachers were asked to complete another survey that measured how their perceptions of differentiated instruction changed. The survey was also used to identify individual needs for future professional development and continued support.

The second round of professional development led by members of the implementation team (experts in strategies that promote differentiation) included strategies to implement differentiated instruction into a classroom. Teachers attended the PD session of their choice and were given the necessary information, time to work with peers to develop lesson plans around the strategy, and support by a "peer expert". The second round of professional development was followed by individual coaching and peer support during PLC meetings. To measure the success and teachers' needs following this professional development, teachers completed a survey providing feedback on the design of the professional development, how perceptions changed, and if classroom practices had changed. Walkthrough (Appendix E) data was collected to see if there was any change from the baseline. Walkthroughs are short, 10 to 15-minute, classroom observations that focus on classroom instruction to drive improvement (Cervone & Matinez-Miller, 2007).

The third PD session was held on November 14, 2018, and provided follow-up coaching by allowing teachers time to meet with their strategy facilitator, members of the implementation team, from the October PD. These teams formed PLCs and discussed challenges and “ah ha” moments while using the self-selected strategy. This PD was focused on building capacity among teachers for the continued support of differentiated instructional practices. After completing the PD, teachers were asked to complete the PD exit questionnaire (Appendix A), Differentiated Instructional Survey (Kiley, 2011) (Appendix B & C), Ohio State Teacher Efficacy survey (Tschannen-Moran & Woolfolk & Hoy, 2001) (Appendix D), and instructional coaches conducted the final round of walkthroughs (Appendix E).

Throughout this initiative teachers received training on strategies that promote differentiation, and ongoing support was offered through team PLC meetings, coaching sessions, and feedback from peers. The implementation team served as leads, facilitators, and peer experts for the PLC teams as well as informal peer coaches.

METHODOLOGY

This improvement initiative was to address the diversity in today's classrooms. Students from various backgrounds, ethnic groups, languages, and different readiness levels to learn are placed together. Teachers are challenged to meet the needs of all their students. As classrooms have grown more diverse, instruction has not responded well. The current educational system that "teaches to the middle" destroys the self-esteem of the students that do not "fit the mold", while, neglecting to meet the needs of the high achievers (Villa & Thousand, 2017, p. 13).

The goal of the initial 90-day cycle was to increase teacher responsiveness to the needs of individual students. Knowing why you need to improve is a core principle of improvement science (Langley, et al., 2009). The implementation team and I reviewed national, state, and local data. National data suggested that the achievement gap is narrowing, but it is at a "slow, uneven, and incomplete" rate (Stanford CEPA, 2013, para. 1). Local data indicated not all students are showing adequate yearly growth. As we began to focus on the needs of our students, we realized that our current instructional practices were not meeting the needs of all students. We set out to look for an intervention that would increase teachers' responsiveness to individual student needs. Teacher knowledge of students, teacher ability, and teacher beliefs were identified as the primary drivers to increase teacher responsiveness to the needs of individual students. After a review of the driver diagram (Figure 7) and discussion about classroom practices, the team decided that providing professional development focused on differentiated instruction would have the largest effect on increasing teacher responsiveness to the needs of individual students.

I used the Improvement Science framework (Langley, et al., 2009) to implement and measure the success of the initiative. The Improvement Science framework is based on three essential questions:

1. What are we trying to accomplish?
2. What changes can we make that will result in improvement?
3. How will we know that a change is an improvement?

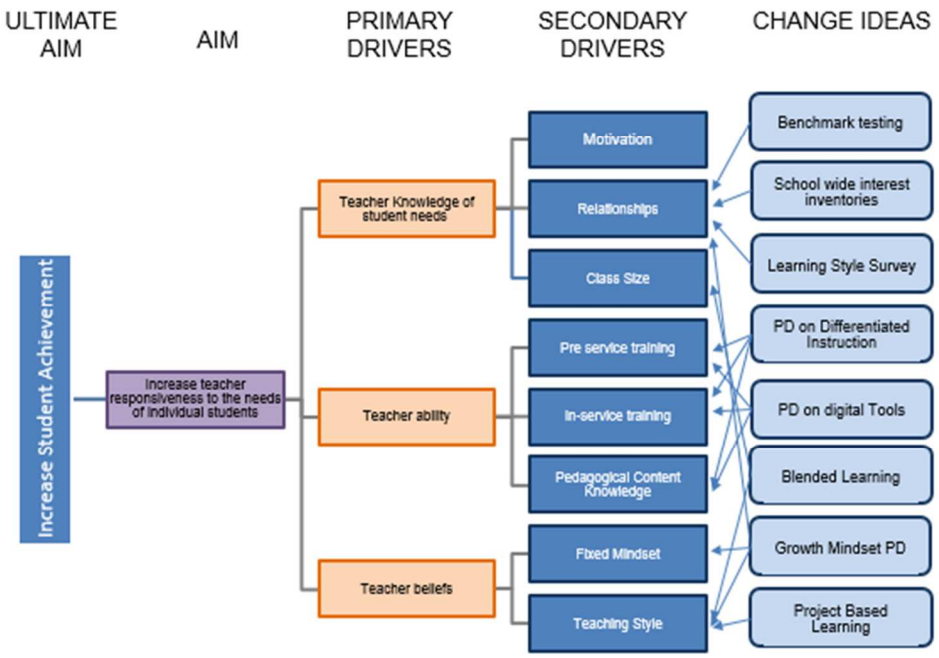

Figure 7. Driver diagram depicting the theory of improvement for increasing student achievement.

WHAT WE ARE TRYING TO ACCOMPLISH

Effective professional development would increase teacher capacity to differentiate instruction. High quality professional development would also address weakness and short-comings of previous pre-service and in-service training. Effective professional development builds consensus and needs to be continuous and ongoing. Teachers need to identify with why change is needed, so investment is made in the change process. Clear goals and expectations needed to be defined to lead to consensus on the meaning of differentiated instruction. The professional development needed to be

continual and ongoing to support teachers as new skills are acquired, or current skills are improved. Building teachers' capacity to differentiate instruction would lead to an increase of differentiated instruction within classrooms. We believe that when students have access to differentiated instruction their achievement improves.

HOW WE KNOW THAT CHANGE IS AN IMPROVEMENT

Improvement science is an iterative process that is built on the Plan-Do-Study-Act or PDSA cycle. These cycles are meant to develop profound knowledge by appreciating the system, understanding variation, building knowledge, and recognizing the human side of change (Langley, et al., 2009). To ensure the change is an improvement, outcome, process, and balancing measures were collected. Outcome indicators measured the desired outcome of the improvement or change idea. To ensure that the improvement or change idea was carried out as planned processes measures were used. Balancing measures were collected to evaluate if the improvement idea was negatively impacting another part of the system. I used the Differentiated Instruction Survey (Kiley, 2011) and collected walkthrough data as the outcome measures. The process measure that I used was an exit survey that was completed at the end of the three professional development sessions. Process data was collected after each round of professional development. I used the 12-item Ohio State Teacher Efficacy Scale (Tschannen-Moran & Woolfolk & Hoy, 2001) for balancing measures to ensure teacher efficacy did not decrease as a result of the intervention.

In August of 2018 data collection begin with the administration of the 12-item Ohio State Teacher Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) and the Differentiated Instruction Survey (Kiley, 2011) to establish the baseline. Instructional

coaches conducted walkthroughs using a differentiated instruction look-for rubric (Appendix D) to document observable teacher practices.

The Differentiated Instruction Survey (Kiley, 2011) uses a 1-5 Likert Scale to measure a teacher's belief and use of differentiated strategies related to student interest, assessment, challenging lessons, content, process, and product. The survey is divided in to two sections; 1) teacher's understanding of differentiated instruction and 2) teacher's implementation of differentiated instruction. The sections contain the same 26 items. This survey was selected due to its previous use by Kiley (2011) and the information gained regarding teachers knowledge and implementation as both knowledge and implementation were areas that the intervention sought to increase. Below is a sample item from understanding differentiated instruction followed by the same question from the implementation of differentiated instruction section.

Q1 I know individual student interests and can relate it to instruction.

- o Extremely important
- o Very important
- o Moderately important
- o Slightly important
- o Not at all important

Q1 I know individual student interests and can relate it to instruction.

- o A great deal
- o A lot
- o A moderate amount
- o A little
- o None at all

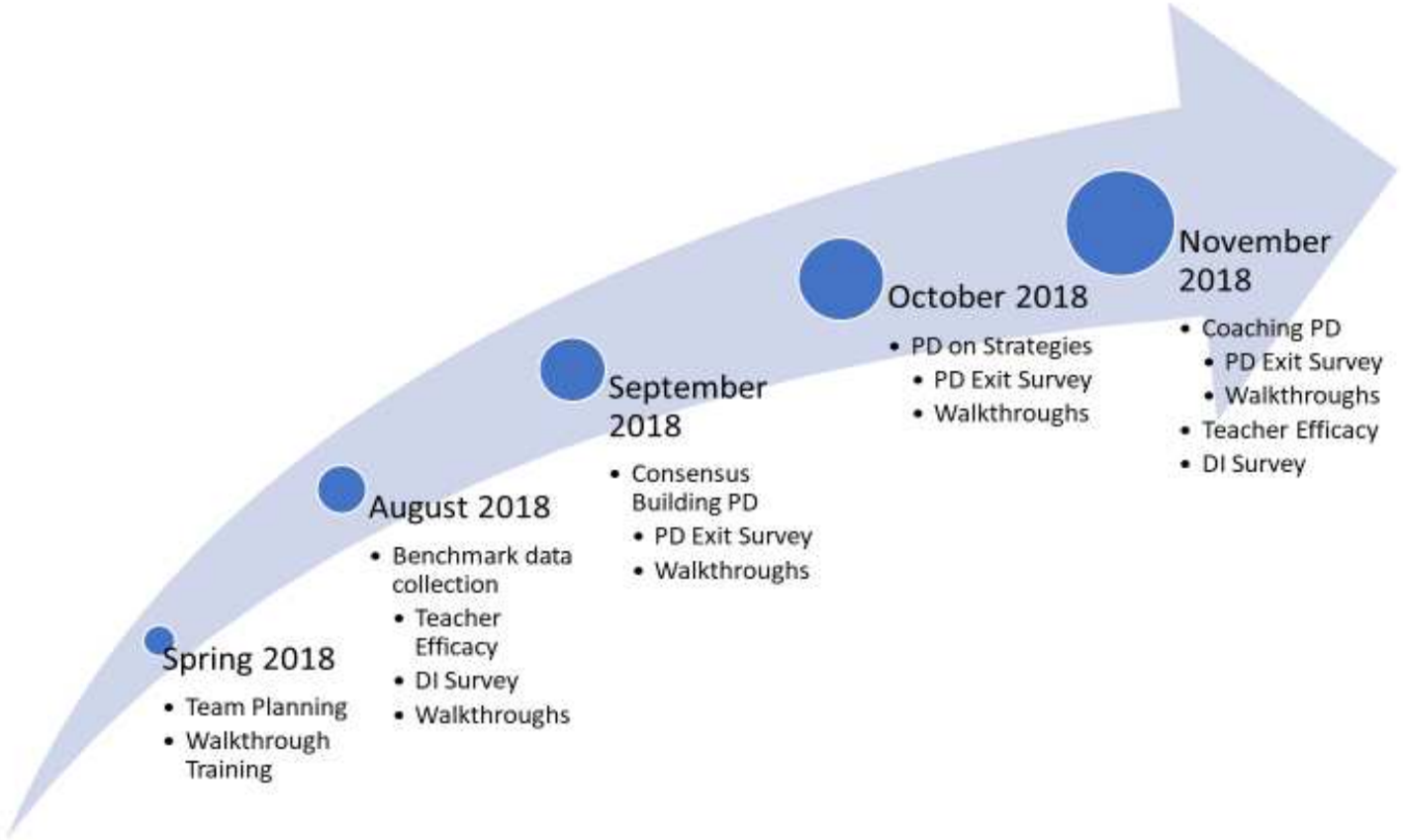

Figure 8. Improvement initiative timeline.

