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One Rural School's Initial Efforts to Assist Teachers in Improving Student Outcomes

Brenda R. Gingerich
Walden University

Walden University

COLLEGE OF EDUCATION

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Brenda Gingerich

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Review Committee
Dr. Pamela Warrick, Committee Chairperson, Education Faculty
Dr. Joan Gipe, Committee Member, Education Faculty
Dr. Robert McClure, University Reviewer, Education Faculty

Chief Academic Officer

Eric Riedel, Ph.D.

Walden University
2012

Abstract

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M.A., Grand Canyon University, 2003

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Submitted in Partial Fulfillment

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Teacher Leadership

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Abstract

Across the United States, student achievement is a concern. The local district under study is not meeting adequate yearly progress (AYP), a standard initiated by the No Child Left Behind Act (NCLB), which schools are expected to attain to avoid sanctions. The district's students are performing lower than state average on the state's standardized test, and the district wants to increase teachers' knowledge and use of differentiated instruction (DI). The purpose of this study was to describe teachers' DI practices, create a project that may increase the implementation of DI, and recommend further study to seek correlations between teachers' use of DI and student performances. A quantitative approach included analyzing archival survey data from the district's teachers to describe how frequently teachers reported practicing differentiated instructional strategies. Data were analyzed through analysis of variance to compare elementary, middle, and high school teachers' responses. Findings indicated teachers employ simple strategies often, while more complicated strategies are seldom initiated. Also, elementary and middle level teachers in the district utilize strategies more frequently than high school teachers. A wiki was created to enhance teachers' knowledge, understanding, and application of strategies to potentially improve student outcomes. Implications for positive social change include providing teachers with a tool to increase professional collaboration regarding student learning, knowledge of differentiated instruction, and practice of strategies for the purpose of improving student learning.

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ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

Dedication

I dedicate my doctoral project study to my family. I dedicate my efforts to my children, Emma Claire, Maia, Logan, Mason, Emma Raine, Layne, and Griffin. I hope they realize their potentials, are willing to take risks to accomplish their dreams, never stop dreaming, always work hard, and focus their efforts for the good of others. I dedicate the passion and persistence it took to complete this dissertation to my husband, Brent, who inspires me daily to become a better person. I appreciate the love and encouragement I received throughout this process. I hope my family realizes how much I love, respect, and enjoy them.

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Section 1: The Problem

Background of the Problem

Many Americans believe recent economic struggles are due, in large part, to U.S. citizens being underprepared to compete in a "knowledge economy" (Cochran-Smith & Power, 2010, p. 8). With more than 10% of the U.S. population unemployed (Vandal, 2009), Cochran-Smith and Power (2010) highlighted that students are not learning what they need to know to compete in a global society and that teachers are not always prepared to teach all students effectively. Teachers struggle to meet the needs of all learners as education is a complex art and science. Partnership for 21st Century Skills (2006), a national organization that advocates for technology integration into education, conceded researchers, national leaders, educators, and other school stakeholders alike continue to look for answers in the quest to prepare all students to become successful, contributing citizens. However, the challenges only begin as teachers find their students are not only changing from year to year, but their entire classroom populations are becoming more and more diverse.

Cochran-Smith and Power (2010) recognized students' abilities, cultures, religions, ethnicities, and linguistic backgrounds are wide-ranging and disparities continue to increase as time passes. When these groups of students are compared, achievement is found to be disproportionate. For example, the achievement gap between European American students and African American students is evident in standardized test scores and college graduation rates (Paige & Witty, 2010). Paige and Witty (2010) noted that African American students scored below 75% of European American students on most standardized tests, and African American students make up a higher percentage

of dropouts compared with European American peers. Other groups of students also have inequalities in their outcomes, but achievement gap statistics are not the only troubling data the nation has experienced.

Nationwide, approximately 11,000 schools have been identified as schools not meeting adequate yearly progress (AYP), according to Stullich, Abrams, Eisner, and Lee's (2009) *Title I Implementation: Update on Recent Evaluation Findings* report for the U.S. Department of Education. Schools that do not meet AYP on standardized tests and that receive Title I dollars are in need of improvement. Of the schools in improvement status across the United States, 46% were in advanced stages of corrective action or restructuring. Further, many of the schools needing improvement were schools with a high number of students of poverty and/or minority, indicating the issues of gaps in student achievement and underachieving students are seen throughout the United States.

National graduation rates reveal there is much work to do in many facets of the education system. Graduation rates provide some outcome data from secondary school students. Across the United States, the rate of high school students dropping out is steady. Every year, more than 25% of all students in the United States do not graduate from high school (Sable & Stillwell, 2009). The impact of dropping out of high school is grim for students and their communities. Padron (2009) explained that students who did not earn high school diplomas are more likely than students who did graduate to be unemployed, incarcerated, living in poverty, or on public assistance.

Even with ongoing reform efforts across the United States, Sable and Stillwell (2009) reviewed graduation rates and found that graduation rates only increased from

72.2% to 73.9% over a 3-year time range. To ascertain reasons students choose to drop out of high school, Civic Enterprises issued a report in association with Peter D. Hart Research Associates for the Bill and Melinda Gates Foundation (Bridgeland, Dilulio, & Morison, 2006). The data were collected through focus group interviews from 467 racially and ethnically diverse students, ages 16-24 years, who dropped out of school. While the reasons students dropped out of school were complex, the top five themes that surfaced from interviews as the causes these students attributed to withdrawal were: (a) classes were not interesting, (b) too many days of school were missed and they were unable to catch up, (c) they spent time with people who also did not care about school, (d) they had too much freedom and few rules, and (e) they had failing grades in school (Bridgeland et al., 2006).

While statistics on high school dropouts is disheartening at best, there are more problems with the outcomes of the U.S. educational system. According to a report titled *Cities in Crisis*, approximately 33% of students who do graduate are unprepared for college or work (Swanson, 2008). In fact, *The Nation's Report Card* reported that just over 33% of all high school students are proficient in reading, while 23% of seniors are proficient in math (Grigg, Donahue, & Dion, 2007). Though approximately 25% of all high school students each year earn their diplomas, many of them are still not proficient in core academic areas.

Required to take much responsibility for student failures, many teachers find it difficult to teach a classroom full of students with a multitude of varying abilities, emotional needs, interests, and backgrounds. Walker-Dalhouse et al. (2009) announced that teachers are ultimately responsible "for adjusting instruction according to students'

specific needs rather than following a predetermined skill sequence that may not match students' development" (p. 85). Richards, Pavri, Golez, Canges, and Murphy (2007) believed teachers require ongoing support to be able to monitor student progress and seek effective instructional practices based on students' needs. When teachers do not have the training to provide students with effective instruction, low student achievement and low graduation rates can result.

The drop-out epidemic and low student achievement are often attributed to poor instructional practices and lack of teacher effectiveness (Baines & Slutsky, 2009; Bridgeland, et al., 2006; Edwards, Carr, & Siegel, 2006; Padron, 2009). Lack of teacher efficacy and poor teacher practices could be in part due to studies, such as Darling-Hammond's (2000), finding a strong correlation between teacher certification and preparation and student achievement in core subjects. Furthermore, Rice (2008) reported that a significant amount of research presented at the American Education Finance Association (AEFA) 2007 conference was focused on teachers. Rice (2008) summarized that "teachers are the single most expensive *and* the single most important resource provided to students. A quality teacher in every classroom is clearly a cornerstone for providing an adequate education for all students" (p. 151). The spotlight and pressures increase on teachers as President Obama created a goal that by 2020 the United States will have the highest postsecondary attainment rate in the world. The president stated that increasing levels of education, which prepares people for higher paying jobs, will stimulate economic growth (Vandal, 2009).

To contribute to the literature and provide another viewpoint on student achievement, state and local data will be reviewed. The hope is the data from student

outcomes and the local teacher self-reported data can serve as a means of identifying support for teachers and proposing strategies to assist teachers in improving student achievement. This particular study will review data to illustrate nationwide education statistics and explore an issue that needs to be addressed to meet the 2020 goal.

The Local Problem

Much like national data, the local district is also generating its share of disappointing results, which has prompted school leaders to look at what they can do to make necessary changes for the betterment of students and the community. While the district has invested in reform models, purchased updated curricula, and groomed teacher leaders, the standardized test scores and graduation rates have not shown incremental patterns over the past 5 years that reflect the increases the state requires. Results from the district's elementary school, where Title I funds are invested, have prompted state and federal sanctions for the district.

According to NCLB, local education agencies (LEAs) must meet minimum progress requirements on standardized assessments each year. For Washington state districts, meeting AYP in 2008 meant 76.1% of fourth grade students had to demonstrate proficiency in reading while 64.9% of fourth grade students must have passed the standardized assessment in math. If schools within a district do not meet AYP criteria for 2 years and the school receives Title I funds, the school enters into *Step 1* of the school improvement process, meaning that the school must follow specified guidelines as part of their consequence for not making adequate progress (Office of Superintendent of Public Instruction [OSPI], 2008). If schools do not meet AYP the following year, the consecution will be *Step 2* of the improvement process in which the penalties increase. In

Step 2, the district must notify parents of their improvement status, offer public school choice, and offer supplemental education services. In *Step* 3, all Step 2 penalties exist and district officials have to choose some of the following: a) replace some staff, b) implement a new curriculum and provide professional development, c) reduce management authority, d) seek outside expert advice, e) extend the school day and year, or f) reorganize the school. Schools who do not meet AYP for 5 years are in *Step 4*, which means the districts must restructure the school. *Step 5* sanctions are added to the requirements the school must follow. Schools in Step 5 must also select from the following list: replace most of school staff, contract with an outside agency to operate the school, or have the state take over the school (OSPI, 2012). Unfortunately, out of the 295 school districts in the state of Washington, 390 schools are in Step 1, 50 schools are in Step 2, 95 are in Step 3, 29 are in Step 4, and 64 schools are in Step 5 (OSPI, 2008).

Local scores from the Washington Assessment of Student Learning (WASL) have shown marginal fluctuation, but no steady increases. Data from the district's fourth, seventh, and tenth grade students' scores are reviewed as benchmark assessments are given during those years. The 2008/2009 school year WASL reading scores revealed 62.6% of fourth grade students, 51.5 % of seventh grade students, and 82.1 % of tenth grade students met the standard (OSPI, 2009). The scores show that most of the fourth and seventh grade students in the district are not reading proficient.

In mathematics, local students who did not pass the standard outnumbered those who did. Of the fourth grade students in the district, 53% did not pass the state standard, while 61% of seventh grade students and 65% of tenth grade students also did not pass. Results of the writing assessment were a little better than math, but still not up to par. In

the 2008-09 school year, 54.5% of fourth grade students, and 53% of seventh grade students met learning expectations for their grade levels. Most tenth grade students met the standard in writing, with more than 10% not meeting standard (OSPI, 2009).

The district under study has seen low achievement in varying groups of students, and is not meeting AYP for students with special needs and students from low-income households. While the population of students in special education programs was relatively high (15%), the number of students from low-income households was comparable with the state average (OSPI, 2009). The district has not experienced an achievement gap between student races because 89.7% of the student population was considered White (OSPI, 2009).

Despite the lesser amount of variation in student race in the local population, and despite national and statewide efforts requiring teachers to ensure academic achievement for all students, the local school district has made minimal progress in differentiating to meet diverse learning needs. Locally, evidence from a district 2007 education audit suggested teachers are generally unprepared to address diversity in their classrooms, mostly due to lack of self-confidence and lack of training (Center for Educational Effectiveness [CEE], 2007b). As a result, teachers experience much frustration with low student achievement, which likely contributes to negative beliefs regarding student abilities and outcomes.

Teachers have a critical role in student success (Rice, 2008). As Tomlinson (1999a) emphasized, teachers must believe that every student can learn. Tomlinson (2004) further explained the importance of a teacher's beliefs when she stated that, "Implicit in the definition of teacher is the ability to guide a student's growth as well as

the ability to help the student envision a horizon he or she might not have seen without the vision of more experienced eyes" (p. 188). Considering the importance of teacher roles on student achievement, the district's hired audit team felt the need to assess teacher views.

Educational audit results identified that 41 staff members were surveyed (CEE, 2007b). The survey was based on the nine characteristics of high-performing schools. When staff was questioned about their beliefs regarding student learning and holding students to high standards and expectations, staff were required to respond on a 6-level Likert scale: (a) almost always, (b) often true, (c) sometimes true, (d) seldom true, (e) almost never true, and (f) missing.

Only 7% of staff surveyed indicated that they almost always believed all students could meet state reading standards, while 5% of staff was convinced that all students were capable of passing state math standards (CEE, 2007b). These data suggested many staff lacked the belief that all students could achieve at a high level, likely because they have little experience witnessing 100% student success.

When staff was surveyed regarding their beliefs of professional development, auditors found that 22% of teachers perceived that the district did not provide any training or skill development in cultural responsiveness; and 53% of staff reported they seldom or sometimes had the opportunity to learn effective teaching strategies for the students represented in their school (CEE, 2007b). Of the staff, 53% also reported that they seldom or sometimes were able to engage in classroom-based professional development activities that focus on improving instruction (CEE, 2007b). Interestingly, only 22% of parents surveyed reported that instructional time is usually spent doing work

that students find useful and interesting (CEE, 2007a), which is likely a reflection of their children's attitudes toward learning. Overall, audit results suggested a weakness in beliefs and assumptions relative to student achievement in the district. Data also suggested teachers find there are few opportunities to increase their professional and instructional repertoires.

Because staff clearly believed district training and professional development lacked focus on improving instruction for student diversity, the district felt they needed to collect more data to determine specific areas teachers needed assistance. Specifically, district leadership decided to assess teacher perceptions and knowledge of the research-based practice of differentiated instruction (DI). A key element of DI is learning about student learning profiles, interests, and readiness to plan curriculum and instruction to maximize all students' learning potentials (Corley, 2005; Tomlinson & Eidson, 2003). In February 2008 elementary staff completed a questionnaire rating their use of differentiated strategies. Teachers responded by rating their perceived frequency of use of differentiation of content, process, learning environment, and product on a 5-point ordinal scale. The scale indicated the following responses: 5=all of the time, 4=most of the time, 3=much of the time, 2=some of the time, and 1=not at all. The district has reviewed the data collected, but has not conducted an analysis, something they would like to do to guide their professional development planning.

Teachers in the district under study are typically provided 2 days prior to the start of the students' first day of school for professional development and collaboration with colleagues. With the days consumed by anything from school improvement planning and reviewing student records to preparing classrooms, there ends up being little time for

targeted improvement in effective strategies. While the district will work time in for teacher skill building, the learning is typically isolated with little time for follow up built into the schedule. The school year is busy with student learning and not much time for teacher training. When teachers are offered optional, yet paid time to attend inservices on effective strategies, they seldom access the trainings. In fact, the district has offered three in-service trainings to all teachers in DI and, according to the sign-in sheet, only 8%-20% of the teaching population attended each training. Many teachers who did not attend were interested, but had conflicting schedules.

For this study, the essential question is, "How can teachers increase their knowledge, understanding, and ability to increase differentiated instruction and improve student outcomes?" I have developed a project (see Appendix A) to assist teachers in improving their access to knowledge and practical use of differentiated instruction.

Rationale

In part, problems with student learning arise because teachers have little time to plan for student differences (Tomlinson, 1995c) and they have not had time to learn about how to effectively differentiate to improve learning (Tomlinson, 2005). Nieto (2009) stated that teacher attitudes have a large impact on why they continue teaching, which influences student learning. After a review of literature on the topic of differentiated instruction and teacher implementation, Hawkins (2009) cited three barriers to employment of differentiated instruction: lacking self-confidence, teacher efficacy, and perseverance. Because differentiation has been deemed a method of educating all students to learn through strengths and develop their weaker learning skills, it is important that barriers to DI are addressed. Likewise, it is imperative that student

outcomes and teacher attitudes are studied, as offering more knowledge will help the educational community, and the United States as a whole, make better decisions regarding educational practices. This study will help staff and administrators better understand where teachers are at in terms of utilization of differentiated strategies. The district has allocated a portion of their Title IIA funding to train teachers to differentiate instruction. District administration would like to see teachers use varying strategies to help all students learn, but are trying to decide what types of professional development and resource investments would be effective with their staff. I have reviewed staff results and created a project that will assist teachers in their development.

Definition of Terms

The following terms and phrases are defined as used in this study.

Content: Students' knowledge, understanding, and ability to apply skills. These include standards that all students should learn (Tomlinson & Strickland, 2005).

Differentiated instruction (DI): Tomlinson and Strickland (2005) described DI as "a systematic approach to planning curriculum and instruction for academically diverse learners. It is a way of thinking about the classroom with the dual goals of honoring each student's learning needs and maximizing each student's learning capacity" (p. 6).

Interest: Indicates tasks that engage and satisfy because they are based on topics or methods that are attractive to students (Tomlinson, 2005).

Learning environment: Surrounding area that "fosters respect, encouragement, acceptance and joy" (Gartin, Murdick, Imbeau, & Perner, 2002, p. 29). Physical arrangements, instructional groupings, and classroom climates are the three major areas

that must be addressed when differentiating the learning environment (Gartin et al., 2002).

Learning profile: Providing activities that offer students choices in their preferred modes of learning and giving them opportunities to learn how students learn best (Tomlinson, 1995b). Learning profiles are shaped by students' learning styles, intelligence preferences, culture, and gender (Gartin et al., 2002).

