THE SELF-REPORTED RELATIONSHIP BETWEEN A TEACHER'S PERCEPTION OF LEARNER CHARACTERISTICS FOR STUDENTS WITH DISABILITIES AND A TEACHER'S USE OF DIFFERENTIATED INSTRUCTION IN GEORGIA PUBLIC SCHOOLS GRADES 6-12

by

Shannon Muller Knight

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

The purpose of this quantitative multivariate correlational study was to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (SWD) and a teacher's use of Differentiated Instruction (DI) in the general education classroom, grades 6-12. Since previous studies did not clearly support any significant benefits in utilizing segregated instruction for the teaching of students with exceptionalities, it was vital to identify research-based methods to facilitate the education of all students in the general education classroom. Sustained by research on student achievement, the proper and comprehensive implementation of DI has shown to benefit students of all ability levels. Therefore, the intention of this study was to add to the research concerning the importance of the classroom teacher in the successful implementation of DI. Fifty-two general education teachers from grades 6-12 who work with SWD from a large school district in Southeast Georgia participated in the study and completed a five-point Likert scale survey. A canonical correlation, used to analyze the relationship between the variables in the data, suggested that 10 out of 21 correlations were statistically significant. Of the remaining correlations, ten showed non-significant positive correlations and one showed a non-significant negative correlation between mean assessment and mean interest. Furthermore, the researcher did not find a statistically significant relationship between a teacher's overall of identification of a student's learning styles and a teacher's overall frequency to differentiate instruction in the general education classroom, grades 6-12. Suggestions for future research are included**.**

Keywords: students with disabilities, exceptional students, gifted, differentiated instruction, inclusion, differentiation, general education teachers, IEP, learning profile, learning styles, LRE, multi-ability classroom, RTI, twice-exceptional students

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Dedication

This dissertation is dedicated to my family. To my husband, Eric, who always believed in me and stepped up in so many ways to ensure that our children were taken care of when I had deadlines to meet. To my boys who had to put up with Christmas vacations and summer trips to Liberty, along with their Mom spending hours on end at her computer. To my parents who pushed me to get an education and who teased me for taking the notion of being a lifelong learner to heart. To my grandmother who told me that I could do anything that I set my mind to. To my brother and sister whose successes in life motivated me to do more and be more.

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Thank you to Dr. Santangelo for giving me permission to use the survey that you and Dr. Tomlinson developed. Additionally, I would like to thank the school system that allowed me to conduct my survey and supported my educational journey.

Deepest gratitude to Liberty University for the stand you take in training champions for Christ. I pray that God will continue to bless your ministry. Last but not least, I would like to thank the members of FBCGC for your love and support through this journey.

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List of Abbreviations

Annual Yearly Progress (AYP)

Center for Applied Special Technology (CAST)

College and Career Readiness Performance Index (CCRPI)

College and Career Readiness Standards (CCRS)

Common Core State Standards (CCSS)

Council for Exceptional Children (CEC)

Comprehensive Model of Differentiated Instruction (CMDI)

Department of Defense Education Activity (DDEA)

Differentiated Instruction (DI)

Department of Education (DOE)

English as Secondary Language (ESOL)

Free and Appropriate Public Education (FAPE)

Governor's Office of Student Achievement (GOSA)

Gifted and Talented (GT)

Individuals with Disabilities Education Act (IDEA)

Individual Education Plan (IEP)

Local Educational Agencies (LEA)

Least Restrictive Environment (LRE)

Learning Style Inventory (LSI)

National Association of Secondary School Principals (NASSP)

National Center on Assessing the General Curriculum (NCAC)

No Child Left Behind (NCLB)

Response to Intervention (RTI)

Race to the Top (RTT)

Statewide Longitudinal Data Systems (SLDS)

Statistical Package for the Social Sciences (SPSS)

Science, Technology, Engineering, and Mathematics (STEM)

Students with Disabilities (SWD)

Twice-Exceptional Students (TES)

Universal Design for Learning (UDL)

United States (US)

United States of America (USA)

United States Department of Education (USDOE)

Zone of Proximal Development (ZPD)

CHAPTER ONE: INTRODUCTION

Background

Exceptional students in the early 21st century embodied approximately 19.8% of the public school population, which represented a noticeable increase since this type of data was first reported in 1991 (U.S. Department of Education [USDOE], 1997; USDOE, 2011; Snyder & Dillow, 2012). This percentage showed, in a typical sized classroom of 26 students, roughly five students identified as being exceptional. Exceptional students, comprised of three subgroups, consisted of learners with unique educational needs that significantly differed from the academic norm (Heward, 2006). The subgroups include Students with Disabilities (SWD), Gifted and/or Talented (GT) identified learners, and Twice-Exceptional Students (TES). Represented on a normal distribution, exceptional students scored in the top and/or bottom ten percent of the population, while educationally supported in small group settings through either enrichment or remedial environments (Tomlinson, 2004). More importantly, research has yet to clearly support any significant benefits in utilizing segregated instruction for the teaching of exceptional students; demonstrating the importance of educating all students in the general education classroom (Borland, 2003; Gartner & Lipsky, 1987; Weiner, 2007).

Exceptional students are children who significantly differed from "typical" children in "(a) mental characteristics, (b) sensory abilities, (c) communication abilities, (d) behavioral and emotional development, and/or (e) physical characteristics" to the extent that they required special education services or modification of instruction to reach their maximum potential in learning (Kirk, Gallagher, Coleman, & Anastasiow, 2012, p. 3). SWD were specified as children from the age of three years to 21 who were afforded a free and appropriate public education (FAPE) by federal mandate, referred to as the Individuals with Disabilities Education Act

(IDEA), and who were served through an Individual Education Plan (IEP; Snyder & Dillow, 2012). GT learners represented students for which a curriculum, typically meeting the needs of the majority, was not appropriate by virtue of the students' advanced abilities (Borland, 2003). Furthermore, TES consisted of learners identified as Gifted and/or Talented, while being served under IDEA as Students with Disabilities.

Several prevailing factors contributed to the upturn in participation, or inclusion, of exceptional students in the general education classroom. Those factors included, but were not limited to, the 1997 and 2004 reauthorizations of the Individuals with Disabilities Education Act (IDEA), Response to Intervention (RTI), cuts in funding for GT educational programs, and the implementation of the College and Career Readiness Standards (CCRS). Each one of the identified factors increased the level of teacher accountability, data driven decision-making, and, ultimately, the need for the presentation of quality education to all students in the general education classroom (Lingo, Barton-Arwood, & Jolivette, 2011).

As the inclusion of exceptional students became more prominent, changes in classroom management and learning environments were slow to follow and, typically, were in reaction to new data and/or standards (Hawkins, 2009). Furthermore, many general education teachers were unprepared to cope with the diverse needs of students (Brownell, Sindelar, Kiley, & Danielson, 2010; Breault, 2006). In an attempt to tackle the issues of teaching exceptional students, the schools began implementing Differentiated Instruction (DI). DI, not a one-teacher-to-one-student type of instruction, rather proposed to be a teacher's response to the educational needs and preferences of all students, through the utilization of a myriad of instructional approaches (Demos & Foshay, 2009; Hawkins, 2009; Specht, 2004; Tomlinson, 2003).

Differentiated Instruction (DI) established that teaching methods should adapt to every student in the classroom (Tomlinson, 2001; Specht, 2004). Rather than asking students to adjust to the curriculum, DI required teachers to be malleable in their teaching methods and in the delivery of instructional material to learners. Based on the students' *interests, learning profiles and/or readiness*, teachers had the ability to differentiate *content, processes, products, assessment,* and/or *learning environments* (Rutledge, 2003; Tomlinson, 2000). Furthermore, the intention of DI was proactive, student-centered, dynamic instruction that is rooted in assessment. (Rutledge, 2003).

The Individuals with Disabilities Education Act (IDEA) of 1975 was the first federal mandate concerning inclusive education (USDOE, 1997). Remarkably, the concept of teaching to the needs of the learner had been around since the existence of one-room schoolhouses; journal articles concerning individualized instruction were even written as early as 1953 (Willis & Mann, 2000). Though the formalization of DI began to take root in the 1970s and advanced as Howard Gardner's theory of multiple intelligences became popular in the 1980s, it eventually developed into its own theoretical construct by 1995 (Allan & Goddard, 2010).

The reauthorizations of IDEA in 1997 and 2004 further supported the case for DI in the classroom. The 1997 reauthorization of IDEA provided the opportunity for all students, regardless of their abilities, to be involved with and participate in the general education curriculum, as well as in state and district summative assessments (USDOE, 2001). The 2004 reauthorization of IDEA mandated for the implementation and documentation of scientific, researched-based interventions for struggling students prior to providing special educational services (USDOE, 2011). Additionally, special education teachers were required to be highly qualified in the subject areas taught, as well as in the field of special education (USDOE, 2011).

A *highly qualified* educator was identified by No Child Left Behind (NCLB) as a teacher who had: (a) been fully certified in any academic areas taught by the educator, (b) completed a bachelor's degree, and (c) demonstrated an aptitude in subject knowledge and instruction (No Child Left Behind Act: Qualifications for Teachers and Professionals, 2008).

The grouping of Gifted and Talented identified learners (GT), Students with Disabilities (SWD), and Twice-Exceptional Students (TES) to form an all-encompassing program for exceptional students was based on the notion that all exceptional learners had specific needs that required differentiation, whether they resided on the high and/or low end of the academic learning curve (Tomlinson, 2001). Similarities among these subgroups included, but were not limited to, the referral processes, ongoing assessments, accommodations, modifications, individualized instruction, underachievement, and heterogeneous groupings (Coleman, 1994). Several of the identified strategies that benefit all students in a general education classroom were personalized agendas, choice boards, remediation or extension activities, collaborative grouping, tiered assignments, varied pacing, pre-tests, Peer Assisted Learning (PAL), and computer use (Hall et al., 2009).

The identification of similarities among these subgroups of learners opened many avenues for sharing resources, tools, research, and data between participating educators. As of 2006, 16 states were able to combine gifted education with special education into one, all-encompassing, program (Traylor, 2013). For instance, Florida public schools grouped adult education, special education, and gifted education under one category called "Special Programs" (Traylor, 2013). Through the combination of these subgroups, school systems were able to eliminate redundancy and increase fiscal responsibility (Traylor, 2013). Research and peer reviews over the last two decades have shown that DI was able to meet the individual needs of

all learners when effectively implemented (Tomlinson, 2001). Carol Ann Tomlinson developed the Comprehensive Model of Differentiated Instruction (CMDI) in 1995. CMDI remains the prevailing theoretical construct for studies pertaining to Differentiated Instruction (Hall, Strangman, & Meyer, 2003). The Tomlinson CMDI model was cited and well established in professional literature for nearly twenty years. There are many published practices associated with this theory, including reviews and research based on the model (Hall et al., 2003). The CMDI was determined to be an efficient and well-ordered way to respect the learning needs and maximize the potential of all students (Tomlinson, 2001).

The guiding principles of CMDI for educators includes: (a) respect the student's individuality, while assuming responsibility for the student; (b) develop a positive classroom environment and provide a quality curriculum; (c) use continuous and assorted assessments to lead instruction, while being flexible with routines and resources; (d) share the responsibility for teaching and learning with the students; and (e) create assorted avenues for gaining knowledge (Tomlinson, 2001). It was the intent of the present study to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12. Furthermore, the results in this study were expected to match the results of similar studies conducted with GT identified learners, due to identified parallels among these subgroups of exceptional students (Santangelo & Tomlinson, 2012).

Problem Statement

Over the past twenty years, many studies concerning Differentiated Instruction (DI) have been conducted in relation to the teacher's attitude/perceptions, competencies, and efficacy, as well as aspects of the Differentiated Classroom (Bahn, 2009; Gilbert, 2012; Jones-Wilson, 2011; Santangelo & Tomlinson, 2012). Dingle, Falvey, Givner, and Haager (2004) identified ten specific competencies needed by special education teachers, general education teachers, and administrators to educate students more effectively in a multi-ability classroom. Although these studies addressed different concerns with differentiation, similar recommendations for future studies began to appear within the studies. Consensus showed that teachers generally preferred someone to model DI in a typical classroom setting, instead of focusing on the research or the theory of differentiation (Gilbert, 2012; Santangelo & Tomlinson, 2012). Unfortunately, "despite an exhaustive search on the literature, we were unable to locate any descriptions of teacher educators intentionally modeling a comprehensive framework for differentiation" (Santangelo & Tomlinson, 2012, p. 311).

Santangelo and Tomlinson (2012) attempted to tackle this gap in research through the exploration of post-secondary educators' perceptions and use of differentiated instruction with College of Education Students (CES). Their study was significant because pre-service teacher training programs have long been identified as a significant factor in changing the educational tide of the K-12 public schools (Berry, 2010; Santangelo & Tomlinson, 2012). Results showed that teacher educators acknowledged the significance of readiness and shaping instruction based on student readiness. Furthermore, the teachers valued "creating a positive learning environment and reported using a variety of strategies to develop" classroom learning environments through the differentiation of *content, process, and product,* as well as *assessment* (Santangelo &

Tomlinson, 2012, p. 322). Tomlinson (2012) also determined that a comprehensive model for DI was not being presented to the College of Education Students. Furthermore, she determined that post-secondary teachers placed little value on the students' learning profiles, flexible grouping models, and continual and varied assessments, all while providing significantly more time and support to struggling learners than to the advanced or average learners (Tomlinson, 2012).

Ghousseini and Sleep (2011) stated that central to teacher education and professional development is learning opportunities in practice. That type of practice provided pre-service teachers the opportunity to study actual classroom behavior/concerns and to develop the needed skills or knowledge base to become fully certified educators (Ghousseini & Sleep, 2011). Additionally, teacher educators must assist pre-service educators by providing a form of practice-based learning, modeling, rehearsal, and an opportunity to study various teaching and learning styles through practice opportunities in controlled university settings, in P-12 classroom settings, and explicitly designed practice settings (Darling-Hammond & Bransford, 2012; Forzani, 2014; Ghousseini & Sleep, 2011; McDonald, Kazemi, & Kavanagh, 2013). Therefore, "teacher educators must constantly model practices; construct powerful learning experiences; thoughtfully support progress, understanding, and practice; carefully assess students' progress and understandings; and help link theory and practice" (Darling-Hammond & Bransford, 2012).

Thus, the problem associated with existing research is that there have been few studies conducted on the self-reported relationship between a general education teacher's perception of learner characteristics and a teacher's use of differentiated instructional strategies, with even less focusing on 6-12 and on SWD (Santangelo & Tomlinson, 2012). Since the pre-service education programs have not been successful in modeling a comprehensive model of Differentiated

Instruction in their programs, there appeared to have been similar disconnect between the knowledge and the implementation of differentiation within K-12 classrooms.

Purpose Statement

Utilizing a multivariate correlational research design, the purpose of this study was to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12. The predictor variable/covariate was the general education teacher's perception of learner characteristics and the criterion variable was the teacher's use of Differentiated Instruction among Students with Disabilities in grades 6-12.

The predictor variable/covariate, a general education teacher's identification of learner characteristics, was defined as the teachers' assessment of students' *readiness, interests, and learning profiles* in the general education classroom (Hall, 2002; Tomlinson, 1995; Tomlinson, 2000; Tomlinson & Allan, 2000). Part II of the instrument assessed the teacher's identification of a student's readiness, interests, and learning profiles. Readiness referred to a student's prior knowledge, cognition, and experience (Tomlinson, 1995; Tomlinson, 1999), while a learning profile referred to how a student learns. Furthermore, interest referred to a student's enthusiasm or passion for a specific field or idea. The criterion variable, the teacher's use of Differentiated Instruction, was defined as the actual implementation of alternative strategies that changes "the pace, level, or kind of instruction provided in response to individual learner's needs, styles, or interests" (Heacox, 2012, p. 5). Part III of the instrument assessed the teacher's use of text, materials, activities, supports, assignments, assessments, and the classroom environment to

differentiate instruction in the classroom. Results from the survey thus determined if there was a significant relationship between the covariates and dependent/criterion variables.

Significance of the Study

As the foundation of education in the United States of America continued in a state of flux, the idea of reaching all students became a priority to all K-12 school systems, due in part to acronyms such as IDEA, RTI, CCSS, CCRS, TKES, LKES, and CCRPI. Santangelo and Tomlinson (2012) identified a significant gap in the research, as it concerned Differentiated Instruction (DI) in the classroom, and continued that research in the post-secondary teacher preparatory setting. Therefore, based on those post-secondary results, it became pertinent for the researcher to determine if a significant relationship existed between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12. Although future research would benefit from the inclusion of P-5 grade teachers, the researcher chose to focus specifically on secondary education teachers, grades 6-12. Furthermore, since research supported the concept of teaching to various learning styles, it was imperative to gain an understanding of the human dynamics that influence DI for Students with Disabilities (Dunn et al., 2009; Lovelace, 2005; Shaughnessy, 1998).

It was the researcher's hope that continued investigation would help administration in 6-12 public schools with designing staff development programs for DI, as well as supporting teachers through inevitable changes in the makeup of the general education classroom (Tomlinson & Imbeau, 2010, p. 5). In addition, the researcher hoped that post-secondary teacher preparation programs would use the results from this research to assist with the future

development of courses or programs in the education department. As a caution to higher education, Santangelo and Tomlinson (2012) stated that professors must use DI strategies in the classroom before expecting novice educators to properly implement, or even utilize, the strategies; thus, supporting the need for modeling desired behaviors (Gilbert, 2012; Santangelo & Tomlinson, 2012). Furthermore, professors modeling various strategies, whether implicitly or explicitly would benefit future educators by de-mesmerizing the practice of DI in the classroom (Santangelo & Tomlinson, 2012).

Research Question

RQ1: Is there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12?