The 12 item Ohio State Teacher Efficacy Scale is a modified version of the 24-item survey (Tschannen-Moran & Woolfolk Hoy, 2001). Tschannen-Moran and Woolfolk Hoy created this survey to build a teacher efficacy skill that was unified and stable to assess a broad range of capabilities that teachers consider important (Tschannen-Moran & Woolfolk Hoy, 2001). This survey was used to ensure that other areas of a teachers role was not negatively impacted as a result of the intervention. The 12-item survey is measured on a 9-point Likert scale with 1-nothing, 3-very little, 5-some influence, 7-quite a bit, and 9-a great deal, however for I modified the 9-point Likert to a 5-point Likert to match the style of the Differentiated Instruction Survey.

Q1. How much can you do to control disruptive behavior in the classroom?

- Nothing (1)
- Very little (2)
- Some influence (3)
- Quite a bit (4)
- A great deal (5)

Q2. How much can you do to motivate students who show low interest in school work?

- Nothing (1)
- Very little (2)
- Some influence (3)
- Quite a bit (4)
- A great deal (5)

The PD exit questionnaire contains ten 5-point Likert scale questions. The Likert scale for these questions are 1-strongly agree, 3-neither agree or disagree, and 5-strongly disagree. The questionnaire also contains four open-ended responses. This survey was created and used as a process measure and to guide the development of future PD sessions.

Q1. The staff development was of high quality?

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

Instructional coaches conducted the walkthroughs. The walk-through document collected evidence for quality, narrative observation notes, strengths, and areas of need (Appendix E). As the scholar practitioner, I did not conduct any walkthroughs. I trained the instructional coaches by using a series of short group walkthroughs and reflections to ensure interrater reliability. The walkthrough document was a short one-page data collection sheet that the instruction coaches used to collect observational notes. The walkthroughs were conducted at random, unannounced times throughout the study.

PARTICIPANTS

Swain Middle School is a 6-8 school with 28 teachers that serve 399 students. The school has a sixth, seventh, and eighth-grade team comprised of one science teacher, one social studies teacher, one Exceptional Children's teacher, two math teachers, and two English Language Art teachers. There are also six full-time elective teachers and an instructional coach in the school for a total of 28 teachers. Including the teachers that also served as members of the implementation team, 18 teachers agreed to participate in the research surveys and walkthroughs.

As the scholar-practitioner and principal, I took several precautions to avoid coercion. First, the study was anonymous, and participants were identified by their employee identification number, which I do not have access. The lead researcher and the middle school instructional coach maintained a list of participants and employee identification numbers so that walkthroughs could be coded using the employee

identification number. All teachers at Swain Middle School participated in the professional development sessions, but only the teachers that agreed to participate in the study completed survey data and walkthroughs.

As the scholar-practitioner and principal, I was not able to conduct any walkthroughs to be used in the study. I trained the middle school, two elementary schools, and the district instructional coaches to complete the walkthroughs for the study. To train the instructional coaches, I lead a series of walkthroughs with them in which we observed a class and individually documented areas that we observed differentiated instruction. Immediately following the observation, the instructional coaches and I would debrief to discuss what we observed and how it related to differentiated instruction. I also provided the instructional coached with the initial professional development session to build consensus regarding the definition of differentiated instruction. After this initial training, the instructional coaches and I conducted another series of walkthroughs to ensure reliability. The walkthrough document (Appendix E) also included a list of the instructional practices teachers learned to facilitate implementation of differentiated instruction. The instructional coaches were also encouraged to follow up with teachers if they had additional questions about what was observed during a walkthrough.

IMPROVEMENT PROCESS

FORMATIVE EVALUATION

Improvement science requires different types of measures, therefore different types of analytical procedures were used to evaluate the data collected. Table 5 outlines the type of measure, what measure was used, when the measure was administered and how the measure was analyzed.

Table 5
Improvement Science Measures

Type	Measure	Administration	Analytical Procedure
Outcome	Differentiated Instruction Survey	Pre and Post	Paired Sample T-Test
Process	Professional Development Exit Survey	After each PD	Evaluative Coding (open ended items) Descriptive Statistics
Process	Walk Through	Pre and then after each round of PD	Provisional Coding
Balancing	Ohio State Teacher Efficacy Scale	Pre and Post	Paired Sample T-Test

Upon completion of professional development and collection of pre-and post-Differentiated Instructional Survey and Ohio State Teacher Efficacy Scale, a one-sample t-test was used to determine any evidence of statistically significant differences.

Professional development exit surveys (Appendix A) and classroom walkthroughs were used as process measures, with the exit surveys measuring teachers' perceptions of the professional development and plans for using new learning in their classroom. Descriptive statistics were used to report the data collected from the professional development exit surveys. Open-ended questions were coded using evaluative coding, an inductive coding method used to determine how a respondent assigns judgment about merit, worth, or significance (Miles, Huberman, & Saldana, 2014). The walkthroughs rubric was coded using provisional coding, a coding method begins with a list of researcher-generated codes (Miles, Huberman, & Saldana, 2014).

BENCHMARKING

Once the design team and I had identified professional development focused on differentiated instruction to increase teacher capacity to meet the needs of all students and we had identified our process, balancing, and outcome measures, I used Qualtrics to administer the Differentiated Instruction Survey (Kiley, 2011) and the 12-item Ohio State Teacher Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). Both surveys are broken down into sections evaluating understanding/implementation based on student interest, assessment, lesson planning, content, process, and product. The surveys were titled Understanding of Differentiated Instruction (Appendix B), Implementation of Differentiated Instruction (Appendix C), and Teacher Efficacy Scale (Appendix D). Survey questions were answered by selecting from a 1 to 5 Likert Scale allowing the use of descriptive statistics to summarize the data collected.

Sixteen participant responses (out of eighteen total participants) were collected for the Understanding Differentiated Instruction survey. It is important to note that the survey responses read from 1-extremely important to 5- not at all important on the survey provided to the participants but for the analysis I used SPSS to recode into the same variable with 1-not at all important to 5-extremely important. The mean, M, for the overall composite for the survey was 4.28 with a standard deviation of .58. A mean of 4.28 correlates to a response of "very important" on the survey. Based on survey data collected, participants indicated that differentiated instruction was very important overall.

The Understanding Differentiated Instruction survey is divided into subcategories student interest, assessment, lesson planning, content, process, and product. The mean and the standard deviation for the composite and subcategories can be found Table 6.

Figure 9 highlights the mean and standard deviation for each of the Understanding Differentiated Instruction survey subcategories.

Table 6
Understanding Differentiated Instruction Baseline Survey

Category	Mean	Standard Deviation	Cronbach's Alpha
Composite	4.28	.58	.967
Student Interest	4.53	.57	.854
Assessment	4.24	.69	.897
Lesson Planning	4.25	.59	.880
Content	4.41	.51	.676
Process	4.24	.68	.875
Product	4.06	.75	.890

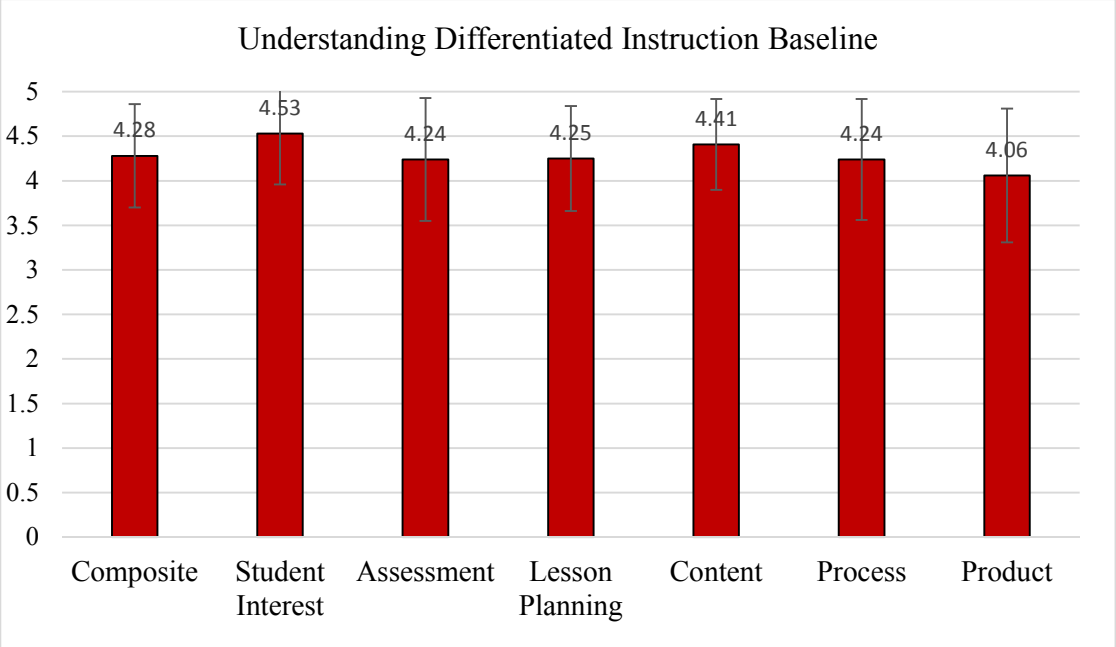

Figure 9. Understanding Differentiated Instruction subscale means with standard deviation.

One conclusion drawn from the baseline data is teachers participating the in the study valued differentiated instruction.

The next survey administered was Implementation of Differentiated Instruction (Appendix C). This survey contains the same questions stems as the Understanding of Differentiated Instruction, but the response range is from 1- a great deal to 5-none at all instead of 1- not at all important to 5-extrememly important. The Understanding Differentiated Instruction Survey's purpose was to evaluate each teacher's perceived use of differentiated instruction. It is important to note that when running descriptive statistics in SPSS that the data was recoded into the same variable with recoding the response from 1-a great deal to 1 representing none at all and 5-none at all to 5 representing a great deal. Resulting data was analyzed using descriptive statistics and finding the mean for the composite and each subcategory; interest, assessment, lesson planning, content, process, and product. The composite mean, M, was 4.15 with a standard deviation of .67. Table 7 and Figure 8 highlights the complete findings from the survey. Results from this survey did not meet the expectations and outcomes expected before the survey was administered and led to uncertainty about my initial hypothesis. King (2010) and Robinson (2014) concluded that although teachers valued differentiated instruction, differentiated was not widely used in today's classroom.