Process: The method or activity that allows students to understand important ideas (Tomlinson & Strickland, 2005).

Product: A demonstration of students' knowledge, understanding, and skills (Tomlinson & Strickland, 2005).

Professional learning community (PLC): A collaborative culture where teachers work professionally to achieve the same mission, vision, values, and goals and commit to student learning (DuFour, DuFour, Eaker, & Many, 2006).

Readiness: "A student's knowledge, understanding, and skill related to a particular sequence of learning" (Tomlinson, 2003, p. 3). Often readiness is influenced by prior experience, attitudes, and habits of mind (Tomlinson, 2003). Tomlinson further explained because the term ability seems more "fixed," readiness is used to describe students' levels of proficiency, which ranges depending on the topic and circumstances.

Traditional Instruction: Teaching to the perceived average ability level of the classroom where some modifications are made to accommodate students (Haager & Klinger, 2005).

Understanding by design (UbD): A curriculum model that focuses on the application of curriculum for student understanding. This framework includes a

"backward design," meaning planning for instruction and content delivery needs to start with what the students should know in the end (Tomlinson & McTighe, 2006).

Significance

In light of increased accountability that national and state policies have placed on public school systems, teachers are really the ones expected to bring about change that will result in improved student outcomes. However, systemic support and training are not often in place and able to provide teachers with the knowledge and practice needed to become change agents.

In an attempt to expand teachers' knowledge and skills in effective instructional practices and ability to plan, this study seeks to contribute to the research on meeting teacher needs in ways that can lead to increased implementation of effective instruction. The study could be important to district administration as it can inform the district of teachers' self-reported frequency of use of effective instructional practices and I will develop a product for the district to assist teachers in increasing effective instruction. Through review of this study, the district may also determine what should be avoided or encouraged for local teachers when considering professional development in instruction. This study can be important to teachers, students, district leaders, and parents because all of the aforementioned stakeholders have been working together to find means of improving student performance. The intention of this study is to improve teacher instructional skills by providing them with tools to improve instructional planning and methods to increase access to current information.

Research Question

Teachers nationwide are expected to improve student learning outcomes or schools will face consequences. While low student achievement is a problem in itself, it cannot be addressed without training and supporting teachers to improve instruction. The local district needs to examine archival data on teacher reported use of DI practices to establish an effective action plan for professional development and determine resources necessary for further growth. Therefore, the focal question of this study is, "How can the local district better assist local teachers to increase their knowledge, understanding, and ability to apply skills to provide students with differentiated instruction?" To answer this question, the district's archival data must be analyzed to better understand teachers' perceptions of their use of DI strategies. Current research in effective instructional practices, especially DI, also needs to be reviewed. Methods of providing instruction on DI strategies must also be considered.

Review of Literature

Considering the local level problems with student achievement, and the district's desire to increase training for teachers to become more effective, the national education system's most significant and relevant flaws were reviewed. In this section are quotations from education reform reports to provide a snapshot of the little progress that has been made over several years of implementing legislations focused on improvement. Also included in this literature review is some information on the achievement gaps between students' demographic and economic groups, statistical differences in student demographic backgrounds, varying student readiness levels, the effects of student drop-outs, recent legislations, reports on teacher effectiveness and lack of training, and

traditional instruction and barriers to the use of differentiation. Subheadings have been used to organize the literature. References are made throughout to the local district, noting how the topic pertains to the district.

The literature noted in this review was found through a search of the Educational Index, Index of Doctoral Dissertations, current Index of Journals in Education, by search of databases such as ProQuest, as well as by general online Boolean search methods. Search terms included: *student achievement*, *educational reform*, *achievement gap*, *student drop-outs*, *teacher training*, *professional development*, *traditional instruction*, *teacher efficacy*, and *differentiated instruction*.

National Reform Attempts

With the opening words in the introduction to *A Nation at Risk: The Imperative for Educational Reform* (1983) the National Commission on Excellence in Education established a challenge for public education.

> All, regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost. This promise means that all children by virtue of their own efforts, competently guided, can hope to attain the mature and informed judgment needed to secure gainful employment, and to manage their own lives, thereby serving not only their own interests but also the progress of society itself. (p. 1)

Despite these opening words from the report that first declared public schools to be failing America's youth and the society, a report that jump-started multiple educational initiatives, little improvement has been found for individual teachers and students. Indeed, a 2008 report submitted by The Forum for Education and Democracy is

considered a sequel to the report commissioned under then President Reagan. The 2008 report, *Democracy at Risk: The Need for a New Federal Policy in Education* (Dianis et al., 2008), boldly stated,

> Twenty-five years after the release of *A Nation at Risk,* the U.S. education system and our democracy are even more at risk. Although the nation set goals to be "first in the world" in math and science by 2000, with all students coming to school ready to learn and graduating with high levels of proficiency, we are further from these goals today than we were in 1983. (p. iii)

The report goes on to conclude that more children live in poverty, more funds are spent on prisons than institutions of higher learning, and that numbers of people incarcerated, mostly made up of high school dropouts, has reached the level of 1 in 100 Americans (Dianis et al., 2008).

Achievement Gaps

At each state level there is truth in the conclusion that public schools still have not attained the goals established in the Nation at Risk report. Specifically, across most schools in Washington and the nation at large there still exists an achievement gap between students of various demographic groups. Chenoweth (2009), who studied the means of overcoming the minority achievement gap, believed that the sense of powerlessness of teachers in educating students with varying backgrounds plays a large role in the gap creation.

Results from a 22- month study by the Washington State School Directors' Association (WSSDA) Ad Hoc Achievement Gap Task Force determined that students who are not meeting the state standards are primarily minority students and students from

low-income families (WSSDA, 2002). The WSSDA Task Force arrived at this conclusion after studying research reports and data presentations from experts in education that identified proficient and nonproficient students, as determined by state assessments. The Task Force, on a statewide basis, also reviewed local district board policies seeking to identify policy development that ensured learning for all students. From this synthesis of data on student performance and from policy analysis, the WSSDA Task Force concluded that classroom instruction and related district policies often fail to recognize the various values, interests, and abilities of all students (WSSDA, 2002).

Student Differences

Wide ranging student learning needs present challenges to instruction. While student variations in values, interests, and abilities are prevalent in classrooms, they cannot be portrayed statistically as they can change depending on the lesson, content, and instructional presentation. Demographic differences, however, are reported and can be reviewed. The U.S. Department of Education (2005) found 96% of general education teachers have students with learning disabilities in their classrooms. Hoffman and Sable (2006) reported that 13% of the nation's youth are identified as having a disability and are in need of specially designed instruction (SDI). The National Center for Educational Statistics (NCES) reported that more than 40% of America's students are of minority status with over 35% of today's students coming from households that qualify for free and reduced lunch (Hoffman & Sable, 2006). According to Hoffman and Sable (2006), another 11% of students nationwide are English Language Learners. In 2005, Raymond Simon, the Deputy Secretary of the United States Department of Education, clarified the

need for teachers to address diverse classrooms needs when he estimated approximately 1 million students of 3.5 million have not finished high school after attending 4 years (Seastrom, Hoffman, Chapman, & Stillwell, 2005).

Looking specifically at the state of Washington, research collected by Washington State School Directors' Association (WSSDA, 2002) reported there is disparity in achievement among different groups of students, and asserted poverty and race have an impact on student learning as well as leaving school prior to graduation. Indeed, according to the *Postsecondary Opportunity and Achievement in Washington* report (as cited in WSSDA, 2002), African American, Hispanic, and Native American students in Washington are more likely to drop out of school than White students.

Dropouts

Students struggling to make positive school connections contribute to the population of teens who drop out of high school every year (Suh & Suh, 2011). Suh, Suh, and Houston (2007) added that students who have been suspended and students of minority have increased dropout rates. After studying survey data from a student cohort in the 1980s and a student cohort from the 2000s, Suh and Suh (2011) found that students who have been suspended from school were 14.2% more likely than students who were not suspended to drop out of high school. Another common characteristic of dropouts Suh and Suh (2011) uncovered after conducting a cross-sectional analysis of their data was students of minority are at a 1.1% higher risk of dropping out than white students.

Archambault, Janosz, Morizot, and Pagani (2009) conducted a quantitative study, analyzing questionnaires of 13,330 students from 69 Canadian schools. The students reported on behavioral, emotional, and cognitive relationships they had toward school

over a three year period. At the end of the three year period, student records were compared with questionnaire results to determine whether students graduated or dropped out of high school. Archambault, Janosz, Morizot, and Pagani (2009) recognized that students reported increased achievement when students were able to learn in positive social-emotional environments and students would engage more in academic tasks if they found learning to be relevant to their lives. Students who reported they had negative experiences in regard to behavior at school, were more likely to drop out of high school (Archambault, Janosz, Morizot, & Pagani, 2009).

The negative effects of dropouts can lead to financial crises in the United States. Amos (2008) found that over the course of a lifetime each high school dropout costs the nation approximately $260,000. Amos (2008) also calculated that if the approximated 250,000 2008 high school dropouts would have graduated from high school, $319 billion would have been contributed to the nation's economy over the remainder of those students' lifetimes. It seems imperative to society and to the nation as a whole that teachers differentiate to accommodate all students through a positive learning environment. Students lacking motivation to seek success, such as high school graduation, can prevent them from making positive contributions to the world.

Legislation and Accountability

While the nation continues to suffer morally and financially from the effects of high school dropouts, legislators have attempted to address the issue at a national level. With a focus on educational improvement, Congress reissued the Elementary and Secondary Education Act (ESEA) in 2001 and mandated increased expectations and accountability to improve the learning outcomes of all students. The ESEA was

reauthorized under the political name *No Child Left Behind* (NCLB; Public Law 107-110, 2002). This law required state departments of education to implement comprehensive assessment programs to monitor the annual progress of all students and to respond to schools not meeting this requirement. NCLB also required states and local schools to have all students academically proficient by 2014. The legislation established consequences and sanctions for schools failing to meet annual student progress/performance goals (OSPI, 2008). Because of sanctions for low student achievement in Title I schools, there is considerable focus nationwide for all teachers to be better prepared to teach all students.

In 1997, the Individuals with Disabilities Education Act (IDEA) required that Individualized Education Program (IEP) teams place students in general education classroom to the extent possible to give them the same access to curriculum as typically developing students (Nichols, Dowdy, & Nichols, 2010). The federal government raised expectations of general education teachers to guide students with disabilities to meet learning standards again when they reauthorized IDEA in 2004 (Public Law 108-446). Leko and Brownell (2009) explained that the IDEA reauthorization and NCLB demanded that students with disabilities not only have access to the general curriculum, but they must also meet AYP on state standardized assessments. The obligation of schools to give students with disabilities access to the general education curriculum was strengthened, meaning teachers would need to be even more prepared to differentiate their instructional approaches to ensure students with varying readiness levels were able to meet state requirements. The original Education of the Handicapped Act known as Public Law (PL) 94-142 (1975) guaranteed students with disabilities a right to Free and Appropriate Public

Education (FAPE) that included options for placement in the general classroom, but did not necessarily mean equal access to general education curriculum expectations.

Teacher Efficacy and Training

The district under study has a large percentage of students with special needs in an inclusive setting. Consequently, many teachers ask for assistance in differentiating for students with disabilities. Because of the inclusion model and the analysis of teacher perceptions, I found Schumm and Vaughn's study helpful and related to my study. Schumm and Vaughn (1995) studied teacher and student perceptions related to disabled students' access to general education and the level of modifications being made. Ninety-three teachers were asked to rate the desirability and feasibility of making accommodations for students with disabilities in their general education classrooms on a Likert-type scale. Having studied this problem for 5 years, Schumm and Vaughn (1995) concluded that even the most committed teachers were not well prepared to teach in inclusive classrooms. Schumm and Vaughn speculated the key factors in the lack of teacher readiness to address disabled student needs were (a) no emphasis on student differences, (b) unawareness of student needs, and (c) lack of knowledge in adapting curriculum.

Another older study conducted for the NCES by Lewis et al. (1999) provided good information and established the urgency to continue examining teacher quality and necessary professional development. Lewis et al. (1999) sent questionnaires to elementary, middle, and high schools across the nation to obtain information regarding teacher quality. The questionnaire asked for information regarding indicators of teacher quality including recruitment, teacher preparation, induction programs, teaching

assignments, resources, and professional development opportunities. After compiling data from the sample of 3,560 teachers, Lewis et al. (1999) found less than 20% of all teachers reported being adequately prepared to teach the diversity of students in their classrooms. Also studying and writing about the lack of teacher preparedness to teach the diversity of needs in the classroom, Tomlinson (2005) explained, "most educators have had little opportunity to study in depth the need for differentiation in ways that enlighten and engender change" (p. 183). When teachers lack time to learn how to differentiate for students with varying needs, they tend to rate their own abilities lower, which has an impact on their performances (Jerald, 2007).

Fourteen years after Schumm and Vaughn's study, Kosko and Wilkins (2009) summarized teachers' self-reported levels of ability to teach students with disabilities. Kosko and Wilkins (2009) found that teachers report higher self-efficacy when they were engaged in more than 8 hours of professional development on a topic. The findings specified that the amount of professional development time was the number one predictor of teachers' ability to help all students learn standards. After a review of literature Jerald (2007) concluded that teacher self-efficacy greatly influences teacher performances.

According to Bandura (1977), self-efficacy is the belief that one is capable and competent of attaining goals and producing positive results. When teachers believe they are capable of making a difference for students and teaching them well, they do. Woolfolk (1998) explained that teachers invest more of themselves and are more persistent to seek success if they have high self-efficacy because they believe in themselves and their students. Erdem and Demirel (2007) insisted that how people judge

their own capabilities impacts their actions. People with high self-efficacy find methods to obtain success, even in very difficult situations (Erdem & Demirel, 2007).

Other nations have also conducted studies on teacher self-efficacy and have found similar results to studies in the United States. Yilmaz (2011) analyzed 54 questionnaires given to Turkish English as a foreign language (EFL) teachers. After comparing teacher reports of self-efficacy and their reports of proficiency in content, Yilmaz (2011) found a correlation and reported that when teachers had low content proficiency, their self-efficacy was also low. Yilmaz recommended training for teachers to increase teachers' belief that they can be competent.

In Australia, Jimmieson, Hannam, and Yeo (2010) sent questionnaires to teachers and students of grades 4-7. Responses from 170 teachers and 3,057 students were compared. Teachers completed a scale on organizational citizenship behaviours (OCB) while students reported on the quality of their school life. The teachers' results were compared with their own students' results. Jimmieson, Hannam, and Yeo (2010) found a significant correlation between teacher efficacy and students' satisfaction with school, confidence in achievement, high hopes for future successes, lower stress, and satisfaction with student-teacher relations. The study also suggested teachers who acquired civic virtue and professional development had a positive impact on students' educational experiences.

In Nigeria, 574 teachers returned questionnaires for another quantitative, correlational study (Olayiwola, 2011). The heads of departments (HOD), a role similar to teacher supervisors, rated the teachers on their job performance. Teachers completed a teacher efficacy scale, which contained a Likert scale. Olayiwola (2011) determined that

there was a positive and significant relationship between self-efficacy and job performance. Teachers who were rated high on job performance reported high self-efficacy, while those who were scored lower on job performance disclosed low efficacy ratings. Olayiwola (2011) declared that self-efficacy can predict teacher performance.

With the understanding that throughout the passage of time, and regardless of place, meeting student learning needs and making annual progress in closing the academic gaps between learners can be met if schools use proven education methods (U.S. Department of Education, 2005) . Also, in light of limited teacher preparation and readiness to teach all children, the 2001 ESEA defined highly qualified teacher and provided districts with substantial amounts of money to assist teachers in gaining the skills necessary to be effective with diverse populations. In addition, the data provided from the mandated statewide assessments were intended to measure yearly progress of component student groups and to force school districts to align the taught curriculum with the expected state standards (McBride, 2004).

To align curriculum with standards and to apply effective instructional methodologies to ensure learning for all students, teachers must engage in lesson planning. In 1991, Clarke and Dunn defined lesson planning as a purposeful, psychological process to analyze learning needs and systematically develop conditions, activities, and assessment of teaching and learning. Lynch and Warner (2008) indicated that through planning, teachers can differentiate to meet student learning needs. However, in 1999, Stigler and Hiebert stated “many teachers in the United States do not even prepare lesson plans, at least not around student learning goals” (p. 151). While this information was presented over a decade ago, it seems the problem still exists.

More recently, Jones, Jones, and Vermette (2011) studied pre-service and novice teachers' lesson planning practices through gathering qualitative data from observations and interviews. Common mistakes were categorized. Jones, Jones, and Vernette found six common themes in regard to teachers' mistakes. The issues discovered with pre-service and novice teachers' planning and delivery strategies were as follows: a) there were no clear learning goals established, b) teachers were not utilizing summative assessments to determine whether or not students were learning, c) teachers were not differentiating for students as they were not taking the time to seek evidence of prior knowledge through formative assessments, d) students' tasks and assessments did not match the learning objectives of the lessons, e) there was a lack of anticipatory set, and f) students were not actively participating in the lessons.

When teachers do create lesson plans, the quality of the plans and instructional efforts depends on the teachers' abilities to apply learning theory (Panasuk & Todd, 2005), which implies that teachers need guidance and training to develop effective plans. Contributing to inadequacies in planning for students' learning success and preparing teachers to address diversity, Whitbeck (2000) recognized that preservice teachers are inadvertently taught to create lessons around available materials rather than considering student learning needs, which is an ineffective pedagogical practice.