Null Hypothesis

The null hypothesis for this study is:

H_o1: There is no significant relationship between a general education teacher's perception of learner characteristics (*readiness, interests, and learning profiles)* for Students with Disabilities and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

Definitions

1. *Accommodations* - Supports provided throughout the school day that do not significantly change the curriculum or how the student participates in classroom activities. Examples of accommodations would be small group testing, extended time for tests, use of a dictionary, use of a calculator, and so forth (Hammeken, 2008).
2. *Affect* - "How a student's emotions and feelings impact their learning" (Tomlinson & Imbeau, 2010, p. 16).
3. *College and Career Readiness Performance Index* (CCRPI) - CCRPI consists of Georgia's accountability measure. Georgia's components for the measures are Achievement, Progress, Achievement Gap, and Challenge (The Governor's Office of Student Achievement, 2013).
4. *College and Career Readiness Standards* (CCRS) – CCRS are accountability measures to ensure that school systems within a state are meeting performance goals (USDOE, 2010).
5. *Common Core State Standards* (CCSS) – CCSS are state educational standards adopted by 45 states, Washington, D.C., the Department of Defense Education Activity, and four territories. The standards focus on "core conceptual understanding" through clear communication of what is expected academically for each grade (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).
6. *Content* - The facts that a student should know, the concepts and principles that a student should understand, and skills that a student should be able to do (Tomlinson, 1999, p. 43). It is *what* is being taught (Heacox, 2012).

7. *Differentiated Instruction* (DI) – The alternative instruction that changes "the pace, level, or kind of instruction provided in response to individual learner's needs, styles, or interests" (Heacox, 2012, p. 5).
8. *Differentiation*- "An organized yet flexible way of proactively adjusting teaching and learning to meet kids where they are and help them to achieve maximum growth as learners" (Tomlinson, 1999, p. 14).
9. *Exceptional Students- C*hildren who significantly differ from "typical" children in "(a) mental characteristics, (b) sensory abilities, (c) communication abilities, (d) behavioral and emotional development, and/or (e) physical characteristics" to the extent that they required special education services or modification of instruction to reach their maximum potential in learning (Kirk, Gallagher, Coleman, & Anastasiow, 2012, p. 3).
10. *General Education Students* – General education students, also referred to as regular education students, are students who are receiving educational services in a setting designed to meet state and federal standards (Webster, 2014).
11. *General Education Teachers*- General Education Teachers, also known as regular education teachers, are educators who work with all levels of students in a typical, all-inclusive, classroom setting (Boe, Cook, & Sunderland, 2008).
12. *Gifted and/or Talented (GT) identified learners* – Students for which a curriculum, that typically meets the needs of the majority of learners, is not appropriate by virtue of the students' advanced abilities (Borland, 2003).
13. *Inclusion*- An educational model that describes the placement and education of Students with Disabilities (SWD) in a general education classroom with same aged peers, while being provided special education support and services (Bahn, 2009).

14. *Individual Education Plan* (IEP) - A written plan for an individual who receives special education services. It describes the student's present level of academic performance, goals, educational and related services, dates of the services, and supports (Hammeken, 2008).
15. *Interests*- The "topics and/or processes that evoke curiosity and inspire passion" within individuals (Santangelo & Tomlinson, 2012, p. 312).
16. *Learning Profile*/*Learning Styles* –A learning profile, also known as Learner Characteristics, is the way students "begin to concentrate on, process, internalize, and retain new and difficult information" (Dunn et al., 2009, p. 136). Simply put, it is the most innate and efficient way that students learn (Santangelo & Tomlinson, 2012).
17. *Least Restrictive Environment* (LRE) - A setting that allows SWD to have the greatest amount of contact with general education peers, while still meeting the needs of the SWD (Hammeken, 2008).
18. *Modifications*- Changes made to the curriculum that significantly alter student's learning expectations. Examples of modifications are teaching below grade level, testing different skills or knowledge than other children of the same grade, and so forth (Hammeken, 2008).
19. *Multi-ability Classrooms*- Multi-ability classrooms, also known as mixed- ability classrooms, are classrooms that contain all types of learners with a variety of specific learning styles (Dingle, Falvey, Givner, & Haager, 2004). Examples of the types of learners in a multi-ability classroom are SWD, GT identified learners, TES, general education students, remedial students, and so forth.

20. *Practice-Based Teacher Education* - the development of pre-service teachers by providing them with the opportunity to work on the practice of teaching, rather than the theories and pedagogy associated with learning (Forzani, 2014).
21. *Process* - "The opportunity to make sense of the content" (Tomlinson, 1999, p. 43). In other words, it is *how* students are taught (Heacox, 2012).
22. *Product* - "A vehicle through which a student shows (and extends) what he or she has come to understand and can do as a result of a considerable segment of learning" (p. 43). More specifically, it is viewed as the culmination of learning over a time period, as an end result of the learning process (Tomlinson, 1999, p. 43).
23. *Readiness* - A "construct that encompasses prior learning and life experiences, attitudes about school, as well as cognitive and metacognitive proficiency" (Santangelo & Tomlinson, 2012, p. 312).
24. *Remedial Students* - Students who need extra or special help to progress in a specific subject, as defined by www.merriam-webster.com.
25. *Response to Intervention* (RTI) - A practice of providing quality, research-based instruction and intervention to meet the needs of students, monitoring student progress in order to make decisions about goals or instruction, and applying data to facilitate educational decision making (National Association of State Directors of Special Education, 2007).
26. *Students with Disabilities* (SWD) - Children from the age of 3 to 21 afforded a Free and Public Education (FAPE) and who are also served through an Individual Education Plan (IEP), afforded by a federal mandate called Individuals with Disabilities Education Act (IDEA; Snyder & Dillow, 2012).

27. *Teacher identification of learner characteristics* - The teacher's assessment of student *readiness, interests, and learning profiles* in the general education classroom (Hall, 2002; Tomlinson, 1995; Tomlinson, 2000; Tomlinson & Allan, 2000).
28. *Twice-Exceptional Students* (TES) - Learners identified as Gifted and/or Talented and served under IDEA as Students with Disabilities (Foley-Nicpon, Assouline, & Colangelo, 2013).

CHAPTER TWO: LITERATURE REVIEW

Introduction

Tomlinson and Allan (2000) stated that differentiation was the teacher's provision of an appropriate and positive response to any learner's needs (p. 4). Diane Heacox (2012) further defined Differentiated Instruction (DI) as a constructivist-style approach to alternative instruction that changes "the pace, level, or kind of instruction provided in response to individual learner's needs, styles, or interests" (p. 5). Although differentiation was not developed as a set of proven teaching strategies, it developed as a philosophy, "a way of thinking about teaching and learning" (Tomlinson & Imbeau, 2010, p.13). No matter the definition utilized, the intended goal of DI was to maximize the growth and academic development of all learners by meeting their specific needs (Hall, 2002). In order to differentiate instruction, it was imperative that teachers understood a student's *readiness, interests, and learning profiles*. By fully understanding readiness, interests and learning profiles, teachers would be able to develop or modify the *content, process, product, assessment,* and *learning environment* (Tomlinson, 1995; Tomlinson, 2001; Tomlinson, 2003). Tomlinson referred to this all-inclusive model of differentiation as the Comprehensive Model of Differentiated Instruction (CMDI; Santangelo & Tomlinson, 2012). Therefore, the purpose of this study was to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment)* in the general education classroom, grades 6-12.

The remainder of Chapter 2 was divided into three sections: Theoretical Framework, Literature Review, and Summary. The theoretical framework further identified the theoretical

foundation of Differentiated Instruction (DI) in the inclusive classroom, through the CMDI. Furthermore, the researcher showed how the Zone of Proximal Development (ZPD), Interest-Based Studies, the Dunn and Dunn Learning Style Inventory (LSI), and the Universal Design for Learning (UDL) all supported Tomlinson's model. The literature review began with an overview of Differentiated Instruction, followed by an explanation of the implications of current federal mandates on inclusive education. The literature review summarized relevant research in the area of Differentiated Instruction. Furthermore, the summary section pulls together the framework and literature review into a concise summation of the chapter.

Theoretical Framework

Tomlinson's Comprehensive Model of Differentiated Instruction (CMDI) was selected as the theoretical construct for this research because it was an all-inclusive model, established and frequently cited within professional journals (Hall et al., 2003; Santangelo & Tomlinson, 2012). As a student-centered methodology to instruction, the goal of Differentiated Instruction (DI) was for teachers to extend the potential of all learners by acknowledging students' needs through insightfully designing classroom educational experiences (Hall, 2002; Santangelo & Tomlinson, 2012; Tomlinson, 1995). Stated another way, "differentiation is an organized yet flexible way of proactively adjusting teaching and learning to meet kids where they are and help them to achieve maximum growth as learners" (Tomlinson, 1999, p. 14).

Over the past several decades, numerous books and journal articles were written concerning the need to implement DI in the classroom (Hall, 2002; Heacox, 2012; Santangelo & Tomlinson, 2012; Tomlinson, 1995; Tomlinson, 1999; Tomlinson & Allan, 2000; Tomlinson & Imbeau, 2010). Unfortunately, few examples were presented in literature depicting the implementation of a fully comprehensive model (Santangelo & Tomlinson, 2012; Tomlinson,

1999, p. 3). In an attempt to advance a more transparent instructional model, Heacox (2012) developed a list of general principles for classroom implementation. Those principles stated that, in order to differentiate instruction, teachers must: (a) recognize variances in student learning; (b) affirm different learning styles, interests, strengths, weaknesses, and preferences of students; (c) maintain a commitment to learning goals and academic standards for all students; (d) provide a variety of instructional practices, learning, and assessments; (e) provide high levels of engagement for thorough, pertinent, and meaningful learning; (f) acknowledge prior knowledge; (g) recognize that some students may need different types of assignments to demonstrate learning; (h) diagnose learning needs of students to better meet their academic goals; (i) nurture the students' abilities to make learning style choices; (j) design assignments to respond to the learners' needs; (k) use flexible groupings; (l) affirm the significance and value of student work; and (m) create just and reasonable procedures for assessing student learning and assigning grades (Heacox, 2012).

Through the utilization of various principles and instructional strategies, such as those identified by Heacox (2012), Tomlinson's (1995) CMDI purported that teachers were able to differentiate *content, process, product, affect,* and the *learning environment* through a range of instructional strategies that were based on the students' *readiness, interests, and learning profiles* (Hall, 2002; Santangelo & Tomlinson, 2012; Tomlinson, 1995; Tomlinson, 2000; Tomlinson & Allan, 2000; Tomlinson & Imbeau, 2010). Figure 1 shows a flow chart for the differentiation of instruction, as presented by Tomlinson (1999), and adapted by the researcher to include additional ways to differentiate instruction (see Appendix F for permission to adapt the flow chart), as described by Tomlinson and Imbeau (2010).

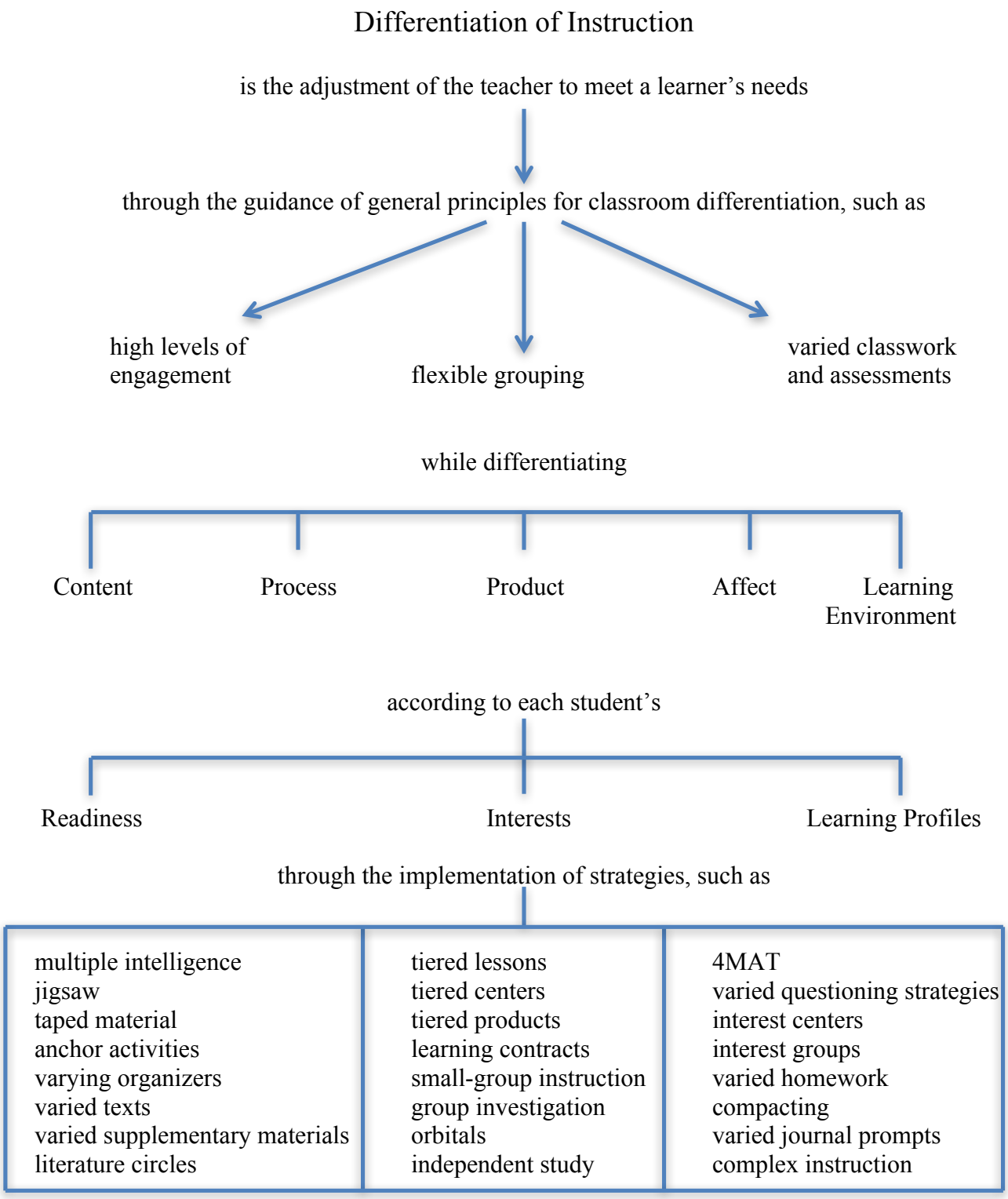

Figure 1. Differentiated Instruction flow chart. Adapted from Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, Va.: Association for Supervision and Curriculum Development, p. 15. Copyright 1999 by the Association for Supervision and Curriculum Development. Reprinted with permission.

No matter the name used or the decade presented, a teacher's desire to meet student needs has been in the forefront of educational concerns since the creation of public schools (Tomlinson, 1999, p. 1). Carol Ann Tomlinson did not create some new educational theory or construct for the classroom teacher; instead, she was able to synthesize effective theories, studies, constructs, and/or practices in a way to enhance student success in the classroom (Tomlinson, 1999, p. 1). Tomlinson's amalgamation was called the Comprehensive Model of Differentiated Instruction (CMDI). Refined over the past three decades, the CMDI synthesized data from areas such as gifted education, psychology, reading literacy, cognitive theory, and recent studies concerning brain-based education (Bell, 2011; Tomlinson & Allan, 2000). Furthermore, CMDI supported theorists such as Dewey, Piaget, Bruner, Erikson, Vygotsky, and many more (Miller, 2011; Tomlinson & Allan, 2000; Tomlinson et al., 2003).

The foundation of CMDI was based on the belief that students differ in a minimum of three ways, making modification of instruction necessary for teachers (Tomlinson & Allan, 2000; Tomlinson, 1995; Tomlinson 1999). Students vary in "(1) their readiness to work with a particular idea or skill at a given time, (2) in pursuits or topics that they find interesting, and (3) in learning profiles that may be shaped by gender, culture, learning styles, or intellectual preference" (Tomlinson & Allan, 2000, p. 9). Tomlinson believed that once the student's *readiness, interests,* and *learning profiles* were determined the teacher would then be able to modify the instruction and/or management strategies to enhance learning.

Supported through research, Tomlinson gauged that one factor in differentiating instruction was determined through the identification of a student's *readiness* (Tomlinson, 1995; Tomlinson 1999; Tomlinson & Allan, 2000). Tomlinson (1995, 1999) defined *readiness* as a student's prior knowledge, experience, and cognition. Furthermore, Tomlinson believed that

readiness must be viewed as a temporary condition that should be changed due to quality teaching (Tomlinson & Imbeau, 2010, p. 16). Generally, the goal of CMDI was to teach just above the student's current academic level in order to build on prior knowledge and encourage further meaningful investigation (Subban, 2006). Tomlinson (1999) identified several ways to teach students whose readiness was not as developed as others were. Some of the ways identified were through the provision of "more opportunities for direct instruction or practice", "a more deliberate pace of learning", and "a brisk pace of work, or perhaps a slower pace to allow for greater depth of exploration of a topic" (Tomlinson, 1999, p. 11).

Student *interest* was identified by Tomlinson's CMDI as another factor in differentiating instruction, which was supported through research by Amabile, Torrance, et cetera (Tomlinson, 1995, 1999). Tied directly to a student's motivation to learn, *interest* was defined by Tomlinson (1999) as "a child's affinity, curiosity, or passion for a particular topic or skill" (p. 11). Tomlinson and Allan (2000) stated that through the identification of a student's *interests*, a teacher would be able to facilitate greater exploration in the learning process. Several ways to increase a student's interest, as suggested by Tomlinson and Allan (2000), was through granting access to a variety of materials and technologies, assigning tasks or projects based on student interests, facilitating independent investigation, and/or providing access to individuals with more knowledge in the student's area of interest.

The final factor in differentiating instruction was in the determination of a student's *learning profile* (Tomlinson, 1995, 1999). A student's *learning profile* had to do with how he or she learned, which was potentially shaped by learning styles, culture, gender, and/or intellectual preferences. Researchers, such as Dunn, Delpit, Sternberg, and Sullivan, "concluded that

addressing an individual's learning styles through flexible and compatible teaching results in increased academic achievement" (Tomlinson & Allan, 2000).

Heacox (2012) compiled various resources for teachers to readily gather information and collect data in determining student *readiness, interests*, and *learning profiles*. Available information to facilitate this type of inquiry would have been drawn from the student's: academic history, test results, grade books, professional observation, and writing portfolios. Further information would have been determined by teachers through the use of interest inventories, learning inventories, preassessments, teacher/student communication, and/or conferences with parents. Once the students' *readiness, interests*, and *learning profiles* have been determined, the goal of Tomlinson's CMDI (1995, 1999) was in the facilitation of individualized learning through the variation of specific curricular elements that could be differentiated: *content, process, product, affect, and the learning environment*.

