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Educating Gifted Students in the Regular Classroom: Efficacy, Attitudes, and Differentiation of Instruction

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EDUCATING GIFTED STUDENTS IN THE REGULAR CLASSROOM:
EFFICACY, ATTITUDES, AND DIFFERENTIATION OF INSTRUCTION

by

DANIEL WILLIAM CALDWELL

(Under the direction of Dr. James Green)

ABSTRACT

The purpose of this quantitative study was to determine which variable, teacher self-efficacy or teachers' attitudes toward gifted students, better explains teachers' willingness to differentiate instruction for gifted students. Survey data from 341 third through eighth grade teachers were analyzed using multiple regression. Teachers' attitudes toward gifted students were measured using *the Survey of Practices with Students of Varying Needs* (short version). The *Teachers' Sense of Efficacy Scale* was used to measure teacher self-efficacy. The outcome variable, teachers' willingness to differentiate instruction for gifted students, was measured by an instrument adapted by the researcher from an instrument developed by Heacox (2002), the *Survey of Instructional Practices*. Years of teaching experience was also used as control variable.

Stepwise regression revealed that a total of 20% of the variance of the dependent variable can be explained by the combined effect of the two predictor variables and the control variable. The largest contribution to explaining the variance in differentiation practices for gifted students is contained within teacher efficacy with the second largest contribution being teacher attitudes.

This research indicated that teacher self-efficacy is a better predictor than teachers' attitudes toward gifted students when trying to predict teachers' willingness to differentiate instruction for gifted students being taught in the regular classroom. While this study found statistically significant results for both of the internal factors studied, efficacy and attitude, as predictors of teachers' willingness to differentiate instruction for gifted students, it explains only a small part of teacher's willingness to differentiate instruction for gifted students in the regular classroom.

The researcher recommends that future researchers employ the use of surveys that ask respondents to rate a list of both internal and external factors believed to influence differentiation for gifted students on how much they believe each factor influences their decisions to differentiate instruction. This method might produce a broader view of what teachers believe to be obstacles to differentiation.

INDEX WORDS: Teacher self-efficacy, Teachers' attitudes, Gifted students, Differentiation of instruction

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DOCTOR OF EDUCATION

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Summer 2012

DEDICATION

I dedicate this dissertation study to the two most important people in my life:

Carol Lee Kipp Caldwell (my wife)

Zachary Richard Caldwell (my son).

I dedicate this work to my wife who has always encouraged me throughout the past years as I worked toward my graduate degrees. You have been there for me at all times. I appreciate your willingness to carry the weight despite your taxing schedule as a school principal.

I also dedicate this work to my son who has been an inspiration to me. Your academic accomplishments have served to inspire me. I am happy that we can share our accomplishments by finishing our terminal degrees in the same year.

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First, I would like to thank Dr. James Green for agreeing to serve as chairman of my committee. You have given me direction and encouragement at every step of the way. Without your help and guidance this work would not have been completed. I will always be indebted to you for all you have done to help me accomplish my goal. A special thanks to Dr. Dawn Tysinger who served as my methodologist. You gave me the confidence that my study could be completed despite my initial lack of knowledge in the methods I desired to use. Working with you has been a pleasure. Also, I wish to thank Dr. Deborah Thomas. After over a decade and a half of knowing you, I am still proud to call you friend and fellow educator. You are truly the embodiment of professionalism in the field of education. Finally, I wish to thank all of the faculty and staff at Georgia Southern University who have made all of my graduate studies rewarding.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS.....	vii
LIST OF TABLES.....	xii
CHAPTER	
I INTRODUCTION	1
Background	2
Research Problem.....	10
Research Questions	12
Significance of Study	12
Method.....	13
Limitations and Delimitations	18
Definition of Terms	18
Summary	19
II REVIEW OF THE LITERATURE	21
The Effects of No Child Left Behind on Gifted Education.....	21
Gifted Students in the Regular Classroom	25

Differentiation Defined	29
Traditional Classroom versus Differentiated Classroom	31
Rationale for Differentiation	33
Limitations of Research on Differentiation.....	35
Differentiation for Gifted Students.....	37
Prevalence of Differentiation for Gifted	42
Other Reasons Teachers Do Not Differentiate for Gifted Students	49
Teacher Attitudes toward Gifted Students	52
Staff Development and Teacher Efficacy	59
Summary	63
III METHODS	69
Introduction	69
Research Questions	69
Research Design and Procedure	70
Limitations and Delimitations	85
Summary	87

IV REPORT OF DATA AND DATA ANALYSIS	88
Introduction	88
Finding	89
Results of Data Analysis.....	96
Chapter Summary	101
V SUMMARY, CONCLUSIONS, AND IMPLICATIONS	103
Introduction.....	103
Summary of Research Findings	106
Discussion of Research Findings	110
Conclusions	112
Implications	113
Recommendations for Future Research	114
Final Thoughts	115
REFERENCES	117
APPENDICES	129
A Survey of Practices with Students of Varying Needs	130
B Teachers' Sense of Efficacy Scale	132

C Survey of Instructional Practices134

D. Internal Review Board Permission137

E. Teacher Cover Letter and Consent139

LIST OF TABLES

	Page
Table 1: Major Studies Showing Relationships between Efficacy, Attitudes, and Differentiation	63
Table 2: Variable Description Table	76
Table 3: Frequencies of Grade Levels Taught.....	83
Table 4: Surveys Excluded from Study.....	91
Table 5: Descriptive Statistics of the Two Versions of the Survey Instrument.....	92
Table 6: Levene's Test of Equality of Error Variances (Version).....	93
Table 7: F-values, Significance, and Partial eta squared Vales of the Dependent Variables (Version).....	94
Table 8: Stepwise Regression Analysis Summary for Variables Predicting Teachers' Willingness to Differentiate for Gifted Students (N=314).....	97
Table 9: Correlation Matrix.....	98
Table 10: Descriptive Statistics of Early and Late Responders.....	99
Table 11: Levene's Test of Equality of Error Variances (Response).....	100
Table 12: F-values, Significance, and Partial eta squared Values of the Dependent Variables (Response).....	101

CHAPTER I

INTRODUCTION

It is estimated that approximately 37% of gifted education takes place in the regular classroom in American elementary and middle schools (“Program,” 2004). Many experts are concerned that gifted students are not receiving an optimal education within the regular classroom as a result of the No Child Left Behind Act of 2001(NCLB) which places emphasis on low performing subgroups within the main population. There is no focus on students who are already performing above the critical threshold. Willard-Holt (2003) has advocated that a number of differentiation strategies be employed to meet the needs of gifted students within the regular classroom. Implementation of new instructional practices is a conscious decision made by teachers (Guskey, 1988); therefore, it is important to understand the factors that may explain why some people implement new strategies while others use the same instructional strategies used prior to being exposed to newer methods. Prior research has identified various factors that influence teachers’ decisions whether or not to implement new practices such as how well the new strategy is presented when introduced in training, congruence with the teacher’s existing teaching practices, and the cost of implementation in terms of a teacher’s time and effort (Ponder and Doyle, 1977). Sparks (as cited in Guskey, 1988) proposed two additional factors that affected teachers’ decision-making: the perceived importance of the innovation and the difficulty of use of the practice.

This study investigated two factors that are suspected by researchers to impact teachers’ willingness to differentiate instruction in terms of product, process, and content for gifted students within the regular classroom: teacher efficacy and a teacher’s attitude toward gifted

students. While both of these topics have been researched in the past, it is particularly pertinent that these topics were investigated in light of the changed educational climate brought on by NCLB and the large number of students identified as gifted receiving services in the regular classroom. Multiple regression was performed to investigate the degree to which the scores on teacher efficacy scales, teachers' self-reports of the amount of differentiation they do for gifted students, and teachers' attitude scales were interrelated. By gaining insights into the human factors that influence teachers to differentiate instruction for gifted students, school administrators may better design staff development programs and promote differentiated instruction.

Background

With the implementation of No Child Left Behind Act of 2001 (20 U.S.C. § 6301), commonly referred to as NCLB, there has been an obvious focus on teaching strictly to standards, teacher accountability, highly qualified teachers teaching in their area of expertise, and closing the gaps between subgroups and the majority population (including minority students, low socioeconomic populations, and special education students). One notable flaw with the NCLB legislation is the concern for the number of students not meeting minimal learning expectations with little regard for the advancement of students who already excel beyond that minimum threshold. In a statement on NCLB, Tomlinson (2002) stated, "There is no incentive for schools to attend to the growth of students once they attain proficiency and certainly not to inspire those who far exceed proficiency" (p. 36).

Gifted in the Regular Classroom

The National Research Center on the Gifted and Talented (as cited in "Program," 2004) published estimates that approximately 36% of elementary gifted students and 37% of middle

school gifted students are educated in the regular classroom. Renzulli (as cited in Knobel & Shaughnessy, 2002) stated that gifted students can succeed in the regular classroom provided that the teachers have specialized training in teaching gifted students or that the students have access to specialists who can come into the classroom to provide assistance. Renzulli has warned however, that without the supplemental services of the gifted specialist, trying to teach gifted students in the regular classroom “always ends up being a smoke screen behind which bright kids get a few extra assignments and more work based on traditional (didactic) models of learning” (p. 4). He further explained that gifted students will be seriously under-served without “specialized personnel and differentiated learning models” (p. 4). Most gifted students are taught in regular classrooms using the same standards used to teach all of the other students (Willard-Holt, 2003). Willard-Holt went on to claim that most state standards do not challenge gifted students. She cited research that gifted students’ motivation and performance decline after prolonged exposure to an unchallenging curriculum. It is this very scenario that is most concerning in a time when schools are trimming all budgets including cutting special services such as gifted. She has advocated that a number of differentiation strategies be employed to meet the needs of gifted learners: curriculum compacting, flexible grouping, product choices, tiered assignments, and multilevel learning stations. Willard-Holt has recommended all of these strategies to meet the needs of gifted students within the regular classroom.

No Child Left Behind and Differentiation

A discussion of educating students at any level would be remiss without returning to the effects of the No Child Left Behind Act of 2001 (20 U.S.C. § 6301). Van Tassel-Baska and Stambaugh (2005) have asserted that teachers are being pressured to increase student scores as a result of the push for accountability while at the same time having to meet the needs of a

classroom that reflects ever-increasing diversity. The barriers to providing appropriate instruction affect all students, but especially the gifted. The authors listed several barriers to differentiating for the gifted, including the negative attitude of some teachers toward gifted students and the lack of state mandates that require service supports for gifted students. In a call for improved teacher training, the National Association for Gifted Students (2008) cited the following examples of research to illustrate the need for improvement:

- Out of 7300 randomly selected third and fourth grade teachers in public and private schools in the United States, 61% reported that they had never had any training in teaching gifted students. The major finding of this study is that classroom teachers make only minor modifications on a very irregular basis in the regular curriculum to meet the needs of gifted students.
- In all content areas in 92 observation days, gifted students rarely received instruction in homogeneous groups (only 21% of the time), and targeted gifted students experienced no instructional or curricular differentiation in 84% of the instructional activities in which they participated.
- Research was conducted in 12 different third and seventh-grade reading classrooms in both urban and suburban school districts over a 9-month period. Results indicated that little purposeful or meaningful differentiated reading instruction was provided for talented readers in any of the classrooms.
- Teachers and principals admitted that academically diverse populations received very little, if any, targeted attention in their schools. Teachers reported the use of little differentiation for gifted middle school students. (p. 1)

Van Tassel-Baska, Quek, and Feng (2007) stated that studies showed very few differentiation strategies are offered in the regular classroom. According to these authors, the lack of differentiated instruction is further complicated in that there is no systematic monitoring of teachers working with gifted learners in regular classrooms. “Studies consistently report that little differentiation is occurring for gifted learners in regular classrooms, a pattern that remains virtually unchanged in the past 10 years, despite efforts in professional development” (VanTassel-Baska & Stambaugh, 2005, p. 212).

Obstacles to Differentiation

According to VanTassel-Baska and Stambaugh (2005), there are major obstacles that impede educating gifted students in the regular classroom. One of the obstacles to effectively teaching the gifted is lack of subject matter knowledge. This situation is improving as provisions in NCLB call for teachers to be “highly qualified” in their discipline. A second area of concern in differentiating for the gifted in the regular classroom is teachers who possess limited classroom management skills. Tomlinson and Allan (as cited in VanTassel-Baska & Stambaugh, 2005) have stated that all staff development on differentiation should include training in classroom management skills. Another concern is the belief that many teachers have about requiring gifted students to keep pace with the rest of the class. They explained that if gifted students are not exposed to the same basic information, they will not perform on state assessments. Some teachers also cite difficulty in finding and utilizing resources, lack of planning time, and lack of administrative support for differentiating practices as other obstacles in differentiating for gifted learners in the regular classroom. While there may be validity to these and other obstacles to providing gifted services in the regular classroom, much of the problem may in fact lie in the lack of training for pre-service and practicing teachers. These

claims are in line with the research cited by the National Association for Gifted Children as presented earlier. The need for staff development may exist with both beginning and veteran teachers. Assessing the need for staff development in differentiated instruction may be vital if high teacher turnover exists since differentiation strategies are not strategies that a beginning teacher is expected to have mastered (Tomlinson, 2004). McCoach and Siegle (2007) echoed this position expressing that it is not a time for “raising the bar,” but rather a time of focus on equity and achievement. They attribute this focus to No Child Left Behind. McCoach and Siegle added that this effect on regular education teachers’ attitudes toward the gifted as a result of this change in focus is unknown.

Teacher Attitudes toward Gifted Students

Geake and Gross (2008) cited that their earlier work showed that teachers in Australia, Europe, and the United States who are opposed to special provisions for individuals who are intellectually gifted did not object to similar provisions for those possessing athletic or sports ability. Eyre and Geake (as cited in Geake & Gross, 2008) have argued that such negative attitudes endanger effective differentiation and undermine professional development efforts. In a study by Carrington and Bailey (as cited in Geake & Gross, 2008) these researchers stated that in their study of elementary and secondary pre-service teachers, studious gifted students were the least preferred of all groups when the researchers asked the prospective teachers whom they preferred to teach. Eyre and Geake further explained a possible theoretical basis for the inconsistency in attitudes toward those who have athletic and musical talents and those with intellectual superiority. Intellectual superiority can be used for individual gain and domination over others, where it is believed that athletic and musical ability benefits others. They speculated that this has primal roots that reflect individual roles within ancient tribes. Their study tested

three hypotheses. The first hypothesis was that teachers harbor negative feelings and are suspicious of gifted students. The second was that it was not the academic performance that created the suspicion of gifted students, but rather the students' articulateness and nonconformity. Geake and Gross's final hypothesis was that with staff development relating to the characteristics of gifted students, teachers' suspicions of intellectual precocity would be reduced. Pre and post surveys were given (N= 377) in conjunction with a fifty-hour training course in gifted education using a semantic differential instrument. The pre-course surveys provided evidence to support both Hypothesis 1 and Hypothesis 2. Post-training surveys showed that the optimism expressed in Hypothesis 3 was warranted. Teachers who completed the staff development in gifted education were more positive about gifted students' talents and less concerned about their social noncompliance.