Table 7
Implementation of Differentiated Instruction Baseline Survey

Category	Mean	Standard Deviation	Cronbach's Alpha
Composite	4.15	.67	.971
Student Interest	4.3	.79	.953
Assessment	4.06	.63	.722
Lesson Planning	4.15	.79	.924
Content	4.44	.47	.739
Process	4.05	.83	.928
Product	3.97	.80	.879

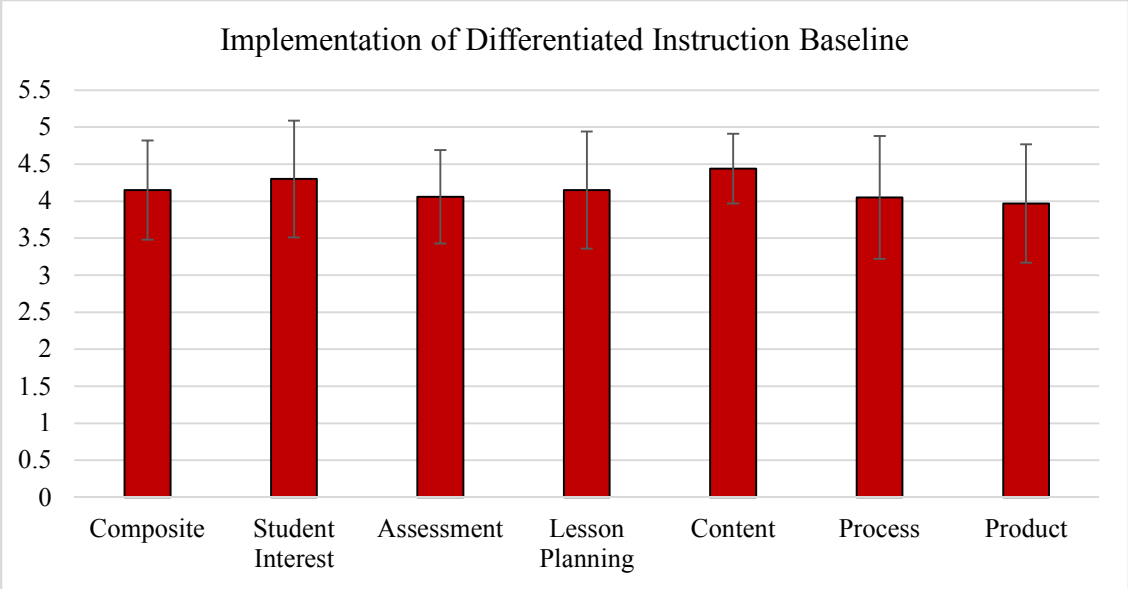

Figure 10. Implementation of differentiated instruction baseline subscale with mean and standard deviation.

The implementation team and I believed that by increasing teacher responsiveness to the individual needs of students that student outcomes would improve. However, teacher responses to the Implementation of Differentiated Instruction survey suggested that teachers were already applying differentiated practices in their classrooms and that the lack of student achievement and differences between achievement in the various subgroups were largely due to another factor and not the individual attention teachers were giving to students. Tomlinson (2008) warned that it imperative to have a clear sense of where the schools begin when they begin implementation of differentiated instruction. Tomlinson recognized that data may reflect a negative impact as schools implement differentiated instruction due to a change in teachers' perspectives. To establish a clear baseline, it is important that researchers collect multiple data sources and types (Langley, et al., 2009 & Tomlinson, 2008). The analysis of this initial survey data led me to believe that teachers understood and implemented differentiated instruction. Swain Middle

School has 28 certified teachers and 18 volunteered to participate in the study, bringing into question if the population sample represented the total population of Swain Middle School.

While teachers were completing the surveys, Swain County School instructional coaches conducted walk throughs using the differentiated instruction look-for-rubric (Appendix E). I asked each of the four instructional coaches to complete 10 walkthroughs from August 20 to September 12, 2018. The instructional coaches and I completed a series of walkthroughs in late August to build interrater reliability and to ensure that the walkthrough rubric would be appropriate to collect observations that could be coded.

The walkthrough data collected did not support the teacher self-evaluation regarding the implementation of differentiated instruction. The instructional coaches collected sixty-six walkthroughs and after coding the observations for no evidence, grouping, graphic organizer, student products, menu's, digital tools, and stations, it was clear that differentiation was not consistently used among all classes, despite teachers' perceptions that differentiation was happening. Differentiated learning by student product was the most commonly used form of differentiated instruction during the baseline walkthroughs. Instructional coaches recorded nine observations in which teachers were using differentiation by student product. No evidence of differentiation was recorded on 36 of 66 (55%) observations. In the majority, 69%, of the observations that recorded no evidence, the class was participating in whole group discussions or note taking with no evidence of differentiation and in remaining observations recording "no evidence" the students were participating in independent work. The independent work was recorded as "class worksheet" and no evidence existed that the worksheet was differentiated on the

basis of content, process, or product and not by student interest, learning profile, or readiness.

The walkthrough evidence and the teacher self-reporting of the implementation of differentiated instruction did not align. This preliminary finding aligns with Tomlinson's (2008) conjecture that teachers perceive that their practices are aligned with the principles and practices of differentiated learning and that as they learn more their perspectives change. The baseline data collected revealed that teachers valued differentiated instruction and perceived they implemented differentiated principles and practices; however, the walkthrough observations revealed that the majority of lessons observed contained no evidence of differentiated instruction.

I used the 12-item Ohio State Teacher Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001) to collect balancing measure data. Balance measures are collected to evaluate if the improvement idea is negatively impacting another part of the system, in this case, a teachers overall self-efficacy. To remain consistent the Differentiated Instruction Survey, I modified the 12-item Ohio State Teacher Efficacy Scale from a nine-point Likert scale to a five-point Likert scale with 0-nothing and 5-a great deal. The survey questions were grouped into four categories: overall, engagement, strategies, and management, and descriptive statistics were used to find the mean and standard deviation for each category. Table 8 shows that overall, teachers felt that they have "quite a bit" of influence on their classroom. This baseline data was compared to the post intervention data using a one-sample t-test to evaluate if the intervention had any effect on participants' self-efficacy.

Table 8
Teacher self- efficacy mean and standard deviation

Category	Mean	Std. Deviation	Cronbach's Alpha
Overall	4.2	.55	.92
Engagement	3.9	.72	.87
Strategies	4.3	.69	.85
Management	4.4	.46	.76

INITIAL PROFESSIONAL DEVELOPMENT

"For teachers to work effectively in differentiated classrooms, principals must establish a coherent and more effective approach to professional development" Corcoran, 1995

As the implementation team and I began planning the professional development that we provided to the Swain Middle School staff we considered the following suggestions from Corcoran (1995) regarding effective professional development programs:

1. Professional development is likely to have a greater impact if it is closely linked to school initiatives.
2. Teacher initiatives, as well as school and district, must be supported. Teacher initiatives promote collaboration, internal professional development, and more serious engagement in learning activities. Internal professional development is more cost-effective than contracting professional development services.
3. Professional development should be grounded in "good" teaching, including holding high expectations, appropriate child development practices, curriculum content and design, instilling higher-order thinking strategies, school culture, and shared decision-making.
4. Allowing teachers time to explore and question new ideas in their classroom practice.

5. If teachers are supposed to teach for deep understanding, teachers must be knowledgeable of their curriculum and work regularly with others in their field.
6. Professional development should consider differing degrees of teacher experience and knowledge.
7. Sufficient time and follow-up support for teachers to master new content and strategies and to integrate them into their practice should be provided.
8. Professional development should be viewed as an integral part of teachers' work and expected of all teachers.

The first professional development activity that we planned took place during a monthly sixty-minute faculty meeting. The professional development was planned to build consensus and come to a common understanding of differentiated instruction (Tomlinson, 1995), translate theory into practice by connecting current instructional methods to differentiated instruction (King, 2010), and connect differentiated instruction to the school's vision and mission (Corcoran, 1995). The presentation can be found in appendix F.

Swain County Middle School uses Content Literacy Continuum: Strategic Instruction Model as a comprehensive integrated literacy program (The Strategic Instruction Model (SIM), n.d.). I chose to model one of the SIM strategies, "Frame", to deliver the information to the staff. By modeling a current strategy, I was able to connect current practices to theory. I used the "Frame" to differentiate the way or process that teachers received the information. The Framing Routine paired with the graphic organizer "Frame" helps students connect information associated with key topics and main ideas. Figure 11 is the completed "Frame" from the presentation (Appendix F).

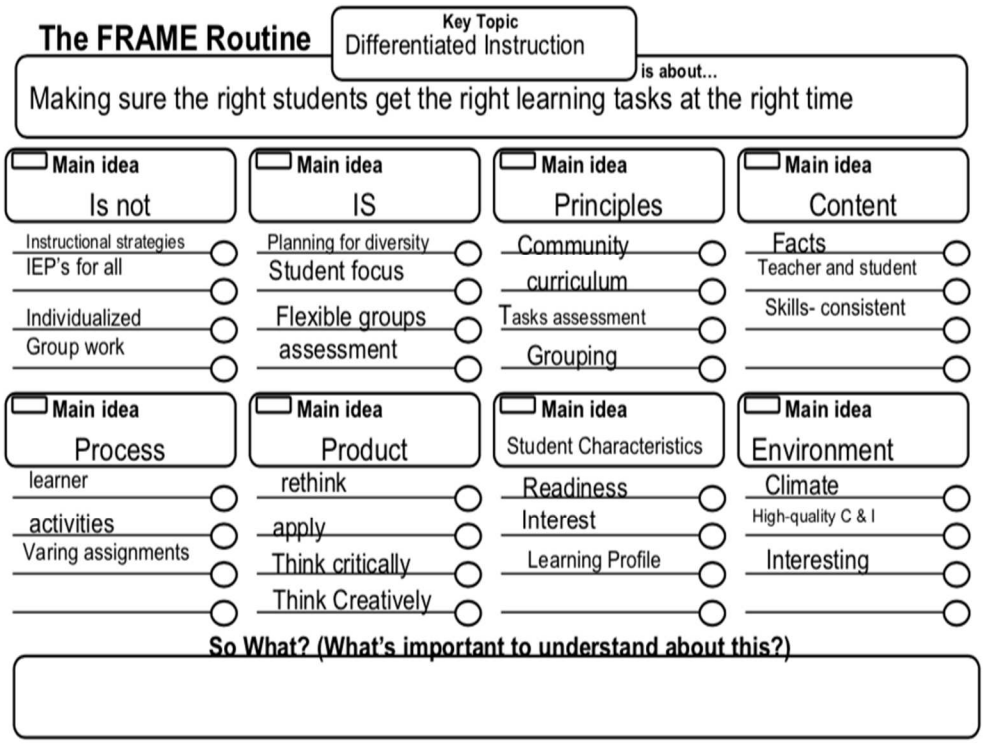

Figure 11. Differentiated instruction frame used during the initial professional development.

The professional development covered common misconceptions of differentiated instruction, what differentiatied instruction is, the principles of differentiated instruction, what it means to differentiate content, process, and product using studet readiness, interest, and learning profile, and the environmental factors that promote differentaited instruction in the classroom. The staff decided to define differentiated instruction using Earls' (2003) definition "making sure the right students get the right learning tasks at the right time" (p. 1428).

Following the professional development reseach participants were asked to complete the professional development exit survey (Appendix A).

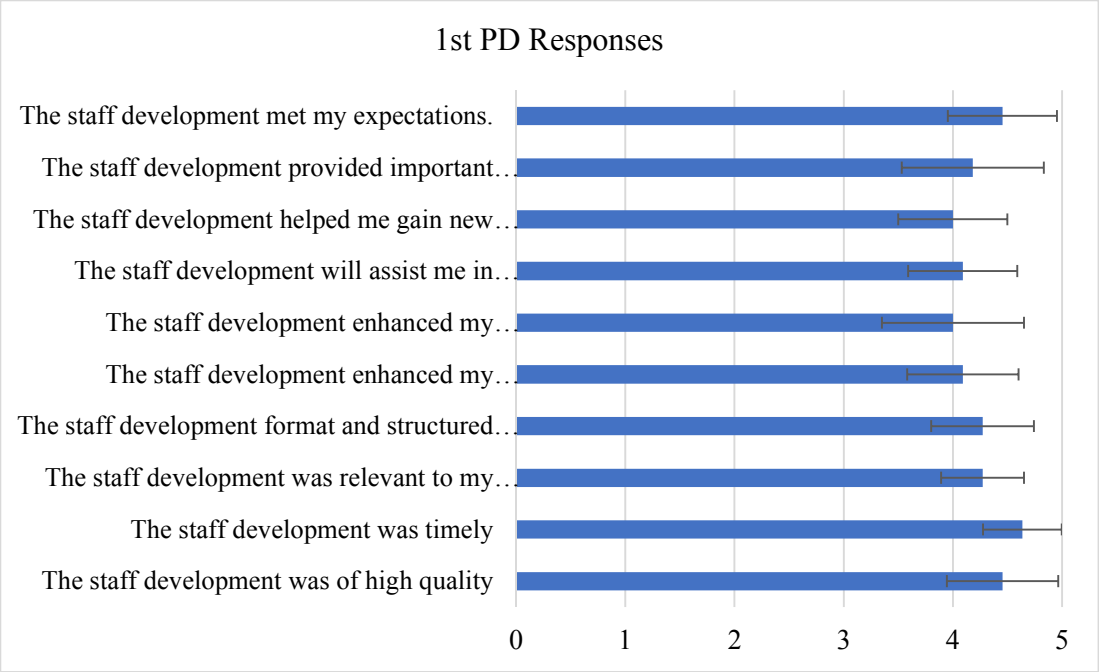

Figure 12. The mean for the first professional development exit survey.