Tomlinson (1999) defined *content* as the facts that a student should know, the concepts and principles that a student should understand, and skills that a student should be able to do (p. 43). Generally speaking, content is *what* is taught (Heacox, 2012). In differentiating *content*, the NCAC (2002) identified "several elements and materials" that were needed to support the educational content presented (Hall, 2002, p. 3). Hall (2002) also stated that tasks and objectives must be aligned with the educational goals, while instruction should be "concept-focused and principle-driven" (Hall, 2002, p. 3). Ways identified to differentiate content were to use material on the students' levels, to utilize audio recordings of text, to present information utilizing multiple learning styles, to utilize peer assisted learning, to remediate ideas in small group settings, and/or to facilitate higher order thinking skills for advanced learners (Tomlinson, 1999; Tomlinson, 2001).

Process was defined as "the opportunity to make sense of the content" (Tomlinson, 1999, p. 43). In other words, process is *how* the students are taught (Heacox, 2012). In order to help students make sense of the content, teachers needed to consistently provide tiered activities, varied homework assignments, interest centers, jigsaws, tasks designed around intellectual preferences, et cetera (Hall, 2002; Tomlinson, 1999; Tomlinson & Imbeau, 2010). Furthermore, an activity was more likely to be successful with a clearly articulated purpose, a focus on the essential understandings, a student's utilization of skills, an assurance that the student clearly understands the activity, a student's ability to connect new to previous knowledge, and teaching to a student's readiness level (Tomlinson, 1999, p. 43).

Tomlinson (1999) defined p*roduct* as "a vehicle through which a student shows (and extends) what he or she has come to understand and can do as a result of a considerable segment of learning" (p. 43). More specifically, *product* was viewed as the culmination of learning over a period, as an end result of the learning process (Tomlinson, 1999, p. 43). An effective culminating assignment/product would specifically describe what students should be able to show, transfer, and/or employ in order to demonstrate learning. It should have provided one or more methods of communication, identified clear and specific expectations, offered support and scaffolding to increase student success, and allowed for a difference in student *readiness, interests,* and *learning profiles* (Tomlinson, 1999, p. 44).

Affect referred to "how a student's emotions and feelings impact their learning" (Tomlinson & Imbeau, 2010, p. 16). Students' emotions and feelings may influence their desire to learn, ability to collaborate, and self-images; thus, affect was a crucial component to the classroom curriculum (Tomlinson & Imbeau, 2010). Therefore, Tomlinson and Imbeau (2010)

stated that teachers must work to understand the *affect* that drives the behavior of each student in order to guide them in an academically positive direction, as well as emotionally.

Tomlinson (1999) defined a *learning environment* as the conditions of the classroom that set the expectations and manner of learning (p. 48). To differentiate the *learning environment*, Tomlinson (2001) stated that the teacher needed to develop a classroom layout proactively where students could work in different groupings, as well as in a quiet area without distractions. Other suggestions were to utilize materials that supported the various cultures represented in the classroom and/or develop procedures for asking questions when the teacher was occupied (Tomlinson, 2001). Another way to facilitate Differentiated Instruction was by supporting the needs of certain students who required more movement in the classroom (Tomlinson, 2001).

Overall, "differentiated instruction is a principle-guided method to approach teaching and learning, and it is implemented in the context of a classroom system" that contains codependent elements: *content, process, product, affect,* and *learning environment* (Tomlinson & Imbeau, 2010, p. 19). Notably, DI was interrelated and shaped by the teacher's beliefs, visions, and enactment of the curriculum. Through the molding and fostering of the elements, separately and in conjunction with one another, opportunities were to abound for each student, in order to maximize his or her own capacity for learning (Tomlinson & Imbeau, 2010).

Although CMDI blended a number of educational theories, constructs, and practices, this researcher focused on ones that supported CMDI's emphasis on the fundamental components of student *readiness, interest, and learning profiles* (Hall et al., 2003; Tomlinson & Allan, 2010; Tomlinson et al., 2003). Thus, the remainder of the introduction described the theories/constructs, as well as how they related to Tomlinson's fundamental components. The theories/constructs selected were: (a) Vygotsky's Zone of Proximal Development (ZPD), (b)

interest-based studies, (c) the Dunn and Dunn Learning Style Inventory (LSI), and (d) the Universal Design for Learning (UDL; Hall et al., 2003; Tomlinson & Allan, 2000; Tomlinson et al., 2003).

Zone of Proximal Development

Lev Vygotsky's sociocultural theory, the Zone of Proximal Development (ZPD), identified by the researcher as a foundation for the Comprehensive Model of Differentiated Instruction (CMDI), specifically focused on collective problem solving (Miller, 2011, p. 220; Tomlinson & Allan, 2000). The ZPD was developed to identify the distance between what a child was able to accomplish independently, the "actual development level", and a higher level of learning that could only be attained through the guidance and support of an adult or a more abled peer, the "dynamic developmental state" (Vygotsky, 1978, p. 32-33). Vygotsky believed that interactive and supportive learning promoted a multitude of developmental processes, which was possible through accessing the ZPD (Miller, 2011, p. 175; Tomlinson & Allan, 2000, p. 18).

Additionally, Vygotsky purported that educators were able to facilitate greater learning through the understanding of a student's prior knowledge, life experiences, and cognition, in addition to the implementation of scaffolded instruction (Miller, 2011, Tomlinson & Allan, 2000). Therefore, developing an understanding of the students' foundation in learning, an educator would be more capable of teaching to the students' ZPD, thus supporting Tomlinson's "readiness" component (Subban, 2006, Tomlinson & Allan, 2000). Additionally, Vygotsky's aim of teaching to a student's interest was to increase personal exploration and to participate more willingly in the educational process within the ZPD, helping to establish the CMDI "interest" component (Miller, 2011). Furthermore, the ZPD supported Tomlinson's "learning profile" component by focusing on the cultural aspect of a student's learning, asserting that cultural

norms and expectations would determine what skills and knowledge a student needed to acquire (Miller, 2011, p. 166).

Interest-Based Studies

The last two decades of the 20th century were full of studies asserting the benefits of teaching to individual student interests (Tomlinson et al., 2003). "Linked to motivation, student interest can be a compelling factor in learning, because interest makes tasks engaging, satisfying, and personally challenging" (Tomlinson & Allan, 2000). Through the compilation, review, and analysis of many studies, Hidi (2001) stated that student interest in education appeared to wane whilst progressing through school; thus, creating a critical need to reach those students via individual interests. Furthermore, Hidi indicated that "stimulating situational interests may be one way for schools to motivate those who do not have preexisting individual interests in academic activities, content areas or topics, and to help them make academic gains" (Hidi, 2001, p. 204).

In further support of interest-based studies, Edeh (2006) performed a multicultural study of students with disabilities, while comparing interest-based and traditional methods of instruction. Results showed that students who participated in interest-based education classes achieved considerably higher posttest scores than those who participated in traditional instruction (Edeh, 2006). Additionally, a three-month follow-up with the students continued to show higher results with the interest-based instruction than those in the traditional group and the control group (Edeh, 2006). Those follow-up results were significant in the retention or maintenance of knowledge for students with intellectual deficits (Edeh, 2006). Edeh (2006) further purported that, although cultural differences; such as religion, national affiliation, and gender; have been shown to influence student interests, an interest-based methodology could potentially minimize

any cultural predispositions in the classroom, allowing for more equal participation of all students (Edeh, 2006; Hagay et al., 2013).

In support of the interest-based studies construct, Tomlinson's Comprehensive Model of Differentiated Instruction (CMDI) affirmed that instruction could be differentiated in order to meet the individual *interests* of students (Hall, 2002; Tomlinson, 1995; Tomlinson, 1999; Tomlinson, 2000; Tomlinson & Allan, 2000). Furthermore, by differentiating instruction in response to student interests, student engagement was promoted, motivation was facilitated, and connections between what was known and what was learned became valued (Santangelo & Tomlinson, 2012).

Dunn and Dunn Learning Style Inventory

Learning Styles were identified as "the way in which individuals begin to concentrate on, process, internalize, and retain new and difficult academic information" (Dunn et al., 1995, p. 353). Theorists, such as Gardner and Sternberg, have supported the connection between learning styles and successes, as well as numerous psychologists, educators, and sociologists (Tomlinson & Allan, 2000). Despite several controversies, one of the most highly touted models developed to determine a student's learning style was the Dunn and Dunn Learning Style Inventory (LSI; Dunn et al., 1995; Dunn et al., 2009; Ivie, 2009; Kavale & LeFever, 2007; Shaughnessy, 1998).

This researcher chose to focus on the Dunn and Dunn Learning Style Inventory (LSI) because of the vast amounts of data, research, and the validation of the model (Dunn et al., 2009). Specifically, more than 30 years ago, the National Association of Secondary School Principals (NASSP) and St. John's University worked together to investigate the potential impact of teaching to learning-styles on student achievement and attitudes (Dunn et al., 2009). Eventually morphing into the International Learning Styles Network, the group collectively

decided to direct their attention to one learning style model, the Dunn and Dunn LSI, due to the model's extensive foundation in research (Dunn et al., 1995; Dunn et al., 2009; Shaughnessy, 1998).

Based on nine theoretical assumptions, the Dunn and Dunn LSI encompassed the theoretical construct of differentiating instruction to meet the needs of students by addressing learning styles (Dunn et al., 1995). The LSI incorporated up to twenty-three elements that were divided into four categories/strands, dependent on the assessment given: *environment, emotionality, sociological preferences, and physiological preferences* (Dunn et al., 2009; Shaughnessy, 1998, Tomlinson & Allan, 2000). Overall, student's preferences to learning were determined by the inventory and suggested a foundation for revamping the classroom to support learning styles, described how students learned best and how much structure was needed, et cetera (Shaughnessy, 1998).

Based on theorists such as Gardner and Sternberg, Tomlinson's Comprehensive Model of Differentiated Instruction (CMDI) supported the importance of teaching to a student's learning style (Tomlinson, 1999, p. 18). Tomlinson and Allan (2000) stated, "matching learning-style preferences and conditions of learning is considered one way to improve learning" (p. 21). Furthermore, the four strands of LSI introduced by Dunn and Dunn (1995) supported Tomlinson's three components of the Comprehensive Model of Differentiated Instruction: *readiness, interests,* and *learning profile*.

Universal Design for Learning

Inspired by the accessibility movement within the field of architecture, the Universal Design for Learning (UDL) was a theoretical construct developed by the Center for Applied Special Technology (CAST) and designed to direct the development of flexible programs that

supported the learning needs of all students (CAST, 2011). The UDL consisted of three basic principles: (a) "provide multiple means of engagement" (b) "provide multiple means of representation"; and (c) "provide multiple means of action and expression" in order to support the identification of learning, along with deliberate and "affective" learning (Hall et al., 2003, p. 7; Meyer, Rose, & Gordon, 2014, p. 51). By implementing the three principles for UDL, teachers were able to develop goals, delivery methods, types of assessments, and utilize materials to increase flexibility and reduce educational barriers (Hall et al., 2003). Furthermore, Hall, Strangman and Meyer (2003) deduced that the implementation of inherently adaptable digital media/technology, to meet the needs of all learners, became essential to the success of UDL.

Overall, the Universal Design for Learning (UDL) and Tomlinson's Comprehensive Model of Differentiated Instruction (CMDI) were designed to make the curriculum accessible to all learners by planning for instruction based on the needs of the students (Aldridge, 2010; Heacox, 2012). UDL and Tomlinson's CMDI both showed reflective traits based on the ideas of individualization, flexibility, variability, and the significance of engaged learners (Hall et al., 2003). Furthermore, the constructs purported the benefits of providing choices, scaffolding, supported instruction, and modifying the curriculum's level of difficulty to meet the needs of the individual learner (Hall et al., 2003). Therefore, this researcher believed that UDL supports the need to differentiate instruction based on a student's *readiness, interests,* and *learning profile*.

Literature Review

Differentiated Instruction

Grounded in cognitive psychology and sustained by research on student achievement, Differentiated Instruction (DI) benefits students of all ability levels (Demos & Foshay, 2009; Tomlinson & Allan, 2000). Gajda (2006) stated that DI integrated four vital educational elements: a thorough curriculum founded in concept, continuous assessments, a plethora of instructional techniques, and a development of a community within the classroom. Differentiated Instruction (DI) was further defined as "a process to teaching and learning for students of differing abilities in the same class" in order to maximize student successes and development by meeting the individual needs of each student (Hall et al., 2003, p. 2-3). In addition, Hawkins (2009) stated, "the case for differentiating instruction has long been identified as the most logical and fair way to respond to every-increasing students' cognitive, demographic, and racial diversity and their disengagement regarding purposeful learning" (p. 11). As diverse as the students in the classroom, Differentiated Instruction models offered many strategies and opportunities to accommodate for the individual learning needs. Thus, it was imperative to break down the reasons for educators to implement DI, as well as relevant research in the field.

The literature review section provided an explanation of the current influences on inclusive education through recent federal mandates. Furthermore, the section identified: (a) a teacher's role in DI, (b) the impact of varying learning styles in the classroom, (c) diversities in the classroom, (d) the pros and cons of labeling and/or segregating students, (e) hindrances to DI, (f) misunderstandings by teachers, (g) the implementation of DI, and (h) a critique of the research.

Implications of Federal Mandates on Inclusive Education

Federal mandates from the United States (US) have played a significant role in the increased participation of Students with Disabilities (SWD) in the general education classroom. Therefore, educators were required to understand fully that not only were they directed by professional obligations, but also mandated, legally, to meet the diverse needs of their students (Breault, 2006). Some of the latest and more significant mandates were the 1997 and the 2004 reauthorizations of the Individuals with Disabilities Education Act (IDEA), the 2001 No Child Left Behind Act (NCLB), the implementation of a Response to Intervention (RTI), the 2009 educational reform program called the Race to the Top (RTT), and Georgia's response to the RTT, the College and Career Readiness Performance Index (CCRPI).

The reauthorization of IDEA's (1997) main focus was to "improve the performance and educational achievement of students with disabilities" (Yell & Shriner, 1997, p. 4). While there were many changes, one significant modification influenced the increased participation of SWD in the general education curriculum. That modification was the presumed participation of SWD in the general education setting (Senate Report No. 105-17, 1997). A determination of an "alternative curriculum" could only be presented when a student was unable to show success in the general education setting, even when provided with significant accommodations and support (Senate Report No. 105-17, 1997, p. 11). An alternative curriculum, determined by the child's Least Restrictive Environment (LRE), referred to the placing of a student with a disability apart from non-disabled peers, through the utilization of a continuum of services for the least possible amount of time. Therefore, the 1997 reauthorization implied that the majority of SWD would receive services in the general education setting with their nondisabled peers, resulting in more mixed - ability classrooms and a greater need for Differentiated Instruction (DI).

The 2001 No Child Left Behind (NCLB) Act's (P.L. 107-110) purpose was to hold schools and teachers accountable for a minimum level of student proficiency (Kirk, Gallagher, Coleman, and Anastasiow, 2012, p. 36). This act required schools to provide test data to prove the effectiveness of meeting that minimum level of proficiency. Although this legislation was not written specifically for Students with Disabilities, all students were ultimately impacted (Kirk, Gallagher, Coleman, and Anastasiow, 2012). Unfortunately, "this causes problems for some children with disabilities, who have a difficult time gaining a year academically for every year spent in school, and for their teachers, who must deal with such unrealistic expectations" (Kirk, Gallagher, Coleman, and Anastasiow, 2012, p. 37).

IDEA's reauthorization in 2004 was designed to strengthen and improve Public Law 94-142, the Education for All Handicapped Act (Kirk, Gallagher, Coleman, and Anastasiow, 2012). The reauthorization (2004) focused on "compliance and enforcement efforts on student performance" (Senate Report No. 108-185, 2003, p. 6). One of the major changes in IDEA 2004 was the requirement that special education teachers must hold state certifications in the subjects for which they teach, with teachers identified as highly qualified educators. Additionally, the Individual Education Plan (IEP) "must reflect scientifically based instructional practices, cognitive behavioral involvements, and early intervention services, as appropriate" (Kirk, Gallagher, Coleman, and Anastasiow, 2012). Furthermore, the reauthorization required that a transition plan be in place, at least, by the age of 16 that included instructional goals, community participation, development of employment, and independent living objectives (Kirk, Gallagher, Coleman, & Anastasiow, 2012).

A significant financial change in the 2004 reauthorization of IDEA was a provision that barred states from having funding instruments that distributed monetary resources based upon

the setting for which a child was served; thus, requiring states to revise any necessary policies (Senate Report No. 108-185, 2003). The reauthorization also addressed an increase in accountability for the educational progress of students, utilizing valid, reliable, and accessible/universally-designed assessments (Senate Report No. 108-185, 2003). Unfortunately, committing to fund 40% of the additional costs to educate SWD, federal funding at its highest rate was only funded at a 19% as of 2003 (Senate Report No. 108-185, 2003). Unfortunately, due to the imposed budgetary constraints, state governments had to pick up the financial difference for educating SWD (Senate Report No. 108-185, 2003). Due to a lack of federal funding, an increased flexibility was permitted by the 2004 reauthorization. That flexibility resulted in a state's ability to use up to eight percent of federal funding, under IDEA Part B, as local funds. In addition, school systems were permitted to use up to 15% of IDEA funds to provide early intervention for struggling learners (Senate Report No. 108-185, 2003).

Developed out of the reauthorization of IDEA in 2004 was a Response to Intervention (RTI), where up to 15% of federal funding could be allocated towards the development and implementation of early intervening programs (Senate Report No. 108-185, 2003). The construct behind the implementation of an early intervening program was to reduce the number of students referred for special education services by meeting their needs through the general education setting (Kirk, Gallagher, Coleman, & Anastasiow, 2012). RTI was envisioned as a program to benefit general and special education by minimizing academic and/or behavioral concerns in the general education classroom, thus reducing the number of referrals for special education evaluation (Senate Report No. 108-185, 2003). The general idea behind RTI was that a student would be referred for special educational testing, and possibly services, when all three tiers of intervention were exhausted. Figure 2 showed the tiered progression, from bottom to top, that

represented a Response to Intervention (see Appendix K for permission to use the model), as presented by Kirk, Gallagher, Coleman, and Anastasiow (2012).