A study of 81 pre-service teachers and 95 experienced teachers used the *Survey of Practices with Students of Varying Needs* (SOP) to measure attitudes teachers held toward gifted, average, and special education students. In regards to gifted students, the pre-service and experienced teachers held similar positive attitudes (Pierce & Adams, 2003). Pierce and Adams explained that the positive attitude for established teachers is a result of their years of association with gifted students. The positive attitude of the pre-service teachers was attributed to the pre-service teachers' perceptions that all students deserve an education tailored to their individual needs. Pierce and Adams extended their claim to state that they did not find the negative attitudes previously found by other researchers. As optimistic as these results seem, they do not tell the whole story. Pierce and Adams concluded their discussion of the findings by pointing out that two other studies, one by Tomlinson, Tomchin, and Callahan in 1994 and another by

Hootstein in 1998, showed that pre-service teachers and experienced teachers may have positive attitudes toward diverse learners, but it does not translate into a change in classroom practice.

If attitude toward gifted learners may be a poor indicator of the actual classroom experiences provided by teachers of gifted students within the regular classroom, how can administrators determine what actual practices are being employed and if teachers are indeed differentiating for diverse learners? Pierce and Adams (2003) stated that teachers' behaviors are a truer reflection of teacher attitudes as reported on self-report scales; therefore, the only method to reconcile the discrepancies between what is being reported as classroom practice and actual classroom practice is the use of classroom observations. Classroom observations can be costly in terms of administrators' time. The work of Koziol and Burns (1986) have concluded that when teacher self-report instruments are designed to test a limited time period over specific practices, teacher self-reports are significantly correlated with student reports and observer reports.

Staff Development and Efficacy

In an effort to determine what changes have taken place in classroom practices over a ten-year time frame, Westberg and Daoust (2003) replicated the classroom practices study originally performed by Archambault et al. in 1993. Archambault's study covered all geographic regions within the continental United States. In the Archambault study, it was found that regardless of the geographical region, only minor modifications were being made for gifted third and fourth graders in regular classrooms. There was also no variation depending on the type of community studied. Westberg and Daoust limited their replication study to two states, one in the South and one in the Midwest. Despite higher levels of professional development than the

teachers in the Archambault study, there were no significant differences in teacher classroom practices.

In their conclusion, Westberg and Daoust (2003) surmised that despite the teachers in their study having more professional development than those studied by Archambault in 1993, the support and encouragement from administrators had not increased. There were few if any follow-up experiences for teachers after they had received the initial training. Westberg and Daoust also cited a study conducted at the University of Virginia by Moon, Brighton and Callahan in 2003. In that study, researchers found that teachers reported spending a large amount of instructional time in preparation for state-mandated tests and that high stakes testing may have a negative impact on differentiation of instruction for high ability students (Moon et al. 2003).

According to studies cited by Henson (2001), both pre-service and experienced teachers with high efficacy tended to experiment with teaching materials and teaching methods more than teachers who were less efficacious. Teacher self-efficacy is defined as a teacher's belief that they have the ability to impact student achievement even in situations involving challenging and unmotivated students (Tschannen-Moran & Hoy, 2001). Self-efficacy beliefs are primary to behavioral change (Henson, 2001). Teachers with higher efficacy are willing to change behaviors. This could explain why some people implement strategies learned in staff development workshops while some continue using the same instructional strategies used prior to the workshop, despite being exposed to newer methods and strategies.

Research Problem

According to studies cited by Henson (2001), both pre-service and experienced teachers with high efficacy tended to experiment with teaching materials and teaching methods more than teachers who were less efficacious. Teacher self-efficacy is defined as a teacher's belief that they have the ability to impact student achievement even in situations involving challenging and unmotivated students (Tschannen-Moran & Hoy, 2001). Self-efficacy beliefs are primary to behavioral change (Henson, 2001). Teachers with higher efficacy are willing to change behaviors. This could explain why some people implement strategies learned in staff development workshops while some continue using the same instructional strategies used prior to the workshop, despite being exposed to newer methods and strategies.

Henson's assertions were based on studies by Allinder (1995), Guskey (1988), and Stein and Wang (1988). After a more detailed investigation into these works cited by Henson, caution should be used in generalizing her findings to other populations. Guskey (1988) admitted that his study only dealt with one particular innovation, mastery learning. Guskey explained that the implementation of some instructional innovations requires only minor changes in instruction while others require significant changes including new curriculum and different instructional approaches. The changes required to implement and maintain this type of program of mastery learning requires only slight changes in the instructional procedures used by most teachers, according to Guskey. Similarly, the study by Allinder (1995) dealt with a single innovation, formative assessment. The ability to generalize the study to other situations was further limited based on sample size (N=19) and the single population studied, special education teachers. The Stein and Wang (1988) study was limited for two of the same reasons as the aforementioned

studies: sample size (N=14), and that it too is a single population studied (special education teachers).

Henson (2001) stated that teachers with high efficacy tend to experiment more with teaching materials and teaching methods. Henson also asserted that self-efficacy beliefs are primary to behavioral changes. Given the limitations of the studies on which these claims are made, there is not enough evidence to show that Henson's claims will generalize to teachers of gifted students using multiple instructional innovations (various differentiation strategies), especially given the motivation to spend more time raising the achievement levels of student subpopulations such as special education and minority students as mandated by NCLB.

Contradictory to the findings of Henson is a study by Westberg and Daoust (2003) that revealed teachers who have undergone more staff development show no increase in the use of differentiation strategies for gifted learners. Another human factor with conflicting studies is teachers' attitudes toward gifted students. Some studies point out that attitudes are not necessarily predictors of classroom practice (Tomlinson, Tomchin, & Callahan, 1994; Hootstein, 1998), and yet more recent researchers, Eyre and Geake (as cited in Geake & Gross, 2008), contend that negative attitudes may endanger effective differentiation and undermine professional development efforts. Also recent is the work of Van Tassel-Baska and Stambaugh (2005). They included the negative attitude of teachers toward the gifted as a major barrier to providing appropriate instruction to gifted students. There is disagreement on the effects of teacher attitudes and student achievement.

Research shows a conflict between how teacher self-efficacy should relate to teachers' classroom practices. What we know about teachers' attitudes and practices seems to be changing with the implementation of No Child Left Behind. What has not been clearly delineated is the

correlation between teacher efficacy and teachers' willingness to differentiate for gifted students as compared to the correlation of teachers' attitudes toward gifted students and teachers' willingness to differentiate for gifted students. Which of the two factors, efficacy or attitude, is more predictive of student achievement?

Research Question

In an attempt to understand the relationships between teacher efficacy and attitudes toward gifted students and the role these factors have on teachers' willingness to differentiate for gifted students, the following question must be answered:

What relationships exist among teachers' sense of self efficacy, teachers' attitudes toward gifted students, and teachers' instructional differentiation practices for the gifted?

Significance of Study

In recent years, differentiated instruction has been one of the most popular topics taught in staff development courses. The teachers in the Westberg and Daoust study of 2003 had more staff development than those studied by Archambault et al. ten years earlier, and yet there was no significant changes in teacher classroom practices. The goal of staff development is to educate and change teachers' beliefs in an attempt to bring about changes in teachers' behaviors. Specifically, the goal of staff development in differentiated instruction for gifted learners is to change those human factors (knowledge, skills, and beliefs) that will bring about changes in classroom practices geared toward differentiating instruction to better serve gifted learners. To design staff development training that has the greatest impact on classroom practices, there is a need to know the relationship between the human factors (efficacy and attitude) to the expected behavioral changes of the participants once they return to the classroom. Given that teacher self-

efficacy and attitude have shown promise as areas worthy of past research in attempts to explain teacher practice, it logically follows that a study that gives the relationship of teacher self-efficacy to classroom practice, the relationship of teachers' attitudes to classroom practice, and the predictive value of efficacy and attitudes as predictors of desired classroom practices, would be of great value. This study is especially relevant given the recent changes in instructional focus brought about by the No Child Left Behind Legislation (20 U.S.C. § 6301).

Method

Previous studies suggest that there may be a relationship between teachers' attitudes toward gifted students and teachers' willingness to differentiate instruction for those gifted students. Previous literature also suggests that teachers with higher self-efficacy are more prone to experiment with new materials and teaching techniques, and thus may influence teachers' willingness to differentiate instruction. Given these two relationships, the question arises whether there might be additional relationships if all of the constructs were examined together. Accordingly, a quantitative study was employed for this investigation. Further, given that there are possibly two variables, teacher attitudes and teacher efficacy that may be related to a single dependent variable, multiple regressions was employed for this study (Creswell, 2009).

Setting and Participants

The population for this study included elementary and middle school academic teachers who serve gifted students in the regular classroom. Because it was not practical to survey all teachers in the population, the accessible population was defined as teachers who were teaching in the 18 school systems served by Georgia's First District Resource Educational Service Agency (RESA) at the time this study was conducted. An estimate made by reviewing school websites indicated that there were approximately 2,000 academic teachers teaching language

arts, math, science, and/or social studies in elementary and middle schools within the First District RESA. Permission to survey the teachers was requested via the superintendent of each system. Given an estimated rate of permissions granted of 50 percent, the sample population was reduced to approximately 1,000 teachers, based on the counties that gave permission. Given an estimated response rate of those solicited to serve as participants in the study of 60 percent (Asch, Jedrzewski, & Christakis as cited in Hoonakker & Carayon, 2009), the sample was reduced to approximately 600. Not all teachers teach gifted students as some schools pull gifted students in some subjects to be taught by gifted specialists in homogeneously mixed classrooms. While there was reason to believe that state budget cuts had reduced the number of gifted specialists, it was not possible to predict what percentage of academic teachers would have heterogeneously mixed classrooms with gifted students as part of that mix at the time the study was conducted. Using the estimates of Van Tassel-Baska (as cited in "Program," 2004), it was anticipated that approximately 37 percent of those surveyed would be teaching gifted students in a regular classroom setting, which would yield approximately 222 returned surveys from teachers who meet the desired criteria of the population under study.

Procedure

Three instruments were included as part of the survey package. The first instrument was used to measure the attitudes of teachers toward gifted students. *The Survey of Practices with Students of Varying Needs* (SOP) was developed by a group of researchers from the National Center on the Gifted and Talented at the University of Virginia (Tomlinson et al., 1995). For the purposes of this study, only the questions pertaining to gifted students from part one of the SOP survey (Appendix A) were used. This instrument uses a Likert-like scale with five choices representing the following: strongly agree, agree, disagree, strongly disagree, and don't know

how you feel. In their study using the SOP to survey both experienced teachers and pre-service teachers, Pierce and Adams (2003) reported a Cronbach's alpha coefficient of .87 ($p < .01$).

The second instrument used as part of this study was the *Teachers' Sense of Efficacy Scale* (TSES) developed by Tschannen-Moran and Hoy (2001) at Ohio State University. This instrument is sometimes referred to as the *Ohio State Teacher Efficacy Scale* (OSTES). This instrument is designed to measure teachers' beliefs that they can positively influence various outcomes within the classroom. Factor analysis shows three moderately correlated factors: efficacy in student engagement, efficacy in instructional practices, and efficacy in classroom management. The 12-item short form (Appendix B) was used for this study to keep the length of the questionnaires short as possible in an effort to increase the response rate. While the authors have recommended that the full 24-item scale be used with preservice teachers, no cautions have been given for experienced teachers. This instrument uses a Likert scale with nine choices ranging from "nothing" to "a great deal". The responses represent the degree to which teachers believe they can impact factors related to student learning. The total score was used for data analysis purposes. The Cronbach's alpha for the long form is .94 while the Cronbach's alpha for the short form is .90.

The final instrument used was a survey of instructional practices used to measure the degree to which teachers differentiate their instruction to accommodate the learning needs of gifted students. This instrument was adapted (with permission) from the *Survey of Instructional Practices* (Heacox, 2002) (Appendix C). The survey was revised to specify differentiation for gifted students. The survey is currently used in a more general context to include students of all abilities. Since validity and reliability data are not available for this instrument, face validity was established by a panel of experts from the fields of teacher education and gifted education. The

ease of use and understandability of the instrument was refined using a pilot test of eight teachers who completed the instrument and suggested ways to improve it. The Heacox *Survey of Instructional Practices* uses an analog scale, thus it does not show numerical or graduated markings. The lack of graduated markings may help the participant feel freer to make choices without trying to give what they believe to be acceptable responses. The same design was used for the survey of practices used in this study. A template that superimposes the calibrations on the analog scale was used to assign quantitative values to each response. Values fell between zero and nine.

These three survey instruments along with a limited number of demographic questions made up a four page questionnaire booklet. A cover letter that explains the purpose of the study, importance of the study, and the assurance of confidentiality for the participant was also included. Approval by the Institutional Review Board of Georgia Southern University was obtained prior to the execution of this study. Permission to use and/or modify the survey instruments used in this study was also obtained before data were collected.

Participants were notified by e-mail that a survey package had being sent to them via their school address. Teacher names and school addresses were obtained from school web sites. A survey of school web sites revealed that at least 80 percent of schools in the First District RESA have web sites that list teachers by grade level and subject taught. Where a direct e-mail link was not available, it was often possible to predict the e-mail address using the standard e-mail address protocol used throughout the state of Georgia for teachers and administrators. In cases where the e-mail address was not obtained, direct mailing was used to notify the teacher. An attempt was made to enlist the support of the director of gifted services in each school district to aid in the distribution of the survey packets. Assistance from the personnel at the First District

Regional Educational Service Area office was requested to aid in the procurement of the names and contact information for the directors of gifted education in each school district. Survey packets were mailed to school contacts or directly to the teachers within ten days of initial notification.

A list containing the individuals surveyed along with the corresponding identification numbers was maintained by the researcher in order to track response rates. However, confidentiality of participants was maintained at all times during the investigation. As the surveys were returned, the identification number was clipped from the survey as the survey was checked off as having been received. By removing the identification number from the survey instrument, confidentiality has been ensured. All surveys and list of participants will remain stored in a locked file cabinet in which only the researcher has access. Follow-up requests for outstanding surveys were made three weeks after the initial mailing date.

Data analysis

Data from each participant was treated as an individual case and was entered into SPSS by the researcher. The total score on each instrument was used as measures for the three variables. Multiple regression was conducted to determine what relationships exist between the independent variables - teacher-efficacy, teacher attitude toward gifted students - and the dependent variable - teacher willingness to differentiate instruction for gifted students. This method of analysis allows researchers to look at the effects that each of the independent variables has on the dependent variable separately as well as the combined effect the independent variables have upon the dependent variable. This technique also allowed the researcher to test for covariance among the independent variables, teacher efficacy and teacher attitudes toward gifted

students. Multiple regression was not only an appropriate approach for this study, it is the most widely used statistical technique used in the social sciences (Allison, 1999).

Limitations and Delimitations

A limitation to this study is the use of self-reports in the collection of data. It may have been that teachers had concerns about their responses given the sensitive nature of the beliefs and behaviors being surveyed: self efficacy, attitude toward a student population, and teaching behavior (differentiation). Assurances of confidentiality may not have been enough to insure honesty from the respondents. There was also the chance that teachers may have interpreted some items in the survey differently from what the researcher thought he was asking. This was most likely on the *Survey of Teacher Practices* since it was modified from a scale that measured differentiation of instruction in a more general context.