Despite demographic changes and increased societal expectations on public schools and the diversity found in classrooms across all of the United States, rural district studies have reported little increase in teacher preparedness. Schwartzbeck and Prince (2003) analyzed surveys from more than 3,000 rural school superintendents in their study of rural districts and teacher quality requirements slated by NCLB, and found that there

were many factors responsible for the difficulty in retaining high quality teachers. One of the factors that tend to discourage teachers from working in rural districts was the limited opportunities for training (Schwartzbeck & Prince, 2003). Lacking resources and having limited professional development opportunities places students with differences at a greater disadvantage because without training teachers are less likely to apply high quality responsive teaching techniques. Elmore (2002), noted that school improvement, supported staff development when stating, "You can't improve a school's performance, or the performance of any teacher or student in it, without increasing the investment in teachers' knowledge, pedagogical skills, and understanding of students" (p. 34). Wang, Chen, and Levy (2010) supported teacher training by reminding reformists that attitude, motivation, and confidence also need to be addressed to acquire change in teaching pedagogies.

Instructional Effectiveness

Looking at the achievement, or lack thereof, in various demographic groups, instruction became the focus of criticism. Traditional teaching methods, or one-size-fits-all approaches lack respect for student learning differences and flexibility necessary to guide students to essential understandings of required content (Friend & Bursuck, 1999). Lapkoff and Li (2007) reported on demographic population shifts in American schools and suggested that traditional instruction does not meet the needs of students with varying backgrounds and levels of knowledge and understanding. In fact, Caraisco (2007) noted that students who are gifted and talented receive the same curriculum and instruction as their classmates more than 80% of the time, which can lead to a lack of interest and motivation in learning.

Cuban (1983) has noted that historical practices in education have included teaching to a group of students, focusing instruction on textbook materials, and engaging in question and answer type discussions. This traditional style of instruction is what most teachers have had modeled for them while they were students (Edwards, Carr & Siegel, 2006). Edwards et al. (2006) declared that to change instruction, teachers must "experience for themselves the processes, benefits, and challenges of new methods" (p. 582) to make a paradigm shift. Changing instruction has not been noted as a simple task. In addition to the complicated nature of change, DI also presents challenges.

Tomlinson (1995c, 1999a) insisted that changing the classroom culture and moving away from traditional teaching practices takes time. Willard-Holt (1994) reported that teachers find it easier to have all students doing the same thing at the same time, which takes little planning time and is not considered differentiation. Teachers may be reluctant to learn different strategies because teachers are not certain that it will improve student achievement because they have had little time to explore the research (Tomlinson, 2005). Another concern which may inhibit teachers from changing their teaching methods is insufficient success in learning appropriate methods.

While Tomlinson (2000a) referred to differentiation as a common sense approach, teachers have not yet embraced responsive instruction as routine practice (Tomlinson, 2000b). Teachers often hesitate to learn new ideas if they do not understand where to begin or how to employ the strategies (Nelson, 2009). Teachers also have little time to collaborate and develop quality lessons that they can learn from and reflect on regularly. Nelson (2009) explained that little collaboration is due to the ill-structured public school schedule and underdeveloped collaboration skills. Hawkins (2009) also found barriers to

teacher implementation of differentiating for student learning needs. The three most prominent barriers included lacking teacher confidence in learning how to differentiate, lack of teacher efficacy, and lack of on-going professional development (Hawkins, 2009).

Given the need for improvement in education, mainly in student achievement, the federal government has issued mandates in an attempt to increase achievement. However, legislative changes that drive educational reform appear to rarely improve classroom instruction, indicating that more needs to be done to improve capacity. Speaking on this topic, Kaestle (1990) stated, "The cycles of public school reform have had limited effects compared to their goals. Links between policymakers and teachers have always been weak, and schools are rather inert institutions with limited time and money to devote to change" (p. 35). Kaestle's (1990) statement alluded to the belief that massive reform efforts have little influence on the instruction provided inside classrooms. In an attempt to rapidly improve instruction, the NCLB Act required schools not meeting predetermined yearly progress goals to use instructional interventions that are driven by scientifically-based research. Utilizing strategies that are research-based increases the probability that students will succeed and reduces the ambiguity of the dreaded pendulum swing. However, the level of success that students will experience is still somewhat reliant on teacher quality (Rice, 2008).

Implications

Without a mandate toward improved teacher efficacy and with few training opportunities in rural districts, little funding tends to be directed toward instructional reform. Without a systemic approach, access to professional development and on-going

support, evidence from Kosko and Wilkins (2009) suggested teachers will likely use generic lessons and hope that all students benefit from traditional methods.

It is my intent to provide the results of this project study to school instructors and leaders, giving them more knowledge to decide how to focus professional development efforts on how to increase the use of effective approaches in the classrooms. The developed project included an informational and interactive website, a wiki, as a means of providing assistance to teachers to increase the use of effective strategies, which should positively affect student outcomes over time. Through the process and outcomes of this study, I found the most appropriate and relevant evidence-based method for the district, based on interest and data collection was Differentiated Instruction (DI). While there are other methods available, I have focused on DI as one relevant intervention. If teachers had more training and utilized DI, they would be better prepared to teach a diverse population effectively.

Summary

Due to graduation rates and other student outcome data, federal demands to improve education have increased for all students. However, many teachers are not using DI in their classrooms and many administrators do not always know what steps to take and how to support teachers in improving their instructional practices. Many districts are producing low student achievement data (OSPI, 2012), which can prompt school leaders and teachers to ponder areas of improvement.

The district under study is struggling to meet AYP requirements, which means students are not achieving as expected. Teachers within the district in general want more training to teach all students more effectively. Leaders in the district want to use

resources to make positive changes. To guide teachers in learning an effective approach to teaching today's diverse student body, the district must first understand where teachers believe they are in regard to their use of effective instructional practices. Given that teachers do report use of DI, there are still strategies that teachers do not use. The high school teachers reported little use of DI. District leaders can review their data and can develop a plan for increasing the use by designating professional development funds for teacher training and support.

The remainder of this study includes three additional sections. Section 2 reviews the methodological design for the study. Section 3 describes the project created with the intent to increase the use of effective instructional practices. Finally, section 4 summarizes the study and includes reflections and conclusions.

Section 2: Methodology

Introduction

To describe teachers' use of differentiated instructional strategies, data were collected from the district under study. The local district used a survey (see Appendix B) to obtain quantitative data on teachers' reported use of DI. Permission to use archival data from the survey was obtained from the district's superintendent (Appendix C). The data were originally collected by the district to assist in their planning of professional development activities. All 59 teachers employed in the district were given the survey and 100% of teachers participated. The district had collected raw data on teachers' perceived use of DI strategies, and I have analyzed the archival data for this descriptive study with permission from the district's superintendent (Appendix D).

With the intent to design a project (Appendix A) to enhance professional development for the particular district under study, I have, with the district's permission, analyzed their data. Because the district is just beginning to explore teachers' current skills and experiences with DI, the methodology for this study focused on describing teachers' reported use of DI through archival data. Examining the validity of teacher efficacy through experimentation to seek correlative relationships was not warranted by the district. The district potentially has a limited or skewed perspective on their teachers' use of DI, due to lack of time spent on data analysis. The first step for the district was to describe teachers' use of DI to begin to answer the question under study: How can the district better assist local teachers to increase their knowledge, understanding, and ability to apply skills to provide students with effective instruction? Learning more about the

frequency of use of DI is of interest to the district leaders first, as they focus on improvement.

Borg (1987), while discussing the use of descriptive research, stated, "it is necessary to know something about the characteristics of our subjects before trying to study more complex research questions" (p. 154). The district collected data on teachers' use of DI to learn more about teachers' understanding and use of DI. Prior to the data collection, the district had a limited understanding of teachers' use of DI. Therefore, it would be premature and a waste of district funds to bypass a descriptive study and invest in experimental research until teachers' use and understanding of DI is understood. Thompson, Diamond, McWilliam, Snyder, and Snyder (2005) supported increasing information prior to searching for cause and effect relationships as they have stated, "randomized experiments may not be ideal if the immature state of knowledge on a given issue does not yet justify the expense of such trials" (p. 182). Also, Cook and Cook (2008) found experimental research to be "expensive, time-consuming, and difficult to implement, especially in real-world settings" (p. 102), which alluded to the fact that descriptive studies can lay the foundation needed for time-consuming, expensive experimental studies and can justify experimental research.

Descriptive research is a nonexperimental quantitative approach. Nonexperimental research is considered such because there is no random assignment to separate groups and there is no manipulation of variables by the researcher, according to Cook, Cook, Landrum, and Tankersley (2008). Borg (1987) and Walker (2005) described descriptive studies as one of the three categories of research. Descriptive studies provide information through descriptions of the participants or the phenomenon (Borg, 1987).

Correlational studies search for relationships between variables, while experimental research establishes a cause and effect relationship through manipulation and use of an intervention (Walker, 2005).

Parahoo (1997) discussed the categories of research as though they are three levels of research that must happen in sequence. Carter (2000) considered descriptive research as a first stage in designing more complex research. Burns and Grove (1999) explained that descriptive studies describe what exists and identify the frequency of occurrences. After collecting a description, the next step to research is to correlate descriptive findings with other variables (Walker, 2005). Finally, given the information collected through descriptive and correlational studies, a cause and effect relationship can be determined through experiment (Roe, 1994).

There are two types of descriptive studies: survey research or observational research (Borg, 1987). This study has utilized survey research. Trochim and Donnelly (2007) discussed the two means of conducting survey research are by use of questionnaires or through interviews. Through this descriptive study, the raw archival data were collected through means of a questionnaire. While direct observation is valued because it can provide reports of observed human behavior, for this particular study, observation data would not efficiently answer the question under study. It would be difficult in this study to observe 59 teachers and be able to determine their level of use of DI strategies in observation sessions. In describing teachers' use of DI strategies, observers do not have an opportunity to witness all strategies and the frequency of use. Self-reported data collected through questionnaire is valued for this study. The district wanted to know how frequently teachers believe they are using DI strategies. Even if

there is some variance from the actual use of DI strategies, it is helpful for the district to know what teachers believe is a starting point in providing more training in DI.

In this nonexperimental descriptive study, data were collected from participants in August, 2007 and again in February, 2008 to ascertain reliability of the questionnaire. The average scores from the elementary and middle school teacher responses were compared from the two data points. There was no comparison for the high school teachers' scores because they completed the questionnaire in February, 2008. A Pearson correlation coefficient was calculated to determine a .70 reliability (*r*) overall. Blaikie (2003) explained that a correlation coefficient is to measure the variance individuals have on two data sets. The product of the standard deviations of the two mean scores was divided by the covariance to find the reliability coefficient. An *r* of .70, means that 70% of the variance is in common, or I would have a 70% chance of predicting the teachers' scores if given another opportunity to complete the same questionnaire (Blaikie, 2003). Bruton, Conway, and Holgate (2000) clarified that if *r* =1.00, the correlation would be perfect and there would be no variance. Harris (2008) described coefficient value of *r*=.70 or above to be reliable. Some variation was expected as the district offered training in DI between the two points in time where data were collected. Participants at the training included elementary and middle level teachers only, which would have affected the data since their scores were the only ones being compared. The training may explain some difference, even though the second data point was only 6 months later than the first.

Johnson and Christiansen (2004) would classify this study as cross-sectional research because the data were collected from multiple groups during a short period of time. The questionnaire participants could be classified in various groups: They included

males and females, elementary and secondary teachers, varied age groups, and ranging abilities and accomplishments.

Archival data were collected to formulate an understanding of current practices and reported use of DI and later study the potential correlation between teachers' level of use of DI and various professional development activities. Correlation studies may be recommended for later use.

Potential weaknesses of self-reported data is just that—it is self-reported. The participants in a study may or may not have provided accurate information (Borg, 1987). Studies that are at high risks for data distortion are those that are very threatening because they collect reports of personal information (Borg, 1987). While the questionnaire used in this study was a rating scale, teachers did not have to write their names on the form, and considering the topic is not highly threatening, I assumed there were no significant distortions in the reported data. However, there is the risk of teachers inaccurately reporting their use of DI due to lack of insight or modestly reporting because they may have higher expectations of themselves. The self-reported data in this study, like any other study, may not provide an exact level of each teacher's use of DI.

In this descriptive research, teachers' reported their perceived frequency of differentiated instructional strategies on surveys the district collected in February, 2008. The data have been analyzed and will be shared with administrators and district stakeholders. A description of the archival data is meant to provide the district with feedback on teachers' reported use of DI strategies so a professional development project can be developed to support teachers in areas that need further progress. In other words, the project and support could be focused on areas where many teachers claimed to lack

use of critical instructional strategies. Trochim and Donnelly (2007) suggested that survey data collected through questionnaires can provide meaningful information within a reasonable timeframe for the district to begin to provide effective interventions for teachers.

Data collected through the use of a predetermined instrument measured information numerically through postpositivist assumptions. Creswell (2003) described postpositivism as understanding there is no absolute truth. However, through measurement, evidence can support or refute theory (Creswell, 2003). While scientific research is accepted through postpositive claims, I used this particular nonexperimental descriptive study to provide evidence collected from self-reported data to build knowledge needed for further study of the problem and contributing variables.

Setting and Sample

A rural Washington school district was the location of the research. There are approximately 1,300 students in kindergarten through twelfth grade. The elementary school houses students in kindergarten through sixth grade, seventh and eighth grade students attend the district's middle school, and ninth through twelfth grade students learn at the high school. The district had 59 certificated teachers in grades kindergarten through twelfth grade who were asked to respond to the questionnaire. Of the 59 certificated employees, all completed the questionnaire. Teachers of grades Kindergarten through middle school were given the questionnaires during a staff meeting and provided with an envelope to return the completed questionnaires anonymously. Staff members were not asked to provide reports on a voluntary basis, nor were they told they were required to complete the questionnaire. The instructions were to simply provide the

district with information regarding their level of use of strategies and all teachers cooperatively responded. High school teachers, due to few staff meetings, were given a link to go to and asked to respond to the questionnaire on Survey Monkey. Of the 59 predominantly White teachers, experiences ranged from 1 to 42 years. Both males and females were surveyed. Some teachers had earned their master's degrees, some had earned their bachelor's degrees, and some had a bachelor's level degree and had accumulated other credits, including various endorsements. The entire population of school year 2007-2008 certificated classroom teaching staff in the district participated in completing the questionnaire. The district decided that collecting data from the whole population, rather than selecting a sample, would provide more accurate feedback to inform further decision making on professional development practices for all certificated staff.

The overall goal of studying the archived data collected from the certificated teaching population of the district under study was to summarize findings based on teacher-reported questionnaires. The data analysis provides an understanding of where teachers are currently in terms of their use and knowledge of DI strategies. From this, the district will be able to chart an appropriate path to meet teachers' professional development needs in the area of instructional practices. Ultimately, the findings have assisted me in designing a project to assist teachers in the district to access needed information on DI and increase their use of DI strategies.

Instrumentation and Materials

Johnson and Christiansen (2004) disclosed that descriptive research is often conducted through the use of surveys to learn more about peoples' "attitudes, opinions, beliefs, behaviors, and demographics" (p. 347). As a first step in discovering teacher needs, this study provides a description of current perceived practices of DI through the use of survey data.

The questionnaire used by the district to collect teacher perceptual data is entitled *Differentiating Instruction in Mixed-Ability Classrooms* (NASSP, 2006) (Appendix B). On October 8, 2007, the National Association of Secondary School Principals (NASSP) granted permission to the district for the use of the questionnaire. On February 2, 2012, the NASSP granted permission to me to publish the questionnaire for this study (Appendix E). The instrument, adapted from Tomlinson and Allen (2000), asked teachers to rate their use of differentiated instruction strategies. Teachers were asked a total of twenty-five questions and they responded using a 5-point ordinal scale. The questionnaire was created during a case study of teachers learning to implement DI in schools.

Scores were assigned to categorical data, according to the level of use. Teachers' frequency of use of DI strategies was assigned the following scores: 5=all of the time, 4=most of the time, 3=much of the time, 2=some of the time, 1=not at all. Scores were used to find measures of central tendency, variability, and percentages, which are typically used in descriptive research because they are easy to understand and summarize findings (Borg, 1987). Raw data is available upon request, and graphs and their descriptions created as a result of data analysis can be found in data collection and analysis.

Data Collection and Analysis

Archival data, previously gathered by the participating district, was analyzed to provide information for the study. Teachers' self-reported uses of DI data were analyzed to develop a project to assist teachers in their efficacy. The resulting project (Appendix A) has been determined based on the data analysis.

The data were collected in August 2007 and again in February, 2008. The district asked certificated staff, including teachers in kindergarten through twelfth grade, to complete a survey. Of the 59 employees, 41 were administered the questionnaire in August, 2007. The high school staff did not complete the questionnaire in August, 2007. All 59 staff members returned their questionnaires in February, 2008. To collect the raw data for this study, I requested permission and cooperation for this study from the district's superintendent. Permission was granted on June 6, 2009. The letter of cooperation was ascertained early on as it was a requirement for permission to begin the study. However, I did not collect or analyze the district's archived data until I received permission from the Walden University Institutional Review Board on October 19, 2010 (approval #10-19-10-0290917).