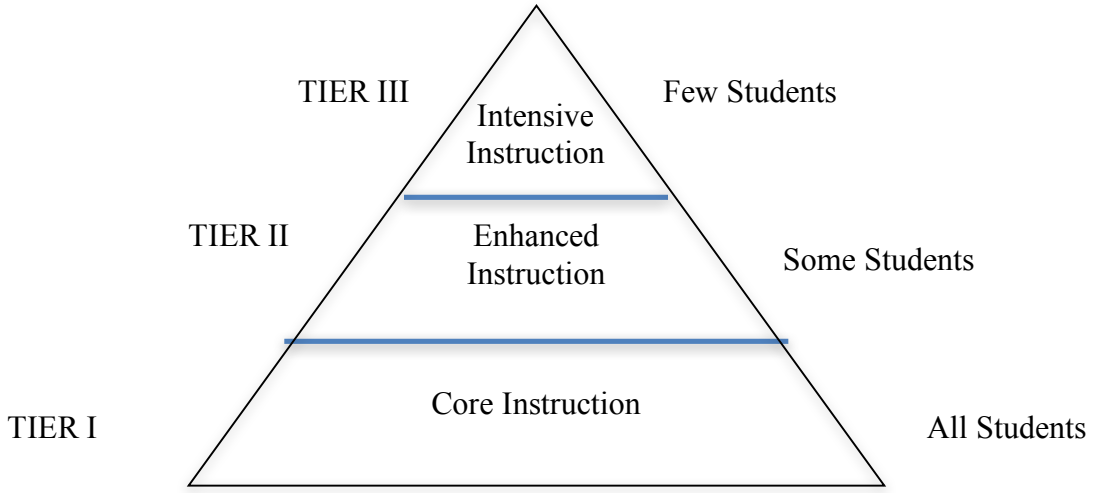

Figure 2. Response to Intervention (RTI) Model. Adapted from Educating Exceptional Children, Thirteenth Edition by S. A. Kirk, J. J. Gallagher, M. R. Coleman, & N. Anastasiow, 2012, Belmont, CA: Wadsworth, Cengage Learning. Copyright 2012 by the South – Western College Publishing, A division of Cengage Learning. Reprinted with permission.

In 2009, President Obama signed into law the American Recovery and Reinvestment Act to stimulate economic recovery in various areas, including education (Kirk, Gallagher, Coleman, & Anastasiow, 2012). Thus, the American Recovery and Reinvestment Act implemented a competitive educational grant program, called Race to the Top (RTT), "designed to encourage and reward States that are creating the conditions for education innovation and reform" (USDOE, 2009, p. 2). The goal of the reform was to make significant advances in student achievement through increasing the graduation rate, closing the gaps in achievement, improving college and career readiness, and implementing grand educational reform (USDOE, 2009). States that exhibited leadership and innovation were rewarded monetarily through the Race to the Top Fund.

Race to the top consisted of six priorities with five overall selection criteria. The priorities were:

> (a) a comprehensive approach to a reform in education; (b) the placement of emphasis on Science, Technology, Engineering, and Mathematics (STEM); (c) planned improvements for early education result; (d) the growth and adaption of Statewide Longitudinal Data Systems (SLDS) to inform decision making processes; (e) a horizontal and vertical alignment among P-12, post-secondary institutions, work programs, and community partners; and (f) plans for reform, innovation, and learning at the local levels (USDOE, 2009, pp. 4-11).

The five selection criteria, consisting of a maximum of 500 points available for states to earn, used in determining RTT funding. Those points were weighted as follows: (a) State Success Factors (25%); (b) Standards and Assessment (10%); (c) Data Systems to Support Instruction (9%); (d) Great Teachers and Leaders (28%); (e) Turning Around the Lowest-Achieving Schools (10%); and (f) General Selection Criteria (11%), along with the implementation of STEM (3%) (USDOE, 2009).

Georgia's response to the Race to the Top (RTT) initiative was the development of the College and Career Readiness Performance Index (CCRPI), which replaced the Annual Yearly Progress (AYP) as the accountability measure for Georgia public schools in 2012 (The Governor's Office of Student Achievement [GOSA], 2013). Potentially earning a maximum of 110 points, school systems in Georgia were rated based on four categories: (a) achievement, (b) progress, (c) achievement gap, (d) and challenge/bonus points. Most notably, 63.7% of the total possible points resided in the category of achievement; thus reaffirming the importance of standardized testing scores for the 98% of the public school population who were not assessed

via an alternative curriculum. Specifically, the CCRPI achievement category consisted of content mastery (40% of achievement), post elementary, middle or high school readiness (30% of achievement), and the graduation rate (30% of achievement; GOSA, 2013).

Individually and in culmination, the federal mandates implemented since 1997 have become significant in the advancement of Students with Disabilities in the student's LRE. The majority of Students with Disabilities were intended to be educated in multi-ability classrooms, which represented a total population of 97% or more of all students within a school (Senate Report No. 105-17, 1997). Furthermore, Georgia's middle schools' achievement readiness scores were determined, in part, by the percentage of SWD who were served in the general education environment for, at the time of the study, 65% of the school day (GOSA, 2013). Eventually, CCRPI would raise the percentage from 65% to 80% of the school day for SWD to be served in the general education setting; thus, accounting for approximately 17% of the middle school and 14% of the elementary school readiness scores (GOSA, 2013). Therefore, the implementation of Differentiated Instruction (DI) to meet the students' individual needs became more imperative than ever for the success of all students (GOSA, 2013).

The remaining portion of the literature review addressed a teacher's role in the educational process; the impact of a student's learning style in the classroom, and the realities of a diverse classroom. Additionally, the pros and cons of labeling and/or segregating students, identified hindrances to implementing a CMDI in the classroom, and teacher misunderstandings concerning DI was addressed. Furthermore, there were sections to address the implementation of CMDI, as well as a critique of the research.

A Teacher's Role

A teacher's role in the educational process identified, by Tomlinson, as a critical component in the implementation of Differentiated Instruction (DI). This component was supported by the United States (US) Department of Education's (2001) declaration that the belief systems of the classroom teachers and their readiness to work with exceptional students could greatly influence the educational outcomes of Students with Disabilities. The educational model most frequently associated with DI for Students with Disabilities (SWD) has been the inclusion model. Inclusion was a classroom setting where multi-ability students were educated while being provided with accommodations to meet their individual needs; thus taught in a general education classroom.

To highlight the importance of a teacher's role in the multi-ability classroom, the Council for Exceptional Children (CEC) released a list of competencies in 2006 for regular education teachers to possess in order to implement an inclusion model/inclusive classroom. Those competencies identified by the CEC were that classroom teachers:

> (a) must assume responsibility of all classroom students, (b) need multiple strategies for educating various levels and know how to use those strategies, (c) need to work as a team with parents, special education teachers, and support personnel, (d) need to view each child as an opportunity to facilitate better teaching, (e) need to be patient and willing to change (Breault, 2006).

The CEC competencies were echoed by other organizational standards, such as the Interstate New Teacher Assessment and Support Consortium Standards, the National Board for Professional Teaching Standards, the National Association for the Education of Young Children, the National Middle School Association, and the National Association of Secondary School

Principals (Tomlinson & Allan, 2000, p. 4). Unfortunately, literature identified a growing number of educators who lacked efficacy concerning differentiated instructional approaches or the ability to change from antiquated educational methods (Hawkins, 2009; Tomlinson & Allan, 2000).

> Yet, despite the consistent and often urgent calls for teachers to attend to individual learners' needs, and in spite of daily evidence that one-size-fits-all instruction fails many, if not most, students, it is extraordinarily difficult for us to pull away from antiquated conceptions and embrace more contemporary and effective ways of thinking about teaching and learning. (Tomlinson & Allan, 2000, p. 8)

Impact of Learning Styles

One way of attending to a student's needs was through the identification of and teaching to a student's learning styles. The impact of learning styles has been researched extensively over the last several decades. More specifically, the United States (US) Department of Education (DOE) conducted a study over four years where they interviewed participants, visited to schools, observed teaching methodology, and examined standardized testing data across the nation. The investigation concluded, "attending to learning styles was one of the few strategies that had a positive impact on the achievement of special education students throughout the nation" (Shaughnessy, 1998, p. 141-142). It was also determined that statistically higher grade-point-averages and/or test scores were reported across the United States for students whose instructors taught to specific learning styles (Shaughnessy, 1998).

Dunn, et al. (1995) conducted a study to analyze the hypothesis that accommodating for an individual's preferred learning-styles resulted in improved academic achievement. Results showed that "accommodating students' psychological preferences has a greater impact than

addressing their emotional, environmental, or sociological preferences, or combining their preferences" (Dunn et al., 1995, p. 358). In addition, students who received educational interventions in response to their specific learning styles were projected to attain three - fourths of a standard deviation higher than students who did not receive adjustments based on learning styles (Dunn et al., 1995; Shaughnessy, 1998). Furthermore, a 2005 meta-analysis of 42 experimental studies that utilized the Dunn and Dunn model, over a ten-year period by thirteen different schools of higher education, further exposed significant and positive results from teaching to student learning styles (Lovelace, 2005). Notably, the personalization of instruction to match learning styles resulted in an increase in student academic achievement, as well as an increase in attitude towards learning (Dunn et al., 1995; Lovelace, 2005).

Diversities in the Classroom

The reality of teaching to a wide range of ability levels was further supported in 2008 at the 30th annual report to congress on the implementation of IDEA, where it was stated that the number of school-aged children (three years old to 21 years old) receiving special educational services was approximately 6.5 million or approximately 13%. These students were to be educated with a Free and Appropriate Public Education (FAPE), through legislative mandates, in their Least Restrictive Environment (LRE). The numbers of students with special needs continued to rise in the general education classroom, even with varying and subjective interpretations of the LRE mandate. Modern classrooms consisted of significantly heterogeneous groupings of students who were, basically, only similar in age (Breault, 2006). These classrooms were comprised of Gifted and Talented (GT) identified learners, Students with Disabilities (SWD), Twice Exceptional Students (TES), English as Second Language (ESOL) students, students served through the Response to Interventions (RTI) tiers, general education students,

and so forth. The combination of these students in one classroom created significantly more educational differences when a teacher considered ability levels, learning styles, interests, motivations, and family cultures (Breault, 2006). This reality created a daunting task for educators, which flamed the conversation of separate but equal classrooms for Students with Disabilities and/or Gifted and Talented identified learners. Unfortunately, the identification of student differences also sparked debates concerning the pros and cons of labeling and/or segregating students considered different from the norm.

Labeling/Segregating Students

The debate of using of labels to categorize Students with Disabilities (SWD) has been ongoing since federal and state laws mandated public schools provide a Free and Appropriate Public Education (FAPE) for all school-aged children (Thomson, 2012). While the overall research showed no significant benefits to labeling, funding was tied to the disability category, as well as the learning environment (Thomson, 2012; Tomlinson, 2004). The notion of identifying ability levels of all students and providing homogeneous groupings had long been the norm for educating students. Thomson (2012) stated that assigning categorical labels facilitated the methodology of supporting, educating, and evaluating individuals who varied from the norm. In other words, the labeling of students by their ability levels, generally, revolved around the identification of and/or funding for special education services (Thomson, 2012). Moreover, it was reported that some students benefited from being separated from the general education setting (Kauffman & Pullen, 1996; Tomlinson, 2004). Unfortunately, it was determined that many educators taught to the student's disability and not to specific needs, resulting in a one-size-fits-all type of scenario within the special classes, as well as within the inclusive settings (Tomlinson, 2004).

Although the segregation of students into special classes had its share of allies, research generally supported the need for educators to teach to a heterogeneous or mixed-ability student grouping (Tomlinson, 2004). Thomson (2012) took it a step further by stating that labels were detrimental when used to degrade or segregate any individual. Research also showed that "special programs, special teachers, and segregated instruction are no match for high-quality classroom instruction" (Tomlinson, 2004). Furthermore, the practice of tracking students and placing them into remedial or low-level classroom settings was a contributing factor to the increased diagnosis of Students with Disabilities (Tomlinson, 2004).

While considering the pros and cons of labeling and/or segregating students, educators and administration needed to understand that the Least Restrictive Environment (LRE) was not always the general education setting. "The LRE must be an environment in which a student can meet the objectives of his or her IEP without endangering self or others and this environment almost certainly will not be always be the general education classroom for all students" (Kauffman & Pullen, 1996, p. 10). It was determined that the diverse placement options must also be available in the consideration of the student needs and the LRE (Kauffman & Pullen, 1996). Furthermore, since federal and state funding has been contingent on labels and the academic settings of students, the likelihood of completely removing such labels from education in its entirety would be suspect.

Hindrances to Differentiation

For years, teachers made excuses for the inability to implement Differentiated Instruction (DI) successfully in the classroom. Vincent Hawkins (2009) identified several excuses shared for a teacher's inability to differentiate: seclusion, control, repetitive teaching, unproductive teaching, instructional simplicity, school philosophy, school atmosphere, and public opinion

were some of the excuses presented to researchers. Therefore, Hawkins (2009) hypothesized three major reasons why differentiation had not become commonplace in the classroom: teacher's lack of confidence, self-efficacy, and persistence. Fullerton, Ruben, McBride, and Bert (2011) stated that secondary education teachers (content teachers and special education teachers) were unprepared or lacked strategies to help students of varying abilities learn the curriculum (Breault, 2006). Therefore, research showed that teachers must demonstrate confidence, believe in their ability to differentiate, and be willing to persist through difficult times in order to implement Differentiated Instruction (DI) successfully in the classroom. Furthermore, it was the researcher's belief that an increase in teacher preparation programs would facilitate an increase in self-confidence and self-efficacy; thus, resulting in a successful deployment of DI in the classroom.

Misunderstandings by Teachers

Many misconceptions have surfaced from discussions concerning the implementation of Differentiated Instruction (DI) in the classroom (Tomlinson & Imbeau, 2010). Some teachers incorrectly believed that differentiation was something that you do or do not do (Tomlinson & Imbeau, 2010). Additionally, they thought that DI was all about instruction and consisted of a set of strategies for which administrators or school leaders should have been able to model (Tomlinson & Imbeau, 2010). Teachers also expressed the fear that it would take too much time to differentiate instruction in their classrooms, where increased class sizes and a reduction in educational funding made time a precious commodity for teachers. To support these beliefs, a 2008 survey by the Fordham Institute asked teachers how difficult it was for them to implement DI in the classroom daily (Loveless, Parkas, & Duffett, 2008, p. 67). Results showed that 48% of those teachers stated that it was fairly difficult and 35% stated that it was extremely difficult

(Loveless, Parkas, & Duffett, 2008, p. 67). Interesting enough, this report was developed with a bias towards the advancement of Gifted and Talented (GT) learners and the equal treatment of all students in the classroom.

The largest obstruction to Differentiated Instruction (DI) was the thought that differentiation only happened in a multi-ability classroom setting (Delisle, 2015). The government has been pushing towards all children being served in one heterogeneous classroom; but DI was not about the location of service. It was about how a student receives services (Heacox, 2012; Tomlinson, 1995; Tomlinson, 1999; Tomlinson and Imbeau, 2010). To exacerbate this false belief system, recent articles have criticized DI, stating, "differentiation is a failure, a farce, and the ultimate educational joke played on countless educators and students" (Delisle, 2015). Delisle (2015) continued by stating:

> It seems to me that the only educators who assert that differentiation is doable are those who have never tried to implement it themselves: university professors, curriculum coordinators, and school principals. It is the in-the-trenches educators who know the stark reality: Differentiation is a cheap way out for school districts to pay lip service to those who demand that each child be educated to his or her fullest potential (p. 28).

Contrary to the misunderstanding of some outspoken educators, schools were mandated by law to provide a Free and Appropriate Public Education by meeting the diverse needs of all children, not just the smart ones (Breault, 2006).

Thus, in reality, "few teachers proactively plan instruction to consistently address student differences in readiness, interest, and learning profile" (Tomlinson & Imbeau, 2010, p. 13). The concept of Differentiated Instruction (DI) was not only about instruction in a multi-ability classroom: it was also about the learning environments, a high-quality curriculum, informative

assessments, and flexible classrooms (Tomlinson & Imbeau, 2010, p. 13). DI developed as a set of principles for which a teacher must continually rethink practices through trial, reflection, and adjustment within the classroom (Tomlinson & Imbeau, 2010, p. 13). Unfortunately, DI takes time, but professional educators who strive for greater successes, must rethink the antiquated beliefs of a traditional classroom and move towards a modern approach to bridge the educational gaps (Tomlinson & Allan, 2000).

Implementation of DI

Tomlinson's (1995) Comprehensive Model of Differentiated Instruction (CMDI) had been reported as the prevailing theoretical construct for Differentiated Instruction (Hall et al., 2003). That specific model of Differentiated Instruction (DI) was identified as a collection of best practices or strategies to help teachers' better address and manage the needs of students (Heacox, 2012). Although no scripts were designated to facilitate the employment, Tomlinson (2001) acknowledged various ways to implement DI in the *content, process, product, affect,* and the *learning environment*. Tomlinson (1995, 1999, 2001) further stated that successful teachers of DI must be (a) reflective concerning appropriate teaching strategies, (b) fluid as a result of assessment data, (c) respectful towards providing quality tasks, and (d) willing/able to provide flexible grouping models. In other words, a teacher must be willing to observe, assess, revise, and/or reteach when appropriate. The National Center on Assessing the General Curriculum (NCAC) further supported the implementation of DI through the identification of guidelines to facilitate teachers in an understanding and in the development of ideas.

Critique of Research

Over the years, there surfaced many critics of the Comprehensive Model of Differentiated Instruction (CMDI), resulting in little validity (Wormeli, 2011). One concern identified was the lack of actual implementation of a comprehensive model. Specifically, teachers have self-reported that they implemented portions of the model of Differentiated Instruction (DI) but little to no research has shown an actual classroom study where the comprehensive model was utilized (Santangelo & Tomlinson, 2012). Furthermore, the actual implementation the CMDI appeared to present many barriers. First, teacher buy-in was paramount but teachers consistently reported that Differentiated Instruction (DI) required more time and effort that they were able or willing to give. Additionally, the proper implementation of the CMDI required that administration be fully on-board with the program, which would have also required significant training hours and an overall change in school wide pedagogy (Bell, 2011; Tomlinson et al., 2003). Another critique identified was that the concept of DI elicited a variety of interpretations that would require focused training on DI and the CMDI model.