Figure 12 highlights the results of the professional developemt exit survet and overall, the teachers agreed that the professional development met their needs. Three of the eleven particiapants responded that they liked using the frame to organize the information, and six particiapants responded that the common definition help eased their stress regarding differentiated instruction.

A second round of walkthoughs started on September 13, 2018 and ended on October 3, 2018. The instructional coaches conducted forty-six walkthroughs and documented seventeen lessons that contained evidence of differentiated instruction. Digital tools were the most commonly used form of differentiated. Digital tools were observed in nine of the observations. The digital tools: MobyMax, Achieve3000, and Prodigy Math, were used to differentiate content based on student readiness. The instructional coaches documented no evidence of differentiated instruction in twenty-nine out of the forty-six

walkthroughs (63%). Whole group actitives such as lecture, note-taking, and class discussion were the primary instructional strategy during the walkthroughs. Independent assignments such as assessments, worksheets, and silent sustained reading were documented twelve out of the twenty-nine walkthroughs. Assessment, worksheets, and silent sustained reading are all practices that could have been adapted to differentiate instruction. The instructional coaches documented that the assessments and worksheets were the same for all students and the silent sustained reading was from the same class assigned novel.

The instructional coaches, through the baseline data collection and the first progress monitoring check, documented that differentation was happening less than fifty percent of the time in classrooms.The baseline data indicated that differentiation was occuring through student product and the first progress monitoring walkthrough collected more evidence that differentation was occuring through the use of digital tools. It is important to remember two key aspects of classroom walkthroughs:

- classroom walkthroughs are short five to fifteen minute snapshots of instruction and
- the walkthroughs are intended to create a school-wide picture (Protheroe, 2009; Richardson, 2001).

The walkthoughs collected indicated teachers are not differentating consistently and when they do differnetiate instruction they rely on digital tools or differentiate assessments.

SECOND PROFESSIONAL DEVELOPMENT: TOOLS TO DIFFERENTIATE

The second round of professional development was delievered to teachers on October 3, 2018. This day was set aside by the school district's calendar committee as a half day for students with the second half a day disignated for school professional development. Prior to the October 3 professional development day, I met with the implementation team to review the progress of the iniative and to allow them to have time to create plans for the professional development sessions.

The goal of the second round of professional development was to highlight strategies already being used effectivly by staff members at Swain County Middle School. As principal, I had observed the teachers on my implementation team use the strategies that I asked them to share with their peers. The implementation team and I wanted the second round of professional development to be provided by internal experts focused on action, linked to school and district goals, with time for collaboration, and an opportunity for teachers to develop a lesson plan to implement the strategy the month following the professional development.

The strategies that the implementation team were experts in were stations, graphic orgnaizers, digital tools, using projects to assess, and menus. Experts were identified through observations and performace evaluation conferences.

Two seventh grade implementation team members were "experts" at the station rotation model. I have observed the two teachers implement station rotation in their class over a couple years and had several post-conference conversations regarding how the model allowed them to differentiate. Station rotation is a model of teaching that allows students to rotate to through different learning opportunities based on a schedule of

teacher discretion. The rotation model that the experts at SMS used included teacher-led small group, a techology based station, and an independent practice station. By dividing the class into groups the teacher is able to differentate content, process, and product based on student need (Maxwell & White, 2017; Tomlinson, 2014).

An eigth grade ELA teacher lead a PD session focused on project based learning (PBL) as a form of differentiating. PBL accounts for students' learning styles and interests, and allows students to explore content and develop a deeper understanding, while, giving students choice on how they demonstrate their learning (Bell, 2010).

I added two teachers to lead the professional development session on graphic organizers. They have credentials to lead professional development for the Content Literacy Continuum: Strategic Instruction Model. They developed a professional development plan focused on the graphic organizers, Lincs and Word Mapping. These graphic organizers are used to help students learn new vocabulary. Graphic organizers are visual repersentations of concepts and information that organizes content in a manageble easy to understand format, which assists visual and logical learners, as well as, students with learning difficulties access important information.

SMS's instructional coach led the PD for the digital tools, MobyMax and Achieve3000. By using a placement assessment, MobyMax, a standard-aligned learning platform for grades K-8, adapts to a student's ability and aligns digital learning lessons to help the student reach proficiency (Rogowski, 2018). According to What Works Clearning House (2018) Achieve3000, an online literacy program, has positive effects on students comprehension and general literacy by tailoring teacher assigned nonficition articles to match students' independent reading levels.

The “menu” professional development session was lead by an eighth grade math teacher, who uses menus to differentiate instruction weekly. Menus or learning contracts give students freedom in leanring new information. Menus are commonly created to mimic Tic-tac-toe boards, restaurant menus, or bingo boards that gives students choices in assignments and tasks to practice and demonstrate new learning (Tomlinson, 2014).

All Swain County Middle School staff were required to select and attend one of the professional development sessions, but only the teachers participating in the research study were required to complete the professional development exit survey (Appendix A). The staff agreed that the professional development met their expectations, helped them learn new skills, and enhanced their understading of differentiated instruction. Figure 13 displays the mean and standard deviation for each of the ten Likert scale questions from the survey.

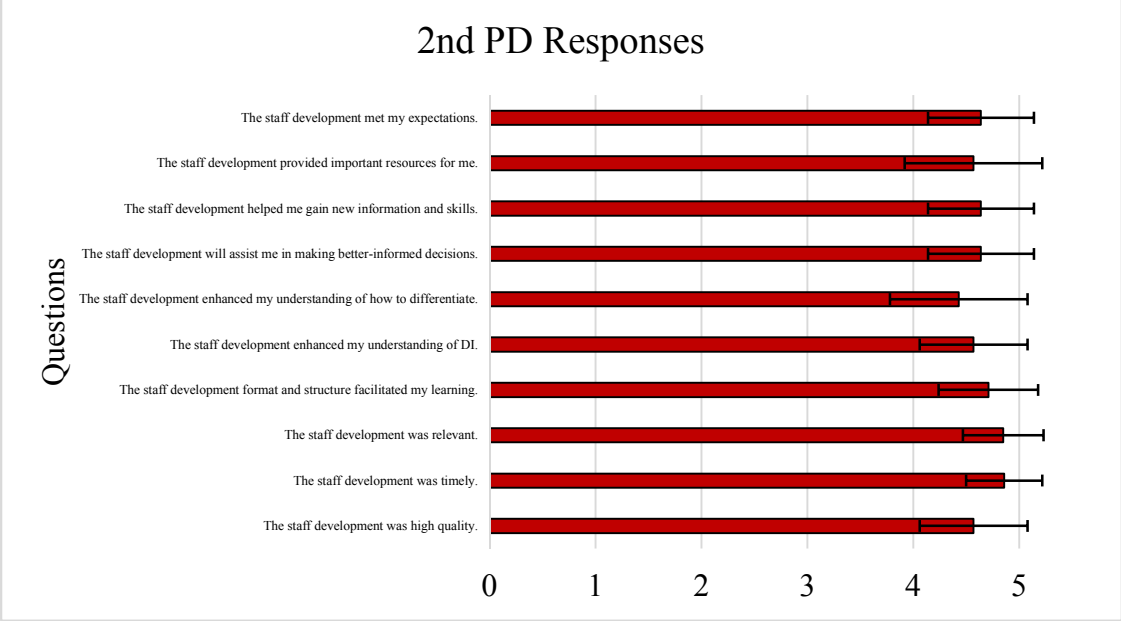

Figure 13. The mean and standard deviation for the second professional development exit survey.

The professional development exit survey also included four open-ended questions which were analyzed be using descriptive coding. Descriptive coding assigns a word or phrase to discribe the main idea of a response (Miles, Huberman, & Saldaña, 2014). “Collaboration” was used to code many of the participants’ responses to what they found as the most useful aspect of the professional development. King (2010) and Corcoran (1995) emphasized the importance of collaboration to create effective professional development for teachers. The collaboration allows teachers to share ideas and problem-solve concerns. Collaboration also increases teachers’ engagement, which is another key element of effective professional development (Corcoran, 1995).

Following the second round of professional development the instructional coaches again completed walkthroughs. Unfortunately, due to the school schedule and one of the instructional coaches missing substantial time from work due to a spouse illness, the instructional coaches were only able to complete twenty-six walkthroughs. Although the instructional coaches completed significantly fewer walkthroughs more evidence of differentiation was observed. Differentiation was observed in 62% of the walkthroughs with digital tools (31% of the observations that documented differentiation) as the most commonly used form of differentiation observed during this round of walkthroughs. Although an increase in differentiation was observed, whole group discussion and notetaking were observed in 70% of the walkthroughs that did not document any form of differentiation.

THIRD PROFESSIONAL DEVELOPMENT: PLC

The third professional development day was on November 15, 2018. The professional development took place during the monthly faculty meeting, so the PD was

capped at an hour. The participants were required to implement the strategy they learned on October 3 in at least one lesson during the month of October. On November 15, the teachers formed professional learning communities with the other teachers that learned the same strategy in October. The PLC's discussed strengths, weaknesses, successes, and areas for improvement during their PLC. The PLC was facilitated by the member of the implementation team that led the strategy specific training in October.

The implementation team and I created the following list of questions to facilitate the PLC's:

1. What have you learned from implementing this strategy?
2. Has anything surprised you?
3. Name your favorite thing about this tool. Everyone must name something different.
4. Have you noticed a difference in student achievement?
5. What are your concerns?
6. What would you like to know more about the strategy?
7. Pretend you are explaining this tool to someone else that has never used this tool or strategy, come up with a 150-word elevator speech describing the strategy to a parent or someone unfamiliar with the strategy.

The goal of the third professional development session focused on facilitating individual and collective experiences so that the participants could construct, evaluate, and synthesize their new knowledge. Reflection and active engagement promote change in educator practice. The active involvement increases a learner's understanding and allows the individual to construct personal meaning and identify applications for their learning (Learning Forward, 2015). The intent was to develop the individual capacity of

each teacher in the strategy that they learned so that they could effectively use the strategy to promote differentiated instruction in their classroom. This increased capacity would help teachers meet the individual needs of students in their classroom.

IMPACT

SUMMATIVE EVALUATION

The purpose of this disquisition was to address the diversity in today's classrooms by addressing teacher responsiveness to the diverse needs of students through effective professional development focused on differentiated instruction. The 90-day improvement cycle was evaluated by using process, balance, and outcome measures. The study began by collecting baseline outcome and balancing measures. To establish a baseline outcome measure, participants completed the two-part differentiated instruction survey. The Ohio State Teacher Efficacy scale was administered to participants to establish a baseline balancing measure. Classroom walkthroughs were completed prior, during, and after the intervention by Swain County Instructional coaches as a process measure. The initial walkthroughs were used to measure the use of differentiated instruction in the study participants' classrooms. After each of the three PD sessions additional walkthroughs were completed to measure any change in instructional practices. Additionally, a professional development exit survey was administered to each participant at the end of each PD session. The professional development exit survey was used as a process measure to evaluate the effectiveness of the professional development.