Another factor that limits the results of this study from being generalized to other populations is the use of convenience sampling and the corresponding small sample obtained. The decision to limit the scope of the study was made in order to create a sample to which the researcher had reasonable access.

Definition of Terms

The following special terms will be used with frequency, therefore definitions are provided to add clarity.

Differentiation of instruction

According to Heacox (2002), “Differentiating instruction means changing the pace, level, or kind of instruction provided in response to individual learner’s needs, styles, or interests” (p. 5).

Differentiation of instruction involves modifications of content, product and process (Tomlinson, 2004).

Gifted Students

In this study, gifted students are those students who meet the guidelines set forth in the official code of Georgia. These students have been identified as having exceptional ability, achievement, and/or creativity (“Resource,” 2009).

Homogeneous Classrooms

Homogeneous classrooms are those that contain a group of students of similar abilities. This term is use to contrast heterogeneous (regular) classrooms that contain students with diverse abilities.

Teacher Self-efficacy

Teacher self-efficacy refers to a teacher’s belief that they have the ability to impact student achievement even in situations involving challenging and unmotivated students (Tschannen-Moran & Hoy, 2001).

Summary

Studies involving the effects that teacher attitudes toward gifted students and teachers' self-efficacy beliefs have been performed. Studies have also been performed on how each of these factors may affect teachers' willingness to differentiate instruction for special populations.

Studies dealing with both teachers' attitudes toward gifted students and teacher efficacy have primarily been performed using pre-service teachers. What had not fully been explored was how differentiation of instruction for gifted students is impacted by both teacher efficacy and teacher attitudes toward gifted students in heterogeneously grouped classrooms taught by experienced teachers. Therefore, this study explored the impact that teacher efficacy and teachers' attitudes toward gifted students have on experienced teachers' willingness to differentiate instruction for gifted learners. The results of this study may shed light on factors that influence teachers' decisions whether to differentiate instruction for gifted learners. Insights into these factors may in turn be employed by those who plan staff development on differentiated instruction.

This study used the technique of multiple regression. Three survey instruments were administered to experienced teachers within Georgia's First District RESA. Teacher efficacy and teacher attitudes toward gifted students were measured using existing instruments. To survey teachers' differentiations practices with gifted students, an instrument used to measure general differentiation practices was modified to address the practice of differentiating specifically for gifted students. This instrument was reviewed by three professors of teacher education and/or gifted education for face validity. The survey was then piloted using eight experienced elementary and middle school teachers who then were removed from consideration as participants in the final study. All statistical analysis including covariance of the independent variables and internal consistency of the modified survey was performed using SPSS statistical software.

CHAPTER II

REVIEW OF THE LITERATURE

This review explores the relevant literature involving what is currently known in regards to the effects of No Child Left Behind on gifted education, the role of differentiated instruction on teaching gifted in the regular classroom, factors that affect teachers' ability to differentiate instruction in general, and ultimately two human factors that may be predictors of teachers' willingness to differentiate instruction for gifted students: teachers' attitudes toward gifted students and teacher self-efficacy.

The Effects of No Child Left Behind on Gifted Education

Most gifted students are being educated within the regular classroom (NAGC, 2009; Sisk, 2009) by teachers who are not equipped to address their special needs (NAGC, 2009). Sisk adds that all too often these regular classroom teachers are overly concerned with scores on state-mandated standardized tests. Sisk explained that test preparation involves an over-reliance on practice and review using released test items from old tests. Teachers' concerns with test scores are the result of the threat of their school being imposed with sanctions if their school does not make Adequate Yearly Progress (AYP) as outlined in the No Child Left Behind Act of 2001 (20 U.S.C. § 6301) (NCLB). The number of gifted students being educated in the regular classroom has risen significantly since 2004 when the percentage of gifted children educated in regular classrooms varied between 30-37% depending on the level of education: elementary, middle, or high school ("Program," 2004).

In a 2007 article published in *The Washington Post*, Goodkin and Gold warned that the overwhelming focus to bring students to a level of minimum proficiency has created an over-

reliance on educational approaches that are inappropriate for high-ability students. Goodkin and Gold explain that basic lessons designed for low-achievers have affected gifted students by destroying their interest in learning. The problem of focusing on children meeting minimum proficiency at the expense of the higher-ability students was reported in *The Wall Street Journal* in 2004. In *The Wall Street Journal* article, the author, Daniel Golden, explained that the newly enacted NCLB legislation imposed sanctions on schools that performed poorly. Those sanctions could include schools to pay for outside tutors and/or allowing parents to send their children to other higher performing schools. The impact on gifted is that the NCLB does not address high performers, only those students who do not meet minimum proficiency. Golden further explained that efforts to assure that all students meet the minimum achievement threshold have resulted in resources once targeted to high-ability students being reallocated to programs that address the performance of students in danger of not passing the standardized tests used to measure compliance with NCLB.

Tomlinson (2002) weighed in early on the effects of NCLB on gifted students when she stated that there was no incentive for schools to attend to the needs of students who had already met proficiency. She explained that the nation's attention and resources were being directed toward non-proficient students in an attempt to systematically move them toward proficiency. Tomlinson noted that our nation has a history of trying to balance two basic beliefs: equity and excellence. She has argued that, while trying to ensure equity, NCLB has focused on baseline performance which will not promote maximum growth – only minimal performance (Tomlinson, 2002). Willard-Holt (2003) added that most state standards do not intellectually challenge gifted students. Willard-Holt encouraged that standards do not have to lead to standardization and that

while gifted students may spend less time mastering given standards, they in turn have the opportunity to address the standards in greater depth.

While it has become commonplace to attach the lack of rigor and challenge for gifted students to NCLB, it may be an unfair assessment. A study by Gentry, Rizza, and Owen in 2002 addressed the question of challenge and choice for gifted students in both middle ($N = 64$) and elementary ($N = 91$) school classrooms. They studied not only the difference in students' perceptions in regard to challenge and choice; they also addressed the differences of those perceptions among different classroom situations: gifted students in magnet schools for gifted, gifted students in regular classrooms, and non-gifted students in regular classrooms. In this study, the researchers desired to explore the differences between students' perceptions of what is happening in the classroom with self-reports of teachers as to their classroom practice. Gentry, Rizza, and Owen believed the addition of student data was an important variable given the amount of research done using only teacher self-reports.

The "*My Class Activities*" (MCA) survey was used to measure students' perceptions of challenge and choice. This instrument developed by Gentry and Gable in 2001 also measures interest and enjoyment by measuring students' attitudes toward their learning experiences. The "*Classroom Practices-Teacher Survey*" (CP-TS), developed by Archambault et al., (1993), was used to measure teachers' perceptions of how often they provided challenge and choice. There was no significant correlation between the students' perceptions of being provided challenge and the teachers' perceptions of providing challenge at either the elementary school level ($r = .062$, $p = .564$) or the middle school level ($r = .044$, $p = .734$). There was also no significant correlation involving middle school students' perceptions regarding choice when compared to their teachers'

self-reports ($r = .148$, $p = .248$). There was, however, a significant positive relationship at the elementary level in the choice comparison ($r = .276$, $p = .001$).

Since it was found that the two dependent variables, challenge and choice, were moderately correlated (.36 for elementary students and .44 for middle school students) the variables were ultimately analyzed as composite variables. When looking at the relationships between group makeup (gifted in magnets, gifted in regular classrooms, and non-gifted students in regular classrooms) and the combined dependent variable made up of challenge and choice, a significant relationship was found. It was found that the large sample size produced a significant result, but further investigation revealed a trivial effect size. At the middle school level, there was an overall significant effect for challenge and not choice based on group makeup.

While the combined sample, elementary and middle, included 4,654 students including 383 gifted students served in regular classrooms, 2,468 nongifted students in regular classrooms, and 893 gifted students served in magnet schools, Gentry, Rizza, and Owen still cautioned against over generalizing their findings. The authors warned that data were collected from only two magnet schools. Another concern was that there may have been a variation between the percentages of identified gifted as a result of differences in identification criteria in each of the districts from which the sample was obtained. A final concern involved the interpretation of the data in that the items from the student survey were not identical to those on the teacher survey.

While there was a significant difference in the level of challenge for gifted students who receive their instruction in magnet schools designed to serve gifted students, we see no significant difference at either the elementary or middle school level for gifted students in the regular classroom versus their non-gifted counterparts being instructed in the same classroom.

This is also true in terms of choice, both at the elementary and middle school level. The lack of significant difference between gifted and non-gifted students in the regular classroom in their perceptions of challenge and choice being given brings to question the degree of differentiated instruction for gifted students in the regular classroom. It is also questionable as to how much differentiation of instruction is being practiced in regular classrooms given the small correlation between what students perceive in regards to challenge and choice as compared to their teachers. While NCLB has been accused of being a major contributor to the neglect of gifted students in the regular classroom, at least according to the results of this study, there may be some question as to how much teachers have been meeting the needs of gifted students in regular classrooms before NCLB. The data for this study were gathered pre-NCLB from 1996 through 1998.

Gifted Students in the Regular Classroom

In 2004, Adams-Byers, Whitsell, and Moon of the Gifted Education Resource Institute at Purdue University performed a study that also investigated the perceptions of gifted students, this time in regards to the academic and social effects that occur when students are grouped homogeneously versus heterogeneously. The authors reported that overall, the students (N = 44) believed that they benefited more from homogeneous grouping, but they had mixed opinions when asked about social benefits. This study was conducted using a mixture of oral interviews (N = 19) and the remaining participants were surveyed using open-ended written questionnaires (N = 25) that asked the same questions used in the oral interviews. The researchers combined the two data-collection methods for analysis. They concluded that gifted students should be offered a mixture of homogeneous grouping and heterogeneous grouping options.

The study published by Gentry, Rizza, and Owen in 2002 revealed some significant differences in gifted students being served in regular classrooms versus those served in gifted magnet schools. The Adams-Byers, Whitsell, and Moon study in 2004 indicated benefits of both homogeneous and heterogeneous grouping. To the other extreme, Bernal (2003) claimed that when inclusion is practiced, gifted students do not receive an appropriate education, much less an education geared to meet their advanced abilities. To return to the long-running debate regarding where gifted students should be educated is beyond the scope of this study. The trend is that more and more gifted are being educated within the regular classroom. This trend is likely to continue as a result of NCLB and/or the general economic downturn.

Despite the trend to place more gifted students in heterogeneous classrooms, some of the concerns expressed by Bernal (2003) are still at the forefront of those against heterogeneous grouping. Bernal claimed that gifted students are underserved in regular classrooms, because teachers make no or few modifications to the instruction to address the needs of gifted students. He stated that it is the lack of differentiated or individualized instruction that makes inclusion inappropriate for gifted students. He stated that for gifted students to receive appropriate services in mixed-ability classrooms, all teachers would be required to be trained in methods of teaching gifted students. He further pointed out that with teacher turnover, training would be expensive as it would have to be accomplished annually.

Bernal continued by discussing the pull-out model of delivering gifted services. While he referred to this as a model used at elementary schools, at the time of his writing, the pull out model was still used in nearly one-third of middle schools (32% in 2004) ("Program," 2004). He stated that the pull-out model has the benefit of having designated specialists who not only teach, but also over-see that other gifted program-related tasks are completed. According to Bernal,

these coordinating activities performed by the gifted specialist prevent teachers from inadvertently or deliberately making it difficult for gifted students to participate in gifted programs. Bernal advocated that, at a minimum, gifted students must be clustered in a regular classroom under a specialized teacher who wants to work with gifted students. In regard to the belief that regular classroom teachers should be able to teach gifted students in regular classrooms, Bernal says that this belief is naïve and offensive to the teachers who are forced to work with gifted students despite their desire not to. Renzulli (as cited in Knobel & Shaughnessy, 2002) agreed with Bernal. Renzulli has argued that the gifted will be seriously underserved if there are not specialized personnel and differentiated learning models. In regard to within-classroom differentiation, Renzulli said that the concept is sound for general education, but for gifted students, it ends up being a situation where the gifted students get a few extra assignments and more work based on traditional models of learning.

In 2007, Rogers wrote a synthesis of the literature from 1861 to date in which she highlighted five lessons suggested by past research on gifted and talented:

Lesson 1: Gifted and talented learners need daily challenge in their specific areas of talent (p. 383).

Lesson 2: Opportunities should be provided on a regular basis for gifted learners to be unique and to work independently in their areas of passion and talent (p. 385).

Lesson 3: Gifted Students should be provided various forms of subject-based and grade-based acceleration as their educational needs require (p. 386).

Lesson 4: Gifted students should be provided opportunities to socialize and to learn with like-ability peers (p. 388).

Lesson 5: Gifted students should receive instructional delivery for each specific subject area that is differentiated in pace, amount of review and practice, and organization of content presentation (p. 390).

These lessons agree with several of the points and concerns already cited (Tomlinson, 2002; Gentry, Rizza, & Owens, 2002; Adam-Byers, Whitsell, & Moon, 2004; Bernal, 2003; and Renzulli as cited in Knobel & Shaughnessy, 2002). Rogers pointed out that even teachers who wish to implement these research-based practices for gifted learners will have to rethink many of their previously held beliefs. According to Rogers, they will have to be committed to developing the full-potential of all learners, including the gifted. To provide the type of instruction indicated in the “five lessons,” teachers will have to figure out if and how they can manage in heterogeneous classrooms. Rogers stated that some form of student grouping will need to be utilized to appropriately differentiate for gifted students. She elaborated by saying that each school system must identify the grouping options best suited for their system based on the learners they have, the attitudes of teachers about gifted learners, and the attitudes of administrators and the community toward the possible grouping options. Rogers further explained that the successful implementation of a plan to address the needs of gifted learners lies in the comprehensiveness and efficacy of gifted education training provided to regular and gifted resource teachers.

Meeting the needs of our nation’s three million gifted students, most of whom are educated in the regular classroom (NAGC, 2009), through the use of differentiation of instruction alone is questionable. Sisk (2009) has stated that without professional development and a willingness to address the needs of gifted students on the part of the teacher, it is a challenge for regular classroom teachers to effectively differentiate given the call for

accountability that accompanied the implementation of NCLB. The need for professional development is further highlighted in that only five states of the 45 responding to a National Association for Gifted Children's survey require training in gifted and talented education for pre-service teachers (NAGC, 2009). Furthermore, 36 states do not require teachers to have any gifted education training during their careers (NAGC, 2009). Three of the remaining four states require in-service credits, while the final state requires continuing education units. With more gifted students being educated in regular classrooms, the question is no longer if within-classroom differentiation is sound only for general education, but rather how to assure that all classrooms are differentiated for the learners within each classroom.