Summary

While the topics of learner characteristics and differentiated instruction were researched in the past, this researcher believed that it was pertinent to investigate them in relation to Students with Disabilities (SWD). This study was imperative in light of the 1997 and 2004 reauthorizations of the Individuals with Disabilities Education Act (IDEA), the 2001 No Child Left Behind (NCLB) Act, a Response to Intervention (RTI), the implementation of Race to the Top (RTT), and Georgia's response to the RTT initiative (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). By gaining an understanding into the human dynamics that influence the differentiation of instruction for Students with Disabilities (SWD), it was the researcher's intent for school systems to design

more appropriate and effective staff development programs, as well as support teachers through a climate of change in the general education setting. This researcher believed that staff development programs must address a teacher's role in the educational process, the impact of a student's learning style in the classroom, the realities of a diverse classroom, and the pros and cons of labeling and/or segregating students. Staff development programs must also identify hindrances to implementing a Comprehensive Model of Differentiated Instruction (CMDI) in the classroom, teacher misunderstandings concerning DI, and a critical analysis of DI, along with how to implement CMDI in the classroom. Furthermore, it was this researcher's hope that teacher preparation programs would utilize this data for the future development of courses or programs within the university education departments, while modeling the Comprehensive Model of Differentiated Instruction (CMDI) in their own classrooms.

CHAPTER THREE: METHODS

Design

A quantitative research approach was utilized to conduct this study. Creswell (2008) stated that quantitative research allowed for the identification of specific elements to analyze through a narrowing of questions. Since the researcher utilized a valid and reliable instrument, the likelihood of biasing the participants or the results was lowered (Creswell, 2008).

This study employed a multivariate correlational research design (Gall, Gall, & Borg, 2007). Gall et al. (2007) stated that a correlational research design was to be utilized when the level of a relationship between two variables is being studied. In addition, a correlational research design was recommended by Gall et al. (2007) to be used when the researcher does not manipulate the independent variables. More specifically, a canonical correlation analysis represents "the highest level of the GLM" (general linear model) "and can be rather easily conceptualized as a method closely linked with the more widely understood Pearson r correlation coefficient" (Sherry & Henson, 2005, p. 38). Furthermore, Tabachnick and Fidell (2007) stated that utilizing a canonical correlation analysis was a way to "introduce dimensionality" to a study "in which there are multiple variables on both sides of a linear equation" (p. 570). The predictor variables/covariates determined for the study were a general education teacher's perception of learner characteristics through a student's readiness, interests, and learning profile. The criterion/dependent variables were the teacher's use of Differentiated Instruction (DI) among Students with Disabilities (SWD) in grades 6-12 using content, process/product, the learning environment, and assessments.

In this study, general education teachers were identified as educators who worked with all levels of students in a typical, all-inclusive, classroom setting (Boe, Cook, & Sunderland, 2008).

Additionally, learner characteristics were defined as the way students "begin to concentrate on, process, internalize, and retain new and difficult information" (Dunn et al., 2009, p. 136). Simply put, it was the most innate and efficient way that students learn (Santangelo & Tomlinson, 2012). Furthermore, Differentiated Instruction (DI) was identified as an alternative instruction that changed "the pace, level, or kind of instruction provided in response to individual learner's needs, styles, or interests" (Heacox, 2012, p. 5). While, Students with Disabilities (SWD) were specified as children from the age of 3 to 21 who have been afforded a Free and Appropriate Public Education (FAPE) and were served through an Individual Education Plan (IEP), by a federal mandate called Individuals with Disabilities Education Act (IDEA) (Snyder & Dillow, 2012).

Since the predictor/independent variable in this research was concerned with learner characteristics, as collected by Part II of the instrument, the researcher was not interested in manipulating the variable. Learner characteristics were defined as the teachers' assessment of students' *readiness, interests, and learning profiles* in the general education classroom (Hall, 2002; Tomlinson, 1995; Tomlinson, 2000; Tomlinson & Allan, 2000). Readiness referred to a student's prior knowledge, cognition, and experience (Tomlinson, 1995; Tomlinson, 1999), while a learning profile referred to how a student learns. Additionally, interest referred to a student's enthusiasm or passion for a specific field or idea. The goal or purpose of this study was to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

Research Question

RQ1: Is there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12?

Null Hypothesis

The null hypothesis for this study is:

H_o1: There is no significant relationship between a general education teacher's perception of learner characteristics (*readiness, interests, and learning profiles)* for Students with Disabilities and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

Participants and Setting

The study was conducted in a large rural public school district in southeast Georgia. Per the Governor's Office of Student Achievement (GOSA) from 2011, the district served 11,016 students from Kindergarten to the twelfth grade, of which approximately half of the students were identified as female. The racial makeup of the student population at the time of the study was 44% Caucasian, 37% African American, 12% Hispanic, 3% Asian, and 3% multiracial.

The county for which the school district resides had a population of approximately 52,250 residents, per the Census Bureau Population Estimate in 2010. The median household income between 2008 and 2012 was $62,953 (US Department of Commerce, United States Census Bureau, 2013). As of 2011, the county reported an average monthly number of food stamp households of 1,863 (The Governor's Office of Student Achievement, 2011). The poverty

rate was 10.3% and the unemployment rate was 8.5% (The Governor's Office of Student Achievement, 2011).

The participants in the study were recruited from middle and high school teachers who served Students with Disabilities (SWD) in the general education classroom setting at the time of the study. A convenience sample was selected of middle and high school classroom teachers from three middle schools, two high schools and one college and career academy in a large public school district in southeast Georgia. There were approximately 350 eligible general education teachers within the county selected. The teachers ranged from 21 to 65+, consisted mostly of non-Hispanic, Caucasian women, who participated on a voluntary basis. Based on a conservative response rate of 26%, it was determined that the sample size was approximately 92 participants (Harrell, 2006). Therefore, according to Gall et al. (2007) the sample would yield a medium effect size at a .05 alpha level with a .7 statistical power. Since the overall county population of educators was approximately 80% Caucasian, with female teachers representing 85% of all teachers, it was determined that the majority of those surveyed would be Caucasian women (U.S. Department of Commerce, United States Census Bureau, 2013). The demographics utilized in this survey were grade level, gender, ethnicity, race, current age level, highest degree earned/completed, years of experience, and level of Differentiated Instruction (DI) preparation.

Fifty-two teachers participated in the study. Forty of the participants taught at the middle school level consisting of 37 white, two black, and one other. Twelve of the participants taught at the high school level consisting of 11 white, 0 black, and one other. The average age of the participants was within the 36 to 40 years old range. Table 1 showed the survey participants by grade level and gender.

Table 1
Number of Teachers by Grade Level

Number of Participants Currently Serving Students With Disabilities (SWD) in the General Education Classroom			
Grade Levels	**Female**	**Male**	**Total**
Sixth Grade	9	3	12
Seventh Grade	5	1	6
Eighth Grade	7	1	8
Multiple Levels	10	4	14
Middle Grades	31	9	40
Ninth Grade	00	1	1
Tenth Grade	00	1	1
Eleventh Grade	00	00	00
Twelfth Grade	1	00	1
Multiple Levels	7	2	9
High School	8	4	12
Total Participants	39	13	52

Instrumentation

The survey, designed to reflect Tomlinson's Comprehensive Model of Differentiated Instruction (CMDI), was developed and first administered as a field test to a pilot group of educators who were knowledgeable in CMDI (Santangelo & Tomlinson, 2012). Although the survey did not receive a formal name by Santangelo and Tomlinson, the title of the original article was used to create a name for identification in the current survey. Therefore, the survey

was referred to as the *Teachers' Perceptions and Use of Differentiated Instruction Practices Survey*. Permission to use and publish the instrument was granted by Tanya Santangelo and administration through a web-based system was deemed appropriate (see Appendix G for permission to use the instrument).

The participants in Santangelo and Tomlinson's (2012) pilot study critiqued the design, as well as the format of the instrument. By calculating the Cronbach's alpha coefficient for the entire survey, as well as the two sections within the survey, Parts II (Teacher's Perception of Students' Needs) and III (Frequency of Differentiated Instruction in Classroom), it was determined that the questionnaire had a high level of internal consistency (Santangelo & Tomlinson, 2012). Gall, Gall, and Borg (2007) state that "Cronbach's alpha is a widely used method for computing test score reliability" through the analysis of individual questions (p. 202). The results of the Santangelo and Tomlinson survey in its entirety were (α= .91), Part II was (α= .86) and Part III was (α= .93). Since the study reported data on a group level, a reliability of .80 or higher was determined to be adequate for the purpose of this research (Gall, Gall, & Borg, 2007, p. 229). Reliability "refers to the consistency, stability, and precision of test scores" through the measurement of error. (Gall, Gall, and Borg, 2007, p. 151). Since the questions were grounded in Tomlinson's CMDI, it was determined that content validity was established (Gall, Gall, & Borg, 2007, p. 196; Santangelo & Tomlinson, 2012). Content validity was also established via the in-depth pilot study conducted (Gall, Gall, & Borg, 2007, p. 196).

While the *Teachers' Perceptions and Use of Differentiated Instruction Practices Survey* was originally designed and validated for teacher educators, recent investigation on practice-based teacher education supported the use of the survey when assessing the self-perceived knowledge of learning styles and Differentiated Instruction with all levels of educators (Forzani,

2014). Practice-based teacher education referred to the development of pre-service teachers by providing those future educators with the opportunity to work on the practice of teaching, rather than the theories and pedagogy associated with learning (Forzani, 2014). This change in teacher education training required the teacher educator to model, facilitate, and guide the teaching opportunities for novice educators (Darling-Hammond & Bransford, 2012; Forzani, 2014; Ghousseini & Sleep, 2011; McDonald, Kazemi, & Kavanagh, 2013). More specifically, Darling-Hammond and Bransford (2012) stated:

> Teaching teachers is certainly among the most demanding kinds of professional preparation: teacher educators must constantly model practices; construct powerful learning experiences; thoughtfully support progress, understanding, and practice; carefully assess students' progress and understanding; and help link theory and practice. (p. 421)

To further support these findings, the National Council for Accreditation of Teacher Education (NCATE) report (2010) stated:

> To prepare effective teachers for 21st century classrooms, teacher education must shift away from a norm, which emphasizes academic preparation and course work loosely linked to school-based experiences. Rather, it must move to programs that are fully grounded in clinical practice and interwoven with academic content and professional courses. (p. ii).

Additionally, the National Research Council, 2000, published a book that focused on teaching and learning in Science through inquiry. It was stated that a crucial component to successful learning was the opportunity to apply what was being studied and to refine it through thoughtful practice. That practice-based learning method supported the need

for “deliberate practice in the acquisition of expert performance” (Ericsson, Krampe, & Clemens Tesch-Römer, 1993, p. 363).

The *Teachers’ Perceptions and Use of Differentiated Instruction Practices Survey*, designed and validated for teacher educators, was determined to be valid and reliable for K-12 educators due to a general or better knowledge of Differentiated Instruction (DI) nationwide, as well as within the school system for which the educator conducted the survey. In 2012, the United States Department of Education (USDOE) National Center for Education Statistics, conducted a Schools and Staffing Survey (SASS) which asked teachers with five years or less experience how prepared they were to differentiate instruction in the classroom during their first year of teaching. Overall, results showed that 58 percent of those public school educators surveyed stated that they were either “well prepared” or “very well prepared”. An additional 35.5 percent of teachers stated that they were “somewhat prepared”. Additionally, the researcher determined that 87.7% of teachers who took the Teachers’ Perceptions and Use of Differentiated Instruction Practices Survey reported that they “received training on DI and have implemented some of the ideas in my classroom”, “received adequate training on DI and I sometimes use it to direct my teaching”, “received adequate training on DI and I often use it to direct my teaching”, or “received adequate training on DI and I use it to direct all of my teaching”. Results were detailed in Table 2.

Table 2
Teacher's Level of Differentiated Instruction (DI) Preparation

What is your level of Differentiated Instruction (DI) Preparation?

Answer Options	Response Percent	Response Count
I have no knowledge about DI	6.1%	3
I've heard about DI	4.1%	2
I know a little about DI but not how to implement it	2.0%	1
I had a few classes on DI but it wasn't relevant to instruction in my classroom	0.0%	0
I have received training on DI and have implemented some of the ideas in my classroom	36.7%	18
I have received adequate training on DI and I sometimes use it to direct my teaching	16.3%	8
I have received adequate training on DI and I often use it to direct my teaching	26.5%	13
I have received adequate training on DI and I use it to direct all of my teaching	8.2%	4

It was determined that the instrument co-authored by Santangelo and Tomlinson (2012), *Teachers' Perceptions and Use of Differentiated Instruction Practices Survey,* would remain valid and reliable when implemented in a public education setting, grades 6-12 because teacher education programs have employed practice-based teacher education over the last several years and K-12 educators have reported a general or better knowledge of DI, (Forzani, 2014; Tomlinson, 1999). This notion was supported through research conducted by Milner (2010), which asserted that the pedagogical gap between teachers and teacher educators has significantly narrowed since 1980. This narrowing appeared to develop a sense of shared purpose through the close working relationship between the teacher educator and the K-12 teacher. Additionally, Milner (2010) noted an increase in classroom-experienced teacher educators over the last decade.

The survey utilized a five-point Likert scale and seven identified areas from Tomlinson's (2005) Comprehensive Model of Differentiated Instruction (CMDI). The questions on the survey required that the respondent reply using a five-point Likert scale with three sections/parts. Part I consisted of demographic information: grade level, gender, ethnicity, race, current age level, highest degree earned/completed, years of experience, and level of Differentiated Instruction (DI) preparation. Part II comprised of 21 questions to elicit teachers' beliefs about learner characteristics, utilizing student *readiness, interests, and learning profiles*. Part III consisted of 39 items designed to provide respondents with an opportunity to self-report how frequently they use strategies that support differentiation *of content, process/product*, *learning environment, and assessment*.

The instrument was administered through an email invitation (see Appendix D for the invitation to participate), which was linked to a participation consent form (see Appendix H for the participant consent), followed by the survey on Survey Monkey (see Appendix I for the survey). After two weeks, the researcher sent a reminder e-mail to facilitate an increase in participation (see Appendix E for the reminder e-mail). The time allotted to administer the survey was four weeks. Furthermore, the raw scores from the instrumentation were downloaded from Survey Monkey and uploaded into Statistical Package for the Social Sciences (SPSS), Version 22, for statistical analysis by the researcher.

Teacher Demographics, Part I

Part I of the survey consisted of demographic information: grade level, gender, ethnicity, race, current age level, highest degree earned/completed, years of experience, and level of Differentiated Instruction (DI) preparation. The researcher added the demographic section for future analysis of data through the implementation of controls. The researcher believed that

some, if not all, of the demographic factors might contribute to variances in the survey results. Any significantly, identifiable, variances could help facilitate future in-service teacher trainings and/or Teacher Education program development in the university system.

Learner Characteristics, Part II (Predictor/Independent Variable or Covariates)

As a multifaceted model, the Comprehensive Model of Differentiated Instruction (CMDI) blended best practices from gifted education, reading literacy, special education, neuroscience, multicultural education, and so forth (Bell, 2011). Focusing those practices into one concise model, Tomlinson (2005) determined that there were three overall student needs: student *readiness, student interest, and student learning profiles*.

Readiness was identified as the embodiment of student knowledge, understanding, and skill level regarding the teacher's planning of lessons (Santangelo & Tomlinson, 2012). It was comprised of the student's knowledge base, experiences from life, cognition; metacognition and feelings about school in general (Santangelo & Tomlinson, 2012). The ultimate goal of readiness was to ensure that all students, based on their personal readiness needs, were provided with an appropriately challenging educational experience (Hall, 2002).

Student *interests* were identified as anything that could arouse curiosity and encourage a desire to learn more (Santangelo & Tomlinson, 2012). Teaching to student interests would help to facilitate engagement, motivate learning, and scaffold learning upon previous interest and knowledge (Santangelo & Tomlinson, 2012). Furthermore, by teaching to various student interests, teachers could potentially facilitate the discovery of new interests.

A student's learning profile was used by Tomlinson (2005) to describe the effective and likely ways that students learn. Overlapping factors, such as culture and gender, influenced learning preferences (Santangelo & Tomlinson, 2012). Preferences, such as class instruction,

ways students learn best, and environmental factors were identified as examples of learning profiles (Santangelo & Tomlinson, 2012).

The predictor/independent variable was measure by Part II (Learner Characteristics) of the survey, created by Santangelo and Tomlinson (2012), consisting of 21 statements designed to obtain a teacher's belief about the significance and effect of their students' needs through *readiness* (12 items), *interests* (three items), and *learning profile* traits (six items). The response choices utilized were 1 = strongly disagree, 2 = disagree, 3 = unsure, 4 = agree, and 5 = strongly agree. A high score, with a maximum of 105 points, on this section meant that the teacher perceived a significant range of abilities in the classroom and that the teacher utilized DI in the classroom to meet those needs. A low score, with a minimum of 21, represented that a teacher perceived little to no variation of abilities in the classroom, from which the teacher differentiated the instruction minimally or not at all.

Frequency of Differentiated Instruction, Part III (Criterion/Dependent Variable)

The Comprehensive Model of Differentiated Instruction (CMDI) stated that a teacher's understanding of student prior knowledge/*readiness, interests, and learning styles* was to direct the differentiation of instruction through *content, process, product, assessment,* and the *learning environment* (Santangelo & Tomlinson, 2012). *Content* consisted of the curriculum taught in the classroom and how the students accessed the instruction. Tomlinson (2005) identified *process* as a "sense-making" activity where students began thinking, working with, and making the content their own (p. 313). Following a significant amount of instruction, *product* was then utilized through summative *assessments* in order to determine if the content presented was mastered (Santangelo & Tomlinson, 2012). These assignments were, typically, performance type assessments that were designed to assess high order thinking skills, such as critical thinking.

Finally, the *learning environment* consisted of the physical setup of the classroom, the classroom routines and procedures, and the emotional tone of the classroom (Santangelo & Tomlinson, 2012).