RESULTS

The Differentiated Instruction Survey and Ohio State Teacher Efficacy scale were administered pre and post intervention. The Ohio State Teacher Efficacy scale, a

balancing measure, and the Differentiated Instruction Survey, an outcome measure, were analyzed using the one sample t-test in SPSS. The one sample t-test allowed me to compare the baseline results to the post intervention results. The one-sample t-test compares the mean of a sample to a pre-specified value and tests for deviation ("One-sample test of means", 2016). The pre-specified value in this case was the mean of the baseline surveys. In order to maintain a degree of anonymity, teachers did not have identifiers on their survey data-so one to one comparison with a paired samples t-test was not possible.

Figure 14 displays the mean for the baseline and post Ohio State Teacher Efficacy Scale. The Ohio State Teacher Efficacy Scale is divided into three subcategories. I found the mean for the overall instrument, efficacy in maintaining student engagement, efficacy in using instructional strategies, and efficacy for classroom management. I compared the baseline mean to the post survey mean using a one-sample t-test. The one-sample t-test was conducted to determine if a statistically significant difference existed between the mean from the baseline Ohio State Teacher Efficacy Scale and the post intervention Ohio State Teacher Efficacy Scale.

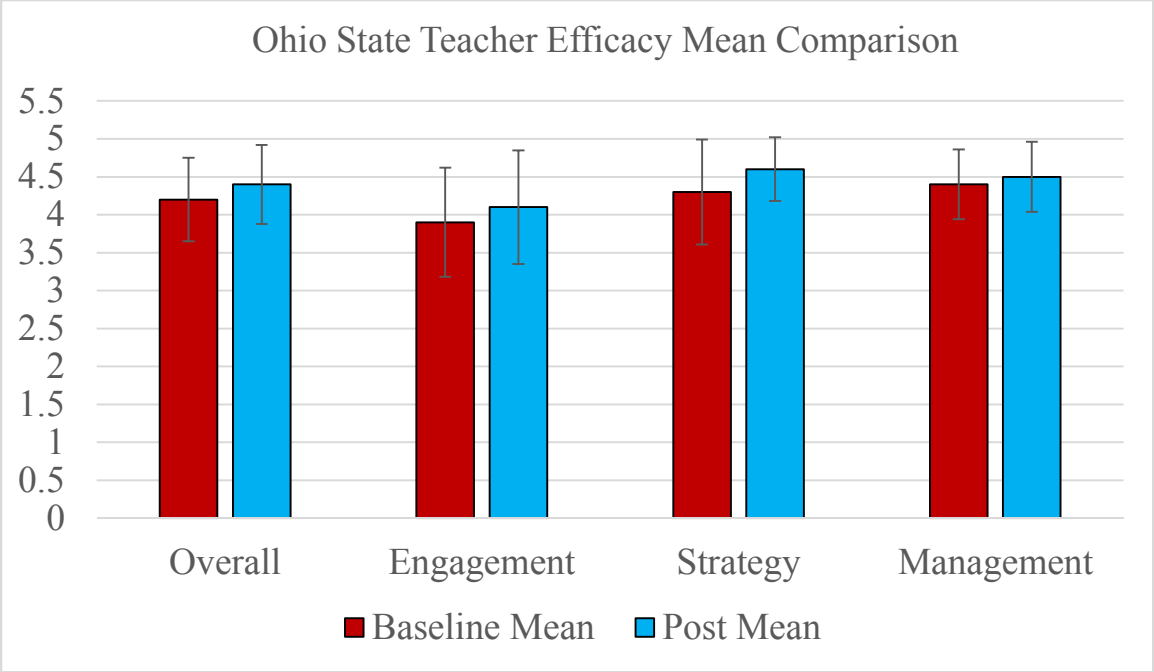

Figure 14. The mean and standard deviation comparison of the baseline and post intervention Ohio State Teacher Efficacy Scale.

The baseline mean (M= 4.2, SD=.55) is similar to the post intervention mean (M= 4.4, SD=.52) from the post observation, t(13)=1.521, p=.152. Neither Engagement (M=3.9, SD=.72) nor Management (M=4.4, SD=.46) are statistically different from the pre to post administration of the efficacy measure, Engagement t(13)=1.019, p=.327 and Management t(13)=1.017, p=.328. However, there was a statistically significant differences in the subscale, Strategy, which has a baseline mean of M=4.3 (SD=.69) and post mean of M=4.6 (SD=.46), t(13)=2.78, p=.016. This analysis indicated that the intervention, professional development focused on differentiated instruction, had a positive impact on teachers' efficacy with instructional strategies.

The Differentiated Instruction Survey consists of two twenty-five question subscales, Understanding Differentiated Instruction and Implementation of Differentiated Instruction. The two surveys have subcategories: student interest, student assessment,

lesson planning, content, process, and product. The one-sample t-test was conducted to determine if a statistically significant difference existed between the mean from the baseline surveys and the post intervention surveys. Table 9 displays the results from the one-sample t-test that was used to determine if there was a statistically significant difference between the overall composite mean and for each of the subcategory means.

There was not a significant difference between the baseline mean for the composite, lesson planning, content, process, or product and the post survey mean. However, there was a statistically significant difference ($t(13)=2.413$, $p=.031$) found in the content baseline mean ($M=4.4$, $SD=.51$) and post administration mean ($M=4.7$, $SD=.47$). Figure 15 is a visualization of the mean and standard deviation of the baseline and post mean.

Table 9
Understanding Differentiated Instruction Survey Results

	Baseline		Post Administration						
Scale	Mean	SD	Mean	SD	Change (Delta)	T	DF	P-value	Cohen's D
Composite	4.28	.58	4.48	.48	.199	1.56	13	.142	.427
Student Interest	4.53	.57	4.64	.47	.114	.912	13	.379	.234
Student Assessment	4.24	.57	4.5	.53	.265	1.869	13	.084	.491
Lesson Planning	4.25	.59	4.5	.54	.267	1.846	13	.088	.463
Content*	4.4	.51	4.7	.47	.302	2.413	13	.031	.638*
Process	4.24	.68	4.36	.61	.122	.749	13	.467	.197
Product	4.06	.75	4.18	.68	.120	.656	13	.523	.177

Note. T = t Statistic; DF = degrees of freedom. * statistically significant at the .05 level, ** statistically significant at the .01 level

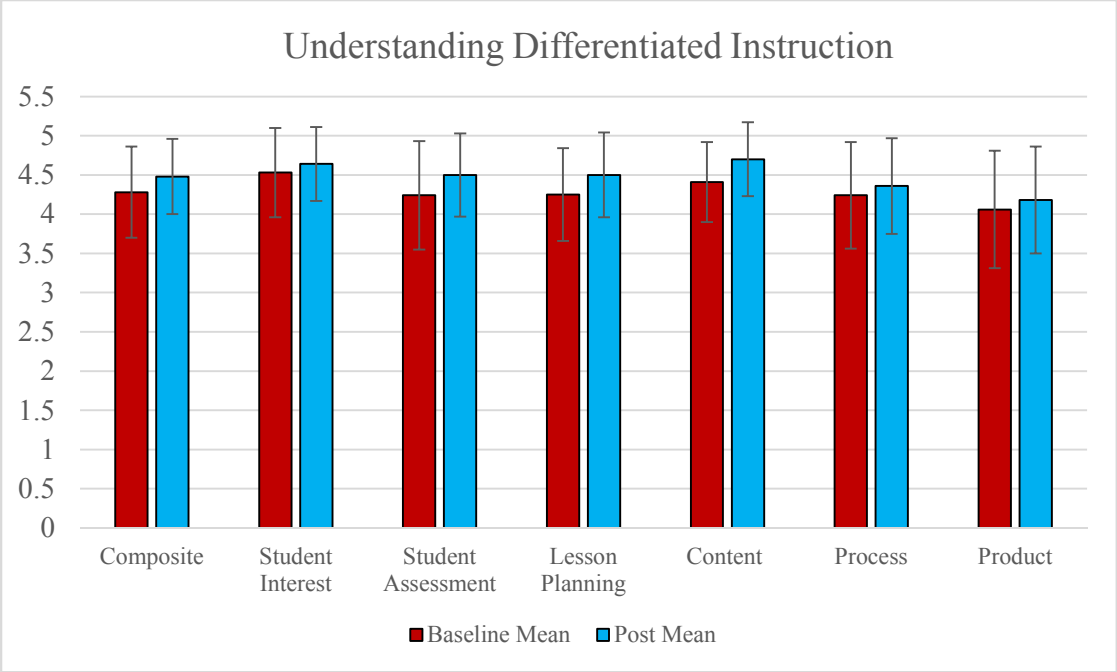

Figure 15. The mean and standard deviation comparison of the baseline and post intervention Understanding Differentiated Instruction subscale.

The results of the Implementing Differentiated Instruction subscale of the Differentiated Instruction Survey were also analyzed using the one-sample t-test as shown in Table 10. Again, the mean of the composite and each of the subcategories were compared to the mean of the composite and each of the subcategories of the post survey results. There was a statistically significant difference ($t(12)=2.508$, $p=.028$) found in the baseline student interest mean ($M=4.3$, $SD=.79$) and post administration mean ($M=4.63$ $SD=.46$). The size of this effect ($d=.674$) is considered medium (Tanner, 2012). A statistically significant difference ($t(12)=2.343$, $p=.037$) with a medium effect size ($d=.696$) was also noted in the baseline mean ($M=4.06$, $SD=.63$) and post administration mean ($M=4.45$, $SD=.59$) of the student assessment subscale. There was no statistically significant difference found in the composite, lesson planning, process, or product subscale.

Table 10
Implementing Differentiated Instruction Survey Results

	Baseline		Post Administration						
Scale	Mean	SD	Mean	Standard Deviation	Change (Delta)	T	DF	P-value	Cohen's D
Composite	4.15	.67	4.45	.53	.303	2.058	12	.062	.566
Student Interest*	4.3	.79	4.63	.49	.338	2.508	12	.028	.674
Student Assessment*	4.06	.63	4.45	.59	.383	2.343	12	.037*	.696
Lesson Planning	4.15	.79	4.45	.56	.296	1.904	12	.081	.536
Content	4.44	.47	4.62	.51	.177	1.263	12	.231	.353
Process	4.05	.83	4.27	.64	.224	1.205	12	.254	.344
Product	3.97	.8	4.23	.69	.260	1.297	11	.221	.377

Note. T = t Statistic; DF = degrees of freedom.

FINDINGS

The goal of the improvement initiative was to increase teacher's responsiveness to the diverse needs of students. To increase teachers' responsiveness, the implementation team chose to provide professional development focused on differentiated instruction to the teachers at Swain County Middle School. The three professional development sessions were developed to maximize teacher learning and outcomes. Extensive research on differentiated instruction and effective professional development guided the creation of the implementation plan. The implementation team also monitored balance, process, and outcome measures during 90 improvement cycle.

According to the teachers' self-reporting, the participants valued and implemented differentiated lessons. The mean composite score for the Understanding Differentiated

Survey was 4.28. On the survey a 4 was labeled very important. The mean composite score for the Implementing Differentiated Instruction was 4.15. “A lot” was the descriptive language for a four. However, the Swain County Instructional coached observed evidence of differentiation in only forty-five percent of the baseline observations.

At the conclusion of the third professional development session participants were asked to complete the Differentiated Instruction Survey and the instructional coaches completed a final round of walkthroughs. Using SPSS and analyzing the data using a one-sample t-test, I looked for any statistically significant differences in the composite and subcategory means. The baseline mean for the composite and each subcategory was used to compare the mean of the composite and subcategories of the post intervention survey. A statistically significant difference was found in the student interest and student assessment means of the Understanding Differentiated Instruction. A statistically significant difference was also found in the Implementing Differentiated Instruction: Content. The analysis of the statistical data would leave one to doubt that the professional development improved teacher responsiveness to the diverse needs of students.

However, the instructional walkthroughs highlight a different finding. Initially, 41% of the walkthroughs captured evidence of differentiated instruction. Throughout the walkthroughs the instructional coaches documented more differentiated instruction. During the second round, 65% of the walkthroughs documented some form of differentiated instruction. In the third round, 62% of the observations documented differentiated instruction. Differentiated instruction was documented in 59% of the final walkthroughs.