Differentiation Defined

According to Tomlinson (2005), "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" (p. 14). In material copyrighted in 1999 and later published in her book *The Differentiated Classroom: Responding to the Needs of All Learners*, Tomlinson (2005) referred to the adjustments to teaching and learning as modifications of content, process, and products based on students' readiness, interests, and learning profiles. Tomlinson defined "content" as what is taught, "process" as the activities through which students come to understand what is taught, and "products" as how a student shows and extends what he or she has learned. By 2000, Tomlinson had also included a fourth dimension to be modified – the learning environment, defined as the way the classroom works and feels (Tomlinson, 2000). The ability to be proactive is enhanced by ongoing formative assessments that indicate a student's readiness for a topic as well as summative assessments that

indicate mastery. To aid in the process of differentiation, a teacher must rely on a wide range of instructional and management strategies (Tomlinson, 2005).

Renzulli (as cited in Dinnocenti, 1998) used the same four dimensions or aspects of differentiation while also addressing the teacher. In addition to defining differentiation, Renzulli included goals of differentiation. Renzulli's goals are as follows:

1. Content – put more depth into the curriculum through organizing the curriculum concepts and structure of knowledge;
2. Process – use many instructional techniques and materials to enhance and motivate learning styles of students;
3. Product – improve the cognitive development and the students' ability to express themselves;
4. Classroom – enhance the comfort by changing grouping formats and the physical area of the environment;
5. Teacher – use artistic modifications to share personal knowledge of topics to curriculum as well as personal interests, collections, hobbies, and enthusiasm about issues surrounding content areas.

Heacox (2002) also listed a set of goals of differentiation:

- To develop challenging and engaging task for each learner.
- To develop instructional activities based on essential topics and concepts, significant processes and skills, and multiple ways to display learning.

- To provide flexible approaches to content, instruction, and products.
- To respond to students' readiness, instructional needs, interests, and learning preferences.
- To provide opportunities for students to work in varied instructional formats.
- To meet curriculum standards and requirements for each learner.
- To establish learner-responsive, teacher-facilitated classrooms.

While Heacox's goals do not in all cases specifically address each dimension of differentiation as do Renzulli's, words and phrases such as "teacher's role as a facilitator" (p. 11), "modification of content, process, and products" (p. 10), and "varied instructional formats" (p. 1) obviously address the same aspects of differentiated instruction referred to by Renzulli. Within the same work, Heacox (2002) referred specifically to the five areas addressed by Renzulli: content, process, product, classroom, and teacher.

Traditional Classroom versus Differentiated Classroom

In her book, *The Differentiated Classroom: Responding to the Needs of All Learners*, Tomlinson (2005) presented a chart contrasting the characteristics of the traditional classroom with those of the differentiated classroom. These characteristics address grouping practices, a variety of materials, the use of assessing students using the concept of multiple intelligences, interest-based learning choices, teacher as facilitator, multiple assignments, time used flexibly in accordance with student need, and planning instruction based on student need, among others. The chart presented by

Tomlinson contrasted the traditional classroom with the differentiated classroom by presenting seventeen pairs of descriptions. Tomlinson's presentation has succinctly contrasted the learning environment typically found in the traditional classroom with the differentiated classroom. Further, Tomlinson suggested that this chart can be thought of as a continuum and that the contrasting descriptions represent the extremes. Most teachers fall somewhere between the two extremes. She further explained that by visualizing the pairs as a continuum a teacher can perform a self-assessment by placing an "X" on the line where they estimate their current practice falls.

Heacox (2002) presented seventeen pairs of contrast between the traditional classroom and a differentiated classroom on continuums in what she presented as her *Classroom Practices Inventory*. While the aspects addressed in the Heacox *Classroom Practices Inventory* use slightly different terminology than that used by Tomlinson, the aspects addressed show much similarity: teaching based on students' learning needs, use of informational resources, choice of activities, varied pace of instruction based on student needs, different activities based on needs and learning preferences, preassessment, choice of product, etc.

Despite variations in terminology, we find that Tomlinson, Renzulli, and Heacox share much common ground. There is much overlap when comparing the basic dimensions addressed in the writings of all three. There is also overlap in the goals of differentiation as outlined by both Renzulli and Heacox. Most striking are the similarities found in the descriptions of traditional classrooms versus differentiated classrooms as described by Tomlinson and Heacox. While each of these contemporary researcher/authors has refined the concept of differentiation, it should be

noted that differentiation is not a new concept. In 1953, the entire issue of *Educational Leadership* was dedicated to differentiated instruction including articles addressing the needs of “slow learners” (Engel, 1953) and “gifted students” (Freese, 1953).

Rationale for Differentiation

According to Hall (2002) the role of differentiated instruction is to maximize student growth and success by meeting the student where they are in terms of background knowledge, readiness, language, interest, and preferences in learning. He continued by explaining that it is a process approach to teaching and learning that is designed for students with different abilities learning in the regular classroom. Hall claimed that differentiated instruction is lacking empirical validation, but rather is a compilation of theories and practices. Hall referred to Vygotsky’s (as cited in Hall, 2002) zone of proximal development (ZPD) or the optimal learning range for a student. Vygotsky defined the zone of proximal development as the difference between the level where a student can perform problem solving independently and the level where a student can perform with guidance from an adult (as cited in Harland, 2003). Tomlinson (2000) also cited Vygotsky when referring to student readiness levels of elementary students in a discussion of differentiation of instruction in the elementary grades. In addition to readiness, Tomlinson included interests, based on the work of Csikszentmihalyi (as cited in Tomlinson, 2000), and learning profiles based on the work of Sternberg, Torff, and Grigorenko (as cited in Tomlinson, 2000).

More specific to the needs of gifted students, Passow (as cited in Dinnocenti, 1998) stated that in order for gifted students to develop their talents, differentiation is essential. Dinnocenti continued by explaining that educators of gifted students must develop and utilize the five dimensions: content, process, product, classroom, and teacher in order to meet the needs of highly capable learners. Tomlinson (1997) argued that there is only one answer to the question of whether the needs of the gifted can be met in the regular classroom. She said that as long as regular classrooms are the mainstay of public education, we must meet the needs of the gifted in those classrooms, since it is where they receive the majority of their education. She reinforced this assertion by saying that if the needs of gifted learners are not met in the regular classroom, it must be realized that public schools are only serving these students a small portion of the time. These assertions are supported by Burns et al. (2002) who, as part of The National Research Center for the Gifted and Talented, desired to infuse gifted education pedagogy into the regular classroom, because they know that when services for gifted students do exist, they are usually only part-time programs.

Smith (2007), a former school superintendent and current vice president at The College Board, argued that a rigorous instructional program will accommodate the needs of all students. Smith asserted that it is a “basic truth that what is good for one is good for all” (p. 2). In response to the position taken by Smith, Kettler (2007) called Smith’s comments “ill-informed” and contradictory to education research. Kettler’s primary argument is with the concept that differentiated instruction that meets the need of a student working years above his grade level is not the same

differentiation needed for a struggling student. McIntosh (2007) also responded to Smith, commenting that Smith has offered no evidence to support his claims that “what is good for one is good for all.” He said that the concept of differentiation contradicts the notion that what is good for one is good for all. McIntosh called differentiation a basic principal that is widely endorsed and supported as best practice that provides the best learning experiences for all students given their readiness, interest, and possibly their learning style. McIntosh said that differentiation is best practice at all levels: special education, regular education, and gifted education. McIntosh also referred to the increasing number of research studies that support the effectiveness of differentiation as a method to increase student achievement.

Limitations of Research on Differentiation

Tomlinson et al. (2003) said that theory and research indicate that it is important for teachers to adjust curriculum and instruction in response to students’ readiness, interests, and learning profiles. Tomlinson offered a list of characteristics common to effective differentiated instruction:

1. Effective differentiation of curriculum and instruction is proactive, rather than reactive.
2. Effective differentiation employs flexible use of small teaching-learning groups in the classroom.
3. Effective differentiation varies the materials used by individuals and small groups of students in the classroom.

4. Effective differentiation uses variable pacing as a means of addressing learner needs.
5. Effective differentiation is knowledge centered.
6. Effective differentiation is learner centered. (pp. 131-133)

Tomlinson cited research to validate each of the characteristics listed. Despite Tomlinson's research-based claims, not all researchers believe there is adequate research in the area of differentiation. Hall (2002) referred to the theories and practices of differentiation but stated that the effectiveness of the process lacks empirical validation. Hall explained that at the time of the writing of his review, the literature was composed primarily of testimonials and examples given by teachers. Ridley and White (2004) stated that differentiation is a recommended method to meet the needs of gifted and talented students in mixed ability classrooms but also added that while prominent authors/researchers had emerged in the field of gifted and talented education, much of their review of the literature was nonetheless based on opinions and lacks research. While there appears to be a shortage of empirical studies involving differentiation, some studies do exist. Hertberg-Davis (2009) refers to several studies dealing with differentiation, including research that stated the following:

- High-stakes testing resulting from No Child Left Behind has led to less student-centered activities in favor of more rote learning strategies (Moon, Brighton, & Callahan, 2003).

- Teachers do little differentiation for gifted students in regular classrooms (Westberg, Archambault, Dobyms, & Salvin, 1993; Westberg & Daoust, 2003).
- When teachers do differentiate, they tend to focus on struggling students in the beliefs that gifted students do not need differentiation (Brighton, Hertberg, Moon, Tomlinson, & Callahan et al., 2005).
- Teachers with coursework in gifted education are more effective in matching curriculum and instruction that matches the needs of high ability learners (Robinson as cited in Hertberg-Davis, 2009).
- Even small amounts of differentiation can impact student achievement and student attitudes toward learning (Brighton et al., 2005).

Anderson (2007) stated that more research is beginning to emerge that supports the potential for differentiated instruction as a means of assisting diverse learners, but he also refers to the gap in research on the important and timely topic of differentiation.

Differentiation for Gifted Students

Despite the limited amount of empirical evidence to validate the effectiveness of differentiation, there is a general consensus in the literature that differentiation is an effective practice for dealing with a classroom of diverse learners. Hertberg-Davis (2009) stated that it is hard to argue with the idea that a student learns better when the instruction is geared toward the student's needs. Given this assertion, differentiation is a hard philosophy to argue against. For the purposes of this study, it is assumed that differentiation of educational practice to include differentiation of curriculum and

instruction is a desirable practice in meeting the needs of all students including gifted students, who are the focus of this study.

Hertberg-Davis (2009) said that it should not be surprising that many schools are eliminating traditional gifted programs in favor of educating gifted students using differentiation of curriculum and instruction in the regular classroom. Hertberg-Davis proposed the argument that the regular classroom is not adequate to educate gifted students. She said that differentiated classrooms should be places where the talents of all students can be discovered and developed; however, many teachers find it difficult to focus on student differences when they exist in a high-stakes testing environment that seems to mandate more focus on rote learning that focuses on minimum competencies. The time consuming task of differentiation appears to be a logical impediment to preparation for state mandated testing.

Even before teachers were forced to address the added demands of high-stakes testing, Tomlinson (1995) warned that given the great diversity in the typical middle school with mixed ability classrooms, no single learning approach effectively addresses the needs of all learners. Tomlinson referred to the diversity of student readiness, interest, and learning profiles. She went on to state that effective middle schools attempt to take students from where they are academically and foster continual growth. She continued by stating that differentiation is a superior solution than trying to apply one-size-fits-all instructional models. Tomlinson elaborated her position by explaining that teachers in differentiated classrooms provide students with a variety of ways to explore and interact with curriculum content as well as various options by which students can demonstrate their learning. Despite the topic of Tomlinson's

article being differentiating to address the needs of advanced learners in mixed-ability classrooms, the dimensions addressed are the same as those found in literature addressing differentiation at all levels. In the area of “interest”, Tomlinson suggested adjustments that allow students to have a voice in which ways they choose to apply key principals. In regard to learning profiles, students are encouraged to reflect and understand their learning preferences. Finally, in the area of readiness, Tomlinson has provided the following list of adjustments teachers can use to create learning tasks:

- Concrete to abstract
- Simple to complex
- Basic to transformational
- Fewer facets to multi-facets
- Smaller leaps to greater leaps
- More structured to more open
- Less independence to greater independence
- Quicker to slower. (p. 3)

In all but the last of the above continuums of adjustments, Tomlinson explained that gifted students benefit from instruction that is closer to the second descriptor on the continuum. In regards to the final continuum, Tomlinson explained that there are times when gifted students benefit from moving rapidly through material and others when advanced learners benefit most from moving slowly through the material to study it in greater depth and breadth.

Finally, Tomlinson gave examples of instructional strategies that can help teachers implement differentiation within the classroom:

- Use of multiple texts and supplementary materials;
- Use of computer programs;
- Interest centers;
- Learning contracts;
- Compacting;
- Tiered sense-making activities and tiered products;
- Task and products designed with multiple intelligence orientation;
- Independent learning contracts;
- Complex instruction;
- Group investigation;
- Product criteria negotiated jointly by student and teacher. (p. 4)

Tomlinson's work suggested that to serve specific learners at various levels, teachers should implement learning strategies that employ various adjustments to address readiness, interest, and learning profiles.

Burns et al. (2002) described strategies for gifted education as falling into four categories: procedures that help teachers identify gifted learners and their unique interest and abilities; strategies for improving curriculum units; techniques for differentiating assignments; and methods of enhancing talent development with interest-based assignments. Not only did these authors agree with much of literature in the field of gifted pedagogy, the authors also acknowledged that addressing the

needs of the gifted in the regular classroom is important since few gifted students are served in full-time programs.

Although her writing was directed to the teaching of social studies, Troxclair (2000) also advocated the use of differentiated instruction for gifted students. She spoke to the need of addressing gifted students in the regular classroom through the use of curriculum compacting in an attempt to create time that can be used for enrichment and/or acceleration for gifted learners. Troxclair defined curriculum compacting as the elimination, accommodation, and enrichment and/or acceleration of learning for gifted students in a particular subject. Troxclair attributed the need for addressing gifted students needs through curriculum compacting to the increase in diversity. She stated that diversity combined with the need to address learning at higher levels has moved instruction away from the levels of knowledge and comprehension in an effort to address the needs of advanced learners. This has added additional burden to teachers who are already taxed trying to deal with a classroom of students who represent a wide range of talents, interest, and learning styles. Troxclair added that differentiation helps all students but especially gifted students in regular classrooms.

In her popular book on educating gifted learners in heterogeneous classrooms, *Teaching Gifted Kids in the Regular Classroom*, Winebrenner (2001) also referred to the dimensions of differentiation. Winebrenner said that gifted students need compacting and differentiation. She defined her “five elements” of differentiation as follows: content, process, product, environment, and assessment. According to this review of literature, there is a similarity in the concept of the dimensions or elements

of differentiation regardless of the student population being address. Winebrenner has promoted meeting the needs of gifted students in the regular classroom as not being elitist because other students benefit as well. She also stated that her avocation of differentiation in the regular classroom does not mean that gifted students needs are being met in the regular classroom. Hertberg-Davis (2009) also has opined that differentiation in the regular classroom is not a suitable substitute for more traditional gifted programs. Hertberg-Davis claimed: "... it does not seem that we are yet at a place where differentiation within the regular classroom is a particularly effective method of challenging our most able learners" (p. 252). Another major point made by Hertberg-Davis (2009) was that research shows that in heterogeneous classrooms, teachers have a tendency not to differentiate for gifted students.