The criterion/dependent variable was measured by Part III (Frequency of Differentiated Instruction), of the survey consisting of 39 statements for the teacher to self-report on the frequency of differentiated instruction implemented in the classroom through content (15 items), process and product (15 items), assessment (three items), and learning environment (six items) (Santangelo & Tomlinson, 2012). The response choices utilized were 1 = never—no intent to do so in the future, 2 = never—may be willing to do so in the future, 3 = occasionally, 4 = frequently, and 5 =always. A high score, with a maximum of 195 points, on this section of the survey meant that the teacher frequently used Differentiated Instruction in the general education classroom, whereas a low score, with a minimum of 39 points, meant that the teacher did not use or infrequently used DI.

Procedures

Upon approval from the IRB, Internal Review Board (see Appendix A for IRB Approval), the researcher requested permission from the Superintendent of a large, rural, school district in Southeast Georgia to conduct a survey of teachers (see Appendix B for the letter to the Superintendent). The Superintendent was informed that the survey results would be utilized to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12. Upon receipt of the approval from the Superintendent (see Appendix C for the approval from the

Superintendent), the Principals at each school were asked to distribute the surveys to their staff (see Appendix D for the participant invitation). The invitation stipulated that this was a voluntary, anonymous participation and that the person completing the survey must teach in the general education classroom between sixth and twelfth grade. Therefore, participation was selected based on a convenience sample of general education teachers within the identified school district.

Prior to initiating the study, the participants were asked to give informed consent (see Appendix I for the consent to participate). The consent form conveyed that participation was voluntary and that there was no financial compensation granted for any involvement. Furthermore, the informed consent advised that participation was confidential and anonymous. Although a conservative estimated response rate of 26% was expected to yield a significant number of participants, a follow-up letter was sent two weeks after the initial invitation, via e-mail, in order to facilitate increased participation (see Appendix E for the participant follow-up letter; Harrell, 2006). The follow-up letter also contained a link to the informed consent document. Permission to use, modify, and publish the survey, *Teacher Educator's Perceptions and Use of Differentiated Instruction Practice*, was previously granted by the designers of the instrument (see Appendix G for permission to use the survey).

The consent page provided a link to the online survey tool, Survey Monkey, utilized to host the survey, *Teacher Educator's Perceptions and Use of Differentiated Instruction Practice* (see Appendix I for the survey). Once the survey was completed, the participant received a thank you letter for participating (see Appendix J for the thank you letter). Since the informed consent and survey was administered completely online, there were no concerns over participants

returning completed surveys by mail. Furthermore, signature requirements were waived via IRB approval.

Part I of the survey consisted of a demographic section. This section included grade level teaching, gender, ethnicity, race, age, highest degree earned, years of experience in teaching, and number of students with disabilities in the classroom.

Part II of the survey focused on learner characteristics. In this section, teachers chose whether they strongly disagreed, disagreed, were unsure, agreed, or strongly agreed to the 21 statements provided. A point scale was assigned to each response, ranging from 1, for strongly disagree, to 5, for strongly agree. A high score, with a maximum of 105 points, on this section meant that the teacher perceived a significant range of abilities in the classroom and that the teacher utilized DI in the classroom to meet those needs. A low score, with a minimum of 21, represented that a teacher perceived little to no variation of abilities in the classroom, from which the teacher differentiated the instruction minimally or not at all.

Part III of the survey attended to a teacher's frequency in differentiating instruction in the classroom. In this part, participants chose from the following options on 39 statements: never, no intent to do so in the future; never, may be willing to do so in the future; occasionally; frequently; or always. A point scale was assigned to the responses in Part III, ranging from 1, for never-no intent to do so in the future, to 5, for always. A high score, with a maximum of 195 points, on this section of the survey meant that the teacher frequently used Differentiated Instruction in the general education classroom, whereas a low score, with a minimum of 39 points, meant that the teacher did not use or infrequently used DI. The survey, in its entirety, required approximately 30 minutes to complete.

After four weeks, the researcher ceased collecting data and downloaded the records from Survey Monkey. The researcher then compiled the data from Survey Monkey and uploaded it to Statistical Package for the Social Sciences (SPSS), Version 22. A canonical correlation analysis was conducted to examine data with multiple variables on both the covariate and dependent variable sides. The mean and standard deviation for the variables was delineated by individual questions, individual learner characteristics (*readiness, interests, and learning profile*), differentiation (*content, process/product*, *learning environment, and assessment*), predictor/independent variables or covariates (*readiness, interests, and learning profiles combined*), as well as criterion/dependent variables (*content, process/product*, *learning environment, and assessment* combined).

Data Analysis

A canonical correlation analysis was conducted for the research hypothesis (Tabahnick & Fidell, 2007). This specific technique was utilized to analyze the relationship between two sets of variables (Pallant, 2010, p. 104; Tabahnick & Fidell, 2007). In addition, it was determined that employing a multivariate technique, such as the canonical correlation analysis, would limit the probability of committing a Type I error (Thompson, 1991). A Type 1 error occurs when the researcher rejects the null hypothesis claiming that there were significant differences when, in actuality, there were no differences and the null hypothesis should have been accepted (Gall, Gall, & Borg, 2007).

All quantitative data was analyzed via the Statistical Package for the Social Sciences (SPSS), Version 22. The data was then entered into SPSS and coded. The level of measurement was measured on an interval Likert scale and observations within each variable were independent of each other. The assumption of normality was tested using the Kolmogorov-

Smirnov Test with a sample population of 50 participants and a normal population distribution. The assumption of linearity, the assumption of bivariate normal distribution, and the assumption of bivariate outliers were determined using a scatterplot between the predictor/independent variables or covariates (x) and the criterion/dependent variables (y). The bivariate normal distribution was identified by a three dimensional bell shaped distribution. Statistical significance for the correlational analysis was $p < .05$ in an attempt to reduce the risk of a Type 1 error.

CHAPTER FOUR: FINDINGS

Research Question

RQ1: Is there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12?

Null Hypothesis

The null hypothesis for this study is:

H_o1: There is no significant relationship between a general education teacher's perception of learner characteristics (*readiness, interests, and learning profiles)* for Students with Disabilities and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

Descriptive Statistics

The means and standard deviations for the questionnaire items related to learner characteristics, via student interest, readiness, and/or learning profiles, were detailed in Table 3. The means for individual items were as follows: readiness ranged from 3.78 to 4.44, interest ranged from 3.9 to 4.04, and learning profiles ranged from 3.48 to 4.06. The composite score mean for readiness was 4.14 {SD = 0.47}, for interest was 3.95 {SD = 0.54}, and for learning profiles was 3.75 {SD = 0.55}.

Table 4 contained the means and standard deviations for the questionnaire items related to the frequency of differentiated instruction in the areas of content, process/product, learning environment, and assessment of learner characteristics. Individual item means were as follows: learning environment ranged from 3.84 to 4.58, content ranged from 3.08 to 4.21, process and

product ranged from 2.96 to 4.16, and assessment ranged from 3.32 to 3.73. The composite score mean for learning environment was 4.37 {SD = 0.44}, for Content was 3.79 {SD = 0.47}, for process/product was 3.51 {SD = 0.49}, and for assessment was 3.48 {SD = 0.58}.

Table 3
Results Related to Learner Characteristics

Survey Results Related to Learner Characteristics	
Questionnaire Item	M (SD)
Readiness	4.14 (0.47)
R1. Students in my class (es) differ significantly in relevant background knowledge.	3.78 (1.03)
R2. There is a strong correlation between students' background knowledge and their class performance.	4.16 (0.70)
R3. My understanding of variance in individual students' background knowledge impacts what/how I teach.	4.16 (0.50)
R4. Students in my class (es) differ significantly in basic academic skills (e.g. reading comprehension, written expression, problem solving).	4 (1.05)
R5. There is a strong correlation between students' academic skills and their class performance.	4.27 (0.60)
R6. My understanding of variance in individual students basic academic skills impacts what/how I teach.	4.12 (0.55)
R7. Students in my class (es) differ significantly in their study skills (e.g. note taking, exam preparation, time management).	4.38 (0.60)
R8. There is a strong correlation between students' study skills and their class performance.	4.36 (0.66)
R9. My understanding of variance in individual students' study skills impacts what/how I teach.	3.92 (0.82)
R10. Students in my class (es) differ significantly in their attitude/motivation towards class performance.	4.1 (0.85)
R11. There is a strong correlation between students' attitude/motivation and their class performance.	4.44 (0.70)
R12. My understanding of variance in individual students' attitude/motivation impacts what/how I teach.	3.98 (0.76)
Interest	3.95 (0.54)
I1. Students in my class (es) differ significantly in their interests with regard to course content.	3.90 (0.86)
I2. There is a strong correlation between students' interests and their class performance.	4.04 (0.82)
I3. My understanding of variance in individual student interests impacts what/how I teach.	3.94 (0.54)
Learning Profile	3.75 (0.55)
LP1. Students in my class (es) differ significantly in their preferred learning modalities (e.g. visual, auditory, or kinesthetic; active or passive; intelligence preferences).	4 (0.63)
LP2. There is a strong correlation between students' learning modalities and their class performance.	3.82 (0.89)
LP3. My understanding of variances in individual student's learning modalities impacts what/how I teach.	4.06 (0.51)
LP4. Students in my class (es) differ significantly in their preferred grouping orientations (e.g. whole class, small group, individual).	3.63 (0.82)
LP5. There is a strong correlation between students' grouping orientation and their class performance.	3.52 (0.94)
LP6. My understanding of variances in individual student's grouping orientations impacts what/how I teach.	3.48 (0.96)

Table 4

Results Related to Frequency of Differentiated Instruction

Survey Results Related to Frequency of Differentiated Instruction	
Questionnaire Item	**M (SD)**
Learning Environment	4.37 (0.44)
LE1. I create activities/assignments to develop a sense of community among students.	3.84 (0.70)
LE2. I take deliberate efforts to ensure each student feels known, welcome, and respected.	4.48 (0.67)
LE3. I take deliberate efforts to make myself approachable/available to students.	4.58 (0.60)
LE4. I take deliberate efforts to ensure students participate consistently and equitably during class.	4.42 (0.64)
LE5. I take deliberate efforts to enhance students' attitude/motivation towards course content.	4.48 (0.57)
LE6. I follow up privately on behaviors or circumstances of concern (e.g. absences, low grades, conflicts between students).	4.26 (0.59)
Content	3.79 (0.47)
C1. I use text materials that represent a variety of formats (e.g. textbooks, journal articles, literature).	3.96 (0.83)
C2. I use text materials that present content at varying levels of complexity.	3.94 (0.79)
C3. I allow students to select from multiple text options (e.g. read one of three).	3.98 (0.92)
C4. I use materials that represent a variety of formats (e.g. text, video, audio, web-based).	4 (0.66)
C5. I use text and/or other materials that present content in a variety of ways (e.g. narrative & graphic, theory to example & example to theory).	3.66 (0.74)
C6. I use text and/or other materials that reflect students' interests or experiences.	3.62 (0.72)
C7. I provide supplemental materials/resources to support students who have difficulty in understanding course content.	3.90 (0.68)
C8. I provide supplemental materials/resource to challenge students who master course content with minimal effort.	3.8 (0.75)
C9. I present course content using visual displays or demonstrations.	4.21 (0.65)
C10. I present course content using examples that reflect students' interests or experiences.	3.84 (0.61)
C11. I use strategies to support comprehension and retention of content presented in text materials (e.g. chapter outlines, end of class summaries).	4.04 (0.72)
C12. I use strategies to support comprehension and retention of content presented in class (e.g. lecture outlines, end of class summaries).	4.1 (0.61)
C13. I provide supplemental support to students who have difficulty in understanding course content (e.g. conference with student, offer a 'working lunch').	3.8 (0.8)
C14. I create more advanced opportunities for students who master course content with minimal effort.	3.58 (0.79)
C15. I solicit student feedback to help select/adjust the content presented within a given year.	3.4 (0.96)
Process/Product	3.51 (0.49)
PP1. I design activities/assignments that help students understand course content by interacting with each other.	3.88 (0.63)
PP2. I use a variety of grouping formats during class (e.g. whole class, small group, partners, individual).	3.86 (0.80)
PP3. I use a variety of grouping formats for assignments completed outside of class (e.g. small group, partners, individual).	2.96 (1.25)
PP4. I allow each student to select his/her preferred grouping format (e.g. work independently or with a partner).	3.37 (0.83)
PP5. I purposefully group students based on their levels of readiness (e.g. relevant background knowledge, academic skills).	3.66 (0.84)
PP6. I purposefully group students based on their interests.	3.04 (0.80)
PP7. I purposefully group students based on their preferred learning modalities.	3.06 (0.83)
PP8. I create activities/assignments that offer format options (e.g. write a paper, create a visual, design a web page, or give a presentation).	3.4 (0.80)
PP9. I create activities/assignments that allow each student to select a topic of personal interest.	3.16 (0.76)

PP10. I adjust assignment deadlines in response to individual students' needs and/or circumstances.	3.52 (0.83)
PP11. I provide supplemental support to students who have difficulty completing activities/assignments.	3.8 (0.63)
PP12. I create enrichment opportunities for students who complete activities/assignments with minimal effort.	3.64 (0.79)
PP13. I evaluate each student based on his/her improvement during the semester.	3.69 (0.95)
PP14. I use three or more forms of assessment to determine course grades (e.g. paper, presentation, participation, final exam/unit test).	4.16 (0.84)
PP15. I solicit student feedback to help create/adjust activities/assignments used within a given year.	3.44 (0.80)
Assessment	3.48 (0.56)
A1. I assess each student's level of readiness (e.g. relevant background knowledge, academic skills, attitude).	3.73 (0.75)
A2. I assess each student's interests (e.g. future plans, areas of talent/passion).	3.4 (0.66)
A3. I assess each student's learning profile characteristics (e.g. preferred learning modality, grouping orientation).	3.32 (0.76)

The final two questions in the instrument were designed to explore teacher efficacy. In other words, it assessed whether the teacher felt adequately prepared to respond to academic diversities in the classroom. The means and standard deviations were generated for the two questionnaire items. In response to the statement, "I feel adequately prepared to respond to the academic diversity among students in my classes," 0% (n = 0) strongly disagreed, 0% (n = 0) disagreed, 6% (n = 3) were unsure, 82% (n = 40) agreed, and 12% (n = 6) strongly agreed. The mean for this item was 4.06 {SD = 0.42}. In response to the statement, "I am interested in learning more about how to respond to students' academic diversity," 0% strongly disagreed (n = 0), 4% (n = 2) disagreed, 12% (n = 6) were unsure, 72% (n = 36) agreed, and 12% (n = 6) strongly agreed. The mean for this item was 3.92 {SD = 0.63}.

Results

Data Screening

The data was screened to check for any missing information, outliers, and inconsistencies among the predictor/covariates and criterion/dependent variables. These errors were identified in accordance with procedures recommended by Green and Salkind (2011). During data entry, it

was determined that two participants started the demographics section and then quit the survey. Those two participants were removed from the data set.

Fifty educators electronically submitted a fully completed questionnaire, resulting in an overall response rate of approximately 14.3%. Of the overall 52 participants, 76.9% (n = 40) were female and 23.1% (n = 12) were male. One hundred percent were from a Non-Hispanic/Non-Latino ethnicity. Ninety two and three-tenths percent (n = 48) were White, 3.8% (n = 2) were Black or African American, 1.9% (n =1) identified as Native Hawaiian/Pacific Islander, and 1.9% {n = 1) indicated "other".

Respondents ranged from 21 to 65 years old with 4% (n = 2) identifying as new teachers. Eighteen percent (n = 9) had one to five years of teaching experience, 22% (n = 11) have taught between 6 and 10 years, 10% (n=5) stated that they had 11-15 years of teaching experience, 24% had 16-20 years of experience in teaching, 10% (n = 5) had 21-25 years of teaching experience, and 12% (n = 6) had over 26 years of experience in teaching. With respect to educational levels, 33% (n = 17) of respondents held a bachelor's degree, 31.4% (n = 16) held a Master's degree, 27.5% {n = 14) held an Educational Specialist's degree, and 7.8% (n = 4) held a Doctoral degree.

The survey utilized a five-point Likert scale and seven identified areas from Tomlinson's (1999) Comprehensive Model of Differentiated Instruction (CMDI). The questions on the survey required that the respondent reply using a five-point Likert scale with three sections/parts. Part I consisted of demographic information: grade level, gender, ethnicity, race, current age level, highest degree earned/completed, years of experience, and level of Differentiated Instruction (DI) preparation. Part II comprised of 21 questions to elicit teachers' beliefs about learner characteristics, utilizing student *readiness, interests, and learning profiles*. Part III

consisted of 39 items designed to provide respondents with an opportunity to self-report how frequently they use strategies that support differentiation *of content, process/product*, *learning environment, and assessment*.

The instrument was administered through an email invitation (see Appendix D for the invitation to participate), which was linked to a participation consent form (see Appendix H for the participant consent), followed by the survey on Survey Monkey (see Appendix I for the survey). After two weeks, the researcher sent a reminder e-mail to facilitate an increase in participation (see Appendix E for the reminder e-mail). The appropriate time allotted to administer the survey was four weeks. Furthermore, the raw scores from the instrumentation were downloaded from Survey Monkey and uploaded into Statistical Package for the Social Sciences (SPSS), Version 22, for statistical analysis by the researcher.

Assumption Testing

A canonical correlation analysis was conducted to test the null hypothesis by examining data with multiple variables on both the covariate and dependent variable sides. The canonical correlation analysis required that the following assumptions be met: independence, normality, homoscedasticity, and sample size (Tabachnick & Fidell, 2006.) A Kolmogorov-Smirnov test ($p > .05$) and a visual inspection of the histograms, normal Q-Q plots and box plots showed that the criterion variables were approximately normally distributed, with a skewness of 0.081 (SE = 0.337) and a kurtosis of 0.798 (SE 0.662). Additionally, since the survey contained a large enough sample size (> 40) and a possible violation of the normality assumption was not determined to cause major problems, the researcher was confident in using the canonical correlation analysis to determine if a relationship existed between the predictor/covariates and criterion/dependent variables (Tabachnick & Fidell, 2006). Furthermore, the assumption of

linearity was determined using a scatterplot between the predictor variables/covariates (x) and the criterion/dependent variable (y).