During the first round of observations, differentiation by student product was documented most frequently (36%). Digitals tools were documented as the most frequently used forms of differentiation during the second and third round of observations (56%). During the last round of walkthroughs, the instructional coached documented the most variety of differentiated instruction as shown in Figure 16. Graphic organizers (36%), digital tools (32%), and flexible grouping (16%) were the forms of differentiation that were observed most often.

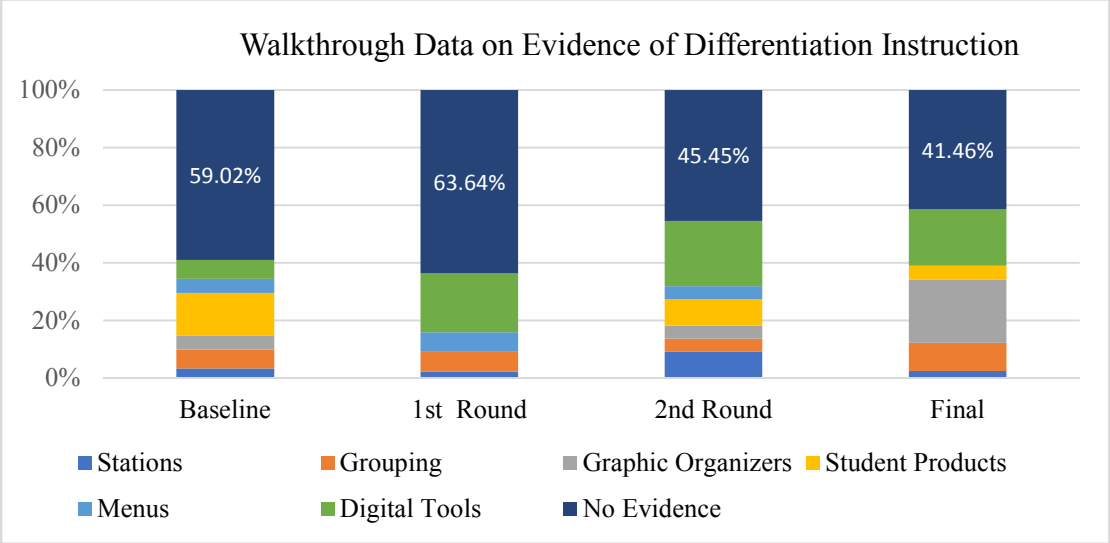

Figure 16. The percent of strategies used during each round of observations.

This 90-day improvement cycle measured the impact of effective professional development on teacher capacity to respond to the diverse needs of students. The survey and observation results indicate that after the professional development sessions, teachers were making progress in meeting the diverse needs of students by implementing more differentiated instructional activities. Improvement research is a learning journey that uses iterative cycles to engage educators in an ongoing process of improvement (Bryk

et.al, 2015). The 90-day improvement initiative outlined in this research is a snapshot of an ongoing improvement effort at Swain County Middle School. The educational landscape is littered with many good ideas that have been abandoned when quick results are not observed (Hiebert, Gallimore, & Stigler, 2002).

The results from this research supports the claim that professional development is most effective when grounded in action, long-term, collaborative, and focused on student learning (King, 2010).

IMPLICATIONS AND RECOMMENDATIONS

LESSONS FOR IMPLEMENTATION

The Breaking the Mold improvement initiative provided school-based professional development to the teachers of Swain Middle School. All teachers at Swain Middle School participated in the professional development but eighteen agreed to be research participants and complete the surveys used for data collection. Constraints during this implementation included time for the professional development, lack of a budget, and the role of the scholar practitioner.

As the principal of Swain Middle School and scholar practitioner, I had to take steps to reduce the risk of coercion. All surveys and walkthroughs were completed anonymously, and each participant was asked to use their employee identification number, which I do not have access, to identify responses so that the survey's and walkthroughs could be triangulated for individual growth. Unfortunately, not all of the participants included their employee identification number on the survey responses. As a result, survey data could not be analyzed using the paired sample t-test, rather a one-sample t-test had to be used.

Due to the anonymous nature of this research, individual coaching was also not utilized. The coaches used to conduct the walkthroughs serve different schools within the local education agency and as a result did not have the time or relationships needed to provide individual coaching to research participants. At Swain Middle School, school administration and the instructional coach dedicated to the school, conduct the individual coaching sessions. As principal and scholar practitioner, I was not able to conduct walkthroughs and provide individual coaching feedback. For teachers to master new content and strategies they need time for follow up support from instructional coaches (Corcoran, 1995; King, 2010; Learning Forward, 2015). Although the third professional development activity was designed as a PLC, individual coaching and support would have produced stronger results and increased teachers' capacity to meet the needs of students.

If I were to conduct this research again, as a principal I would have conducted walkthroughs and coaching session for all teachers. The teachers participating in the research would have remained anonymous as I would have observed and coached all teachers. Coaching and ongoing support is essential as teachers work to learn new skills, and as the lead learner I needed to have supported teachers.

At the outset of this improvement initiative, the superintendent of Swain County Schools, approved the research with the guidelines that the professional development had to fit within the current school calendar and require no budget. The lack of a budget had minimal impact on the design of the professional development. To increase teacher capacity and the capacity of the organization the professional development was designed and implemented by a team of teachers. This internal professional development promoted

collaboration, engagement, and reduces the cost of professional development activities (Corcoran, 1995). This lack of a budget did impact planning time for the improvement initiative. The improvement team had to meet on individual time before or after school so as to not interfere with classroom responsibilities to reduce the need for substitute teachers. These requirements limited the time that the implementation team had to plan and deliver the professional development. The first and third sessions of the professional development were delivered during sixty-minute monthly faculty meetings. These meetings are from 3:20 to 4:20 the second Wednesday of every month. The second professional development session was scheduled on an early release day for students allowing for a three-hour professional development session. Participants reported that the first professional development was rushed and that more time was needed to discuss differentiated instruction. Participants felt that the second and third sessions adequately met their needs. More time for the first session would have increased understanding and connected the differentiated instruction to more commonly used practices, allowing teachers to use common practices in a new way to meet the needs of their diverse students.

The second professional development sessions allowed teachers to select from six different strategies that promote differentiation; menus, digital tools, Lincs, Word Mapping, projects, and stations. The strategies progressed with difficulty allowing teacher to select a strategy to learn that matched their readiness. The majority of the participants selected the digital tool professional development, no participants selected the menu professional development, three participants chose the projects professional development, only one participant selected the station option, and two participants

selected the graphic organizer professional development, which included the Lincs and Word Mapping strategies. Originally, Lincs and Word Mapping were individual sessions, but due to low participation the presenters combined the sessions. The more difficult sessions had fewer participants which was to be expected given the time constraints teachers were working within. Teachers had already received training on Achieve3000 and MobyMax but still eighteen teachers selected this training. These digital tools require little teacher planning, are easier to incorporate into weekly lessons, and provided the student and teacher information about the student's current learning readiness.

The lack of differentiated instruction in today's classrooms are a result of a variety of causes, including but not limited to lack of time and resources, teachers' attitudes and beliefs, and the complexities of differentiated instruction. The digital tools professional development could be an easier bridge for teachers to connect differentiated instruction to everyday practices. One participant responded, "I am excited to use digital tools such as MobyMax to help teach and work with students on their individual Lexile levels. In a mixed group classroom, with Lexile's ranging from 100 to 1400, digital tools will help tremendously with differentiating reading passages and questions on each student's level". This response indicates why the teacher selected the digital tools professional development. The teacher expressed a desire to help all students but is not sure how to reach each student at their readiness when the class has a range of reading abilities. Using digital tools to differentiate instruction is a good starting point for teachers as they work to incorporate more differentiated learning experiences into their lessons. The digital tools alleviate concerns associated with a lack of time while allowing teachers to understand and learning instructional strategies to overcome the complexities

of differentiated instruction. As teachers become less intimidated by the complexities of differentiated instruction, they can work to learn and incorporate more instructional practices.

I would recommend that a future researcher or leaders offer the professional development focused on digital tools in an early PD session. I would follow the initial consensus building session with the digital tools sessions to allow teachers an opportunity to build knowledge of differentiated instruction prior to exploring more intensive strategies. Differentiation is more than a series of strategies, it is a way of thinking about student learning in a meaning making, active approach (Tomlinson & Allen, 2000). Allowing teachers to explore differentiated instruction by connecting the principles to commonly used practices will promote a better understanding of differentiated instruction breaking down the misconception that differentiated instruction is a set of complex instructional strategies.

LESSONS FOR LEADERSHIP

The role of a principal has changed from the building executive to the lead learner focused on student and teacher learning (Dufour, 2002; Fullan, 2002; Louis, et.al, 2010; Mendels, 2012). This research led to lessons in serving as the lead learner, building teacher capacity, creating a shared purpose, and distributive leadership.

To promote the success of students a principal must create a nurturing school environment that has a shared vision, enabling students and teachers to be their best (Dufour, 2002; Fullan, 2002; Mendels, 2012). This improvement initiative's ultimate aim was to improve student success by supporting teachers in the implementation of differentiated instruction. This aim is directly connected to the school's vision to create a

learning environment where all students will be career and college ready by ensuring that each student has the opportunity to learn in an environment that meets their individual needs. To reach this vision and ultimate aim the improvement initiative emphasized building teacher capacity, shared leadership, and sustainable school improvement.

As the lead learner, the principal must develop teacher knowledge and skill to build individual and organizational capacity for sustainable school improvement. The improvement initiative was led by the school principal and relied on instructional leaders to create a collaborative environment that promoted organizational collaboration. Unlike, traditional professional development that is often short-term and episodic, the professional development designed for the improvement initiative was focused on the needs of Swain Middle School, provided collegial collaboration and support, and was ongoing (Newman, et. al, 2000). The improvement team identified a problem of practice, developed an improvement initiative, then carried out the initiative. By including a team of peers to identify the problem of practice, this improvement initiative did not seem like "one more thing" for teachers. The team was able to build consensus and group commitment. The development of shared instructional practices will build the collective capacity of Swain Middle School. The implementation team led PD sessions, in areas that they were "experts." In preparation to lead the professional development session, the teacher leaders or experts had to learn more about differentiated instruction to be prepared to address any concerns or questions that their colleagues might have had during the session. Developing their PD sessions strengthened the individual's capacity and, as a result of sharing their strategy, increased their peers' capacity. It is not likely that one person will have the expertise needed to lead school improvement, so school leaders must

develop opportunities for principals and teachers to work together to build skills and knowledge while "constructing meaning toward a shared purpose" (Fullan, 2002; Lambert, 2002, p.18; Pearce & Manz, 2005).

The Breaking the Mold improvement initiative included an implementation team to lead the initiative. The team consisted of teachers from various subjects and grade levels. The team approach is important to school improvement because often initiatives fade away or fail when principals leave (Fullan, 2002; Lambert, 2002). The initiatives fade away or fail because teachers are often excluded from determining the direction of the school which inhibits the construction of a shared purpose (Barth, 2001; Fullan, 2002; Lambert, 2002). By working together, the implementation team was able to develop a shared purpose for the initiative and facilitate the sharing of that purpose with their peers. Because classroom teachers designed the improvement initiative, the professional development sessions included information that was seen as pertinent. When describing the most useful part of the professional development research participants used words such as "collaboration, sharing, learn from others, and see how others use." One participant stated, "The most useful part was getting to discuss different ideas with peers. Having the one-on-one discussion time with people you do not see on a regular basis allows for better communication throughout the school and allows all of us to be on the same page about what is expected of us and our students." These statements reiterate the importance of including teachers in the school improvement process to construct a shared purpose.