Prevalence of Differentiation for Gifted

This study takes the position of Tomlinson (1997) who argued that there is only one answer to the question of whether the needs of the gifted can be met in the regular classroom. She says we must meet the needs for the gifted in the regular classroom, since that is where they are currently receiving the majority of their education; therefore, Hertberg-Davis's concern as to the amount of differentiation taking place in regular classrooms is an important component of any research into differentiation for gifted students.

In 1993, Archambault et al. performed a nationwide study to discover what instructional practices are used with gifted and talented students in heterogeneously and homogeneously grouped elementary classrooms and how teachers modify

instructional practices and curriculum materials to meet the needs of gifted students in those classrooms. Archambault et al. surveyed approximately 7300 third and fourth grade teachers using a stratified random sampling. They included teachers from both public schools (N = 3993) and private schools (N = 980). The teachers surveyed included a diversity of ethnicity: African-American (N = 592), Hispanic-Americans (N = 582), and Native-Americans (N = 580). Demographic data and data regarding classroom teacher practices were gathered using the “*Classroom Practices Questionnaire*” (CPQ). Teachers reported their practices with both average students and gifted students. The surveyed teachers reported the extent to which they perform a particular behavior for average students and then the extent they perform the same teaching behavior for gifted students. The difference between the two scores is then calculated to determine the amount of differentiation taking place for gifted students relative to average students. The teacher behaviors were analyzed using the following six factors:

1. Questioning and Thinking
2. Providing Challenges and Choice
3. Reading and Written Assignments
4. Curriculum Modifications
5. Enrichment Centers
6. Seatwork. (p. 39)

In direct relevance to the study proposed for this dissertation was the finding that only minor modifications were made for gifted students in third and fourth grade classrooms in both public and private schools. These results were consistent in schools with high concentrations of minority students. While the mean was significantly larger for gifted students in all of the factors, effect size was used to further assess the magnitude of the differences. Using this procedure, only one of the differences between the means was found to have even a medium effect size. The use of effect size analysis was used to moderate the inflation in significance found when large sample sizes are used. These researchers characterized the overall result of the survey as “a disturbing picture of the types of instructional services gifted students receive in regular classrooms across the United States” (p. 106).

In response to the widely accepted idea that gifted students are often unchallenged by the instruction provided in the regular classroom, Westberg, Archambault, Dobyns, and Salvin (1993) conducted a series of structured observations in 46 classrooms within the four major regions of the United States. These classrooms were drawn from 26 schools that had formal gifted programs and twenty from schools with no gifted programs. The observations were performed using the “*Classroom Practices Record*” (CPR) developed by Westberg, Dobyns, and Archambault in 1990. The instrument is used to measure the types and frequency of the differentiation of instruction and curriculum provided in the regular classroom. Two days of observations were recorded in each of the 46 schools involved in the study. During each of the two days, one gifted and one nongifted student was observed for a total of 184 observations (N = 92 gifted and N = 92 nongifted).

The results of this study tend to substantiate the finding of Archambault et al. (1993) in that the results indicate that gifted students received only limited differentiation in core academic subjects. It was found that in mathematics, social studies, science, reading, and language arts classes, gifted students did not receive differentiation in 84 percent of the activities. The researchers set out to observe advanced content instruction, advanced process instruction, advanced product or project instruction, independent study with assigned topics, independent study with self-selected topics, and other differentiated experiences to be identified when observed. Differentiation was observed most often in mathematics classes where 11 percent of the activities involved gifted students receiving instruction in advanced content. Of particular interest is the authors' call for inservice training to be modified and increased. It was suggested that teachers in inservice training be encouraged to experiment with the strategies observed in this study. Westberg, Archambault, Dobyms, and Salvin (1993) also suggested that assistance should be given to regular classroom teachers by specialized personnel.

In 1997, Westberg and Archambault performed a qualitative study in 10 elementary schools (2 urban, 6 rural, and 2 suburban) to determine what teacher factors and environmental factors contribute to the effective use of differentiated teaching strategies. They also attempted to determine if the existence of a gifted education program affected the instructional strategies and materials used in regular classrooms. Recommendations of successful schools were requested from individuals such as state directors of gifted programming who might have knowledge of districts known to have a reputation for meeting the individual needs of advanced learners.

When a district was named by three sources, it became a candidate for the study. School administrators were then asked for permission to perform the study at their location. The study was performed in one third, one fourth, and one fifth grade classroom at each location. All classrooms contained identified gifted students.

Data were collect through observation, interviews, and documents. The triangulation of data was used to increase reliability. The researchers described the purpose of the study to be to “describe how teachers implement curriculum differentiation practices to accommodate the needs of their high ability students and describe the factors that influenced these practices” (p. 47). The research revealed the following generalizations:

- The teachers in this study had training in areas of special education. While all of these teachers with reputations for being effective in differentiating for high achievers did not have graduate degrees, most had some training in special education practices. The importance of the special education training is that special education is an area where students are focused on as individuals.
- The teachers in this study were also willing to make changes in their approaches to teaching. They had a willingness to experiment with new practices.
- The teachers in this study were involved in self-initiated and voluntary collaboration with other teachers and found ways to make the time for collaboration.

- The teachers in this study were aware of student differences in terms of readiness and did not view their class as a whole, but rather, as a collection of individuals with different levels of skill and different interests.
- The teachers in this study worked with superintendents who openly supported differentiation for gifted students and/or strong principals who supported their classroom practices.
- The teachers in this study reported working in a supportive environment that was free of district policies that prevented them from engaging in various practices.

Westberg and Archambault acknowledged the possibility of observer effects – that teachers may altered their behaviors as a result of being observed. They also acknowledged that as with all qualitative studies, observer bias needs to be considered as a limitation. Westberg and Archambault concluded from their study that “typical teachers tailor instruction to students’ similarities; but truly effective teachers tailor instruction to students’ differences as well as their similarities” (p. 50).

In 2002 Westberg and Daoust replicated the “*Classroom Practices Survey Study*” performed by Archambault et al. a decade earlier in which it was found that third and fourth grade teachers made only minor modifications to the instruction or curriculum to accommodate gifted students in regular classroom environments. Westberg and Daoust felt that it was time to find out if teachers’ behaviors had changed. This was prompted by the fact that the term “differentiation” had become more widely used and that many districts had begun to focus their professional

development around the topic of differentiation. In Westberg and Daoust's study, data was gathered from only two states. The two states differed in that one was located in the Southeast and had a gifted and talented mandate, while the other was located in the Midwest and did not have a gifted mandate. Westberg and Daoust obtained a sample size of 1,366. This sample size represents 17% of the third and fourth grade teachers in the two states studied. Westberg and Daoust (2003) compiled the teacher responses regarding the degree to which they use various practices with gifted students as compared to average students. All six factors studied in the original Archambault, et al. study showed only minor differences in the mean of the responses given for practices related to differentiation for gifted students as compared to the mean of the responses given for practices related to differentiation of average students. Inferential statistics revealed no statistical difference on any of the six factors. Further, it was revealed that there was no statistical difference between teachers teaching practices from rural, urban, or suburban communities.

Overall, no correlation was shown between teachers' training experiences and their classroom practices. However, when teachers who had taken their gifted education courses at a college or university ($N = 179$) were compared to those who had taken no coursework ($N = 337$), it was found that teachers who had taken coursework in gifted education modified curriculum for gifted students more frequently. Still, curriculum modification was the only factor that showed a significant difference when comparing teachers who had taken gifted education coursework with those who had taken no coursework. Westberg and Daoust concluded that despite the teachers in their study having more professional

development, their practices were not reflective of the additional training. The instruction found in their study showed no change from that reported 10 years earlier by Archambault et al.

Westberg and Daoust found teachers felt pressures to have their students perform well on state-tests which, according to these researchers, lead teachers to using similar methods for all students without regard to their abilities. They also found comments from their surveys which indicated that teachers still believed pullout programs to be sufficient for gifted students even if they only provide services as little as one hour per week. Yet another reason given by these authors for teachers not differentiating for gifted students is that many districts do not provide follow-up experiences after training.

Other Reasons Teachers Do Not Differentiate for Gifted Students

Van Tassel-Baska and Stambaugh (2005) stated that there are various obstacles to differentiation. While these obstacles apply to other populations, Van Tassel-Baska and Stambaugh refer to these obstacles in the context of gifted education. These authors list the following as recognized barriers:

- Lack of content knowledge at higher levels,
- Lack of training in classroom management strategies which facilitate differentiation,
- Lack of belief in the concept that students have different skills, interests, and learning profiles,

- Inadequate knowledge of the standards to appropriately modify the curriculum,
- Lack of understanding of the needs of gifted students with special needs or of low socioeconomic status,
- Difficulty finding and utilizing resources, especially those of advanced grade levels,
- Lack of planning time,
- Lack of administrative support at both the district and school levels, and
- Lack of training in differentiating instruction. (pp. 212-215)

Van Tassel-Baska and Stambaugh say that when educators use advanced content-relevant strategies, gifted students can show significant growth in achievement.

Accordingly, this can only happen when educators and administrators recognize these barriers and take steps to reduce them. The authors conclude by stating that only when teachers “acknowledge, embrace, and act on student differences, will gifted students be properly served” (p. 216).

Despite the admission that many of the barriers to differentiation apply to populations other than gifted, Van Tassel-Baska and Stambaugh (2005) explained that differentiation for gifted is more challenging due to the following factors:

- Degree of differentiation required,
- Need to provide learning opportunities beyond grade level,

- Philosophical barriers and antipathy of many teachers toward the gifted learner and their needs,
- Lack of understanding of the services for the gifted population, and
- Lack of service mandates in many states to support services for gifted learners leading to greater neglect. (p. 212)

In another effort to explain why teachers are not differentiating more for gifted students, Moon, Brighton, and Callahan (2003) concluded that high-stakes testing has had a negative impact on teacher practice. Moon, Brighton, and Callahan explained that teachers are not adapting the mandated scope and sequence of concepts and/or pacing guides to meet the individual needs of students, but rather are using one-size-fits-all instruction as a result of mandated testing. Van Tassel-Baska, Quek, and Feng (2007) indicated that studies show that very few differentiation strategies are being employed in the regular classroom. These authors attribute the lack of differentiation in instruction to a lack of systematic monitoring of teachers working with gifted students in regular classrooms. Given this tendency for teachers to rely on one-size-fits-all instruction coupled with the lack of systematic monitoring, it is not surprising teachers are not differentiating classroom instruction for gifted students. This situation is further exacerbated by the demands placed on teachers to have all students achieve minimum competency as defined by No Child Left Behind. McCoach and Siegle (2007) explained that in an era of No Child Left Behind, “the pendulum of public opinion is swaying toward the need for equity and away from the quest for excellence” (p. 246). They went on to say that the effects that these shifts have had on teachers’ attitudes toward gifted students is unknown.

Teacher Attitudes toward Gifted Students

In response to conflicting research findings regarding how preservice teachers and experienced teachers' knowledge affects their attitudes toward gifted students, Pierce and Adams (2003) addressed the following research questions:

1. What kind of attitudes do preservice teachers hold toward diverse learners in general and gifted learners in particular?
2. What similarities/differences are there in the response of preservice and experienced teachers on questions dealing specifically with gifted learners?

Using 36 questions from the "*Survey of Practices with Students of Varying Needs*" (SOP), Pierce and Adams surveyed preservice (N = 85) and experience teachers (N = 95) regarding their attitudes toward gifted, special education, and average students. The SOP was developed by researchers from the National Research Center for the Gifted and Talented. The questions regarding each respondent's attitude was scored such that the 5-item Likert scale gave the highest point value to positive attitudes on the part of the respondents.

Overall, Pierce and Adams (2003) did not find the negative attitudes claimed by some researchers who inspired their study, nor did they find extremely positive attitudes either. The tendency toward slightly positive attitudes was true for both preservice and experienced teachers. They also warned that the similarity in attitudes shared by preservice and experienced teachers may be due to different reasons. They speculated that experienced teachers may hold positive attitudes toward gifted students as a result of experience working with these students; whereas, preservice teachers' attitudes may stem from beliefs of equity -- diverse learners are entitled to having their individual needs met. Pierce and Adams also warned that self-report instruments

such as the SOP used in this study may yield responses that reflect teachers' desires to be socially acceptable or to please the surveyor.

In the discussion of their study, Pierce and Adams referred to two studies that indicate that positive attitudes toward diverse learners may not be reflected in classroom practices (Tomlinson et al., 1994; Hootstein, 1998). This view of a discrepancy between teacher attitudes and teacher classroom practices is not shared by all. Eyre and Geake (as cited in Geake & Gross, 2008), have contended that negative attitudes may endanger effective differentiation and undermine professional development efforts. Also contrary to the assertions of Tomlinson et al. and Hootstein are Van Tassel-Baska and Stambaugh (2005), who included negative attitudes of teachers toward the gifted as a major barrier to providing appropriate instruction to gifted students.

McCoach and Siegle (2007) stated that despite 50 years of research on teachers' attitudes toward gifted students, there is still no consensus as to the current state of teachers' attitudes toward gifted students and gifted education. They explained that the studies that have been done may or may not be generalizable to other populations due to inadequate sample sizes and the failure on the part of researchers to use either a random or representative sample of teachers. McCoach and Siegle used the 35-item instrument, "*Opinions about the Gifted and Their Education*" (developed by Gagne and Nadeau, 1991) to survey a random national sample of 1,500 teachers. To offset the tendency of respondents to render responses believed to be desired by the researchers, McCoach and Siegle sent 500 surveys with a University of Connecticut letterhead, 500 with a Center for Equity and Equality (antigifted) letterhead, and 500 with a National Research Center for the Gifted and Talented (progifted). They used a 7-point Likert scale (1=strongly disagree and 7=strongly agree) to measure six factors:

1. Needs and Support subscale measures respondents' beliefs in the needs of gifted learners and the respondents support for special services for the gifted.
2. Resistance to Objections measures respondents' objections based on ideology and other priorities.
3. The Social Value subscale measures respondents' perceptions of the social usefulness of gifted persons in society.
4. The Rejection subscale measures respondents' perceptions of isolation of gifted students by others in the immediate environment.
5. The Ability Group subscale measures respondents' attitudes toward special homogeneous groups, classes, and schools.
6. The School Acceleration subscale measures respondents' attitudes toward acceleration for academically gifted students.

The above subscales were subjected to exploratory factor analysis and subsequently condensed to three subscales:

- Support, measures respondents' beliefs in the needs of gifted children and his or her support for special services for the gifted.
- Elitism, measures the respondents' objections based on concerns about elitism and the favored status that the gifted have in schools and society at large.
- School Acceleration, measures respondents' attitudes toward acceleration for academically gifted students.

High scores on Support and School Acceleration indicate positive attitudes toward the gifted, while high scores on Elitism represent negative attitudes. Cronbach's alphas for the subscales

were .76, .80, and .71, respectively. McCoach and Siegle created an additional subscale, Self-Perceptions as Gifted. This 5-item subscale was designed to measure the respondent's perception of themselves as gifted. This subscale had a Cronbach's alpha of .94.