The earlier version of the study had a different title. The superintendent read the proposal entitled, *One Rural School's Initial Efforts to Assist Teachers to Differentiate Instruction*. However, the study itself has not changed. From the surveys, there is no way to determine specific teachers' responses because names were not requested. The archival data is sorted by teaching level: elementary, middle, and high school.

The elementary school houses the most teachers in the district as it holds all kindergarten through sixth grade teachers, or 51% of the district's teachers. It is expected that their responses will reflect approximately half of the ratings. It is also expected that elementary level teachers' frequency of use of some strategies will be higher than that of secondary teachers due to the nature of the students. For example, it is suspected that elementary teachers may utilize centers more than secondary teachers might.

The mean number of years of teaching experience for all teachers in the elementary is 13.6 years. The standard deviation related to teaching experience is 10.8 years. Of the 30 teachers in the elementary, their responses had no relationship to their years of experience. In fact, in all three schools, years of experience did not make a difference. Teachers with few years of experience did not necessarily have higher or lower frequencies based on the number of years they have taught.

In the middle school, the least populated school in the district with 11 teachers, there was a mean of 11.7 years of teaching experience. The standard deviation was 11.1 years. Like the elementary teachers, years of experience proved to be irrelevant to use of DI strategies. The high school staff revealed the same conclusions. High school teachers had a mean of 10.7 years of experience with a standard deviation of 9.5 years. At the time of the survey, 18 teachers were employed at the high school.

For the data set collected from the district, mean, median, and mode scores were calculated to show the average and most frequent level of use for each DI strategy (Figure 1). In the legend, *Rate* refers to the frequency of use on the Likert scale. The meanings for each Rate is: Rate 1=not at all, Rate 2=to some degree, Rate 3=much of the time, Rate 4=most of the time, and Rate 5=all of the time. The subject of each question is

abbreviated. All 25 subjects are in order according to the question number. For example, *preassess* identifies Question number 1 on the Teacher Questionnaire (Appendix B). Strategies that the district's teachers reported high use included the following: providing activities that require students to do something with their knowledge; using a variety of materials, other than the text; differentiating concepts and generalizations; providing active learning opportunities; varying the pace of instruction; and creating a student-centered classroom.

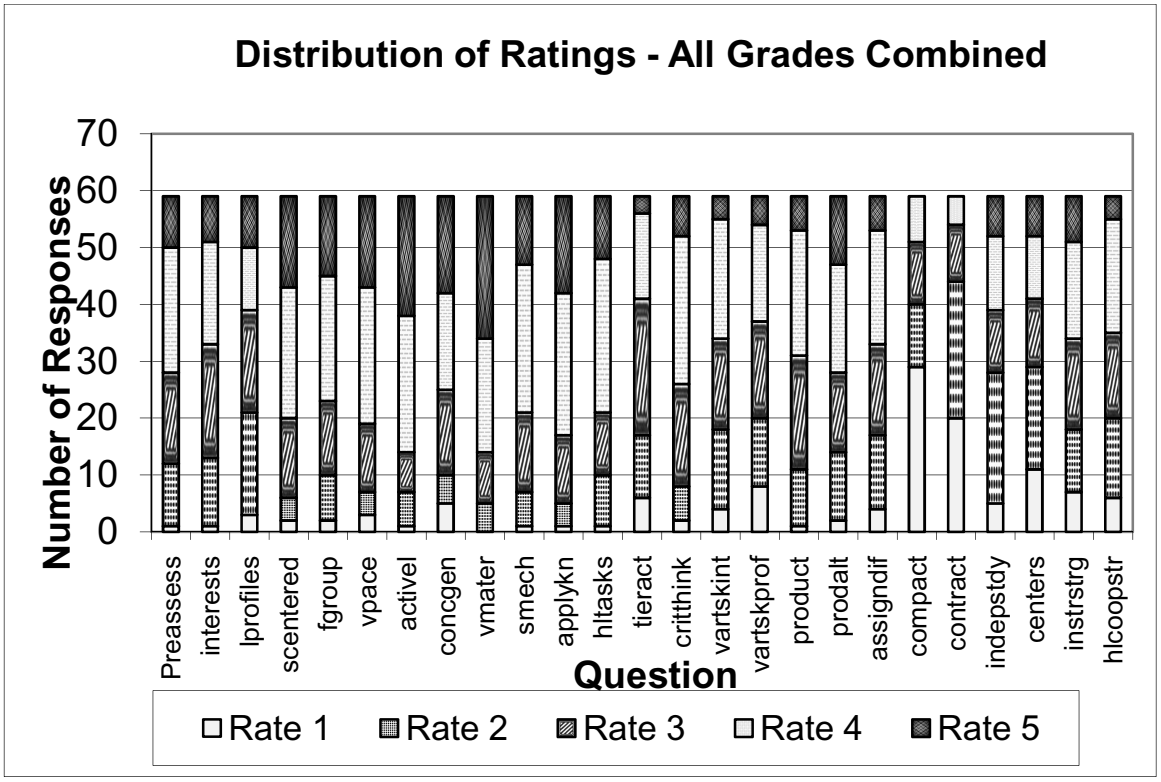

Figure 1: Questions and Responses Based on Frequency of Use

The measures of central tendency are represented through the use of a chart to demonstrate a description of typical scores (Figure 2). For all district teachers, the most common response was a level 4. The numbers were figured by adding all teachers' numbers of 5s, 4s, 3s, 2s, and 1s. For example, teacher 1 may have had 23 5s, teacher 2

may have had 14 5s, and so on. All of the numbers chosen by each teacher for all 25 questions were added together to compare the total frequencies. In a normal distribution, the most common response would have been 3. Possible reasons for a 4 as a common response may be due to elementary teachers, who account for just over half of the teaching population, reporting higher use of certain strategies due to the nature of the classrooms and student needs.

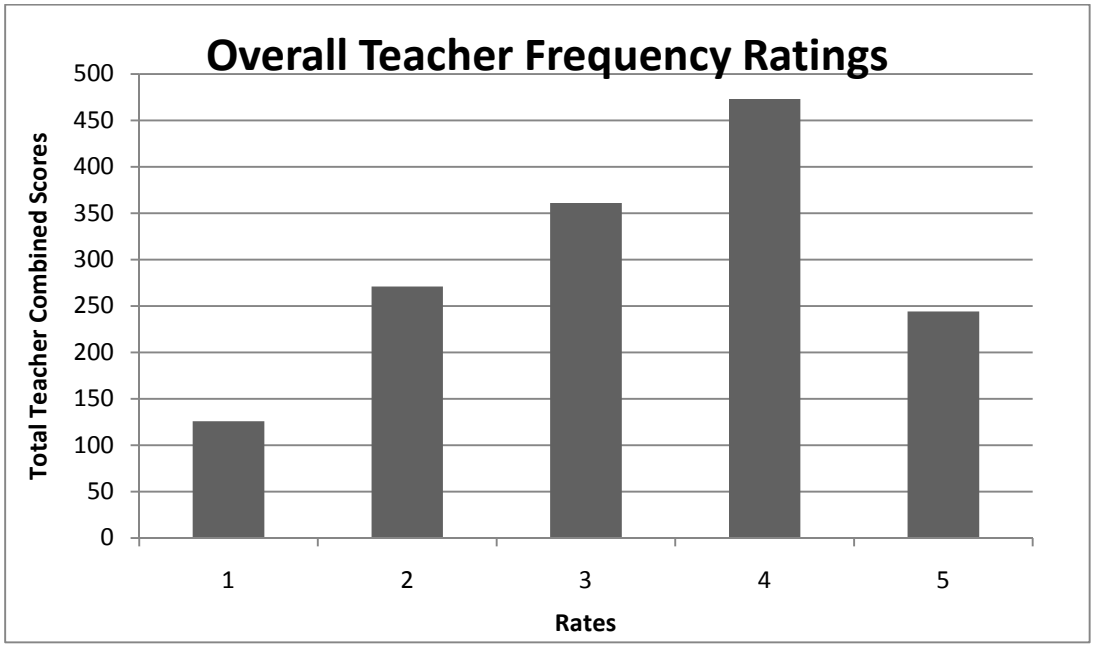

Figure 2: Teacher Overall Responses According to Frequency Ratings

Frequency distributions, as well as counts of responses are depicted through visual representation (Figure 3). To understand the distributions better, Figure 3 reveals how many responses were given from each school. This depiction compared the schools and showed similar distributions for elementary and middle school teachers. However, high school teachers' most common answer was a 2.

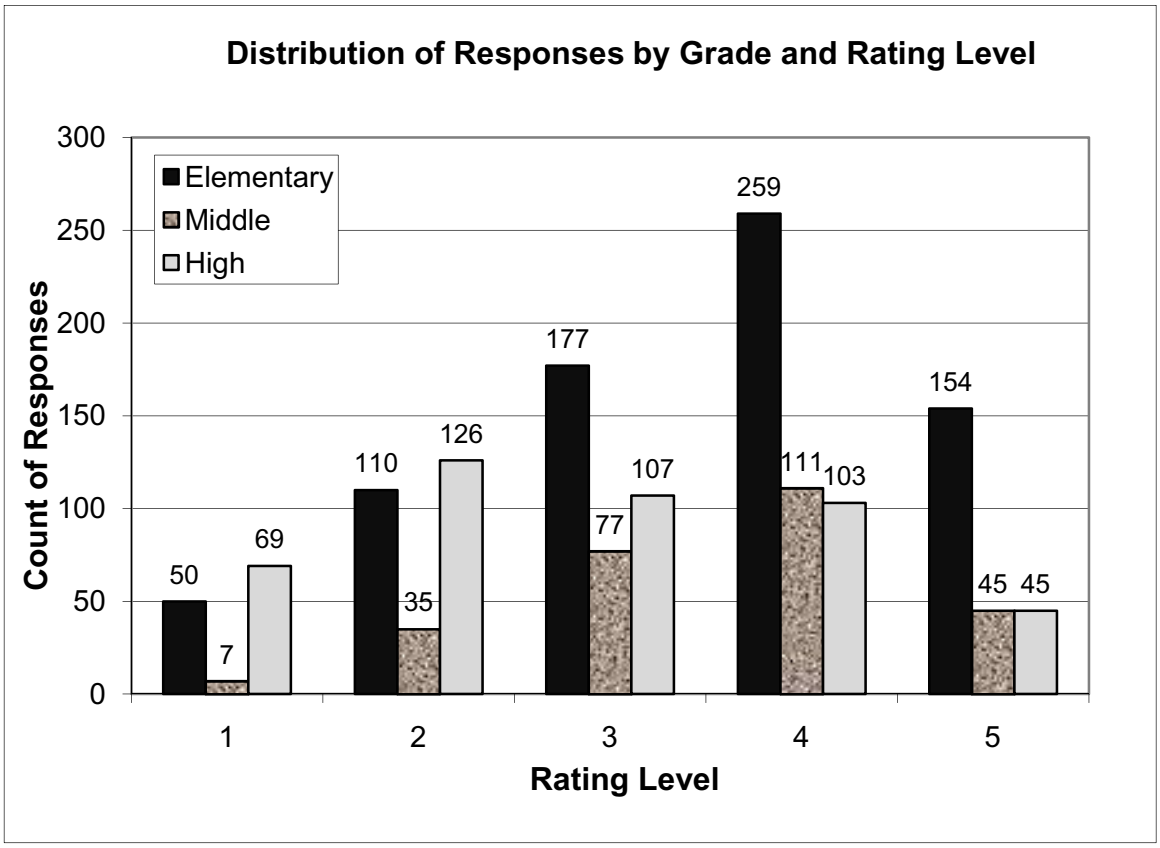

Figure 3: Rating Comparisons Among Grade Spans

The elementary and middle school teachers reported that their use of DI strategies is more frequent than teachers at the high school level. There were no significant differences between the middle school teachers and the elementary teachers' responses. They were very similar. Some of the strategies used most included active learning (score of 4.4) and varying materials for student learning needs (score of 4.5). The two most infrequently used approaches to teaching included more complex strategies such as student contracts (score of 2.1) and centers (score of 2.5).

While teachers can choose from a set of scores (1-5), which indicates that score spread is small, the variance and standard deviation have been calculated to determine how far the numbers vary from the mean (Johnson & Christiansen, 2004). The data

organized through central tendencies, frequency distributions, and the standard deviation calculation provide information regarding the typicality of use of DI, as well as identify the ranging reported skills and needs of the teachers in the district. Teachers' frequency of use in specific strategies can help determine the type of training that teachers need. For example, all teachers district-wide reported low use of the more complex strategies, such as compacting and student contracts. One focus of the project can be to offer resources and examples to assist in utilizing complex strategies.

Considering surveys are sorted by different building levels, elementary, middle, and high school teachers' responses were compared by use of analysis of variance (ANOVA) to determine if there are differences found in strategy use frequencies. This information is useful to understand teachers' level of use of DI strategies, and for considering appropriate levels of professional development for the separate buildings. There were significant differences in some strategies when the middle and elementary responses were compared with high school responses. A *t* test was used to determine the level of significance between teachers at the different levels. When elementary teachers' and high school teachers' reported use of strategies was compared, elementary teachers demonstrated more frequent use of many strategies. A *t* test revealed a p=.0 in providing assignments that differ based on students' readiness, learning needs, and interests, use of compacting, and use of interest centers. A p=.01 was noted in identifying learner profiles, use of support mechanisms, varying tasks based on learner profiles, and allowing product alternatives. When rating a student centered classroom, the use of flexible grouping, varying tasks based on student interests, and using learning contracts, there was a p=.02. A p=.03 was calculated when comparing the use of active learning and using a variety of

materials. The use of preassessment was p=.04, while a p=.05 greater difference in elementary differentiation of concepts and generalizations. Elementary teachers reported a higher frequency with a significant difference than high school teachers for 15 strategies.

Similar to elementary teachers, middle school teachers also reported more frequent use of DI strategies when compared to high school teachers. There were eight strategies that were significantly different. For all of the strategies, middle school teachers reported higher use. A p=.00 greater difference of middle teachers' use of assignment differentiation, compacting, and high level cooperative strategies. Teachers' use of active learning and use of products uncovered a p=.01, while a p=.02 was calculated for varying materials. A p=.04 was determined for varying tasks by learner profile than high school teachers, and p=.05 greater difference of middle school use of centers than high school teachers. Overall, high school teachers reported using all strategies less frequently than teachers at the kindergarten through eighth grade levels (Figure 3).

Given that local standardized test results are lower than the state averages, which have caused the district to receive AYP sanctions, the district's teachers need further support in differentiating instruction. While some teachers reported frequent uses of some strategies, others reported very low use of DI. Considering the district has offered paid time to teachers for their participation in DI trainings and few attended every time, the district needs to have an alternative approach to training. The district-offered trainings may work for some, but it is clearly not helping all teachers. Time to find information on DI, time to train in DI, and time to plan differentiated lessons seems to be the greatest

barriers for the district's teachers to learn about DI. While I would not discourage offering trainings, the district must find a way to reach all teachers, to reduce the time barrier, to disseminate information on DI, and establish a community of learners so all teachers can collaborate on the topic and learn from one another. When discussing teacher preparation programs, Borko (2004) insisted that in order to develop content knowledge and teaching practices, a community of learners must be established for students to experience success. To assist the local teachers in increasing their knowledge, understanding, and application of effective instruction, the resulting project from this study will provide the district's teachers with a website.

A website on effective teaching practices has not yet been established by the district. More specifically, a wiki with information focused on differentiated instructional strategies, especially strategies teachers in the district reported infrequent use of, has not been used or created by the district. A wiki that includes various strategies would provide a current, all access method of providing teachers with training in DI. A multipaged, multimedia website that can potentially decrease barriers the district's teachers are experiencing is a wiki. A wiki, or an interactive website that offers a collection of information, media, work samples, and discussion boards organized around the same topic, can be edited by its users to update information (Engstrom & Jewett, 2005). Because a wiki is available on the Internet, teachers can login when it is convenient for them. It will still take time, as anything does, but it may reduce the amount of time searching for information on the web. Teachers can discuss teaching with others and receive ideas and feedback under "Discussion" on the top row of tabs. If the district's Internet filter allows, teachers may also utilize the live chat feature. They can post

information or media they find to share with others in their learning community. Teachers can discuss their practices and share strategies and plans. They can access sample units that have been utilized by teachers for differentiated lessons. Media and DI strategy descriptions and applications will also be available. A wiki would allow more teachers to access a full menu of options whenever they have the time. The discussion board will provide them another avenue to decrease isolation.

While there are other forms trainings that have been developed to increase teacher awareness, understanding, and application of DI, such as workshops and book studies, a wiki is a means that has not yet been provided for teachers. Trainings and future professional development will always be encouraged, as will planning time for teachers to increase their collaboration with other educators. However, the wiki project seems a practical tool for teachers in the district to have access to. It is also customizable, which can help teachers with specific needs. Specific needs highlighted by the questionnaire results included increasing information to teachers on more complex strategies, such as compacting and developing learning contracts.

There are a few wikis that have been developed on DI. While there is helpful information on the available sites, I created one tailored more to the specific needs of the district's teachers, as noted by questionnaire results. I wanted to insure that information is available in a format organized in a practical manner, and that engages secondary teachers. The existing wikis will be noted and linked to the project under development so as many helpful resources become easily accessible to the district.

Assumptions, Limitations, Scope, and Delimitations

This study was focused on classroom teachers in a rural school district in northwestern United States. It is assumed that teachers who responded to the given survey responded truthfully and that they reported true approximations of practices within their classrooms.