Statistical Analysis

A Pearson's product moment correlation (Pearson's r) was used to test the null hypothesis at the .05 alpha level. Statistical significance for the correlational analysis was $p < .05$ in an attempt to reduce the risk of a Type 1 error. Additionally, a Canonical Correlation Analysis (CCA) was conducted to examine data with multiple variables on both the covariate and dependent variable sides with a test wise error rate of .05 to reduce the potential of Type 1 errors (Sherry & Henson, 2005).

Null Hypothesis

This study examined if there was a significant relationship between a general education teacher's perception of learner characteristics (*readiness, interests, and learning profiles)* for Students with Disabilities and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

A canonical correlation analysis was performed using three learner characteristics as the predictors/functions of the four frequencies of Differentiated Instruction (DI) variables. The learner characteristics included readiness, interests, and learning profiles. The frequencies of DI consisted of content, process/product, learning environment, and assessment. Assumptions concerning normality were met and variates (linear combinations of variables on either the independent or the dependent side) were generated from the data. The correlational results, identified in Table 5, suggested that ten out of the 21 correlations were statistically significant.

Of the remaining 11 correlations, ten showed non-significant positive correlations and one showed a non-significant negative correlation between mean assessment and mean interest.

Table 5
Predictor and Criterion Variable Correlations

Correlations Among and Between the Predictor and Criterion Variables (N=50)

	Mean Interest	Mean Learning Profile	Mean Learning Environment	Mean Content	Mean Process/Product	Mean Assessment
Mean Readiness	.65**	.53**	.15	.22	.24	.01
Mean Interest	1.0	.67**	.14	.07	.12	-.06
Mean Learning Profile		1.0	.15	.21	.28*	.10
Mean Learning Environment			1.0	.30*	.37**	.48**
Mean Content				1.0	.75**	.48**
Mean Process/Product					1.0	.56**

** Correlation is significant at the .05 level (two-tailed).*
*** Correlation is significant at the .01 level (two-tailed).*

An analysis of the 21 correlation matrices indicated that all correlations ranged from a weak correlation to a strong correlation (Salkind, 2010, p. 129). The strongest relationship was between mean content and mean process and product (r= .75). The results of the correlational analysis presented in Table 5 showed that 10 out of 21 of the correlations were statistically significant and were greater than or equal to .28. The mean learning environment showed significantly low correlations with all three of the predictor variables: mean readiness, mean interest, and mean learning profile. Additionally, mean readiness and mean interest had pointedly low correlations when compared to the criterion variables: mean learning environment, mean content, mean process/product, and mean assessment.

A Pearson's Product Moment Correlation was also run using the mean predictor variable (consisting of the mean readiness scores, mean interest scores, and mean learning profile scores) and the mean criterion variable (consisting of the mean learning environment, mean content, mean process/product, and mean assessment). Results of the Pearson's Product Moment Correlation showed a weak positive correlation between the overall predictor variables and the overall criterion variables $r(48) = 0.19$, $p<0.182$.

Wilks's lambda and corresponding F-tests were used to evaluate the null hypothesis that canonical correlations coefficients for all functions are zero. The canonical correlation analysis yielded three functions/roots with squared canonical correlations (R_c^2) of .131, .053, and .009 for each succeeding function/root. Collectively, the full model was not statistically significant using the Wilks's λ =.816 criterion, $F(12, 114.06) = .759$, $p = .691$. Since Wilks's λ represented the variance unexplained by the model, the expression 1- λ would yield the full model effect size of .184 (Sherry & Henson, 2005). The effect size of .184 indicated that the full model explained approximately 18% of the variance shared between the variable sets, thus a full model set that is less than .30 would not be interpreted as part of the variate (Tabachnick & Fidell, 2006, p. 587).

The Dimension Reduction Analysis allowed the researcher to identify the arrangement of roots by hierarchy for statistical significance. Since the full model was not determined to be statistically significant, it was not necessary to analyze the other two roots for statistical significance. Given the effects for each root, only root 1 to 3 was considered noteworthy with a 13% shared variance. The other two roots only explained 5.3% and 0.9% of the remaining variance, respectively.

Table 6 presented the standardized canonical function coefficients (coef) and the structure coefficients/loadings (r_s) for roots 1 and 2. The squared structure coefficients (r_s^2) were

also identified, as well as the communalities (h^2) across the two functions for each variable. In review of the Table 6 function/root 1, it was determined that the most relevant criterion variables were process/product and content, both of which contributed to the squared structure coefficients (r_s^2). The r_s^2 represented "the percentage of shared variance between the observed variable and the synthetic variable created from the observed variable set" (Sherry & Henson, 2005, p. 44). The canonical function coefficient (coef) for process/product supported this finding but content had a modest function coefficient with the larger structure coefficient (r_s). Furthermore, readiness, interests, and learning styles were all positively related to the frequency of differentiation criterion variables.

Although root 2 was not significant for further interpretation, the researcher chose to include root 2 in the chart for comparison. In function/root 2, the coefficients in Table 6 showed that the only relevant criterion variable was assessment. Additionally, readiness and interest were the main predictors, with interest as the dominant. Furthermore, readiness and interest were inversely related to the frequencies of differentiation, with the exception of learning environment.

Table 6
Canonical Solution for Learner Characteristics Predicting Frequency of Differentiation

	Function/Root 1			Function/Root 2			
Variable	Coef	(r_s)/ Loading	r_s^2 (%)	Coef	(r_s)/ Loading	r_s^2 (%)	h^2 (%)
Learning Environment	-.224	-.441	19.48	.787	.269	7.22	26.70
Content	-.310	<u>-.817</u>	66.67	-.039	-.292	8.55	<u>75.22</u>
Process/Product	-.831	<u>-.933</u>	86.96	.051	-.298	8.87	<u>95.83</u>
Assessment	.387	-.329	10.82	-1.10	<u>-.718</u>	51.60	<u>62.42</u>
R_c^2			13.10			5.30	
Readiness	-.773	<u>-.825</u>	68.06	.118	<u>.490</u>	24.01	<u>89.10</u>
Interests	.535	<u>-.482</u>	23.23	1.277	<u>.766</u>	58.68	<u>81.91</u>

Learning Style	-.764	-.812	65.93	-.878	.040	0.16	66.09

Note. Structure coefficients (r_s) greater than |.45| are underline. Communality coefficients (h^2) greater than 45% are underlined. Coef=standardized canonical function coefficient; r_s = structure coefficient; r_s^2 = squared structure coefficient; h^2 = communality coefficient; r_c^2 = squared canonical correlations. Adapted from "Conducting and Interpreting Canonical Correlation Analysis in Personality Research: A User-Friendly Primer" by A. Sherry and R.K. Henson, 2005, *Journal of Personality Assessment, 84*(1), p. 44)

Although there were positive results concerning process/product and content, the researcher did not find a statistically significant relationship between a teacher's overall of identification of a student's learning styles and a teacher's overall frequency to differentiate instruction in the general education classroom, grades 6-12. Therefore, the researcher failed to reject the null hypothesis.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

Utilizing a multivariate correlational research design, the purpose of this study was to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12. The predictor variables/covariates were the general education teacher's identification of learner characteristics: readiness, interests, and learning profile. The criterion/dependent variables were the teacher's use of Differentiated Instruction: content, process/product, learning environment, and assessment. The following research question and hypothesis guided the study:

RQ1: Is there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12?

H_o1: There is no significant relationship between a general education teacher's perception of learner characteristics (*readiness, interests, and learning profiles)* for Students with Disabilities and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

Nearly 20 percent of students educated in the public schools have been identified as exceptional students, which consisted of Students with Disabilities, Twice Exceptional Students and Gifted and/or Talented identified learners (U.S. Department of Education [USDOE], 1997; USDOE, 2013; Snyder & Dillow, 2012). Research has yet to support any benefits of utilizing a

segregated instructional model for teaching exceptional students, thus demonstrating the importance of educating all student in the general education classroom (Borland, 2003; Gartner & Lipsky, 1987; Weiner, 2007). In addition, federal and state mandates, along with cuts to funding for specific educational programs, have supported the need for quality education in the general education classroom (Lingo, Barton-Arwood, & Jolivette, 2011). To meet the needs of a growingly diverse student population, teachers began to implement Differentiate Instruction (DI) in the classroom. DI was defined as a constructivist-style approach to alternative instruction that changed "the pace, level, or kind of instruction provided in response to individual learner's needs, styles, or interests" with the intended goal of maximizing the growth and academic development of all learners by meeting their specific needs (Hall, 2002; Heacox, 2012, p. 5).

The DI model utilized in this study was Tomlinson's Comprehensive Model of Differentiated Instruction (CMDI), due to its all-inclusive nature and supporting documentation from decades of research and journal citations (Hall, 2002; Heacox, 2012; Hall et al., 2003; Santangelo & Tomlinson, 2012; Tomlinson, 1995; Tomlinson, 1999; Tomlinson & Allan, 2000; Tomlinson & Imbeau, 2010). Developed over several decades, Tomlinson's CMDI blended the best practices from gifted education, reading literacy, neuroscience, multicultural education, and special education to help teachers respond to the educational needs and preferences of all students using a myriad of instructional approaches (Bell, 2011; Demos & Foshay, 2009; Hawkins, 2009; Specht, 2004; Tomlinson, 2003). As an efficient and well-orderly way to respect the learning needs and maximize the potential of all students, CMDI was identified as the prevailing theoretical construct for studies pertaining to DI (Hall et al., 2003; Tomlinson, 2001).

Supporting CMDI's emphasis on the fundamental components of Differentiated Instruction were: Vygotsky's Zone of Proximal Development (ZPD), interest-based studies, The

Dunn and Dunn Learning Style Inventory (LSI), and the Universal Design for Learning (UDL; Hall et al., 2003; Tomlinson & Allan, 2000; Tomlinson et al, 2003).

Lee Vygotsky assumed that, by developing an understanding of the students' foundation in learning, an educator would be more capable of teaching to the students ZPD, which was supported by Tomlinson's "readiness" component of CMDI (Subban, 2006; Tomlinson & Allan, 2000). Vygotsky's aim of teaching to a student's interest to increase personal exploration and a willingness to participate in the educational process within the ZPD was supported by the "interest" component of CMDI (Miller, 2011). Furthermore, Tomlinson's "learning profile" supported Vygotsky's focus on the cultural aspect of a student's learning. Vygotsky asserted that cultural norms and expectations would determine what skills and knowledge a student needed to acquire (Miller, 2011, p. 166).

Over the last two decades of the 20th century, many studies pertaining to the benefits of teaching to individual student interests (Tomlinson et al., 2003). Studies showed that one way for schools to motivate students without preexisting interests in academics was through the stimulation of situational interests (Hidi, 2001). Additionally, Edeh (2006) found that, when conducting a multicultural study of Students with Disabilities, students who participated in interest-based education classes achieved considerably higher posttest scores than those who participated in traditional instruction. Tomlinson's CMDI incorporated the interest of students and found that differentiating instruction in response to student interests, student engagement was promoted, motivation was facilitated, and connections between what was known and what was learned became valued by the student (Santangelo & Tomlinson, 2012).

Tomlinson and Allan (2000) asserted that one way to improve learning was by matching student learning-style preferences to the conditions of learning (Tomlinson, 1999). Theorists,

such as Gardner and Sternberg, have supported the connection between learning styles and successes, as well as numerous psychologists, educators, and sociologists (Tomlinson & Allan, 2000). One of the most highly touted models developed to determine a student's learning style was the Dunn and Dunn Learning Style Inventory (LSI); a model with an extensive foundation in research (Dunn et al., 1995; Dunn et al., 2009; Shaughnessy, 1998). Incorporating up to 23 elements, the LSI determined student preferences, suggested a foundation for revamping the classroom to support learning styles, described how students learned best and how much structure was needed, et cetera (Shaughnessy, 1998).

Another construct that was supported by CMDI was the Universal Design for Learning (UDL); designed to direct the development of flexible programs that support the learning needs of all students (CAST, 2011). Tomlinson's CMDI and the UDL were similarly designed to make the curriculum accessible to all learners by planning for instruction based on the needs of the students (Aldridge, 2010; Heacox, 2012). Additionally, they both showed reflective traits based on the ideas of individualization, flexibility, variability, and the significance of engaged learners (Hall et al., 2003). Furthermore, the two constructs purported the benefits of providing choices, scaffolding, supporting instruction, and modifying the curriculum's level of difficulty to meet the needs of the learner (Hall et al., 2003).

A canonical correlation analysis was conducted to examine data with multiple variables on both the covariate and dependent variable sides with a test wise error rate of .05 to reduce the potential of Type 1 errors (Sherry & Henson, 2005). This specific technique was utilized to analyze the relationship between two sets of variables (Pallant, 2010, p. 104; Tabahnick & Fidell, 2007). In addition, it was determined that employing a multivariate technique, such as the

canonical correlation analysis, would limit the probability of committing a Type I error (Thompson, 1991).

Conclusions

The conclusion of the study was that there was no significant relationship between a general education teacher's perception of learner characteristics (*readiness, interests, and learning profiles)* for Students with Disabilities and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12. Tomlinson et al. (2003) supported these results, when they stated, "while many teachers acknowledge academic diversity in their classrooms and often affirm the need to address student variance, their practice tends to be misaligned with those beliefs" (p. 124). Additionally, Moon, Tomlinson, and Callahan (1995) stated that "50% of middle school teachers who responded to a nationwide survey indicated that they did not differentiate their instruction based on readiness, interest, or learning profile because they did not believe there was a need to do so" (p. 96). Furthermore, Santangelo and Tomlinson (2010) affirmed that teachers differentiate parts of instruction, but a complete implementation the Comprehensive Model of Differentiated Instruction was not observed.

Implications

According to Santangelo and Tomlinson (2012), more research was needed to determine if there was a significant relationship between a teacher's perception of learner characteristics for Students with Disabilities and a teacher's use of Differentiated Instruction in the classroom. This multivariate correlational study was specifically intended to provide added information about the self-reported relationship between an educator's perception of student learning styles (*readiness, interests, and learning profile)* and a teacher's use of Differentiate Instruction (DI) for Students

with Disabilities (*learning environment, product and process, content, and the assessment)* in the general education setting for grades 6-12. Furthermore, it was intended to add to the current literature on the examination of educating Students with Disabilities and the Comprehensive Model of Differentiated Instruction (CMDI). Since this study did not find a statistically significant relationship, it may be implied that continued professional development in Differentiated Instruction for SWD is needed. Additionally, by describing how teachers perceived student learning styles as it related to their willingness to differentiate, professional dialog and teacher educator training would, hopefully, continue to work towards meeting the needs of an increasingly diverse classroom of students.

Various researchers have supported the additional need for professional development. Rita Dunn et al. (2008) went so far as to say "few educators are trained in the effective implementation of any styles other than conventional teaching" (p. 139). Male (2011) studied and reported a positive shift in attitude towards Differentiated Instruction (DI) when provided with professional development (p. 184). Berry (2010) supported the need for additional professional development for teachers with limited experience and high levels of anxiety. Additionally, Johnson and Kardos (2002) stated, "schools that gear professional development to both the ongoing induction of new teachers and the continual renewal of veteran teachers serve all educators well—thus enabling them to serve all their students well".

Limitations

Several limitations existed within this study. First, the results were based exclusively on teacher educators' self-reporting data. The researcher did not conduct a verification of teacher beliefs and practices within the classroom. Only educators from one rural district were sampled, resulting in a lack of diversity among participants. The majority of the participants were female

(76.9%) and white (92.3%). Due to the non-random nature of the sample design, there was a threat to internal validity, thus potentially creating participation groups that may not be representative of the population (Gall, Gall, & Borg, 2007). Furthermore, the survey did not take into account urban school districts, private schools, or elementary education. Additionally, the sample size was much smaller than expected with 50 educators completing the survey. Finally, the instrument was designed to quantify only an educator's identification of learner characteristics and the implementation of Differentiated Instruction.

Recommendations for Future Research

The following are recommendations for future research:

(1) Since the survey relied on self-assessment, it is recommended that future research triangulate data using surveys, interviews, classroom observations, and examination of classroom artifacts among the participants. Through the triangulation of data, there would be data to quantify any differences between reality and a teacher's personal perception.

(2) In order to determine whether the results are generalizable, further research should replicate the study with a larger, national, population and with a wider range of educators, to include grades K-5. The study might also compare teachers in a general education setting and teachers in a special education setting.

(3) Additional research should attempt to understand qualitatively the teacher's overall perception of learner characteristics for Students with Disabilities (SWD) and the use of Differentiated Instruction (DI) in the general education classroom.

(4) Further analysis of the data could be used to determine if there are significant differences within and among teachers of varying years of experience in the classroom and/or based on level of education achieved.

(5) Since professional development would be utilized to facilitate the identification of learner characteristics and an increased willingness of a teacher to Differentiate Instruction (DI) for SWD in the general education classroom, it would be helpful to conduct a study to determine which types of professional development opportunities would benefit educators.

(6) A deeper analysis of Readiness, Interest, and Learning Styles as it relates specifically to Content and Process/Product for SWD would continue to add to the data as it pertains to DI in the classroom.

(7) Since professional development is subjective between and within schools, teacher interest, and/or administration buy-in, it is recommended that recognition of professional development implemented within the schools be taken into account when collecting demographic information.

(8) Adding degree field(s) and/or certificate level(s) to the demographic section is recommended for comparison of a teacher's perception of learner characteristics (*readiness, interests, and learning profiles)* for Students with Disabilities and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

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Appendix A

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

June 25, 2015

Shannon Muller Knight
IRB Exemption# 2229.062515: The Relationship between a Teacher's Identification of Learner Characteristics of Students with Disabilities and a Teacher's Use of Differentiated Instruction in Georgia Public Schools Grades 6-12

Dear Shannon,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Professor, IRB Chair
Counseling

(434) 592-4054

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1971 University Blvd. Lynchburg, Va. 24515 irb@liberty.edu fax (434) 522-0506 www.liberty.edu

Appendix B

Date: May 28, 2015

[redacted]

Dear [redacted]

As a doctoral candidate at Liberty University, I am conducting research as part of the requirements for an Educational Doctorate. The title of my research project is The Self-Reported Relationship between a Teacher's Perception of Learner Characteristics for Students with Disabilities and a Teacher's Use of Differentiated Instruction in Georgia Public Schools Grades 6-12. The purpose of my research is to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

Since studies have yet to clearly support any significant benefits in utilizing segregated instruction for the teaching of exceptional students, it is vital to identify research-based methods to educate all students in the general education classroom (Borland, 2003; Gartner & Lipsky, 1987; Weiner, 2007). Sustained by research on student achievement, the proper and comprehensive implementation of Differentiated Instruction (DI) has proven to benefit students of all ability levels (Demos & Foshay, 2009). Therefore, this study is intended to continue to add to the research concerning the importance of the classroom teacher in the successful implementation of Differentiated Instruction.