A multivariate analysis of variance was used to determine if the teachers surveyed were influenced by the type of letterheads distributed with the survey. No statistical significance ($p = .123$) was found in the scores on the three dimensions of elitism, support, and acceleration. Finding no significant difference between the letterheads used, the researchers decided to combine the three sets of data into one. Not having a significant finding regarding the letterhead used is important, since there was a major concern that the respondents may answer in a way that they believed the researchers wanted or in a way they believed to be socially correct.

McCoach and Siegle found that the results in regard to the support factor indicated a slight to moderate support for gifted education ($M = 5.45$). The respondents had a relatively neutral position on the issue of acceleration ($M = 4.46$). On the issue of elitism, the researchers found evidence that the teachers surveyed had relatively neutral beliefs in regards to gifted education being elitist ($M = 3.88$). The midpoint on each 7-point scale would equal 4.0. The Gifted Self-Perception scale had a wide variance, but the mean fell near the midpoint at 4.12. No correlation was found between the Gifted Self-Perception subscale and the other subscales, indicating that whether or not teachers saw themselves as gifted tended to have no bearing on how they responded to the subscales of elitism, support, and acceleration.

To study the impact that training and education had on the attitudes of teachers, teachers with no training ($N = 126$) were compared with those with some training ($N = 133$) using a multivariate t test. Training was defined as attending or taking a gifted education class, working

as a teacher of gifted students, or being certified in gifted education. When the two groups were compared on attitudes toward the gifted, they were found to be similar in their attitudes toward gifted students. Only trivial differences were found when comparing the two groups on elitism, support, and acceleration (McCoach & Siegle, 2007). In a 1994 study, Begin and Gagne (as cited in McCoach & Siegle, 2007) found that five of the eight studies they reviewed showed a statistically significant relation between training in gifted and attitudes toward gifted education. The findings in the McCoach and Siegle study were not those anticipated by the researchers.

The results were quite different between the two groups in terms of self-perception as gifted. A univariate *t* test was used for this analysis. The teachers with training were significantly more likely to see themselves as gifted ($M = 4.5$, $SD = 1.52$) than teachers without training ($M = 3.7$, $SD = 1.58$). This difference represents an effect size of .52 standard deviation or a medium effect. McCoach and Siegle were unable to determine if training in gifted education increased teachers' self-perceptions as gifted or if teachers with high self-perceptions of being gifted seek training in gifted education.

McCoach and Siegle suggested that training may increase teachers' understanding of the needs of the gifted, but it does not lead to support for meeting those needs. If this is indeed true, then the content taught in gifted training needs to be examined. While not expressed by McCoach and Siegle, it should be considered that values are relative and in the era of NCLB the emphasis on equity has placed it above excellence in individuals' values and thus is being reflected in surveys that measure attitudes. It is also possible that there has been a shift in the impact that training has had on attitudes, which may explain these unexpected findings.

Eyre and Geake (as cited in Geake & Gross, 2008) claimed that negative attitudes not only hamper effective differentiation, they also undermine the effectiveness of professional development in gifted education. Eyre and Geake claimed that those individuals with negative attitudes toward gifted learners are unlikely to attend professional activities in gifted education unless attendance is required by administration. Geake and Gross (2008) stated that while teachers have been resistant to providing services to the academically gifted, resistance to providing equivalent services to children with disabilities, language barriers, and even children who possess advanced artistic or athletic talents is less rare. Geake and Gross elaborated by saying that their earlier work showed that teachers in Australia, Europe, and the United States who are opposed to special provisions for individuals who are intellectually gifted did not object to similar provisions for those possessing athletic or sports ability. It may be that these feelings toward gifted students start before a person's actual teaching experience begins. Geake and Gross cited a study by Carrington and Bailey which stated that among elementary and secondary pre-service teachers, studious gifted students were the least preferred of all groups when the researchers asked the prospective teachers whom they preferred to teach. Elementary preservice teachers listed nonstudious average ability students as those they preferred to teach, while secondary preservice teachers preferred nonstudious gifted students. They continue by explaining that it is not the intelligence level as seen by the preferences of the secondary teachers, but rather the students' attitudes toward study (studious versus nonstudious). It is not the concern of advanced intelligence that bothers most teachers, rather a concern for socialization.

In an effort to explore the beliefs and behaviors prevalent among today's teachers, Geake and Gross (2008) designed their study around three hypotheses. The first hypothesis was that

teachers harbor negative feelings and are suspicious of gifted students. The second was that it was not the academic performance that created the suspicion of gifted students, but rather the students' articulateness and nonconformity. Geake and Gross's final hypothesis was that with staff development relating to the characteristics of gifted students, teachers' suspicions of intellectual precocity would be reduced. The researchers studied 377 teachers in England (N = 151), Scotland (N = 67), and Australia (N = 159) who were involved in professional development in gifted education. Pre and post surveys were given using a semantic differential instrument. Demographic data was also collected. The Australian professional development was voluntary, while the English and Scottish sessions were mandated. The Australian training was part of a postgraduate certification program in gifted education. This in turn gave a disproportionate number of Australian teachers who were currently teaching in gifted programs. Given the unbalance in distribution of teaching experience, the data for the three countries was combined to form three levels for analysis purposes: no previous continuing professional development, partial completion of continuing professional development course, and full completion of continuing professional development course.

Teachers' attitudes toward gifted children were measured using a five-dimensional semantic differential instrument. A pilot study (N = 59) was performed using a 28 item format. The responses producing the highest reliabilities ($\alpha > .90$) were used. The semantic differential scale was reduced from eight possible responses to five. Twenty of the original 28 items were included on the final instrument.

The pre-course surveys provided evidence to support Hypothesis 1 that teachers harbor negative feelings of suspicion toward gifted students because of their intellectual precocity. Hypothesis 2, that teachers' negative feelings will focus on students' superior articulateness and

nonconformist socializing, was also supported by the results of the pretest. Post-training surveys showed that the optimism expressed in Hypothesis 3 was warranted. Teachers who completed the staff development in gifted education were more positive about gifted students' talents and less concerned about their social noncompliance. The results of the study also found that when teachers who had completed their professional development program in gifted education were compared to teachers who had only partially completed the program, the teachers having completed the training were significantly ($p < .01$) more positive about both the intellectual and social characteristics while being less negative about gifted students' potential for noncompliance. Likewise, the same differences were found when comparing those who had partially completed the program were compared with those with no previous training. These findings showed evidence that professional development makes a positive difference in the attitudes of teachers' toward gifted students.

Staff Development and Teacher Efficacy

As previously mentioned, several major research studies showed that only minor modifications for gifted students take place in regular classrooms (Archambault et al., 1993; Westberg et al., 1993, Westberg & Archambault, 1997; Westberg & Daoust, 2003). In particular, Westberg and Daoust (2003) concluded that over a ten year period changes in classroom practices had not measurably changed despite the fact that teachers had more professional development. Westberg and Daoust found no measurable increase in differentiation for gifted students despite an increase in professional development advocating differentiation of instruction. In their discussion of strategies appropriate to meet the needs of gifted students, Starko and Schack (1989) stated, "if school districts wish to increase classroom teachers' use of differentiated strategies, it may be important to consider means to enhance teachers' efficacy

rather than concentrating efforts on convincing them that particular activities meet the needs of bright students” (p. 121). Self-efficacy is believed to be a predictor of what people do with the knowledge and skills they have (Pajares, 2002).

If the goals of professional development are to change behaviors, it is reasonable to speculate that self-efficacy can be an important predictor of changes in teachers’ behaviors since self-efficacy is a predictor of what teachers will do with the knowledge and skills they gain during training. Pajares (2002) has explained that how people behave is better predicted by their efficacy beliefs than their actual abilities. According to Starko and Schack (1989), the primary sources of self-efficacy are performance accomplishment, vicarious experiences, verbal persuasion, and low physiological arousal. These researchers also indicated that of the four sources, performance accomplishment is the most potent of the sources. Therefore, the successful completion of a target behavior is vital to self-efficacy. It is also stated that successful completion of a task increases the likelihood of repeating the behavior.

Starko and Schack referred to self-efficacy as “an individual’s belief in their ability to perform a given behavior in a given situation” (p. 118). These researchers used the term teacher self-efficacy to refer specifically to teachers’ beliefs that they can successfully implement specific teaching strategies. This definition of teacher self-efficacy is in line with the definition used by Tschannen-Moran and Hoy (2001) in which they defined teacher self-efficacy as a teacher’s belief that they have the ability to impact student achievement even in situations involving challenging and unmotivated students. The specific strategies studied by Starko and Schack included the following: alternate textbooks, creativity training, simulations, centers, eliminating assignments for previously mastered material, curriculum units that incorporate higher order thinking skills, acceleration, independent study based on student interest, research

based on a curriculum unit, and grouping for instruction. Starko and Schack proposed two research questions:

1. What are the relationships among perceived need, teacher efficacy, and teacher use of ten teaching strategies for education of the gifted in preservice teachers, classroom teachers, and teachers of the gifted?
 2. In what ways do preservice teachers, classroom teachers, and teachers of the gifted vary in perceived need, teacher efficacy, and the use of the ten identified strategies?
- (P. 118)

A Likert-scaled questionnaire was created to measure teachers' beliefs as to how well the ten instructional strategies studied meet the needs of gifted students, teacher self-efficacy in using the strategies, and the frequency the strategies were actually used. The study involved preservice teachers (N = 176), classroom teachers (N = 85), and teachers of the gifted (N = 57). For each strategy, means and simple correlations were calculated for perceived need, teacher efficacy, and use. Because many of the preservice teachers have had little or no opportunities to use the strategies studied in this research and that the proposed research of this dissertation deals with experienced teachers, reporting of the findings of this study will focus on classroom teachers and teachers of the gifted.

Discriminate function analysis was used to find if classroom teachers could be defined as a group separate from teachers of the gifted by a function of need, efficacy, and use of the strategies. One function (Wilks Lambda = .5458) correctly classified 81.1% of the classroom teachers and 83% of the teachers of the gifted ($p < .05$). Correlations between discriminating variables (need, efficacy, and use) and discriminate functions (strategies) "identified efficacy

regarding creativity training and the use of independent study, research relating to a unit, creativity training, and units containing higher level thinking skills as making the most potent contributions to the functions” (p. 121). The correlation between need and use was not found to be as strong as that between efficacy and use, indicating that it is not enough to recognize that a particular strategy may meet the needs of gifted students, a teacher must be confident in his or her ability to implement the needed strategy. The strong relationship between efficacy and use is important to professional development where the goal is to change teacher behaviors. It also follows that trying to convince teachers to use a strategy that is good for gifted students will not, in and of itself, increase the use of the strategy unless teachers are provided with experiences that enhance their efficacy in the use of the strategy; therefore, it is suggested that staff development use demonstration lessons as opposed to lectures. Staff development presenters should at least instruct at the demonstration level which creates vicarious learning experiences. Self-efficacy training can best be optimized through the use of simulated class activities and/or micro-teaching opportunities – activities that provide performance accomplishments, and therefore provide the most potent source of efficacy.

In another study of teacher self-efficacy, Henson (2001) found that both pre-service and experienced teachers with high efficacy tended to experiment with teaching materials and teaching methods more than teachers who were less efficacious. Henson also concluded that self-efficacy beliefs are primary to behavior change. Henson’s assertions were based on studies by Allinder, 1995; Guskey, 1988; and Stein and Wang, 1988. A closer investigation into these works revealed that caution should be exercised when generalizing the findings to other populations, in that these studies dealt with a single population, explored instructional

innovations that required only minor changes in instruction, used a small sample size, or a combination of these factors.

Summary

The following chart (Table 1) shows the major studies highlighted in the review of the relevant literature. The listed studies start with studies that explored teachers' and students' perceptions of differences in challenge and choice in different classroom environments, moves to a synthesis of studies that established a variety of needs common among gifted students, progresses into a series of studies that infer that differentiation has not taken place for gifted students, then explores studies that highlight commonalities among teachers who do differentiate, and finally looks at studies related to the two suspect variables of this dissertation study: teachers attitudes toward gifted students and teachers self-efficacy and how those suspect variables may influence teachers' willingness to differentiate instruction for gifted students.

Table 1

Major Studies Showing Relationships between Efficacy, Attitudes, and Differentiation

STUDY	PURPOSE	PARTICIPANTS	DESIGN/ ANALYSIS	OUTCOMES
Rogers (2007)	Investigate past research in the field of gifted and talented education.	Various. Depending on each study reviewed in synthesis.	Qualitative: Synthesis	Gifted students have needs different from other students. Gifted students should receive instructional delivery for each subject area that is differentiated in pace, amount of review and practice, and the

Archambault et al. (1993)	Discover the instructional practices used with gifted students in heterogeneously and homogeneously grouped classrooms.	7300 third and fourth grade teachers from 3993 public schools and 980 private schools.	Quantitative: Survey	organization of content. Only minor modifications were made for gifted students in both public and private schools.
Pierce & Adams (2003)	Determine what kind of attitudes preservice and experienced teachers hold toward gifted students.	85 preservice teachers and 95 experienced teachers	Quantitative: Survey	Found slightly positive attitudes toward gifted students for both groups.
	Determine if the impact that training and education had on the attitudes of teachers in regards to gifted	126 teachers with no training and 133 teachers with		The two groups were found to be similar in their attitudes toward gifted students.

<p>McCoach & Siegle (2007)</p>	<p>education.</p> <p>Determine if teachers harbor negative feelings toward and are suspicious of gifted students.</p>	<p>some training</p>	<p>Quantitative: Survey</p>	<p>Teachers do harbor negative feelings of suspicion toward gifted students because of their intellectual precocity.</p>
<p>Geake & Gross (2008)</p>	<p>Determine if teachers were given professional development, could the teachers' suspicions of intellectual precocity be reduced.</p> <p>Determine the relationship among perceived need, teacher efficacy, and teacher use of ten teaching strategies used for gifted education and how that relationship compares between classroom</p>	<p>151 teachers in England attending mandated professional development, 67 teachers in Scotland attending mandated professional development, and 159 teachers in Australia attending voluntary professional development</p> <p>85 classroom teachers, and 57 teachers of the gifted.</p>	<p>Quantitative: Survey</p>	<p>Teachers who completed a program in gifted education were more positive about both the intellectual and social characteristics of gifted students.</p> <p>The correlation between need and use was not as strong as that between efficacy and use.</p>

Starko & Schack (1989)	teachers and teachers of the gifted.		Quantitative: Questionnaire Discriminate function analysis	
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This review of literature found that there is agreement that most gifted children are now being educated within the regular classroom. No sooner than No Child Left Behind had been fully implemented, concerns were expressed that the testing mandated to assure accountability was causing teachers to focus on students who were in danger of not meeting minimum proficiency at the expense of meeting the needs of those gifted learners who were being educated in regular education classrooms. These concerns for gifted students seemed to be confirmed by the research of Gentry, Rizza, and Owen in which they found no significant difference between regular education students and gifted students being educated in the same classrooms in terms of

students' perceptions of challenge and choice. This was true at the elementary school level and the middle school level. This study by Gentry, Rizza, and Owen is important in that it indicates that the needs of gifted students may have been neglected even before NCLB, since their data collection took place between 1996 and 1998.