This study is delimited to perceptions of teachers in a specific rural district during February, 2008. All 59 teachers' reports of DI use were considered. I am aware that many factors exist that may contribute to teachers' perceptions, including experiences, training, attitude, pedagogy, and other such influences.

While nonexperimental descriptive, cross-sectional studies provide valuable information, they are obviously limited in their capacity as they are not intended to be used to explain whether or not an intervention works. Its purpose is less rigid and is limited in providing data where firm conclusions can be drawn. Walker (2005) characterized descriptive data as simply a description of the existing phenomena. The existing phenomena, or use of DI strategies, were provided through self-reported data, and is a snapshot of approximate use, not a description of why an intervention does or does not work or an explanation of a cause and effect relationship.

Protection of Participants

All data collected are confidential. As a matter of fact, I will be unable to identify the participants' specific responses as there are no names on the surveys. Names will not be posted on any of the data sets. The only possible identifier would be the teachers' years of service. Teachers of kindergarten through eighth grade were asked to jot their years of teaching service on their questionnaire. However, this is not a certain way to

determine the participants' identities because many taught for the same number of years. I have no interest in determining teachers' identities. Regardless, all questionnaires were held confidential in a locked file cabinet. The questionnaires have recently been returned to the district and there is no way to determine any teachers' identity from the data sets. The use of the data will not harm participants as only a description of the group's responses will be provided. The process is intended solely as a means for increasing knowledge of teachers' current practices.

Summary

While self-reported data cannot provide 100% accuracy, it can provide substantial information to assist the district in its quest to provide more support to teachers in the areas that are needed. The data collected for this study is archival data that has painted a well-known picture. While many teachers are doing many great things, they need continued support to continually deliver high-quality, effective instruction. While recommendations will be given to the district under study for their professional development plan, a project is intended to aid teachers in increasing their study and practice of DI.

Section 3: The Project

Introduction

One focus of concern in the United States, and nations around the world, continues to be education, or more specifically, improving student outcomes. When educators, administrators, politicians, and community members alike look at components that lead to student proficiency, one of the topics that inevitably stands at the forefront is teacher efficacy. Wei, Andree, and Darling-Hammond (2009) assured that investing in professional development is critical to increasing teacher expertise. In a report on a multiyear study on professional development in the United States, Wei, Darling-Hammond, and Adamson (2010) further emphasized, "teacher professional development is a key element of school reform. Without a strategic investment in high-quality professional development, it is unlikely that any effort to improve teacher effectiveness or to turn around low-performing schools will succeed" (p. 1). The district under study is focusing efforts on improving teacher effectiveness and has collected evidence to justify the need for training in DI. While the United States is funding some professional development activities for teachers, one of the major barriers is scheduling time for educators to learn when they are not teaching children (Organisation for Economic Cooperation and Development [OECD], 2007).

Time is of essence for teacher training and technology abounds in access to information and collaboration opportunities (Ferriter, 2009). Many educators, with little time to increase their knowledge of evidence-based approaches and strategies, turn to online resources for help. One online learning tool that will be developed as the product of this study is a *wiki*. Knobel and Lankshear (2009) explained that a wiki is a shared

online space created by users to organize a theme or topic. A wiki can include space for discussions, photos, videos, and links to other websites.

The theme of the wiki will be DI, an evidence-based approach to addressing student learning needs. To provide an online resource for teachers on DI will include the following: a) explanations of differentiated strategies, b) links to updated research on DI, c) lesson planning procedures that can help teachers to effectively differentiate, d) links to online tools, e) links to state standards, f) definitions of terms related to DI, and g) sample lesson plans with differentiated components. The intention is to build the web page and gain users who can add to the information and keep the website current. The wiki will also provide a site for educators to collaborate on differentiated instructional strategies to improve their skills.

Goals

The goal of the DI wiki is to assist the district in creating a resource to increase teachers' use of DI. Providing a resource for teachers that is easily accessible may give teachers a method of learning more about DI while reducing time spent searching for topics related to DI. The information is available on one website. On the wiki, teachers can collaborate with other educators, find research quickly, and review actual plans that have been differentiated and implemented. The wiki will provide a site where teachers can learn to place emphasis on learning about their students and planning for them accordingly. To differentiate effectively, teachers must plan for students and be able to articulate to the education community what the students are supposed to learn and how teachers will differentiate to ensure learning for all. Through the use of this project, it is

the intent that teachers will begin to improve their instructional practices by learning more about DI.

Rationale

The district under study is interested in providing professional development in DI. The district issued a questionnaire to all classroom teachers in kindergarten through twelfth grade in 2008 and found that elementary and middle school teachers reported using DI strategies at a higher frequency than high school teachers did. However, the data determined that most staff reported low frequency of use of some strategies, which indicated there is room for improvement.

To provide a better picture of the rationale for this project, other current data should be considered. For example, the local district's on-time graduation rate was approximately 83% in 2009-10, just under half of the student population is considered to have low socio-economic status, and 17.4% of the student population was being served in special education in May, 2011 (OSPI, 2011). While the numbers provide a general sense of the student population, the reality is that students have varying layers of needs beyond what is reported (Tobin & McInnes, 2008). According to OSPI (2011), 74% of teachers in the district have a Master's degree, yet the district's students are not making Adequate Yearly Progress (AYP). Keeping in mind that Weschler and Shields (2008) indicated there was a significant link between teacher quality and student outcomes, it can be assumed that teachers need more training than they have received through coursework to increase student achievement. Because teachers are required to guide all students to meet learning standards, regardless of students' socio-economic status, ability level, or whether or not they are being served through a special program, teachers must be trained to

address learning needs (Levy, 2008). DI is a practice that recognizes the importance of learning standards as well as students' learning needs (Tomlinson & Allan, 2000).

Although DI is an effective, evidence-based practice (Tomlinson & Allan, 2000), teaching educators to implement DI can be a challenge, considering the limited amounts of time they have to spend on professional development outside of their classrooms. Inservice trainings provide exposure, but not ongoing learning (Chappuis, Chappuis, & Stiggins, 2009). Web 2.0, or the name given to reference updated technologies, has offered an array of methods for disbursing information on topics such as DI. A wiki, for example, is a means to disseminate literature, resources, and create a place to engage in professional conversations (Younger, 2010).

Collaboration is a function found to be highly useful and productive in achieving high level results in education (DuFour et al., 2006). Considering time to work with other professionals is often a barrier that keeps teachers from engaging in collaboration, a wiki will provide some access to collaboration. Available on the wiki is a discussion board and a live chat feature. Many school district filters will not allow teachers to access the chat feature, however. The chat feature will only be useful if teachers utilize the wiki from another location. The discussion board will suffice for expressing and sharing thoughts and detailing experiences for those who cannot chat live.

While the chat tool would be helpful for teachers to collaborate from their own spaces, they can still reduce time searching for information from others as a multitude of information is available at one site. Engaging teachers in Web 2.0 will introduce or continue their exploration into the latest online integrative software. The wiki is designed

for teachers to use in the district under study, but users anywhere in the world can have access to this online learning tool, which can lead to widespread collaboration.

Review of Literature

The review of literature will cover two components of the project: the format and the content. The content of the project will be about DI. An explanation of and a review of DI literature, its meaning and purpose, will be included to provide an understanding and a rationale of the content. Equally as important to project development and purpose, the format of the project will also be described and supported with evidence. Professional development literature will be woven into both the content and format, as it is truly the overarching concept of the project.

The literature and findings reported in this section were identified through a search of the Educational Index, Index of Doctoral Dissertations, current Index of Journals in Education, as well as by general online and Boolean search methods. Given that Tomlinson, of the University of Virginia, is a highly recognized researcher on this topic, references listed in major publications were also reviewed for relevance to this study.

Format

Historically, teachers could collaborate only with colleagues they worked with and learn from books that they could find on specific topics. Another method of teacher learning, also still alive today, but not the only avenue available, are inservices, or the notorious drive-by workshops. While inservice trainings are good in the sense that they provide information to teachers, short-term trainings are not molded around teacher needs and do not facilitate sustainable change (Chappuis, Chappuis, & Stiggins, 2009). In the

Web 2.0 era, teachers can access multitudes of information online. Reference books often take a backseat to the Internet because the web takes less time to access, provides many different relevant materials, and uncovers current sources of information. Additionally, social software offers a place for teachers to ask questions and find answers.

While a webpage of information was considered for this project, a wiki will be used instead. Web pages are static and do not encourage educators to be contributors. Wikis can cultivate thinking and offer space for collaboration (Cromity, 2009). A wiki's collection of web pages that focus on a specific topic can be modified and updated by users. It is a form of social software that allows users to collaborate, share documents, videos, audios, and discuss practices (Knobel & Lankshear, 2009). As a wiki gains users, the capacity to provide current evidence, personal experiences, and descriptions of knowledge and skills of others increases (Brown & Adler, 2008).

Collaboration is a large part of a wiki. Teachers are able to connect, discuss, and/or share materials. Nieto (2009) commented that teacher attitudes and beliefs are affected by collaboration. Nieto further discussed that teacher disposition has an influence on instructional practices. Ferriter (2009) explained that, on the wiki, accomplished teachers can post insights and describe the art and science of teaching practices that others can benefit from. Descriptions, audio, and/or video samples of teaching will allow others to see or hear good teaching. Reeves (2009) insisted that teachers have good models of best practice instruction to improve their own. Huebner (2009) also affirmed that interaction and self-reflection are needed for teachers to learn. Wikis are canvases for both interaction and self-reflection.

Given that Web 2.0 tools are relatively current in their use, it has been difficult to locate any research as to the effectiveness of wikis in professional development. Wheeler and Wheeler (2009) also found research to be limited in the effectiveness of wikis. While wikis have been available for the past decade, they have not been commonly utilized in academic arenas until recently (Slotter, 2010). The research I was able to find in the effectiveness of wikis related to student use, as more universities are using wikis to help students learn. Wheeler and Wheeler (2009) studied academic writing in undergraduate teachers. They issued questionnaires to 35 students asking them specific questions for written feedback. Most students reported that their academic writing had improved due to their heightened awareness of the "hidden audience," but they were reluctant to edit each other's work. Wheeler and Wheeler (2009) did find that, over time, students became more confident with their writing and willingness to create their own pages.

Similarly, Slotter (2010) studied survey results from college students who had to use a wiki as part of their course. Slotter (2010) found that wikis enhanced students' learning, as they reported positive results. Students enjoyed the wiki and were given the opportunity to collaborate and receive feedback from others on their work. Students ended up frequently utilizing the wiki. Slotter (2010) commented that a wiki is "an ideal educational tool for inducing collaborative learning" (p. 33). While much of the research on wikis studies student use, it would serve as a good tool for aiding teacher learning as well. The district under study would appreciate a collaborative learning tool for teachers to share their expertise.

Content

The content of the wiki will be focused on DI, an effective instructional approach to teaching all students. DI is flexible and incorporates strategies to teach students from all backgrounds, with different learning profiles, and varying abilities. Sternberg, Torff, and Grigorenko (1998) identified that student achievement improves when students are given options related to their learning profiles. Sternberg, in his book edited by himself and Williams (1998), explained that instructional design that recognizes student intelligences "will improve student attention, learning, thinking, and satisfaction" (p. 14). Students are also more engaged in learning when teachers respond to their readiness levels (Vygotsky, 1986) and interests (Csikszentmihalyi, 1990). Planning instruction based on students' readiness, interests, and learning profiles is referred to as Differentiated Instruction (DI).

Differentiated Instruction

Common sense can identify that every child is unique. While parents might celebrate this fact, it presents educators with various challenges and choices. The most obvious challenge for a teacher is whether to teach to a perceived average of the class or to differentiate instruction. As classrooms become more diverse and legislative demands increase for all children to reach state standards, pressure intensifies for teachers to address the learning needs of every student. DI is an educational concept that may offer teachers an approach to addressing more diverse needs found within today's classrooms.

DI is a method of implementing patterns of instruction to meet the needs of multiple groups of children (Tomlinson & McTighe, 2006). Wormeli (2005) identified DI as a highly effective form of teaching that maximizes student learning. Tomlinson

(2000a) wrote, “Differentiation seems a common-sense approach to addressing the needs of a wide variety of learners, promoting equity and excellence and focusing on best-practice instruction in mixed-ability classrooms” (p. 25). Thus, the main premise of DI is that all students must gain essential skills and understandings, but how they actually acquire those skills will vary according to the students’ abilities and learning styles (Tomlinson, 2000a).

In support of Tomlinson identifying DI as a process to permit teaching and learning in heterogeneous classrooms, Hall (2002) stated, “The intent of differentiating instruction is to maximize each student’s growth and individual successes by meeting each student where he or she is, and assisting in the learning process” (para. 2). On the contrary, Tomlinson (1995b) explained that differentiation is not “varying the level of difficulty of questions for certain students, grading some students harder than others, or letting students who finish early play games for enrichment” (para. 4). Theisen (2002) presented examples of DI and summarized that differentiation “is a philosophy of teaching and learning which recognizes that each learner is unique. Rigorous, relevant, complex and flexible, DI is a response to that uniqueness” (para. 5). Sands and Barker (2004) proposed that “Differentiating instruction is a way of thinking about and approaching the planning and implementation of curriculum and instruction with an understanding that learners differ in important ways” (p. 26). Wormeli (2007) believed DI to be a method of preparing students for life experiences. More recently, Tomlinson (2009) explained that differentiated means to “teach up” to students. Teachers often save dynamic curriculum for high-achieving students. Teaching up would mean that everyone learns high level curriculum, but there are supports in place to assist students and bridge

gaps (Tomlinson, 2009). Thus, in conclusion to the various definitions, this study defines DI as an approach to teaching based on a philosophy and theoretical construct that expects student differences in learning, and believes teaching should be adjusted to seek meaningful learning to guide all students to meet academic standards.

Elements of Differentiated Instruction

According to Tomlinson and Strickland (2005) five classroom elements can be differentiated based on student readiness, interest, and learning profile. The five elements are content, process, products, learning environment, and affect. The first of these five elements is content, or the information students must learn or how they can find the information (Tomlinson, 2000. Gregory and Chapman (2002) refer to content as an answer to the teacher's self-question, "What do I want students to know or to be able to do as a result of this learning experience?" (p. 84). Tomlinson and Strickland (2005) explained that "content is what students should know, understand, and be able to do" as the result of a lesson or unit (p. 7). Content can be differentiated in various ways. For example, differentiated content could be the use of reading partners, text on tape, varying reading levels of materials used, and/or creating small groups for re-teaching (Tomlinson, 2000b). Content differentiation can be enriched to challenge gifted learners and modified for academically at risk students (Tomlinson, 2000b).

The second element of DI, process, refers to the activities in which students engage so they can practice and learn required skills. Examples of differentiated process include the utilization of manipulatives and hands-on activities, or using tiered assignments in which students are exposed to the same learning standards, but may be presented with assignments that vary in complexity (Tomlinson, 2000b). Wormeli (2007)

insisted that tasks must be respectful and progressively complex so students can meet learning goals. Smagorinsky (2008) also expressed that students need simple tasks when concepts are introduced, but they should increase in complexity. Other representations of differentiated processes would be varying the time students have to finish an activity, as some need additional time to process new information and apply it, while others will be ready to move on to the next skill quickly. Creating learning centers that are based on students' interests can encourage student participation and motivation to explore concepts (Tomlinson, 2000b). Tomlinson (2000b) also recommended giving teacher-developed agendas or task lists to individual or groups of students to help learners break down information and increase understanding of concepts, depending on students' needs.

A key component to DI, which can fall under the element of process, is flexible grouping. Flexible grouping refers to the arrangement of students into clusters to meet instructional, emotional, and/or personal needs (Tomlinson & Strickland, 2005). According to Gregory and Chapman (2002), flexible grouping is needed to facilitate DI. Flexible grouping allows students to consider their performance and knowledge levels while maintaining interest. The way students are grouped depends on the activity or lesson, individual's knowledge and abilities, students' interest levels, and students' social abilities (Gregory & Chapman, 2002). For instance, a social studies lesson on the Oregon Trail may be taught to a whole group. When students are assigned the task of finding an alternate route, some students may work in a small group of varied ability levels and group tasks. Another student may prefer to work alone while others may work with a partner or in a small like-ability group with the teacher.

In a literature review on middle school students' transitions, Parker and Neuharth-Pritchett (2009) recommended flexible grouping as a way for teachers to move away from tracking students and increase interest levels. Hayes and Robnolt (2007) reported on the results one school experienced after receiving a Reading Excellence Act (REA) grant. The grant was given to assist in efforts to improve reading instruction in grades K-3. Teachers were provided professional development in literacy and flexible grouping, as a best practice instructional approach. In the first year of the grant, 47% of third grade students met benchmark standards on a standardized achievement test, and 65% of third grade students met standards the following year (Hayes & Robnolt, 2007). While the instruction of flexible grouping alone did not impact student achievement, it is likely that the focus of this practice assisted teachers in effectively instructing students in literacy.