I am writing to request your permission to contac[redacted] sixth to twelfth grade educators in the general education setting to invite them to participate in my research study, administered via Survey Monkey. Participants will be asked to click on a link provided to access the informed consent. After reviewing the consent, the participants will click on a link to the survey, thus granting consent. The survey will take approximately 30 minutes to complete, and participation will be completely anonymous. No personal, identifying information will be required and/or reported. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please reply to this email or provide a signed statement on approved letterhead indicating your approval.

Sincerely,

Shannon Muller Knight, Ed.S
Educator/Graduate Student

Appendix C

[redacted] Board of Education

[redacted]

STATEMENT OF AGREEMENT FOR RESEARCHERS

Title of Research Project: The Relationship between a Teacher's Identification of Learner Characteristics of Students with Disabilities and a Teacher's Use of Differentiated Instruction in Georgia Public Schools, Grades 6-12

The proposed activities to be conducted in [redacted] School District are in compliance with existing legal and ethical codes. The research will not differ significantly from the activities described within the proposal. Any amendments to the original proposal must be submitted to and approved by the Office of Instruction and Technology. All participation in the study will be voluntary and confidentiality of the data will be maintained. All researchers agree to provide the Office of Instruction and Technology of the [redacted] County School District a copy of the final research report. Researchers agree to ensure that all associates, colleagues, and employees assisting in the conduct of the study are informed about their obligations in meeting the research study commitments.

I understand and agree with the above statement and will follow the guidelines it sets forth.

Date: 06/02/2015

Printed Name: Shannon M. Knight

Signature: Shannon Knight

[redacted]

Approved by [redacted] Title: Asst. Superintendent Date: 6/16/15

Please mail or fax the signed document to: Assistant Superintendent

[redacted]

Equal Opportunity Employer

School Board Members

[redacted]

Appendix D

Date: July 20, 2015

Sixth to Twelfth Grade General Educator

Dear Sixth to Twelfth-Grade General Educator:

As a doctoral candidate at Liberty University, I am conducting research as part of the requirements for an Educational Doctorate. The purpose of my research is to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12.

If you are a licensed educator in the state of Georgia and currently teach in middle or high school, grades 6-12, general education classroom with students with disabilities and are willing to participate, you will be asked to complete a survey on Survey Monkey. It should take approximately 30 minutes for you to complete the procedures listed. Your participation will be completely anonymous, and no personal, identifying information will be required and/or reported.

Sustained by research on student achievement, the proper and comprehensive implementation of Differentiated Instruction (DI) has proven to benefit students of all ability levels (Demos & Foshay, 2009). Therefore, this study is intended to continue to add to the research concerning the importance of the classroom teacher in the successful implementation of Differentiated Instruction.

To participate, click on the link provided to view the consent document. Please click on the survey link at the end of the consent document to indicate that you have read the consent information and would like to take part in the survey. Thank you in advance for participating.

Sincerely,

Shannon Muller Knight, Ed.S
Educator/Graduate Student

Appendix E

Date: June 29, 2015

Sixth to Twelfth Grade General Educator

Dear Sixth to Twelfth Grade General Educator:

As a doctoral candidate at Liberty University, I am conducting research as part of the requirements for an Educational Doctorate. A few weeks ago an email was sent to you inviting you to participate in a research study. This follow-up email is being sent to remind you to complete the survey if you would like to participate and have not already done so. The deadline for participation is October 14, 2015.

If you choose to participate, you will be asked to complete a survey. It should take approximately 30 minutes for you to complete the procedures listed. Your participation will be completely anonymous, and no personal, identifying information will be required.

To participate, click on the link provided, which will take you to the consent document. Please click on the survey link at the end of the consent document to indicate that you have read the consent information and would like to take part in the survey. Thank you in advance for participating.

Sincerely,

Shannon Muller Knight, Ed.S
Liberty University Graduate Student

Appendix F

Permissions@ascd.org
To: Shannon Muller Knight
RE: permission to reprint (Thread:1307470)

In response to your request below, please consider this permission to use the excerpt(s) from the referenced publication for your personal research purposes. Should you include excerpts or cite content in a paper or some other report form, please credit the source accordingly. If your research results in use of our content in a product or publication for commercial release, please contact me again to secure further rights to do so.

Thank you for your interest in ASCD and good luck with your dissertation.

Sincerely yours,

KATY WOGEC • Sr. Paralegal
ASCD
1703 N. Beauregard Street • Alexandria, VA 22311-1714
P 703-575-5749 · F 703-575-3926 · www.ascd.org · www.wholechildeducation.org

Join us:

-----Original Message-----
From: Shannon Muller Knight [mailto:knightgang@comcast.net]
Sent: Thursday, January 01, 2015 5:42 PM
To: permissions@ascd.org
Subject: permission to reprint (Thread:1307470)
Importance: High

I would like to request permission to reprint figure 2.1 from The Differentiated Classroom: Responding to the Needs of All Learners (1999) by Carol Ann Tomlinson, in my dissertation through Liberty University. The figure is located on page 15.
I would also like to add two additional factors to be differentiated (that corresponds with Tomlinson's later publications (ex. Tomlinson & Imbeau, 2010)). I have attached the modified version of Figure 2.1, Differentiation of Instruction for your review.

Shannon Muller Knight

Appendix G

From: Santangelo, Tanya santangt@arcadia.edu
Subject: Re: Dissertation and Differentiated Instruction
Date: August 26, 2014 at 1:42 AM
To: Knight, Shannon sknight24@liberty.edu

Dear Shannon,
This written correspondence serves as documenting/giving my permission to (1) use our survey and (2) publish a copy of the survey. I wish you the best with your scholarship.

Sincerely,
Tanya

On Jan 25, 2014, at 1:01 PM, Santangelo, Tanya <santangt@arcadia.edu> wrote:

Hi Shannon,
Thank you for your message. It sounds like you have a very interesting study planned. You are welcome to adapt and use our questionnaire, as you and your dissertation committee members deem to appropriate and useful. I wish you well with your research and your future career.

~ Tanya

On Fri, Jan 24, 2014 at 8:09 PM, Knight, Shannon <sknight24@liberty.edu> wrote:

My name is Shannon Knight and I am a doctoral student at Liberty University. I am currently preparing my dissertation prospectus and would like to ask to use one of your surveys in my study. I am very interested in writing my dissertation on 'the relationship between a general education teacher's perception and the use of Differentiated Instruction (DI) for students with disabilities in K-12'.

I have been leaning towards the teacher's attitudes towards students with disabilities and DI utilizing Dr. Tomlinson's Survey of Practices with Students of Varying Needs (SOP), but was concerned about the negative perceptions about "attitude" and "attitude towards students with disabilities". After I read your 2012 article, with Dr. Tomlinson, concerning teacher educators' perceptions and their use of DI practices, I was immediately drawn in.

Again, the reason I am writing you is to request your permission to use and (slightly) modify the survey that you implemented in your 2012 study. I was unable to find the original 2012 survey, so I replicated it to the best of my ability and bolded any changes to the original for your review.

If you have a hard copy of the original survey, and would be willing to share it with me, I would be appreciative. Blessings!
Sincerely,
Shannon M. Knight
sknight24@liberty.edu

Appendix H

The Liberty University Institutional Review Board has approved this document for use from June 25, 2015 to --
Protocol #2229.062515

CONSENT FORM

The Relationship between a Teacher's Identification of Learner Characteristics of Students with Disabilities and a Teacher's Use of Differentiated Instruction in Georgia Public Schools, Grades 6-12

Shannon Muller Knight
Liberty University
School of Education

You are invited to be in a research study of teachers' perceptions and differentiated instruction. You were selected as a possible participant because you are an educator in the middle or high school working in a general education classroom in [redacted]. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

Shannon Muller Knight, a doctoral candidate in the School of Education at Liberty University is conducting this study.

Background Information:

The purpose of this study is to determine if there is a significant relationship between a teacher's identification of learner characteristics of Students with Disabilities (SWD) and a teacher's use of differentiated instruction in Georgia public schools grades 6-12.

Procedures:

If you agree to be in this study, I would ask you to do the following things:

Click on the link below to proceed to the survey. The survey should take approximately 30 minutes to complete. Your participation will be completely anonymous, and no personal, identifying information will be required and/or reported.

Risks and Benefits of being in the Study:

The study has minimal risks: No study is without risk. The risks are no more than you would encounter in everyday life.

There are no direct benefits for participating in the study. Indirectly, the benefits are in the contribution to research on differentiated instruction and student learning styles.

Compensation:

There is no financial compensation for participation.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be

stored securely and only the researcher will have access to the records.

Survey Monkey will not track the participants in the survey. Any demographics provided will not be reported for identifying features in this survey. The demographics will be utilized to divide survey responses among middle and high school, as well as gender, ethnicity, race, years of experience, and highest degree earned.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Shannon Muller Knight. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at sknight24@liberty.edu. Furthermore, the dissertation chair is Dr. Keith, and you may contact her directly at dlkeith@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information to keep for your records.

By clicking on "next" at the bottom of this page, I grant the researcher permission to use the survey I will complete as part of this study

Appendix I

TEACHERS' PERCEPTIONS AND USE OF
DIFFERENTIATED INSTRUCTION PRACTICES SURVEY

Part I: Demographics

Please respond to the following demographic information by checking the appropriate boxes.

D1. What grade level(s) do you currently teach? *(Select all that apply)*

☐ 6th Grade ☐ 7th Grade ☐ 8th Grade
☐ 9th Grade ☐ 10th Grade ☐ 11th Grade ☐ 12th Grade

D2. What is your gender? ☐ Male ☐ Female

D3. What is your ethnicity? ☐ Hispanic or Latino ☐ Non-Hispanic or Latino

D4. What is your race? ☐ Native American or Alaskan Native ☐ Asian
☐ Black or African American ☐ White
☐ Native Hawaiian or other Pacific Islander ☐ Other

D5. What is your current age level? ☐ 21-25 ☐ 26-30 ☐ 31-35 ☐ 36-40
☐ 41-45 ☐ 46-50 ☐ 51-55 ☐ 56-60 ☐ 61-65 ☐ Over 65

D6. What is the highest degree you have earned/completed?

☐ Bachelors ☐ Masters ☐ Specialist ☐ Doctorate

D7. What are your years of experience in teaching? ☐ New teacher ☐ 1-5
☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ Over 30

D8. What is your level of Differentiated Instruction (DI) Preparation?

☐ I have no knowledge about DI
☐ I've heard about DI
☐ I know a little about DI but not how to implement it
☐ I had a few classes on DI, but it wasn't relevant to instruction in my classroom
☐ I have received training on DI and have implemented some of the ideas in my classroom
☐ I have received adequate training on DI, and I sometimes use it to direct my teaching
☐ I have received adequate training on DI, and I often use it to direct my teaching
☐ I have received adequate training on DI, and I use it to direct all of my teaching

Part II: Learner Characteristics

Please respond to the following questions concerning learner characteristics by checking the appropriate box.

Readiness

R1. Students in my class (es) differ significantly in relevant background knowledge.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R2. There is a strong correlation between students' background knowledge and their class performance.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R3. My understanding of variance in individual students' background knowledge impacts what/how I teach.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R4. Students in my class (es) differ significantly in basic academic skills (e.g., reading comprehension, written expression, problem solving).

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R5. There is a strong correlation between students' academic skills and their class performance.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R6. My understanding of variance in individual students basic academic skills impacts what/how I teach.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R7. Students in my class (es) differ significantly in their study skills (e.g., note taking, exam preparation, time management).

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R8. There is a strong correlation between students' study skills and their class performance.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

R9. My understanding of variance in individual students' study skills impacts what/how I teach.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

R10. Students in my class (es) differ significantly in their attitude/motivation towards class performance.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

R11. There is a strong correlation between students' attitude/motivation and their class performance.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

R12. My understanding of variance in individual students' attitude/motivation impacts what/how I teach.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

Interest

I1. Students in my class (es) differ significantly in their interests with regard to course content.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

I2. There is a strong correlation between students' interests and their class performance.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

I3. My understanding of variance in individual student interests impacts what/how I teach.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

Learning Profile

LP1. Students in my class (es) differ significantly in their preferred learning modalities (e.g., visual, auditory, or kinesthetic; active or passive; intelligence preferences).

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

LP2. There is a strong correlation between students' learning modalities and their class performance.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

LP3. My understanding of variances in individual student's learning modalities impacts what/how I teach.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

LP4. Students in my class (es) differ significantly in their preferred grouping orientations (e.g., whole class, small group, individual).

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

LP5. There is a strong correlation between students' grouping orientation and their class performance.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

LP6. My understanding of variances in individual student's grouping orientations impacts what/how I teach.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

---

Part III: Frequency of Differentiated Instruction

Differentiated Instruction *is defined as alternative instruction that changes "the pace, level, or kind of instruction provided in response to individual learner's needs, styles, or interests" (Heacox, 2012, p. 5).*
Differentiation*- "Differentiation is simply a teacher attending to the learning needs of a particular student or small group of students, rather than teaching a class as though all individuals in it were basically alike" (Tomlinson, 2000).*

Please respond to the following questions concerning frequency of Differentiated Instruction by checking the appropriate box.

Learning Environment

LE1. I create activities/assignments to develop a sense of community among students.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

LE2. I take deliberate efforts to ensure each student feels known, welcome, and respected.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

LE3. I take deliberate efforts to make myself approachable/available to students.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

LE4. I take deliberate efforts to ensure students participate consistently and equitably during class.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

LE5. I take deliberate efforts to enhance students' attitude/motivation towards course content.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

LE6. I follow up privately on behaviors or circumstances of concern (e.g., absences, low grades, conflicts between students).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

---

Content

C1. I use text materials that represent a variety of formats (e.g., textbooks, journal articles, literature).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C2. I use text materials that present content at varying levels of complexity.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C3. I allow students to select from multiple text options (e.g., read one of three).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C4. I use materials that represent a variety of formats (e.g., text, video, audio, web-based).

☐ Never – no intent to do so in the future ☐ Never –may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C5. I use text and/or other materials that present content in a variety of ways (e.g., narrative & graphic, theory to example & example to theory).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C6. I use text and/or other materials that reflect students' interests or experiences.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C7. I provide supplemental materials/resources to support students who have difficulty in understanding course content.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C8. I provide supplemental materials/resources to challenge students who master course content with minimal effort.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C9. I present course content using visual displays or demonstrations.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C10. I present course content using examples that reflect students' interests or experiences.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C11. I use strategies to support comprehension and retention of content presented in text materials (e.g., chapter outlines, end of class summaries).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C12. I use strategies to support comprehension and retention of content presented in class (e.g., lecture outlines, end of class summaries).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C13. I provide supplemental support to students who have difficulty in understanding course content (e.g., conference with student, offer a "working lunch").

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C14. I create more advanced opportunities for students who master course content with minimal effort.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

C15. I solicit student feedback to help select/adjust the content presented within a given year.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

---

Process/Product

PP1. I design activities/assignments that help students understand course content by interacting with each other.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP2. I use a variety of grouping formats during class (e.g., whole class, small group, partners, individual).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP3. I use a variety of grouping formats for assignments completed outside of class (e.g., small group, partners, individual).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP4. I allow each student to select his/her preferred grouping format (e.g., work independently or with a partner).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP5. I purposefully group students based on their levels of readiness (e.g., relevant background knowledge, academic skills).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP6. I purposefully group students based on their interests.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP7. I purposefully group students based on their preferred learning modalities.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP8. I create activities/assignments that offer format options (e.g., write a paper, create a visual, design a web page, or give a presentation).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP9. I create activities/assignments that allow each student to select a topic of personal interest.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP10. I adjust assignment deadlines in response to individual students' needs and/or circumstances.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP11. I provide supplemental support to students who have difficulty completing activities/assignments.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP12. I create enrichment opportunities for students who complete activities/assignments with minimal effort.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP13. I evaluate each student based on his/her improvement during the semester.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP14. I use three or more forms of assessment to determine course grades (e.g., paper, presentation, participation, final exam/unit test).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

PP15. I solicit student feedback to help create/adjust activities/assignments used within a given year.

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

---

Assessment

A1. I assess each student's level of readiness (e.g., relevant background knowledge, academic skills, attitude).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

A2. I assess each student's interests (e.g., future plans, areas of talent/passion).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

A3. I assess each student's learning profile characteristics (e.g., preferred learning modality, grouping orientation).

☐ Never – no intent to do so in the future ☐ Never – may be willing to do so in the future ☐ Occasionally ☐ Frequently ☐ Always

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Self-Reflection

SR1. I feel adequately prepared to respond to the academic diversity among students in my class.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

SR2. I am interested in learning more about how to respond to students' academic diversity.

☐ Strongly Disagree ☐ Disagree ☐ Unsure ☐ Agree ☐ Strongly Agree

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Adapted, with permission, from:

Santangelo, T., & Tomlinson, C. (2012). Teacher educators' perceptions and use of differentiated instruction practices: An exploratory investigation. *Action in Teacher Education*, *34*(4), 309-327.

Appendix J

Date: July 14, 2015

Sixth to Twelfth Grade General Educator

Dear Sixth to Twelfth Grade General Educator:

As a doctoral candidate at Liberty University, I would like to personally thank you for participating in this research. To reiterate, the purpose of my research is to determine if there is a significant relationship between a general education teacher's perception of learner characteristics for Students with Disabilities (*readiness, interests, and learning profiles)* and a teacher's use of Differentiated Instruction (*content, process/product*, *learning environment, and assessment*) in the general education classroom, grades 6-12. In short, I am interested in finding out if the knowledge of a student's learning styles affects if and how you differentiate instruction.

In your voluntary agreement to participate, you have confirmed that you are a certified educator and currently teach in middle or high school, grades 6-12, general education classroom, and are willing to participate in honestly completing a short survey, taking approximately 30 minutes to complete. Furthermore, your participation was completely anonymous, and no personal, identifying information was required and/or reported.

Sincerely,

Shannon Muller Knight, Ed.S
Educator/Graduate Student

Appendix K

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