The literature indicates that there is a general consensus as to what differentiation is and that it is good for all students, including the gifted. Despite the knowledge that differentiation helps gifted students, some researchers have expressed concerns that gifted students are often underserved in regular classrooms, or that differentiation for gifted students in regular classrooms is not taking place. In 2003, Westberg and Daoust found that the use of differentiation strategies for gifted students in the regular classroom had not increased over the previous decade despite the teachers in the study having more professional development. Westberg and Daoust cited the lack of follow-up experiences after training as a reason for the lack of differentiation.

Van Tassel-Baska and Stambaugh identified numerous barriers to differentiation of instruction in general, but added that differentiation for gifted is more challenging. One possible barrier to differentiation was investigated by Pierce and Smith who found slightly positive attitudes toward gifted among the teachers they surveyed. These findings were not shared by all researchers. Van Tassel-Baska and Stambaugh included negative attitudes of teachers toward gifted as a major barrier to providing appropriate instruction to gifted students. In a study by McCoach and Siegle, the researchers drew the conclusion that training may increase teachers' understanding of the needs of the gifted, but does not necessarily lead to support for meeting those needs. There is clearly a lack of consensus on the issue of teachers' attitudes toward gifted students and the role it may play as a barrier to differentiation of instruction.

Starko and Schack stated that if teachers' use of differentiation strategies is desired, districts must find ways to enhance teachers' efficacy. Pajares said that self-efficacy is believed to be a predictor of what people do with the knowledge and skills they have. In another study on self-efficacy, Henson found that pre-service and experienced teachers with high efficacy tend to experiment more with teaching materials and teaching methods, but this assertion was based on studies with small sample sizes and with innovations that require fewer changes in instruction than differentiation for gifted in the regular classroom.

In reviewing the literature, it was found that there are recognized barriers to differentiation for gifted students, including the two human factors of teachers' attitudes toward gifted students and teacher self-efficacy. What appears to be missing in the literature is research that identifies which of these two human factors may be a better predictor of a teacher's willingness to differentiate instruction for gifted students.

CHAPTER III

METHODS

Introduction

In reviewing the literature related to differentiation of instruction for gifted students, a number of barriers were found. Two human factors affecting teachers' willingness to differentiate instruction for gifted students, teachers' attitudes toward gifted students and teacher self-efficacy (Starko & Schrack, 1989; Pierce & Adams, 2003), were also reviewed. What was absent from the literature is research which identifies which of these two human factors is a better predictor of a teacher's willingness to differentiate instruction for gifted students. This study attempted to identify whether teachers' attitudes toward gifted students or teacher self-efficacy is a better predictor of a teacher's willingness to differentiate for gifted students. This section describes the research design, the population surveyed, the instruments used to survey the sample, the data collection methods, the data analysis methods employed, and the data reported. Limitations and delimitations relating to this study are discussed.

Research Question

In an attempt to understand the relationships between teacher efficacy and teacher attitudes toward gifted students and the role these factors have on teachers' willingness to differentiate for gifted students, the following question needed to be answered: What correlations exist among teachers' sense of self efficacy, teachers' attitudes toward gifted students, and teachers' instructional differentiation practices for the gifted? The two independent variables identified for this study were selected based on indications of their impact on the dependent variable provided by previous research (Starko & Schrack, 1989; Pierce & Adams, 2003). The

dependent variable was selected due to the importance of differentiation of instruction to student achievement for gifted students (Rogers, 2007).

Research Design and Procedure

This was a cross-sectional study where the participants were studied at a given point in time. The goal of this study was to determine the magnitude of the relationship that teacher efficacy and teacher attitudes toward gifted students each has with teachers' willingness to differentiate instruction for gifted students. All variables were measured using survey instruments. Multiple regression analysis was employed since it allowed the independent variables to be separated and the unique influence of each independent variable to be examined (Allison, 1999; Creswell, 2009; Gall, Gall, & Borg, 2007).

Because the chosen variables do not define a construct that is related to the dependent variable, multiple regression analysis was chosen over multiple correlation analysis (Huberty, 2003). Huberty explained that multiple regression analysis is an appropriate technique when the variables are chosen from various sources and for various reasons such as researcher intuition, previous research, or practical considerations. For this study, teacher efficacy and teachers' attitudes toward gifted students were chosen from previous research.

Population

The population for this study was certified third through eighth-grade public school teachers within the 18 counties comprising Georgia's First District Regional Educational Service Agency who teach identified gifted students in heterogeneously grouped classrooms in the core subjects of math, language arts, social studies, or science. These teachers were employed during the 2011-2012 school year. Preliminary estimates, based on web-based school directories,

indicated that the population was approximately 2,000 teachers. An attempt was made to survey all teachers within the population (approximately 2,000 teachers). Permission to survey the teachers was requested from the superintendent of each school system. While no data were available to help with estimating how many superintendents would allow their teachers to be surveyed, a permission rate of 50% would provide an adequate number of teachers to request responses from to meet the needed sample size. Given an estimated response rate of those solicited to serve as participants in the study of 60 percent (Asch, Jedrziwski, & Christakis as cited in Hoonakker and Carayon, 2009), the sample was estimated to be reduced to approximately 600. If a more conservative estimate of only one-half of the solicited teachers responding yielded an estimate of 500 surveys that should be returned and received. Van Tassel-Baska (as cited in "Program," 2004) stated that approximately 37 percent of gifted students are being educated in a regular classroom setting. Given that estimate, the researcher should have received 185 surveys from teachers who met the necessary qualifications. Of these 185 surveys, it was estimated that some would be missing a substantial amount of data and would be deemed unusable as a result of the missing data. There was reason to believe that state budget cuts had reduced the number of gifted specialists who traditionally teach in a pull-out model that removes gifted students from the regular classroom for instruction. The impact that budget cuts would make on this study and the number of teachers that would ultimately be available to be surveyed at the time the study was actually conducted could not be determined at the time the study began. It was the researcher's belief that the increase in available teachers would offset the number of surveys returned too incomplete to use; therefore, maintaining our estimated sample at 185. A smaller sample size may have been used as long as it did not lower the required power analysis and statistical significance planned for the study. The researcher decided to survey a population

which was accessible to the researcher. Therefore, the results obtained from this convenience sample are generalizable only to the population from which the sample was obtained. Any broader application of the findings will require further research involving different populations.

Allison (1999) stated that most statistical analysts would be reluctant to do a regression with fewer than five cases per variable, although he also stated that there are situations where fewer cases might be enough. Newton and Rudestam (1999) have offered a guideline for estimating the minimum number of subjects for multiple regression, the method chosen for this study. Their formula for testing individual predictors is $N > 104 + k$, where “k” is the number of predictor variables to be tested and N is the recommended sample size. Given the wide span between the guidelines provided by Allison (1999) (10 cases, given two independent variables) and Newton and Rudestam (1999) (106 cases, given two independent variables), a more formal method was employed to estimate sample size needed for this study.

For this study, power analysis was used to compute the desired sample size. More specifically, a priori power analysis was used. In a priori analysis, sample-size is calculated based on a prespecified alpha level and a desired power level, both of which are supplied by the user (Faul, Erdfelder, Buchner, & Lang, 2009). Faul, Erdfelder, Lang, and Buchner (2007) defined power as the probability that the null hypothesis will be rejected when it is indeed false. The power analysis for this study was performed using the G*Power3.1.2 software designed by Faul, Buchner, Erdfelder, and Lang (2009). Multiple linear regression was specified as the procedure to be used for the data analysis of this study. A medium effect size (f-squared = .15) was chosen given the guidelines provided by Faul, Erdfelder, Buchner, & Lang (2009) and Cohen (1992). A desired power of .80 (Cohen, 1992) and an alpha of .05 were used. The researcher also proposed testing two predictor variables: teacher efficacy and teacher attitude

toward gifted students. Using the G*Power3.1.2 software (Faul, Buchner, Erdfelder, and Lang, 2009), a sample size estimate of 68 was obtained. This estimate was in concert with an estimated desired sample-size of 67 provided by Cohen (1992) for a medium effect. The G*Power3.1.2 estimate is well within the estimate of 185 surveys that were expected to be returned to the researcher.

Threats to statistical conclusion validity include issues dealing with statistical power including alpha level and sample size. In reviewing the threats to statistical conclusion validity, Parker (1990) has recommended using the guideline established by Cohen that stated that power should be at or about .80. Parker has explained further that a power of .80 will “give researchers an 8 in 10 chance of obtaining a statistically significant result when one actually exists” (p. 616). Parker also added that by estimating power in the planning stage, the researcher can maximize the probability of finding an effect if one does in fact exist.

Instrumentation

All data were collected by surveying the sample. Three instruments and a series of demographic questions were compiled into a four page survey instrument. This four-page survey was used to gather the data necessary for the multiple regression analysis performed in this study. While it is true that response rates to mailed surveys are often significantly lower than those employing telephone or face-to-face interviews (Beebe et al., 2010), given the nature of the survey instruments used, printed surveys were distributed to the participants on the assumption that participants would find them easier to understand. Beebe et al. stated that evidence shows that response rates increase when surveys are short, but that that evidence may not hold true for surveys below the threshold of four pages. Four pages allowed for the three necessary surveys required to measure the dependent and independent variables and adequate space to collect a

limited amount of demographic data. The researcher estimated that the survey should take approximately 12 minutes to complete. The pre-notification e-mail and the introductory letter that accompanied the survey stated an estimate of 12 minutes to reassure the participants that the survey was a reasonable length in terms of the required completion time.

The first instrument contained in the survey was the *Survey of Practices with Students of Varying Needs* (SOP) (See Appendix A). This instrument was used to measure the attitudes of teachers toward gifted students. The original instrument was developed by a group of researchers at the University of Virginia (Tomlinson et al., 1995) and was a more extensive instrument than was required for this study. For the purposes of this study, questions pertaining to students other than gifted were omitted and only the questions pertaining to gifted students from part one of the SOP were used. The remaining 15 questions were used to assess teachers' attitudes toward gifted students and attitudes toward differentiating instruction for these students. In a study performed by Pierce and Adams (2003) using the SOP to survey both experienced and pre-service teachers on their attitudes toward gifted students, a Cronbach's alpha of .87 ($p < .01$) was obtained during Pierce and Adams's study. In a pilot study of the instrument (Tomlinson et al. 1995), the SOP was found to have face validity.

The SOP contains questions that are stated both positively and negatively. All questions require that the respondent reply using a five-point Likert-like scale with choices representing the following: strongly agree, agree, disagree, strongly disagree, and don't know how you feel. Questions stated negatively were reverse scored so that all the results could be totaled to reveal the relative positive or negative attitude of the respondent. To "strongly disagree" with a negative statement carried the same score as would "strongly agreeing" to a positive statement. Responses of "don't know how you feel" were considered as neither positive nor negative and

were thus scored as zero. The scores on the individual questions were totaled to obtain a score that reflects the teacher's attitude toward gifted students. The higher the score, the more positive the attitude is.

The second instrument used as a part of this study was the *Teachers' Sense of Efficacy Scale* (TSES) developed by Tschannen-Moran and Woolfolk Hoy (2001) at Ohio State University (See Appendix B). This instrument is also known as the *Ohio State Teacher Efficacy Scale*. The TSES is designed to measure teachers' beliefs that they can positively influence various outcomes within the classroom. More specifically, the instrument is designed to measure three moderately correlated factors: efficacy in instructional practices, efficacy in classroom management, and efficacy in student engagement. For purposes of this study, efficacy was treated as a single concept of the belief in the teacher's ability to influence outcomes within the classroom.

The TSES uses a nine-point scale measuring the teacher's belief in her or his ability to influence outcomes. The available responses range from "1" representing "nothing" or no influence to "9" representing "a great deal." The original survey was composed of 24 items. An alternate version is also available that relies on 12 items. The shorter version has a Cronbach's alpha of .90 while the longer version Cronbach's alpha is .94 (Tschannen-Moran & Hoy, 2001). For this study, the shorter version was used in an attempt to shorten the overall length of the teacher survey. All questions are written in the affirmative and the total score was used as a measure of teacher efficacy for this study. The higher the total score, the more efficacious the teacher is.

The outcome variable of teachers' willingness to differentiate instruction for gifted students was measured by an instrument adapted (with permission) by the researcher from an instrument developed by Heacox (2002), the *Survey of Instructional Practices* (See Appendix C). The *Survey of Instructional Practices* is currently used as a self-assessment instrument to give teachers an indication of their differentiation practices in a more general context to include students of all abilities. The Heacox *Survey of Instructional Practices* uses an analog scale, thus it does not show numerical or graduated markings. The lack of graduated markings may help the participant feel freer to make choices without trying to give what they believe to be acceptable responses. The same design was used for the survey of practices used in this study. A template that superimposes the calibrations on the analog scale was used to assign quantitative values to each response. Values ranged between "zero" and "9."

A summary of all the variables and instruments used to collect them can be found in

Table 2.

Table 2

Variable Description Table

Variable	Measurement	Variable Type
Efficacy	Total score on Teachers' Sense of Efficacy Scale Scored 12-108	Continuous/ Independent
Attitude	Total score on SOP Scored 15-60	Continuous/ Independent
Willingness to Differentiate	Total score on the Survey of Practices Scored 0-135	Continuous/ Dependent
Years of Experience	Total number of years teaching Demographic Data Score = Actual years of experience	Continuous/ Independent

Procedures

The revised version of the *Survey of Instructional Practices* was evaluated for face validity by experts in the field of gifted education including two practicing gifted educators and two university professors from the College of Education. Face validity involves only “a casual, subjective inspection of the test items to judge whether they cover the content that the test purports to measure” (Gall et al., 2007, p. 196). The final survey packet was pilot tested utilizing eight teachers who possess the desired characteristics of the population to be sampled. Judd et al. (as cited in Curtis & Redmond, 2009) stated that pilot testing is one of the best techniques for improving the return of completed surveys. The teachers chosen for the pilot test were eliminated from the remainder of the study. In addition, split sample comparison was employed to test for reliability. Half of the surveys started with questions regarding teachers’ attitudes toward gifted students and the remaining surveys started with questions measuring teacher efficacy. “If the mean responses of the comparison subsamples differ significantly, the inference is made that the two versions represent two different items, not two versions of the same item” (Garson, 2008).

Once permission was received from Georgia Southern University’s Institutional Review Board (IRB) (Appendix D), a letter requesting permission to conduct research was submitted to each of the school systems within the First District Regional Educational Service Agency. Letters were then sent to the county gifted coordinators to request permission to survey academic teachers and to solicit their assistance in distributing the surveys to the teachers’ mail delivery boxes. The principal of each school was also notified with an explanation of the study and an

offer to provide any additional information they believed needed to be provided before the surveys were distributed to the selected academic teachers.