The third classroom element that can be differentiated is student products. Levy (2008) explained that product differentiation provides students with a means of demonstrating their knowledge by using their own learning styles. Anderson (2007) suggested that giving students options with differentiated products motivates them to take responsibility for their own learning. Some examples of differentiated products include, but are not limited to the following: individuals or group work, presentation of a report on audio or videotape, a written report, a Powerpoint or technology-based product, a song or poem, or they may draw and label a map. Differentiated products are guided by established criteria found in rubrics or contracts that accommodate different abilities and skill levels to achieve the same standard of learning. Some product options may offer open-ended assignments that allow for creativity, while others are well defined in process (Tomlinson & Strickland, 2005). A method often encouraged for highly capable students

is to contract for the product. Students can then manipulate their assignment to illustrate what they have learned using their own creativity or learning styles and strengths (Tomlinson, 2000b). In order for students to create products meaningful to learning, they need to have choices that encourage engagement in self-directed learning and promote the use of synthesis, a high-order skill. Teachers would then act as facilitators and help students maintain focus on their learning activities by limiting distractions. Focused activities not only assist students in sustaining attention but can be used to help students activate prior knowledge which, in turn, encourages various types of student demonstrations (Gregory & Chapman, 2002).

The fourth classroom element that can be differentiated is the learning environment. The learning environment includes the setting students are learning in as well as classroom organization, which contributes to the overall tone of the room. Hawkins (2007) conducted a longitudinal study regarding rising achievement of students with special needs. In his follow-up survey, 60 schools responded. Hawkins (2007) profiled three successful schools and determined 10 effective practices in closing the achievement gap between students with special needs and general education students. One of the practices included providing safe environments that encourage learning.

Some ways to differentiate the learning environment are as follows: (a) to ensure quiet areas within the classroom, (b) invite student collaboration through arrangement of furniture, (c) use materials that respect and expose students to different cultures and home situations, (d) match independent work to individual needs, and (e) design procedures for students to follow if unable to access immediate help from the teacher. In addition, it is

important for students to understand that every learner is different. Some students may need to get out of their seats and move while learning, while others choose to work quietly (Tomlinson, 2000b).

Affect, the fifth element that can be differentiated, can be influenced by any element. Affect is connecting thoughts and feelings (Tomlinson & Strickland, 2005). To successfully differentiate for affect the teacher needs to find ways to keep threats, which cause unhealthy stress, absent in the classroom. For example, if a student is an English Language Learner (ELL) and cannot read English aloud in class, the teacher needs to assist the student in feeling he or she has a voice and can contribute to the class. Likewise, if a student has difficulty keeping his or her body still, there may need to be space for movement so the student can avoid frequent reprimands for something that he or she has trouble controlling.

Tomlinson and Strickland (2005) explained that students need to feel like they have purpose and belong in their classrooms, have the means to develop self-efficacy, and have support in developing affective and cognitive competence. Sousa and Tomlinson (2011) emphasized that learning in a supportive, academically challenging, affirming environment makes students feel safe to grow emotionally, academically, and socially. Hall, Strangman, and Meyer (2003) explained that flexible instruction and giving students choices helps them to feel more successful and more engaged in learning.

Support for Differentiated Instruction

Differentiation implies modifications or variations to instruction or assignments presented to students through content, process, product, learning environment, and/or affect in order to create child-specific learning experiences. The purpose of DI can be

deduced from theories and neuroscience. Because the multiple intelligences theory is a motivator for teachers to deliver content in a way that students will learn best, the general idea behind the theory will be discussed. Investigation on such matters as student motivation is also relevant as it lends the purpose of delivering content through student interest. Student interest, along with readiness and learning profiles, are components that teachers plan for when effectively differentiating lessons.

Student interest, readiness, and learning profiles can be further understood by learning about brains. The increasing amount of knowledge gathered from neuroscience is essential to review as support for DI as it provides teachers with more knowledge of the human brain. Theories and neuroscience often describe DI as a meaningful approach to increasing knowledge and stimulating the human brain in a healthy manner.

Gardner's (1983) multiple intelligences theory truly provided a foundation for DI pedagogy. Aborn (2006), in an article discussing teaching and thinking stated,

> Feeling dissatisfied with the current one-size fits all model prevalent in much of today's competitive high-stakes testing culture, we have been able to use Gardner's theory as a vital tool to realign our pedagogy to better value the individual children with whom we work (p. 83).

He further asserted that using DI in combination with assessments aligned with multiple intelligences theory, teachers can develop the skills of all students.

Gardner's (1999) studies have identified eight different types of intelligences. The eight intelligences include the following: logical-mathematical, linguistic, naturalist, spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal. Through his theory of multiple intelligences, Gardner sought to explain why similar knowledge can be

learned successfully by people through different experiences as well as why people learn various concepts. The underlying concept of multiple intelligences is that everyone is smart, as all people have learning strengths. When content is presented in students' preferred intelligence area, they are more likely to learn. Moran, Kornhaber, and Gardner (2006) described within the theory of multiple intelligences that several independent cognitive capacities interact, but they insist that there is no "general intelligence." This implied no general lessons will meet the needs of all students. Indeed, Gardner's work suggested learning is different and unique for each individual, requiring differentiated experiences in order for individuals to learn the same knowledge or skill. However, beyond Gardner's work with multiple intelligences, other researchers studying other topics have also contributed to the rationale for differentiating instruction.

In studying motivation, Anderman and Midgley (1998) concluded that students are more engaged in learning when they are active and have some choice and control over the learning process especially when the curriculum is more individualized, authentic, and related to their interests. Fisher et al. (1980) reported that students performing at a level where they attained approximately 80% accuracy learned more and reported greater satisfaction with the learning environment. Vygotsky (1978) reported similar findings in what he called the zone of proximal development. He concluded skills should be taught slightly higher than a student's current level of attainment in order to maximize learning. Ellis and Worthington (1994), in a research synthesis on effective teaching practices, described classroom management procedures, grouping strategies, and motivational methods that are strikingly similar to methods listed by Tomlinson as DI.

Along another avenue of study, and one that is gaining popularity with increased evidence, is brain research. Brandt and Wolfe (1998) reviewed studies related to how brains learn and have noted that, post 1993, more had been learned about the human brain than in the previous 100 years. Further, they identified in 1998 that nearly 90% of all neuroscientists were still alive; suggesting that brain research is a relatively new, but a rapidly expanding field of study. Sousa referred to brain research and education as the collective unit called educational neuroscience (Ansari et al., 2010).

Psychologists, neuroscientists, and educators study the brain to describe how brains function and learn best. Molecular biologist John Medina discussed brain science in connection with learning in his 2008 bestseller, *Brain Rules*. In his review of research, Medina shared 12 rules, or principles to increase understanding of how the brain functions best for learning purposes. The rules/understandings include the following: (a) exercise, (b) survival, (c) wiring, (d) attention, (e) short-term memory, (f) long-term memory, (g) sleep, (h) stress, (i) sensory integration, (j) vision, (k) gender, and (l) exploration. Medina described some basic needs that must be met for increased functioning and gave examples so teachers and parents could foster a healthier learning environment for students. Medina proposed that traditional classrooms are not environments that feed the brain what it needs to make optimal learning growth (Medina, 2008). A pedagogy that harbors flexibility and adapts instructional strategies to encourage sensory integration and an affective environment will increase the likelihood of student learning. Fogarty (2009) announced that, as a prerequisite to teaching, instructors must learn about how the human brain operates. If teachers access evidence

that has been collected on how brains learn best, teachers can organize information and present it in a more effective manner to each unique brain in their classrooms.

Ali, Hukamdad, Ghazi, Shahzad, and Khan, (2010) conducted a quantitative study in Pakistan, comparing traditional classroom methods with brain-based teaching methods. Fifty high school students participated in the study. There was a control group and experimental group, who were all given a pretest. Then, one classroom environment was transformed to appeal to students in the experimental group and students were taught using brain-based teaching methods. The control group received traditional methods in a traditional environment. After students received lessons, they were all given a posttest. In comparison, students in the experimental group performed better on the posttest than students in the control group. This study serves as one demonstration of how understanding brain-friendly instruction can impact student achievement.

Physical Nature of the Human Brain

Wolfe and Nevills (2004) discussed awareness to brains' physical reactions to environmental stimuli. According to Wolfe and Nevills (2004), childrens' brains physical form is dependent on their experiences. This physical changes made in human brains is called *neuroplasticity.* Wolfe and Nevilles (2004) acknowledged neuroplasticity takes place when brains build new connections, or synapses, and reorganize information by eliminating unused synapses and keeping those that are reinforced through experiences. Gregory and Chapman (2002) noted that emotional stimuli affected the physical nature of the brain, which can be observed through increased or decreased attention toward instruction. For example, Jensen (1996) presented that negative influences, such as stress

caused from bullying or other adverse situations, can impede learning because the limbic system sends emotional signals in times of distress, shutting down neural pathways. Medina's (2008) reported consistencies with Jensen when he explained that severe or moderate amounts of prolonged stress can negatively impact language processing, memory, and peoples' ability to connect learned information to new situations. Mathers (1992) found that dendrites, or branch-like connections extending from neurons, will not grow when stress is present. Teele (2000) stated that negative feelings, such as boredom, anxiety, and anger, can shut down the brain's ability to learn. Conversely, positive environments and fun activities help people to learn because such situations stimulate dendritic growth (Mathers, 1992). Thus, the more lessons that meet the learning style needs of the students, the more brain development will occur.

Gregory and Chapman (2002) stated brains change physically in environments where they are exposed to meaningful, stimulating experiences. Schultz, Dayan, and Montague (1997) found the brain does not release enough dopamine, noradrenalin, serotonin, and other neurochemicals needed for learning when students are not challenged and their learning needs are not being met. These findings also suggest there is need to vary learning experiences depending on the needs of individual students.

Despite the explosion of knowledge about the brain, there are researchers, such as Blakemore and Frith (2000), who believed that brain research does not yet apply in the theory or practice of education. However, physical functions of the brain have provided insight into the effectiveness of classroom instruction. Sousa explained that scientists

may not know everything yet about the human brain, but the available information should inform educational practices (Ansari et al., 2010).

To increase the release of neurochemicals in the brain, Stover (2001) found students should be given learning choices related to their interests through the use of integrated, interactive modules that include segments and extend learning and/or allow project learning. These examples of applied neuroscience parallel Tomlinson's (2000b) description of the elements within the educational approach of DI. It is becoming clear that the links between cognitive neuroscience, psychology, and education are combining to create a theoretical foundation for evidenced-based teaching and learning. Tomlinson's work (1995a, 1995b, 1999a, 1999b, 2000a, and 2000b) on DI provided the theoretical structure for evidence-based teaching and learning. With the foundation and structure in place, applied research studies are needed to assist in the further development and application of DI in the school setting. Jensen (1998) concluded, "We have finally learned enough to formulate some important action steps. Many areas require more research, but dozens of studies are clear and solid enough to be transformed into classroom practice" (p. 16). Similarly, Geake and Cooper (2003) found the move for educators toward scientific evidenced-based practice is just beginning and the disciplines of cognitive neuroscience, psychology, and education can collaborate to advance education science through qualitative and quantitative research methods.

Professional Development

Hootstein's (1998) mixed methods study examined instructional strategies teachers used to address students' diverse academic needs and to identify what

instructional methods teachers believed to be effective. Hootstein (1998) surveyed and analyzed data from 284 urban, suburban, and rural secondary school teachers who taught science, math, English, and social studies. Hootstein reported 90% of responding teachers indicated they believed addressing academic differences was "important" or "very important." Over half of the responding teachers indicated that they believed they could improve their instructional methods and better meet students' needs through staff development. In addition, approximately 20% of teachers thought it would be beneficial to disseminate research findings. When asked to identify instructional methods they use, teachers reported a variety of practices. Hootstein (1998) found methods such as tiered assignments and curriculum compacting, practices requiring considerably more planning time, were cited the least. Methods most frequently used, such as group discussion, adjusting questions, and lecture with question and answer, were referred to by Tomlinson (1995b) as "microdifferentiation."

According to Tomlinson, microdifferentiation suggests there is some flexibility in the instructional practices, but lessons are not being prepared for students with diverse skill levels. Hootstein (1998) suggested that when designing staff development trainings, teacher perceptions should be taken into account. He suggested this because teachers differ in their perspectives regarding differentiated instruction, and they differ in philosophy of instructional practices of how their content should be taught.

Holloway (2000) reviewed literature pertaining to teacher use of DI and found that to increase the use these strategies, "school leaders must provide all teachers encouragement, support, and nurturing—all delivered through effective professional development that is founded on competent training and effective mentoring and that is

conducted by experienced, skilled professionals" (p. 83). Tomlinson (2004) concluded that the reason for lack of use or limited use related mostly to teacher experiences. The findings by Holloway and Tomlinson could be interpreted to support the belief that if there is limited use, there must also be limited effective professional development providing teachers with experience in utilizing DI methods.

Indeed, when teachers have learned about DI and are familiar with some strategies, they are in need of training yet. Teachers often have a new class of students each year, all with varying strengths and needs, which will mean that plans will need to be altered to ensure quality learning for each student. Even if teachers had the same group of students every year, their students' interests and readiness levels would inevitably change, altering student needs. Classrooms at any grade level are rich with challenges. Educating others has built-in learning curves. Teachers need to learn every strategy they can to increase student achievement.

While it is probably safe to conclude that the potential barriers keeping many educators from implementing differentiated instructional strategies to any effective degree undoubtedly vary, Tomlinson, Brimijoin, and Narvaez (2008) identified that by helping teachers to become familiar with the research literature on DI, school leaders can strategically encourage them to differentiate for their students. In general, exposure to the literature is really learning from other peoples' experiences. If there is an abundance of literature on the same topic with research to back it up, it is evidence-based best practice. Differentiated Instruction is a best practice, according to What Works Clearing House, a source of scientific evidence in education.

In Tomlinson's (1995a) case study of a school district where teachers were required to begin implementing DI, observations and interviews were conducted over an 18-month period to gain information on how teachers transformed their teaching practices. Tomlinson (1995a) noted that many of the teachers were very resistant at first and spent much of their time discussing why they should not be wasting their time with implementation. Teachers reported they needed to see what DI looked like and found it frustrating that there was no formula. For teachers who need a set recipe, DI is discouraging, but Pettig explained that "to say there is a single, perfect example of differentiated instruction is a contradiction in terms" (p. 14). Without an outlined procedure, it is difficult for teachers to learn how to differentiate without ongoing support and professional discussions regarding instructional practices.

While teachers in the district that Tomlinson (1995a) was studying were, for the most part, resistant to the mandated changes, the teachers had some valid concerns. For example, some teachers were concerned that if they spent time learning to differentiate, they would not be able to adequately expose students to the content needed so students would meet the expectations of standardized assessments. Other teachers felt that the requirement to differentiate was a "culture shock" and their feelings of lacking self-efficacy burdened them more than it motivated them (Tomlinson, 1995a). Fullan (1993) cautioned that while top-down mandates can force change, the efforts are unproductive if the requirements do not turn into motivation, as motivation is essential for long-term results.

After approximately 6 months of resistance, Tomlinson (1995a) reported some teachers started to show an interest in learning more about DI. The teachers who were

experimenting with DI were not those that administrators had predicted. Administrators assumed the younger teachers would be more likely to change. However, the teachers who accepted the changes and began working to create differentiated classrooms varied in age and experience. Tomlinson (1995a) found two indicators of teachers willing to differentiate: "(a) they were inquirers about students, and (b) they saw schooling as an organic enterprise in which disequilibrium or 'disturbance' was a catalyst for growth" (p. 85). As a result of these findings as well as observation and interview data, Tomlinson (1995a) concluded that teachers may perceive themselves as using DI even if they are not. If teachers do not clearly comprehend the definition of DI and if they do not understand the makeup of a differentiated classroom they may only assume they know what DI is and what it looks like. While teacher perceptions may be skewed by their DI knowledge, or lack thereof, perceptions must be explored to identify specific barriers to differentiation (Tomlinson, 1995a). Hootstein (1998) also discovered the importance of teacher perceptions when designing staff development trainings. Hootstein suggested that teachers' beliefs be taken into account because teachers differ in their perspectives regarding DI and may need varied approaches in learning. Teachers' philosophies of instructional practices also differ in regard to how content should be taught.

While the district under study is not forcing teachers to differentiate, they will require them to access the project's wiki. The site is low risk in the sense that teachers can review it when they have time, glean knowledge from it, and insert their expertise when ready. The wiki may take time for some to learn how to navigate, while others are familiar with wikis and will likely begin authoring new pages immediately.

Project Discussion

After reviewing literature and district data, I wanted to give teachers a planning tool to help them create lessons that they could differentiate and implement. After more consideration, I found that terms needed to be explained and I wanted a means to provide examples. Given that there is little time to explain and show teachers new avenues for planning, but all teachers in the district have a computer to access e-mail and Internet, I thought a better project may be to create something online that teachers could access when they each have time. I wanted to give some guidance on planning differentiated lessons, while making resources, sample lesson plans, and definitions of terms available. I discovered that a wiki would allow for all of the necessities and be able to host media and discussion boards for teacher feedback and collaboration. If used to its potential, a wiki on DI would be very appropriate, helpful, and relevant to teacher needs.

There are many wiki host sites available. I reviewed articles on educational wikis and conducted a Google search to discover my options. Most host sites allow people to create wikis for free. Because Wikispaces offered free educational wikis and it seemed user friendly, I chose it. First, I had to register with my e-mail address, create a password, and establish a web address. I then determined the guideline that only users who I approved could modify the site. Users are able to edit text, and upload images, videos, and create links. I categorized and designed pages, developed links, uploaded documents, organized a list of contents, chose visual effects such as color, font, and images, and added media. I also uploaded sample lesson plans, links to current articles, learning standards, information on best practice, a discussion board, and links to online tools and resources (see Appendix A). The wiki is intended to be utilized by teachers in the local

district to increase the potential for collaboration. Other teachers outside of the district can also register. If teachers do not register as users and participate in the discussions, they will not benefit as much as they can from the site. Due to this barrier, the district's superintendent discussed requiring teacher participation (Appendix D).