As the lead learner, there is no expectation that the principal has all the answers. Teachers' experience and knowledge are essential to the school improvement process,

and it is unlikely that one person will have all the answers (Pearce & Manz, 2005). By creating the opportunity for the principal and teachers to act as mutual learners this improvement initiative used distributed leadership to increase leadership capacity to create sustainable school improvement. Bennett, Wise, Woods, & Harvey (2003) defined distributive leadership as "a group activity that works through and within relationships, rather than individual actions" (p. 3). Throughout this initiative, I relied on the expertise of my team to facilitate the PD, assist in the organization of the initiative, and provide valuable feedback to shape the planning of the initiative. Instructional coaches were essential in collecting and reporting valuable walkthrough data that helped guide the implementation and evaluate the effectiveness of the initiative. School leaders must use daily interactions, walkthroughs and formal observations to capitalize on the strengths and weakness of individuals and the team to build capacity and sustainable school improvement.

DIFFERENTIATION AS A TOOL FOR EQUITABLE ACCESS TO OPPORTUNITIES TO LEARN

The introduction of this disquisition outlines the need for differentiated instruction as a means for social justice. Differentiation in the classroom *is* means for increasing student opportunities to learn. Today's classrooms are more diverse than ever due to Public Law 94-142, No Child Left Behind, and Every Student Exceeds Act that ensure all students are being taught at high academic standards to prepare them for college and/or a career. Milner (2012) argued gaps in achievement mirror gaps in opportunity to learn. He explicated while:

> On one hand, it is necessary to hold educators accountable for providing optimal learning opportunities for all learners . . . on the other hand, instructional practices

> and related educational experiences need to be constructed in ways that address and are responsive to varying needs because of the range of differences that students bring into the classroom (Milner, 2012, p. 694)

Despite the growing diversity in classrooms, instruction has remained teacher-centered and didactic creating a stagnate closing of the achievement gap and perpetuating unequitable access to opportunities to learn. Ladson-Billings (2006) compared the achievement gap between Caucasian students and students of color to the national debt and deficit; calling for the nation to address the history of injustices that generations of students of color have faced. The history of "educational debt" has led to a lack of trust in the current education system adding an increased burden for current school administrators and teachers to carry. According to Ladson-Billings this burden is interest that must be paid as a result of the nation's educational debt. Ladson-Billings (2006) stated, "on the face of it, we must address it (educational debt) because it is the equitable and just thing to do" (p. 9).

A socially just school provides whatever is necessary to ensure that all students have access to instruction that will prepare them for college and/or career. Villa and Thousand (2017) stated, "inclusive education does not require students to possess any particular set of skills or abilities as a prerequisite to belonging in a "regular" classroom (p. 9). In lieu of forcing students with a myriad of differences to conform to the teacher-centered, didactic style of teaching, teachers need to adjust instruction to meet the needs of students. Research by Cosier, Caustio-Theoharis, and Theoharis (2013) supported previous research suggesting that students with disabilities achieve at higher levels when given the opportunity to learn in the general education classroom. In fact, their research

suggests that students who spend 6 hours a day in the general education classroom out perform their peers who spend the majority of their time in a self-contained classroom by 8 to 10 achievement points. As a result of these findings, teachers and administrators need to review practices and policies that remove students from the general education classroom for interventions and look for ways to bring a continuum of services to support students' in the general education classroom.

This improvement initiative took purposeful steps to ensure that all students receive the education they deserve by supporting teachers' capacity to address the needs of a diverse classroom. When teachers implement effective instructional practices such as differentiated learning, they can create successful inclusion classrooms that support the opportunity to learn for all students (Cosier et al., 2013). By identifying students' interest, readiness, and learning profile teachers can differentiate instruction to create an inclusive learning environment that values, empowers, and supports the learning of all students.

CONCLUSION

This 90-day improvement cycle focused on providing effective professional development to teachers, so that all students regardless of skill, ability, race, or gender can access instruction that will prepare them for college and/or career in a regular classroom setting. It is necessary that schools and classrooms move from the teacher-centered, didactic style of teaching to address the national "education debt" and society's growing desire for a personalized education to adjust instruction that meets the needs of students. Although this improvement initiative used five instructional strategies to promote differentiation, it is important to understand that differentiating instruction is

more than a set of strategies; it is a thought process that focuses on student needs and not a prescribed curriculum (Tomlinson, 2014).

Shifting from the teacher-centered, didactic style of teaching will require a paradigm shift in schools and classrooms. This shift, like all change, will be challenging, difficult, and require time. School leaders must work with teachers to construct a clear, common vision, build individual and institutional capacity while supporting one another through ongoing, collaborative professional development. The change will take time and teachers will need the opportunity to make sense of new ideas through collaboration and coaching.

The framework outlined in this 90-day improvement cycle will give future administrators and schools the foundation to build teacher capacity to respond to the diverse needs of students. With commitment to a shared vision, distributed leadership, and effective professional development practices schools and teachers can increase their capacity to respond to the individual needs of students.

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APPENDIX

APPENDIX A PROFESSIONAL DEVELOPMENT EXIT SURVEY

Q1 The staff development was of high quality
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q2 The staff development was timely
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q3 The staff development was relevant to my needs.
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q4 The staff development format and structured facilitated my learning.
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q5 The staff development enhanced my understanding of differentiated instruction.
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q6 The staff development enhanced my understanding of how to differentiate instruction.
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q8 The staff development will assist me in making better-informed decisions.
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q7 The staff development helped me gain new information and skills
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q9 The staff development provided important resources for me.
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q10 The staff development met my expectations.
- o Strongly agree (1)
- o Somewhat agree (2)
- o Neither agree nor disagree (3)
- o Somewhat disagree (4)
- o Strongly disagree (5)

Q11 How will you use what you learned?

Q12 What was the most useful part of this staff development? Why?

Q13 What was the least useful part of this staff development? Why?

Q14 What additional training/support do you need?

APPENDIX B UNDERSTANDING OF DIFFERENTIATED INSTRUCTION

Q1 I know individual student interest and can relate it to instruction.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q2 I know individual student culture and expectations and can relate to instruction.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q3 I know individual student life situations and how it may impact their learning.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q4 I am aware of student's learning disabilities and handicaps and how to address them in lessons so as not to impair their learning.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q5 I pre-assess students before instruction.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q6 I pre-assess readiness to adjust the lesson.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q7 I assess during the unit to gauge understanding.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q8 I assess at the end of the lesson to determine knowledge acquisition.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q9 I determine student's learning styles.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q10 I teach up by assuring each student works toward their highest potential.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q11 Materials are varied to adjust to students' reading/interest abilities.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q12 Learners play a role in designing/selecting learning activities.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q13 I adjust for diverse learner needs with scaffolding, tiering instruction & provide student choice in learning activities.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q14 I provide tasks that require students to apply and extend understanding.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q15 The curriculum is based on major concepts and generalizations.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q16 I clearly articulate what I want students to know, understand and be able to do.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q17 I use variety of materials other than the standard text.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q18 The pace of instruction varies based on individual learner needs.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q19 I use learner preference groups and/or learning preference centers.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q20 I group students for learning activities based on readiness, interests, and/or learning preferences
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q21 The classroom environment is structured to support a variety of activities including group and/or individual work.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q22 I provide multiple modes of expression in the final product.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q23 I provide students with the choice to work alone, in pairs or small group
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q24 The product connects with student interest.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

Q25 I provide a variety of assessment tasks.
- o Extremely important (1)
- o Very important (2)
- o Moderately important (3)
- o Slightly important (4)
- o Not at all important (5)

APPENDIX C IMPLEMENTATION OF DIFFERENTIATED INSTRUCTION

Q1 I know individual student interest and can relate it to instruction.
- o A great deal (1)
- o A lot (2)
- o A moderate amount (3)
- o A little (4)
- o None at all (5)

Q2 I know individual student culture and expectations and can relate to instruction.
- o A great deal (1)
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- o A lot (2)
- o A moderate amount (3)
- o A little (4)
- o None at all (5)

APPENDIX D TEACHER SENSE OF EFFICACY SCALE

Q1 How much can you do to control disruptive behavior in the classroom?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q2 How much can you do to motivate students who show low interest in school work?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q3 How much can you do to get students to believe they can do well in school work?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q4 How much can you do to help your students value learning?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q5 To what extent can you craft good questions for your students?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q6 How much can you do to get children to follow classroom rules?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q7 How much can you do to calm a student who is disruptive?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q8 How well can you establish a classroom management system with each group of students?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q9 How much can you use a variety of assessment strategies?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q10 To what extent can you provide an alternative explanation for example when students are confused?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q11 How much can you assist families in helping their children do well in school?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

Q12 How well can you implement alternative strategies in your classroom?

- Nothing (1)
- Very Little (2)
- Some Influence (3)
- Quite a Bit (4)
- A Great Deal (5)

APPENDIX E WALKTHROUGH TEMPLATE

Employee ID.: _____

Date: _____

Classroom Walkthrough Checklist
Differentiated Instruction

Legend
❑ -Evidence
NE- No Evidence
NA- Not Applicable

Quality Evidence	Observations	Follow-Up
❑ Graphic Organizers ❑ Flexible Grouping ❑ Menus ❑ Stations ❑ Digital Tools ❑ Student Products Learning Goal: Description of Quality Evidence:	Content: Process: Product (collect sample student product if possible):	Strengths: Areas to follow up (allow teacher to respond):

APPENDIX F INITIAL PROFESSIONAL DEVELOPMENT PRESENTATION

Differentiated Instruction

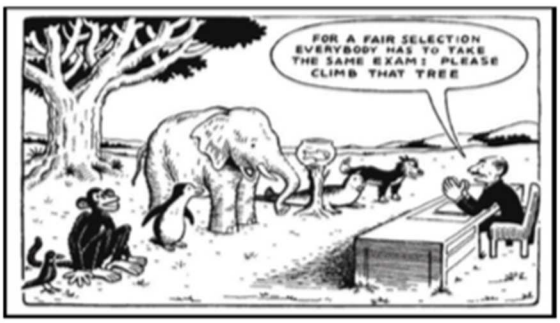
making sure that the right students get the right learning tasks at the right time

Goals for this session

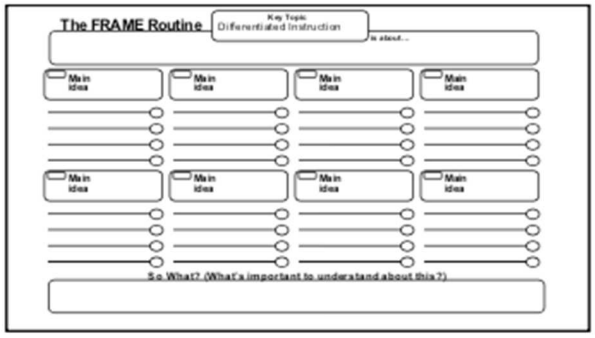
1. Participants will understand "Why" differentiated instruction is important.
1. Participants will know the foundations to differentiated instruction.
1. Participants will leave with a shared definition of differentiated instruction.
1. Participants will be able to identify current practices that are used to differentiate instruction.

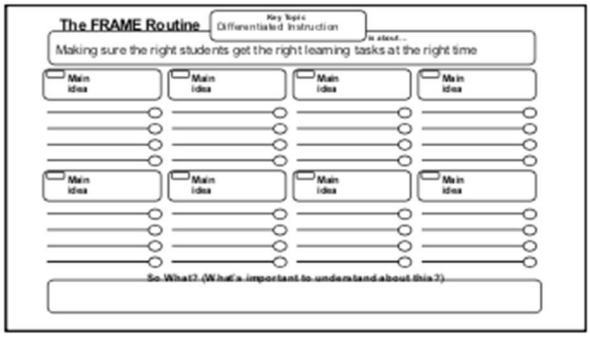
Why

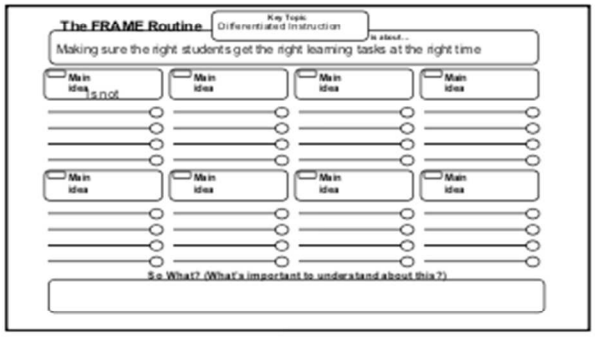
Schools are like airport hubs; student passengers arrive from many different backgrounds for widely divergent destinations. Their particular takeoffs into adulthood will demand different flight plans (Levine, 2002, p.336).