To put the wiki together took approximately 30 days. Now that the wiki has been created, I can invite teachers to register and they can begin using and contributing to it immediately. The wiki should be continually improved upon, though this will not take place until teachers are utilizing the site. Teachers will be invited to use the site as soon as the project study process is completed. I have created, will continue to monitor the wiki at least once weekly, and accept users to the site. Users can log in, add to the site, and participate in the discussion board.

Project Evaluation Plan

The evaluation of the wiki will be formative. Formative evaluation was chosen for this project because it is a type of assessment that can be developed concurrent with implementation (Patton, 2002). Teachers can evaluate the convenience and effectiveness of the site while using it to make necessary and immediate improvements. Davidson (2005) explained that formative evaluations are designed to improve the quality of a project, whereas a summative assessment is used to determine outcomes. A wiki can be edited at anytime and is not intended to seek one final result (Toner, 2004). Teachers who utilize the wiki should be able to use some of it, apply it, and come back to it to learn more. Seeking judgment of the site multiple times seems appropriate considering the nature of the wiki is intended for ongoing use.

I have not yet evaluated the wiki as the assessment is a plan I will initiate at the conclusion of the study. Part of my evaluation plan is to ask for feedback every 3 months for the first school year, as this amount of time may give teachers the opportunity to become familiar with the wiki enough to formulate an opinion on it. After the second 3 month interval, I would anticipate teachers would have had time to apply some of the information and produce more helpful feedback. Due to the nature of the project and the fact that I expect to continuously improve the site, I decided formative evaluation for the wiki would be most relevant.

Considering the purpose of the DI wiki is to assist in teacher learning, I need to obtain teacher feedback. I will post a questionnaire asking for teachers' assessment of the following: ease of use, content, resources, discussion board, media, and the lesson planning guide. The questionnaire will contain a Likert-type scale. The 1-5 scale, judging how helpful the site is in regard to teachers' learning and applying DI strategies will represent the following: 1=strongly disagree, 2=disagree, 3=undecided, 4=agree, and 5=strongly agree. Through the use of the scale, I can quantify the results and focus quality improvement in the areas most needed. I will also be able to post the results to teachers and ask more specific questions to guide any needed revisions. Along with the questionnaire that can prompt feedback from teachers, the frequency of use of the discussion board will be monitored.

Ernst (2008) described the purpose of online tools in learning is to enhance knowledge of content and practice while building a community of teacher learners. Considering the purpose of online tools, such as the DI wiki, the overall goal of the formative evaluation is to insure that the wiki is a quality product that is valuable to its

users. More specifically, goals include measuring and encouraging increased use of the wiki, editing and adding information to insure teachers can find the content they need, posting questions and/or responding to the discussion board weekly, adding current resources frequently, and prompting others to share their insight and expertise. Salazar, Aguirre-Munoz, Fox, and Nuanez-Lucas (2010) insisted that wikis are mechanisms that support professional practice even when teachers cannot physically meet. Thus, promoting collaboration as much as possible is also a goal of this wiki as it can be an opportunity to decrease isolated teaching practices. To initiate teacher use in the district, the local superintendent plans to allow the wiki link to be posted to its webpage and invite all teachers and administrators to become users (Appendix D).

Project Implications

Teachers have a tremendous duty to uphold. They are responsible for educating students to be able to compete in a global market and overcome the obstacles in their lives to be able to learn. However, lack of time and isolation are often barriers for teachers to become more effective educators. Weschler and Shields (2008) stated that "The quality of a student's teacher is the most important determinant of learning after family background" (p. 1). If student success is largely dependent on teachers, it seems quite important that teachers have access to learning resources that can help make them more effective.

As a result of the data analysis on local teachers' self-reported use of DI strategies, the project was created. The project was developed to provide local teachers with access to online resources for furthering their understanding of DI and to contribute to their repertoire of ideas and understandings of DI strategies. To apply their knowledge

and contribute to student learning, a planning template was designed for teachers so they could highlight learning standards, the goals of the lesson or unit, and insure student learning profiles, abilities, and interests were all taken into account prior to teaching. The discussion board was added to give teachers the opportunity to collaborate with colleagues to increase professional dialogue on DI. Varga-Atkins, Dangerfield, and Brigden (2010) studied first year undergraduate medical students' learning through the use of a wiki. In regard to learning on a wiki, 32 students were surveyed and data was triangulated with student interviews and statistics gathered on wiki usage. Varga-Atkins, Dangerfield, and Brigden (2010) found that through collaborative efforts on the wiki, students were learning professionalism. Students were able to share links, discuss topics, and were able to increase their knowledge. Because students were going to share their knowledge to a group, they took the time to reflect on resources and present their information well. The wiki designed as the project for this study has the potential to increase collaboration and professionalism for local teachers as well.

The wiki can help teachers learn about DI strategies they have not used and enhance the methods they have already utilized. Educators can seek resources on the wiki to differentiate for students, which can increase their self-efficacy. Enhancing knowledge and perceptions of their own abilities can improve teachers' instruction and promote student achievement. Chu (2011) insisted that student diversity challenges teachers and if teachers misperceive students' abilities, it is often a result of low self-efficacy. The danger in low self-efficacy is the impact it has on students' behavioral and academic performance (Chu, 2011). If teachers have tools, such as the DI wiki, to increase their

knowledge and gain support from colleagues, their improved efficacy and practice should have positive effects on student learning.

If teachers have more options in ways to collaborate and communicate with colleagues, they have more opportunities to cultivate social change. As teachers learn to apply more skills, they can express their experiences through the use of the discussion board and share it with others. Exposure to knowledge and skill building, along with practice and application can help teachers accommodate student learning needs. The collaboration alone may improve the quality of the educational environment for students. It seems when people become stressed, they react rather than respond effectively. The more knowledge and practical experience teachers have, the more likely teachers can appropriately respond to students' learning needs.

While the project will first be available to the district's stakeholders, educators from other regions can be invited to join the wiki and share their wisdom. As the site gains registered users, the pool of resources and discussions can deepen. Wikis allow for idea integration and knowledge building (Farabaugh, 2007). Through the wiki, teachers can have more chances to progress professionally. West and West (2009) clarified that creating a space, such as a wiki, where people can share their expertise and interact, not only gives them the ability to learn socially, it also is a practical method of supporting one another for the purpose of student achievement. Through the wiki, the district stakeholders may have the possibility of upgrading their community to one continuously focus on student achievement.

Summary

Given the effectiveness of DI, the importance of knowledge on how the human brain functions, and the perspective on learning that comes from the multiple intelligences theory, it seems critical for teachers in the district to learn more about this knowledge to increase their understanding of how students learn. Studying how students learn best can help teachers better prepare students for academic success and the world in general. Thanks to technology, the world's vast amounts of information are available at any point in time. The flip side of that benefit is just that: we have vast amounts of information available. There is so much information to sort through. If teachers have an organized site to pull information from on a centralized topic, such as DI, they will not have to filter through so much information. The advantage of a wiki, while the effectiveness on teacher professional development remains unknown currently, is that all teachers can participate and share their knowledge and experiences to help other teachers in the learning community. The wiki project will assist in organizing DI content for teachers in the district and help to reduce time barriers through continuous availability.

The first section of this study reviewed the local problem and established the need for the study. Section 2 explained the methodology of the study, and an analysis of results, while section 3 described the project that emerged from the data analysis. Section 4 will add to the information by reflecting on the project, the project developer, and explain how the project can affect social change.

Section 4: Reflections and Conclusion

Introduction

In the wake of reviewing the frequent nationwide issues regarding low student achievement and lack of teacher effectiveness, my once idealistic attitude when first presented with the opportunity to create a project/solution for my problem slightly faded. While I realized my project could be focused on the local problem I was studying, and while I knew the problem would be centered around one concept/idea, I still found myself rubbing my forehead trying to recapture the disillusion that I could find a panacea to help everyone. Like many other passionate educators, I too have experienced grandeur while caught up in thoughts of helping all of my students. The reality is that education and teaching is beyond complex as there are many dynamics that ultimately vary from district to district, state to state, and across the nation. To say there is one wholesome solution to a massive issue is, to say the least, an understatement. I am not sure it is possible to have something so complex cured by something simple. While remaining passionate and dedicated to finding a worthwhile project to help teachers and students, I removed my heroic cape and began brainstorming.

When I thought of different ways to help teachers learn to differentiate their instruction, I made lists of barriers and benefits. Every time I thought of a way to disseminate information and provide practical examples, I ran into a predominant issue—time. Because teachers have limited time to engage in extra learning when they are otherwise immersed in student learning, professional duties, and the like, I had difficulty fitting an effective support into varying schedules. Then, it dawned on me. Within the district, every teacher has their own computer with Internet access. That's when I started

researching some digital literacies and their uses (Brown & Adler, 2009; Foley & Chang, 2006; Knobel & Lankshear, 2009; and Varga-Atkins, Dangerfield, & Brigden, 2010) and came up with the idea to establish a wiki that I could put relevant and meaningful information about Differentiated Instruction (DI) on. The biggest attraction for the use of a wiki were the amounts of information a wiki could hold, the ease of use, and the unlimited, untimed access teachers could have. I plan to evaluate the wiki and its effect at least once per month as a future course of action.

Through the development of the wiki, and the study as a whole, I have learned much about myself as a scholar and a practitioner. While my learning has merely commenced in this domain of my life, my experiences are noteworthy and will weigh heavily on future professional actions and decisions. I hope that, through the project, educators in the district will increase their effectiveness and become inspired to make necessary changes to help students learn and grow through different modalities. While I hope the benefits of the wiki are significant and obvious within the district, I also would like to see its use stretch across other districts. While there are some limitations that are inevitable with the wiki, there is much potential in its success.

Project Strengths

The wiki that was developed as a result of this study is organized around DI, an effective approach to teaching. There are many benefits to presenting DI resources through a wiki. According to Richardson (2010), a wiki is a great site to house resources and archive files—a digital filing cabinet of sorts. Any registered users can add and/or edit published content. Users can also network and discuss issues centered on DI. While some may choose to only read what is available and not actively participate, likely means

they are at least processing the information. On the other hand, people who are typically reserved may engage in an online social collaboration, such as blogging, or publishing to a website and/or providing commentary to a discussion (Richardson, 2010). Al-Shalchi (2009) believed that blogging would provide a medium for shy people to engage in conversations so they could establish a voice and collaborate with others. Eide and Eide (2005) on their neurolearning site insisted that blogs "can promote critical and analytical thinking," promote "creative, intuitive, and associational thinking…[while promoting] analogical thinking," and "blogging is a powerful medium for increasing access and exposure to quality information" (paras. 3, 5, & 7). While blogging is only one aspect of the wiki, the capabilities of the online discussions are limitless.

The wiki can be used to maintain records of meetings and the topics of discussion at the meetings so users may reflect. Speaking of reflection, the site users have time to edit responses before and after they post. This way, some may find they are more articulate and can express themselves better online. This helps teachers to engage in metacognitive analysis and synthesize ideas. While the targeted users are those in the district that participated in this study, anyone can register. The audience could be expansive and open the walls of the school. All users can contribute to a greater body of knowledge.

Ultimately, the DI wiki is meant to be organized, easy to search, and shareable. The method of the wiki can continue to expose teachers to new literature that helps them handle the expanding collection of information available in this digital era. Images, links to resources, videos, and document files can all be shared on the DI wiki. If the wiki needs to be upgraded to be more user-friendly, users can make the changes. There are

many possibilities with the DI wiki. The intentions are good and the possibilities are yet to be seen. While the wiki has many benefits, there is no denying there are limitations that must be understood.

Project Limitations

With all digital learning, wikis are subject to numerous and constant changes and upgrades. This can be frustrating to new users. Likewise, people who are new to the digital world may become easily irritated with the learning curve. However, teachers who refuse to learn about new methods of informational exposure will be disappointed. O'Brien and Scharber (2008) attested that digital literacies are not going to fade into the background of society. New literacies will continue to develop.

All registered educators need Internet access. At work this is not a problem because the school district has provided each teacher with a computer with Internet access. If they want to sign on at home, they will need a computer. Along with technology come glitches, a common frustration among teachers engaging in online learning (Zirkle, 2003). If there are technical issues, while typically resolved in a short period of time, teachers may not be able to sign in or access the information they need. It is also possible that some users, new and experienced, will find they like the social aspect of the wiki and use the discussion board for this purpose solely, disregarding the educational role of the tool.

There are always barriers in implementing professional development. Schumack and Forde (2008) claimed that the highest ranked barriers to any professional development were time and money. Luckily, there is no cost involved to use the DI wiki. It will, however, take some time for teachers to peruse through and read the information.

Some teachers may struggle with the unscheduled times they use to go online to the wiki. O'Brien and Scharber (2008) noted that some teachers become frustrated with online professional learning when it defies routines and schedules of the school.

All in all, there are always benefits and pitfalls to implementing new interventions. The limitations are prominent enough to pay attention to and evaluate to insure teachers are able to all access and use information posted on the wiki. The evaluation will be incorporated into the ongoing questioning of teachers on the discussion board to continue improving the wiki. Unfortunately, no matter what was implemented, there were going to be some limitations. Depending on the individuals, this was the best way I could think of to propose flexibility in teachers' time. At this point in time, the strengths of this project outweigh the limitations.

Recommendations

After much review of the study and hours of brainstorming, I came up with a few ways to address the local problem of teachers needing further skill training in DI strategies to help more students to achieve. More than anything, it seemed teachers were most familiar with simple DI strategies, such as varied time and pace. The more complicated the strategy, the less frequently they used it. The teachers may need to learn more about the complex strategies, which means they need notification on the topics. To disseminate research and DI strategy information, I could send out weekly newsletters with summaries of current resources. I also considered offering and facilitating inservices for teachers. Another recommendation is to work some collaboration time for teachers to develop and implement DI lessons into the professional development plan.

While all of these ideas are useful, and would be most powerful if used in combination with each other, I wanted to focus efforts on providing a multimedia approach to learning about DI. Other recommendations may even be implemented in the future. The ongoing evaluation will help determine what is best for the teachers in the district. For now, providing online examples where teachers can interact, collaborate, and seek needed resources when it is convenient seemed more of a benefit and respect for teacher time.

Scholarship

Through the project study process and professional experiences, it is apparent that scholarship can be ascertained not only through exposure to abundant literature, but also by way of applying acquired knowledge. It is a responsibility to others to share what has been learned and use it for the betterment of education. In my case, it means using my knowledge and skills to help and support teachers in learning DI. When people learn something new, they tend to feel inadequate until they understand why they are making a change and experience success. Students, especially those with special needs, depend on others to shape their education. I have the opportunity to impact student achievement through teacher learning. The knowledge I have acquired through reading, experimentation, and through this study, helped me to realize that the very techniques and strategies teachers must use for students, I too must employ. For example, if a student does not understand or have much experience with a subject, I would never belittle him or her, I would teach them in a way that makes sense to them. Ergo, I must also differentiate for teachers through discovering their interests, learning profiles, and readiness. If I expect teachers to simply utilize the wiki and discover DI for themselves, I

would not be upholding my responsibility as a scholar. Scholars would do whatever needed to be accomplished and do it the right way. In this case it would be to focus on student achievement and not to become lost in any type of setbacks.

Knowledge gained throughout this process inevitably broadens perspectives on prior experiences and guides further reflection and decision making on critical topics. Reflection is critical. In every situation and at any given time, scholars must make well-informed decisions. After spending tremendous amounts of time learning, scholars should realize that gathering information that has an evidence base is critical when making choices that impact others. If mistakes are ever made, scholars can correct what has happened and make everything right.

Scholars choose to analyze, reflect, and constantly improve upon performances because, given new information, experiences and research reviews, it is unavoidable to believe that growth is not necessary. Collecting and analyzing data provides scholars with displays of what is truly happening, well beyond the opinions of others. As a result, appropriate resources may be utilized to make improvements. It is critical that morals and ethics be strictly followed throughout the process of inquiry, data collection, and analysis so the lives of others and situations can be readily improved upon.

Project Development and Evaluation

Project development was gratifying in the sense that something could be created to help the district that was studied as a result of their data analysis. As I saw teachers become frustrated with difficult students as they felt helpless to assist students in meeting learning standards, I wanted to look at the district's data on teacher reported use of DI. Through the data analysis, I could pinpoint that the issue was many teachers were not

utilizing some DI strategies. The patterns established by teachers' reports determined they were typically not using complex DI strategies. After reading about barriers to DI implementation, I determined that lack of time and knowledge on complicated strategies was likely the issue in the local district. Through the creation of the project, I could offer teachers some help. With this study, I could do something with the data that were collected and analyzed. I was able to create something that could encourage teacher collaboration and learning.

Teachers reported how frequently they used specific DI strategies. As a result the project placed emphasis on all strategies to provide information for teachers. The discussion board gives teachers one more place to collaborate to learn more about DI from each other. Encouraging the use of the project can be helpful as the district increases expectations and moves into the next phases of DI training.