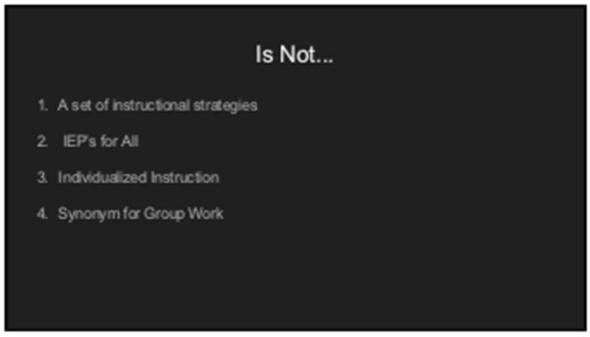


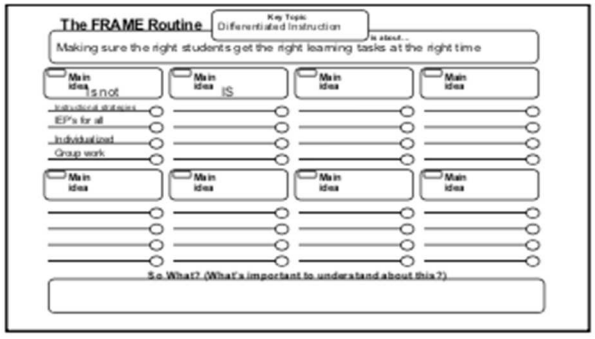
Some great teachers use technology, some poor teachers use technology, some great teachers do not use technology, some poor teachers do not use technology.

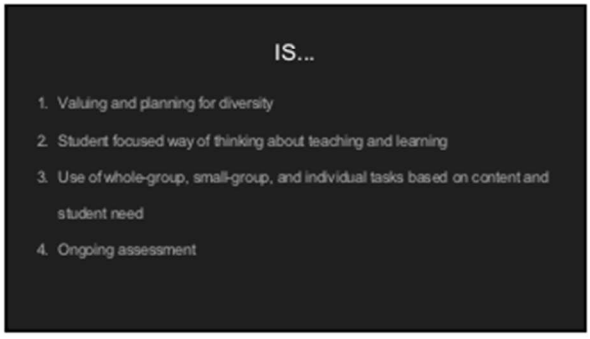

The FRAME Routine
Key Topic:
Differentiated Instruction
is about...
Main idea
So What? (What's important to understand about this?)

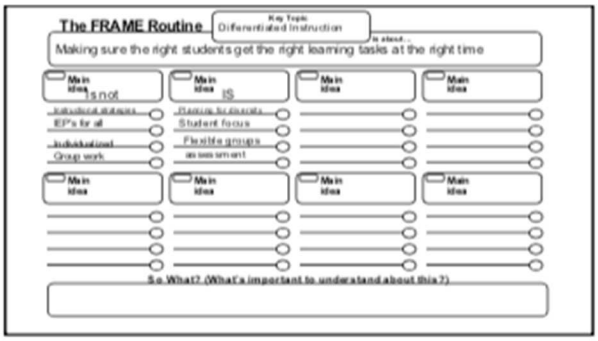

The FRAME Routine
Key Topic:
Differentiated Instruction
is about...
Making sure the right students get the right learning tasks at the right time
Main idea
So What? (What's important to understand about this?)

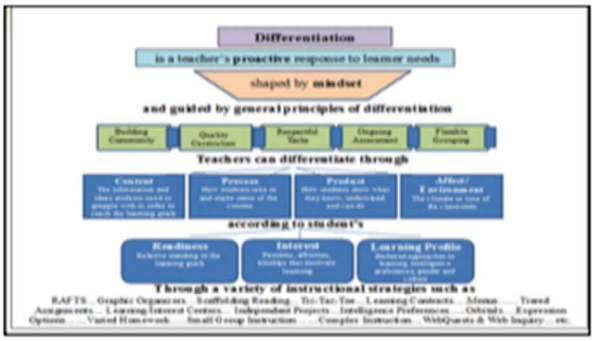

The FRAME Routine
Key Topic:
Differentiated Instruction
is about...
Making sure the right students get the right learning tasks at the right time
Main idea
Is not
So What? (What's important to understand about this?)

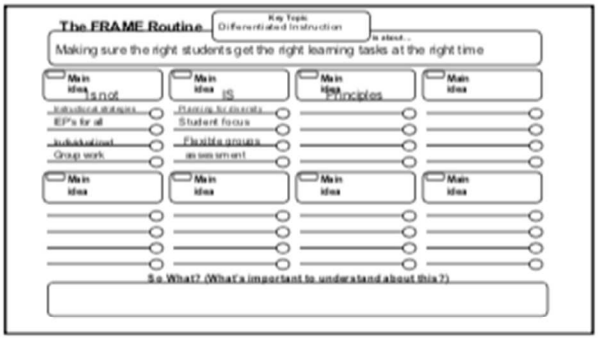

Is Not...
1. A set of instructional strategies
2. IEP's for All
3. Individualized Instruction
4. Synonym for Group Work


The FRAME Routine
Key Topic:
Differentiated Instruction
is about...
Making sure the right students get the right learning tasks at the right time
Main idea
Is not
IS
Individual strategies
IEP's for all
Individualized
Group work
So What? (What's important to understand about this?)


IS...
1. Valuing and planning for diversity
2. Student focused way of thinking about teaching and learning
3. Use of whole-group, small-group, and individual tasks based on content and student need
4. Ongoing assessment

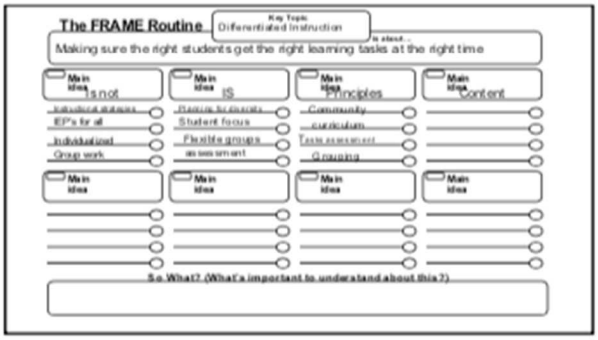






Principles

1. Community
2. Quality Curriculum
3. Respectful Tasks
4. Ongoing Assessment
5. Flexible Grouping

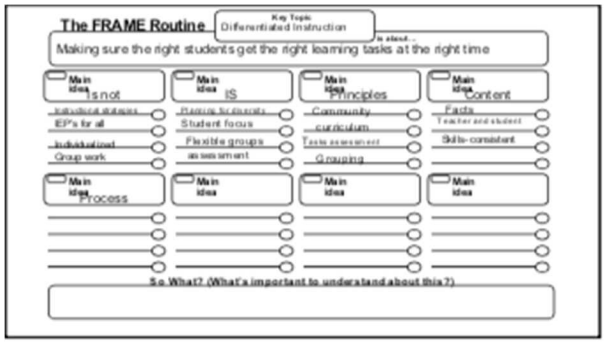


Content

-consists of facts, concepts, generalizations or principles, attitudes, and skills

-what the teacher plans for the student to learn and how the student will gain access to the desired knowledge, understanding, and skills

-essential facts, material to be understood, and skills remain consistent for all learners.

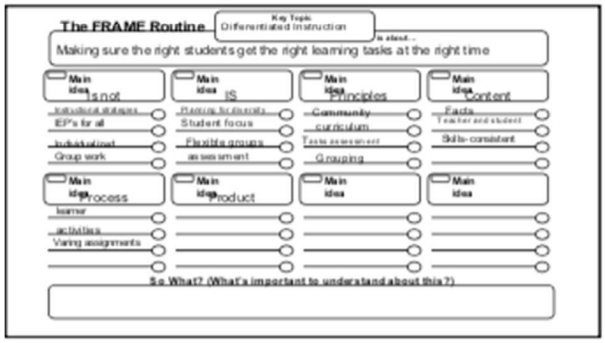


Process

-how the learner comes to make sense of, understanding, and "own" key facts, concepts, generalizations, and skills of the subject

-activities

Examples- varying difficulty levels, assignments related to student interest, vary the amount of support given, choice in assignment type

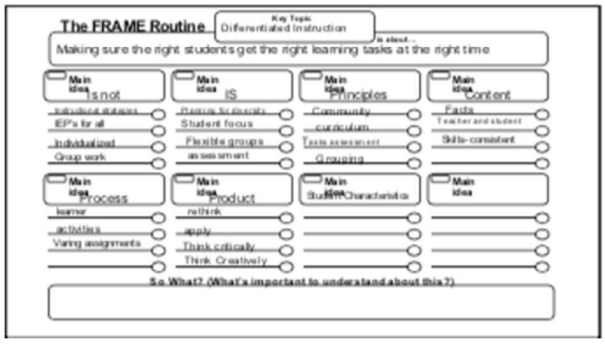


Product

-items a student can use to demonstrate what he or has come to know, understand, and be able to do as a result of a period of study.

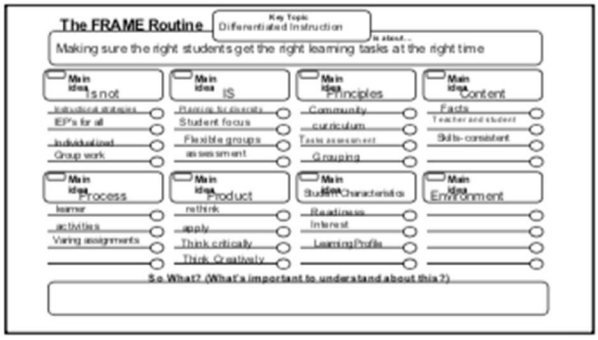
-Good Products

- -cause students to rethink
- -apply understanding
- -think critically
- -think creatively



Student Characteristics

1. Readiness- tasks must be at the proper level of difficulty
   a. "Zone of proximal development"
   b. Examples- scaffolding, coaching, manipulatives
2. Interest- aligning learning activities with student interest
   a. Student choice in tasks and products
   b. Access to a broad range of materials and technology
3. Learning Profile- addressing learning styles, talents, and intelligence profiles in class
   a. Presenting information through auditory, visual, and kinesthetic modes
   b. Varied groupings
   c. Authentic learning opportunities (i.e. art, song, acting, ect....)

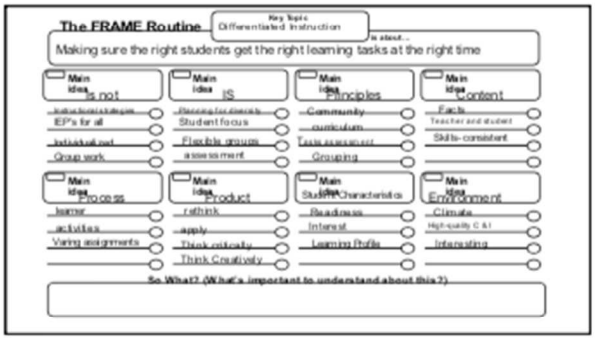


Environment

1. The climate or tone of the classroom
2. High-quality curriculum and instruction
3. Making learning irresistible, even when the task at hand is not inherently interesting

Characteristic of High Quality C & I

- Focused
- Engaging
- Choice
- Clear Expectations
- Builds Connections



So what?