To measure the effectiveness of the project, I need teachers who use the wiki to submit feedback regarding their experiences with the project. The evaluation will take place after the project study is completed. The evaluation is formative and will take place at different points throughout the school year. The intention is to give teachers time to operate the site and apply any gained knowledge. Considering the nature of the site, I can edit or add information to enhance its effectiveness as a result of the findings gathered from teacher evaluations.

Leadership and Change

I have learned that leadership means being responsive and accountable to the needs of the system and the people in it. Leadership is collaborating for the greater good of the situation and braving change when it is necessary to improve. A good leader avoids

being critical to colleagues and students. Instead leaders focus on others' strengths to help them grow and positively contribute. Education is complex and nothing this complicated can be changed alone.

I know that I have grown professionally and become a leader throughout the process of this study. I have noticed that others have confidence in my professional opinions, as well as in my decisions. When I initiated this study, I was a special education teacher in a resource room setting. Shortly thereafter, while still a special educator, I was coordinating all special programs, which included the learning assistance program (LAP), students 504 plans, and training and supervising paraprofessionals. The more I learned, the more responsibilities were added to my job. I soon acquired discipline management for all middle school students. I was also asked to participate in school improvement activities, to design protocol for parent participation in the schools, and facilitate teacher trainings in evidence-based practices. As district administrators became more reliant on my expertise, I was asked to become the special education director, while still maintaining student case loads and insuring my students were receiving services outlined on their individualized education program (IEP) plans. While I was hesitant at times to take on more responsibility, the reality is that I was learning and becoming more competent throughout my training with Walden University and the school district. Each year that passed brought new challenges and improvement. When people seek knowledge and build upon what they have learned and can apply it when working collaboratively with others, they become leaders. I once was told that teachers have a choice. They can spend the next 40 plus years having the same experiences repeatedly, or they can have 40 years of different experiences. This comment alluded to teachers' perceptions and

personal reflections can mold them into better educators over time, or they can settle for status quo, fear change, and be reluctant to helping all students achieve.

Change takes patience, persistence, and collaborative efforts. If leaders are reactive rather than responsive, they have lost their patience and may damage the process of good change. When people realize change is needed, they resist it anyway because it doesn't typically happen overnight, especially in the context of educational reform. When there are problems, many want to see change immediately and make irrational decisions in hopes it will suffice. Change will only happen if teams collaborate to work toward a common goal. I often have to remind myself of this when frustration sets in or I try to take activities on by myself. Though the foundation has been set, the success of the product from this study will take more time and collaboration, patience, and persistence.

Analysis of Self-Scholarship

I have learned that I have much more to learn. The more knowledge I gain, the more I realize how much I do not know. I have also learned that the process of learning is frustrating, but knowing how to do something is worth the sometimes grueling process that it takes to learn. When I started the doctoral process through Walden University, I was open to learning and self-reflection, but had no idea that I would find how limited my educational practices were. I enjoyed reading articles about practices I was partaking in, but avoided the ones that required me to change, saying I did not have the time to read them. I knew what action research was, but did not execute it in my classroom regularly, as I figured it was only something I would do if I were required, or if I had time.

I now read articles and books relating to practices in education just because I want to know more about the evidence and critically question my practices. I am constantly

thinking of ways to document and analyze student achievement, how to measure their progress, and be able to articulate it to parents, teachers, and administrators. Throughout my journey of becoming a scholar, I have acquired confidence, competence, a passion to help others understand evidence-based practices, the ability to have professional conversations with others, and to be constructive in my approach as a leader. I have also learned to always harbor humility to remind myself that I have only one brain and collaboration is precious.

While I have made tremendous growth as a scholar, I realize I still have much learning to do. I am sure someday I will look back at this point in my life, just as I do my earlier years, and consider myself naïve. Life-long learner is a label I will bestow upon myself forever.

Analysis of Self as Practitioner

I have found that self-reflection of my own practices is just as important as observing others' performances. I can learn from others and myself. I can improve my own practices through reflection, reading scholarly journals, and researching ideas. Just as I have grown as a scholar, I have also grown as a practitioner throughout my doctoral process. My practices as an educator have changed dramatically. When I learn about a practice, I research it further and then apply it. When applying it, I keep data to compare my notes with those I have read. If what I have done produces good results, I continue the practice and take notes to improve it. While I was nervous about exposing my thoughts and ideas to others, I now will share with others and appreciate their feedback. The doctoral process has helped me to step outside my comfort zone and grow as a teacher and leader.

I believe I have grown through the passion I have for improved student learning and teaching practices, and through my mentors challenging me. Not only have local mentors pushed me to learn, but my committee has also maintained high expectations of me. Many revisions later, I have developed something worthwhile. I do not consider this study my masterpiece. I view it as a first step in developing my skills. My goal is to research other topics of interest to improve knowledge and skills of myself and other teachers.

Analysis of Project Developer

Developing my project automatically put me on a learning curve. I did not know how to develop a wiki, but knew I needed to learn so I could create an easy access tool for teachers. I wanted to work toward creating positive social change in instruction of students through finding a method to allow district teachers to collaborate with teachers in other districts on the topic of DI. I have created a lesson planning guide for teachers to develop their own differentiated lessons and make important considerations when planning instruction. This guide was included on the wiki. I have tested the planning guide with teachers. I collaborated with teachers in grades K-6 to plan units. When teachers started planning, they always wanted to talk about activities first, and they all had amazing ideas. It was difficult for many of them to first decide what the learning goals were and what all students should learn as a result of the units. Automatically creating activities without first reviewing what is necessary can sometimes take too much time and dismiss teaching critical elements. The planning guide can help teachers to first consider learning standards each student must learn and highlight what students must

learn. Constructing my project can help me to assist others with learning about DI and navigating the wiki.

Some teachers have used the planning guide and experienced positive results with students. Planning with teachers and discovering their needs has already challenged me to find methods to support teachers in skill building. As time goes by and teachers can experience the wiki, I realize that changes will need to be made to meet their needs. I am excited to find out what more I can provide teachers with and how the site will impact their teaching.

Importance of the Project

The DI wiki has potential impact on social change in the local district and for other teachers throughout the nation who access the wiki. The wiki is a means for all teachers to learn about DI and collaboration with other teachers when time allows. The lesson planning guide is available to assist teachers in developing differentiated lessons for the students in their classrooms. Teachers have a medium to share their expertise from any location, at any time, as long as there is Internet access. Overall, the study itself will show the district stakeholders how frequently teachers in the district utilize DI strategies and provide a tool for possibly increasing the use of DI planning and strategies.

Implications, Applications, and Directions for Future Research

Teachers, administrators, and the school board will now be able to review the findings of the questionnaire to perceive teachers' self-reported frequencies of utilization of DI strategies. The data collected in this study can be used as a springboard for further analysis. For example, as the district implements professional development activities in DI, they can continue to measure self-reported data from teachers on their perception of

utilization of DI strategies. Teachers can also report on the functionality and effectiveness of the wiki. Observations and interviews can also assist in seeking the needs of teachers to guide future professional development activities in DI. Data can also be collected from parents and students regarding student performance and their response to DI to determine how to educate parents on DI to provide more support for teachers while implementing the approach.

The lesson planning guide that was created and the information available on DI strategies that is available on the wiki can help teachers develop plans for helping all students develop skills they are mandated to learn. If teachers become accustomed to planning with the end in mind, or what they want the result to be for each student, their instruction may become more intentional. Teachers' instruction may also be easier to articulate to others. While the wiki is being introduced to local teachers, it also has the potential to help other teachers as it is available on the web. With the discussion board, teachers from other districts can collaborate and/or share information on DI. The planning structure and access to information on DI can have positive social impacts on teachers, students, parents, and other district stakeholders.

Conclusion

My study and project have led to the development of my own scholarship, professional practices, and ability to use data to introduce tools for others' use. Overall, studying scholarship, leadership, and project development has helped me to better understand my roles and responsibilities in impacting positive social change professionally. The project was a direct result of the local problem study. The wiki was organized for teachers to access DI information, current resources, and a planning guide

to decrease the impact of the problem on the local district. The wiki was also launched to actualize social change for teachers and students.

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Appendix A

The Project

A wiki was created as the project of this study. The intention of the wiki is to provide teachers in the district where the study took place with information on DI strategies. The examples and discussion board on the wiki will hopefully increase teachers' use of DI strategies. The wiki has some information and links currently, but it will be further developed throughout time. The wiki can also be edited and improved by teachers. Teachers can add links, lessons, and professional discussion on the wiki. Teachers can share their practices and learn from others as well. Currently, the wiki includes the following content: a) explanations of differentiated strategies, b) links to updated research on DI, c) lesson planning procedures that can help teachers to effectively differentiate, d) links to online tools, e) links to state standards, f) a lesson planning template, g) media, h) a discussion board, and g) sample lesson plans with differentiated components. All content was selected with purpose.

Explanation of differentiated strategies

Given that teachers reported various frequencies of use of DI strategies with a number of teachers using some DI strategies not at all or some of the time, I determined definitions should be included in the wiki. Definitions and descriptions of strategies may help teachers better understand what each strategy is and how to apply them. I have added some descriptions of the DI strategies that were presented in the questionnaire. Along with each strategy description, examples of the strategies and links to sites that provide further information on the strategies are listed. Not all strategies have solid descriptions and/or links to quality websites. Also, strategies that were reported to have

the least amount of use will have more examples and demonstrations to hopefully increase teachers' understanding of more complicated strategies. The wiki is a work in progress. Links to helpful information will be added as it is found.

Links

To define DI and assist teachers in articulating the research basis to others, current resources will be linked on the site. Because teachers reported low frequency of use of some strategies, it was decided that links to research on DI may help teachers to better understand student outcomes when DI is used. There are journal articles available on the site now, but there will be more added. It is the intention that research will continually be added to the site. It is hopeful that teachers will also share information as they locate it. Teachers may gain a better understanding of all facets of DI by being aware of current findings.

Also linked to the wiki are online tools for teachers to use while planning for their students. Additional tools will be added to the wiki. Teachers will be encouraged to add helpful tools that they use to the site. An example may be text to speech software for students who need assistance with reading, or virtual manipulatives in math for those who need to visual representations of equations. Teachers can access the tools, and plan time for students to utilize the tools. The overall goal of adding tools is to provide teachers with methods that will assist students in meeting learning standards.

When planning, all teachers need to access learning standards. The lesson planning template available on the wiki has space for teachers to note the standards they are teaching in their lessons or units so they can articulate what all students must learn. Because the site is intended for teachers to use in the state of Washington, Washington

state standards are linked. However, there is potential for expansion and if teachers from other states use the site, their standards will be linked as well. Access to learning standards is critical for appropriate lesson planning.

Lesson planning

While teachers did not respond to any questions directly related to lesson planning on the questionnaire, it is a critical component of DI. The lesson planning stage is when teachers should be deciding which strategies they will utilize for their particular students. If teachers plan to use the strategies, they may be more likely to apply them. Also, during lesson planning, teachers can determine what all students should know, understand, and be able to do. Without good planning, DI strategies may be omitted from lesson delivery.

To help teachers with their planning, some sample lesson plans are available on the wiki. The lesson plans are actual plans that have been used by teachers in kindergarten through 6th grade. Teachers in each grade level used Tomlinson and Strickland's (2005) lesson components to create their own lessons. Teachers included standards, KUD, and differentiated components when planning for their students. They planned lessons in grade level teams, observed each others' lesson deliveries, and added reflections on their lessons.

Considering high school teachers' use of DI strategies is lower than that of teachers at the primary level, high school plans will eventually be added as examples for high school teachers. As users register, high school teachers will be asked to share their knowledge, try using strategies, and provide reflections. The lesson plans they create can then be uploaded. Available plans on the Internet can also be reviewed and added to give secondary teachers more examples.

Media

It is important that teachers plan for and differentiate to help students meet learning standards, but it is also important to understand that teachers have learning needs as well. Providing explanations of strategies is a good way to help some teachers learn, but others may need to watch the lesson implementation. A few videos of teachers utilizing DI strategies have been added to the wiki, but I am in search of more videos. I especially want to find media clips where teachers are using more complex strategies, such as compacting, tiered activities, and using learning contracts. The wiki will be put to better use if teachers have more examples of what DI strategies are.

Discussion board

Considering the multiple and varying levels of use of DI strategies, it may be assumed that teachers have different classroom experiences. The discussion board was added to the wiki so teachers could have a space for professional conversations relating to DI. Teachers can share their perspectives and explain how they have used DI strategies so they can learn from each others' knowledge and reflections. Questions can be posted and answered on the site. There are many possibilities for the discussion board.

Summary of the project

The wiki is a multiple page product. It was designed as a result of teachers' self reporting that they use some DI strategies, but the frequency of use varies from teacher to teacher, especially at different grade levels. The wiki has many components to help teachers differentiate. While the wiki is not complete, the intention is to develop and improve it over time. The wiki has the capacity for continual improvement and will never

be in a finished format. The DI wiki can be found at: http://differentiatedinstructionprek-12.wikispaces.com/

Appendix B

Teacher Questionnaire

(1) Not at all (2) to some degree (3) much of the time (4) most of the time (5) all the time

1.	I pre-assess students to determine their level of understanding.	1	2	3	4	5
2.	I assess student interests.	1	2	3	4	5
3.	I identify students' learning profiles.	1	2	3	4	5
4.	My classroom is student centered.	1	2	3	4	5
5.	I consistently use flexible grouping.	1	2	3	4	5
6.	I vary the pace of learning for varying learner needs	1	2	3	4	5
7.	I use active learning	1	2	3	4	5
8.	I differentiate using major concepts and generalizations.	1	2	3	4	5
9.	I use a variety of materials other than the standard text.	1	2	3	4	5
10.	I make accommodations for the needs of various learners by using support mechanisms (e.g. reading buddies, graphic organizers, study guides).	1	2	3	4	5
11.	I provide activities that require students to do something with their knowledge (apply and extend major concepts and generalizations as opposed to just repeating it back).	1	2	3	4	5
12.	I use higher level tasks for all learners (e.g., application, elaboration, providing evidence, synthesis) to provide appropriate challenges.	1	2	3	4	5
13.	I use tiered activities	1	2	3	4	5
14.	I use activities that involve all learners in both critical and creative thinking	1	2	3	4	5
15.	I vary tasks by students' interests.	1	2	3	4	5
16.	I vary tasks by learner profile.	1	2	3	4	5
17.	I provide opportunities for student products to be based on solving real and relevant problems.	1	2	3	4	5
18.	I allow for a wide range of product alternatives (e.g., oral, kinesthetic, visual, musical, spatial, creative, practical).	1	2	3	4	5
19.	The assignments I give differ based on individual (or group) readiness, learning needs, and interests.	1	2	3	4	5
20.	I use compacting.	1	2	3	4	5
21.	I use student learning contracts.	1	2	3	4	5
22.	I allow for independent study.	1	2	3	4	5
23.	I use interest centers/groups.	1	2	3	4	5
24.	I use various instructional strategies to differentiate (e.g., organizers, cubing, etc.).	1	2	3	4	5
25.	I use high-level cooperative strategies (e.g., complex instruction, group investigation).	1	2	3	4	5

Adapted from Tomlinson & Allen (2000).

Appendix C

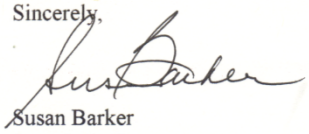
Letter of Cooperation 1

Dear Ms. Miller:

I have reviewed your research proposal entitled, "One Rural School's Initial Efforts to Assist Teachers to Differentiate Instruction." You have been granted permission to conduct your study within the district. Teacher participation has already taken place as I am aware you are reviewing archival data. I reserve the right to withdraw from the study at any time.

I understand that personal information will remain confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Sincerely,



Susan Barker
Superintendent

Appendix D

Letter of Cooperation 2

Dear Brenda:

I am pleased to assist with the conclusion of your doctoral studies. As such, the Castle Rock School District teaching staff will be directed to the use of your wiki site to learn more about differentiated instructional strategies and to review any data relevant to this district.

I trust your study was a valued process for you and will provide better outcomes for students.

Regards,

Susan Barker
Superintendent

Appendix E

Permission to publish Teacher Questionnaire

Emery, Leslie <emeryl@nassp.org> Thu, Feb 2, 2012 at 10:10 AM

Brenda,

Permission is granted to use NASSP materials as requested. This is a one-time only permission. Please credit material appropriately, and add to credit line: "Copyright 2006 National Association of Secondary School Principals. For more information on NASSP products and services to promote excellence in middle level and high school leadership, visit www.nassp.org."

Good luck with your dissertation.

Thank you,

Leslie S. Emery
Program Assistant, Communications Department
NASSP | Leading Schools
1904 Association Drive, Reston, VA 20191
P: 703-860-7254 | 800-253-7746 | F: 703-476-5432
www.nassp.org

Curriculum Vitae

Brenda R. Gingerich

Education

Walden University
Ed.D in Teacher Leadership
Degree Anticipated: February, 2012

Grand Canyon University
Master of Arts in Teaching
Degree Received: August, 2003

Washington State University
Bachelor of Arts in Education

- Major: Elementary Education (K-8)
- Endorsement: Special Education (K-12)

Degree Received: May, 1999

Professional Experience

Positive Behavior Specialist, 2010-present

Special Education Director, 2008-2010

Middle School Special Programs Coordinator, 2004-2008

Elementary Special Education Teacher, 2000-2004

2nd grade teacher, 1999-2000

Presenter at Summer Institute, 2009

Facilitator for professional development trainings, 2007-2009