As each school system granted permission to distribute the surveys to the teachers, the school websites were referenced for teacher names and subject(s) taught. Envelopes were addressed using each teacher's name and grade level. The survey and a preaddressed, stamped envelope accompanied the introductory letter that explained the purpose of the study and explained that by returning the survey the teacher was giving implied consent (Appendix E). These items were inserted into a 9" x 12" envelope and sent to the teachers. Gifted coordinators or school-based designees were asked to distribute the survey materials to the teachers by placing them in the teachers' postal boxes as soon as possible. Teachers were notified by e-mail a week in advance of the projected arrival of the survey packet. The e-mail explained the nature of the study and the importance of the potential findings to the body of educational research. Where a direct e-mail link was not available, in many cases it was possible to predict the e-mail address using the standard e-mail address protocol used throughout the state in Georgia for teachers and administrators. In cases where the e-mail address was not obtained, a direct mailing served to notify the teacher. Survey packets were mailed either to a school contact (where available) or directly to the teachers within ten days of initial notification.

A list containing the individuals surveyed along with the corresponding identification numbers were maintained by the researcher in order to track response rates. Confidentiality of participants was maintained at all times during the investigation. As the surveys were returned, the identification number was clipped from the survey as the survey was checked off as having been received. By removing the identification number from the survey instrument, confidentiality was ensured. A spreadsheet that cross-references a new reference number used

for data entry to each survey is stored in a lock-box for which only the researcher has access. This spreadsheet is the only link between the participants and the surveys. All other primary data has been placed in storage in a locked file cabinet which only the researcher has keys. E-mail prompts were sent to teachers one and two weeks after the projected arrival of the surveys. Follow-up postcard requests for outstanding surveys were mailed three weeks after the initial mailing date.

Low survey response rates have a negative effect on the generalizability of a study in that the responders may not share the same characteristics or views of those who chose not to respond (Curtis & Redmond, 2009; Rogelberg & Luong, 1998). This affects not only the researcher's ability to generalize the findings to the sample but consequently to the population as well (Rogelberg & Luong, 1998). The larger the response, the more representative the sample is of the population. While response rates are difficult to predict since they are the product of human behavior, it is in the best interest of the researcher to strive to obtain the best response rate possible given their resources of time and money.

Miller and Smith (1983) have suggested trying to get back as many surveys as possible by using tested guidelines used in the construction of the cover letter and questionnaire. Some of their suggested techniques include personally signing all letters, mailing questionnaires so that they do not arrive at a time that is known to be a busy time for most potential responders, assuring confidentiality, offering a summary of the results, using rewards, specifying in the cover letter a deadline date to receive a response. They also have suggested that all materials be mailed flat, the use of colored paper, short questionnaires, humor, personal appeals or appeals based on social benefit, and sending post cards or replacement questionnaires as follow-up. Rogelberg and Luong (1998) have offered some of the same suggestions as Miller and Smith.

In addition, they have suggested the following: notification before the surveys are mailed, follow-up calls, stamped return envelopes included with the survey, ordering of survey questions with most interesting first and demographic information last, and the use of a sponsor to make the study more official. Oppenheimer (as cited in Curtis & Redmond, 2009) offered many of the same suggestions as the aforementioned researchers and added anonymity and advanced publicity.

As many techniques as can reasonably be justified in terms available resources of time and money were incorporated into the data collection process. Gifted coordinators were asked to deliver the surveys to the teacher's postal boxes at their schools as a cost saving measure. If a coordinator was not available, a school-based representative was requested. If no one was available to deliver the surveys, they were mailed to the teacher's school address. E-mail reminders were used for the first and second reminders, and postcards were used as a third and final reminder. Follow-up calls and replacement surveys were not used. Drane et al. (1998) stated "the postcard prompt seems to be a reasonable and cost saving alternative to repeated mailings of a survey questionnaire and to face to face interviews" (p. 6). Due to the limited circulation and academic nature of this study, sponsorship and advanced publicity were not appropriate strategies. Anonymity was not offered since it would limit follow-up efforts; however, confidentiality was built into the collection and reporting of the survey results. In addition to the coding of surveys and the securing of the data storage previously discussed, only aggregate data was reported to avoid the identification of any individuals, schools, or school systems. Third-party personnel employed for data interpretation were given access to only data that had no identifiers associated with participants. All primary data, including original surveys, will be kept under lock and key with access available only by the researcher for three years from

the completion of this study at which time it will be shredded using a locally available professional shredding service.

Incentives also were not used in this study. In a review of literature Roberts, Wilson, Roalfe, and Bridge (2004) found only one of the nine studies identified as using a prize lottery yielded a significant result. While the research of Petrolia and Bhattacharjee (2009) stated that incentives improve response rates, a closer look at their findings showed that despite the overall effect of prepaid and postpaid incentives, they worked better with less educated individuals. Petrolia and Bhattacharjee also reported that incentives had very little effect on item non-response. The lack of improvement in item non-response when incentives are used was also found by Shaw et al. (2001).

Once the follow up efforts were completed, the researcher tried to determine what effect the presence of non-responders had on the generalizability of the findings to the sample and ultimately to the population. Miller and Smith (1983) gave three methods of dealing with non-responders. One is to compare the non-responders to known characteristics of the population which may be able to be found in a database. No such database exists for this population. Another strategy is to use telephone or personal interviews to gather information for a random sample of non-responders. Due to the sensitive nature of the questions contained in the survey used in this study, this was an inappropriate method because of the likelihood that the answers may vary from those that were given on a mail-in survey. A third, more appropriate method for this study is based on research that has shown that late responders are often similar to non-responders. If no difference is found between the original responders and the late responders, then the assumption is that there was no difference in the non-responders and the responders and the results can be generalized to the sample (Ford & Bammer, 2009; Miller & Smith, 1983). If a

high level of non-response bias is found, then a statistical solution where the respondent data is weighted may be used to better generalize the findings. “Weighting involves adjusting the sample data in the analysis so that the characteristics of the sample correspond with those of the population – the bias introduced by the characteristics of the non-responders is statistically factored in” (Hamilton, as cited in Ford & Bammer, 2009, p. 52).

Descriptive Statistics of the Sample

The primary purpose of the demographic variables in this study was to give the researcher some insight into who comprised the sample in terms of gender, teaching experience, and grade levels taught. The demographic variable that surveyed the subjects taught was used only to screen participants to be sure that they met the criteria of teaching a core academic subject of math, social studies, science, or language arts and was therefore excluded from analysis. Frequencies that were run on the demographic data revealed that the sample was made up of 303 women (88.9%), 36 men (10.5%), and 2 non-responses (.6%). Years of teaching experience ranged from 0 to 40 years. It was determined that the mean number of years of teaching experience of the teachers surveyed equaled 14.77 (SD = 8.4). Years of teaching experience was included as a confounding variable when running regressions because it was believed that it may correlate to teacher efficacy and/or teachers’ attitudes toward gifted students. Since even beginning teachers are expected to have some training in differential instruction, beginning teachers were included in the analysis. Table 7 shows the frequency of individuals in the sample that teach at each grade level. Again, this variable was used to assure that those within the sample met the criteria of teaching a grade level between third and eighth grades.

Table 3

Frequencies of Grade Levels Taught

Grade level	Number of Participants
Multiple Elementary	9
Multiple Middle	13
Third	56
Fourth	47
Fifth	74
Sixth	49
Seventh	42
Eighth	48
Other Combination	3
Total	341

Data Analysis

Data from each participant was treated as an individual case and was analyzed with the assistance of the Statistical Package for Social Sciences (SPSS). The total score on each instrument was used as a measure for the three variables. Multiple regression analysis was conducted to determine what relationships exist between the independent variables (i.e., teacher- efficacy and teacher attitude toward gifted students) and the dependent variable (i.e., teacher willingness to differentiate instruction for gifted students). This method of analysis allows researchers to look at the effects that each of the independent variables has on the dependent variable separately as well as the combined effect the independent variables have upon the dependent variable. This technique also allowed the researcher to test for covariance among the independent variables. Multiple regression was not only an appropriate approach for this study, it is the most widely used statistical technique used in the social sciences (Allison, 1999). A stepwise regression analysis was performed to determine the unique contribution each independent variable made toward explaining the dependent variable. The latest version of The

Statistical Package of Social Sciences (SPSS 20) was used to perform all statistical calculations. In addition to multiple regression analysis, descriptive statistics, including means, minimum and maximum values, and standard deviation were calculated. Descriptive statistics were used to analyze both the demographic data collected and the results of the three surveys used in this study.

Reporting data. In a comparison of multiple correlation analysis and multiple regression analysis, Huberty (2003) listed the information that should be reported for both types of analysis. Huberty suggest that the following be reported as part of a multiple regression analysis:

- Purpose of the study
- Design of the study
- Computer program used
- Data inspection for missing data and outliers
- Descriptive statistics
- Assessment of the data conditions
- Adjusted R-squared value
- Effect size value ($R^2 - p/(N-1)$)
- X-variable deletion

All applicable tables generated by SPSS were also reported.

Limitations and Delimitations

Threats to internal validity that are pertinent to this study are instrumentation (Parker, 1990; Creswell, 2009), selection (Parker, 1990; Creswell, 2009), and ambiguity about the direction of causal effect (Parker, 1990).

One threat to internal validity is that of instrumentation. In the context of this study, the threat to internal validity created by instrumentation refers to the accuracy of the instruments being used (Parker, 1990). Two existing instruments were used to measure teachers' attitudes toward gifted students (Tomlinson et al., 1995) and teacher self-efficacy (Tschannen-Moran & Hoy, 2001). A third instrument (used to measure the differentiation of instruction for gifted students) was adapted by the researcher from a similar instrument used to measure the more general concept of differentiation of instruction. The modified instrument was critiqued for face validity by practicing professionals in the field of gifted education and university professors who are knowledgeable of instructional practices. Further, the instrument underwent pilot testing as part of piloting the entire survey. Eight teachers were used in the pilot study. These teachers were then removed from consideration as participants for the remainder of the study. The internal consistency of each of the three instruments used in this study was measured using Cronbach's alpha.

Another threat to internal validity is the ambiguity regarding the direction of causal influence. There may be a two-way relationship between the two independent variables and the dependent variable. It is conceivable that teachers who differentiate instruction are reinforced by successful experiences and their efficacy scores reflect this reinforcement. It is also conceivable that teachers who successfully differentiate instruction for gifted students are exposed to students with improved satisfaction and positive attitudes which in turn shapes the attitudes of the

teachers toward gifted students. Even the independent variables may show collinearity. Multicollinearity between independent variables can be dealt with through the use of stepwise entry of the variables (Sprinthall, 2003). A two-way relationship between the dependent variables and the independent variable also needs to be acknowledged. It is for this reason that the researcher has avoided making claims of causation and explained that findings represent relationships between the variables being studied and not evidence of a cause.

One of the major external threats is based on respondents versus non-respondents. There may indeed be fundamental differences in those individuals who are willing to respond to questions regarding their beliefs and practices. In an effort to get a broader cross-section of teachers to respond, a brief explanation of how confidentiality would be protected for all respondents was included in the initial e-mail contact and was restated in the cover letter which accompanied the surveys. Ultimately, this threat to validity is acknowledged as a limitation to the study.

Another external threat to this study, which will limit the degree to which the findings can be generalized beyond the population, is the small geographic region which has been defined as the population. The selection of this well defined population (public school teachers within the First District RESA) for reasons of convenience and accessibility poses the same threat as convenience sampling. Care needs to be taken on the part of the researcher and those using this research not to generalize beyond the population studied as other populations may have different characteristics than the participants of this study (Skidmore, 2008).

Summary

Teacher efficacy and teachers' attitudes toward gifted students were measured using existing instruments. To survey teacher's differentiations practices with gifted students, an instrument used to measure general differentiation practices was modified to address the practice of differentiating specifically for gifted students. This instrument was reviewed for content validity by experts in the field of gifted education including two practicing gifted educators and two university professors from the education department. The entire survey packet was then piloted using four elementary and four middle school teachers who were then removed from consideration as participants in the final study. Surveys were either delivered to the teachers by the system gifted coordinators (or designees) or mailed directly to the teachers' school addresses. The survey was accompanied by a self-addressed, stamped envelope to allow the respondent a quick and convenient method to return the survey. All statistical analysis including covariance of the independent variables and internal consistency of the modified survey were performed using SPSS statistical software.

CHAPTER IV

REPORT OF DATA AND DATA ANALYSIS

Introduction

This chapter reviews the methods used in data collection, including any relevant findings related to versions of the survey used, late responders versus early responders, and return rates. The statistical methods used in this study are also reviewed, as well as, the findings from the data analysis. The chapter concludes with a summary of the relevant findings from this study. This study was designed to determine what relationships, if any, exist between teachers' attitudes toward gifted students, teachers' self-efficacy beliefs, and teachers' willingness to differentiate instruction for gifted students. The two independent variables, attitudes and efficacy, were chosen by the researcher because they have been the subject of previous research in which they were studied in relation to the dependent variable, teachers' willingness to differentiate for gifted students. Since the goal of this research was to determine which of the independent variables better explains the dependent variable, each of the concepts surveyed were treated in their entirety using total scores on each, and no attempt was made to study the specific domains or attributes of the concepts or to analyze the surveys used other than to look for reliability estimates.

Multiple regression analysis was employed since it allowed the independent variables to be separated and the unique influence of each independent variable to be examined (Allison, 1999; Creswell, 2009; Gall, Gall, & Borg, 2007). The decision to use multiple regression was further reinforced since the chosen variables do not define a construct that is related to the dependent variable (Huberty, 2003).

Findings

Survey Response

During September, 2011, superintendents of the 18 school systems which comprise the First District Regional Educational Service District in Georgia were contacted by mail to request permission to survey teachers within their systems. As permission was granted from each system, a database of schools and teachers was constructed from information on each of the school's websites. The database contained contact information on all academic teachers that were believed to meet the criteria for participation in this study. This study was designed to survey third to eighth grade teachers who teach a core subject of science, social studies, mathematics, or language arts. Also, as permissions were obtained, teachers were recruited using e-mail to serve as volunteers who were willing to distribute survey packets to the teachers' school mailboxes. Ultimately, 9 of the 18 systems granted permission which provided access to 848 potentially qualified respondents. Once these nine systems had granted permission to survey their teachers, permission to begin research was requested from the Internal Review Board (IRB). Permission was granted by two additional systems after IRB permission was received, but these systems were excluded from the study since the study was already progressing. Before any surveys were mailed, letters were sent to all school principals to notify them that their superintendent had granted permission in their system and to see if the principals had any objections or questions. No objections were received. One question was received asking for a detailed breakdown of the system's data, but the request was denied because confidentiality provided to respondents would have been compromised.

School contacts were not obtained for all schools and, ultimately, 186 surveys had to be mailed individually to the teachers at their school addresses. Of these direct mail surveys, 74

were returned (39.8%), as opposed to those mailed to contact persons and distributed to the teachers where 335 of 662 surveys were returned for a return rate of 50.1%. Mailing to the school contacts allowed the surveys to be mailed in a single envelope thus saving the researcher money. The higher return rate was an unexpected byproduct.

Comparison of survey Version A and Version B. On November 11, 2011, 848 surveys were mailed to potential respondents in the nine school systems that granted permission to survey their teachers. Two versions of the survey packet were used, alternating the version of the survey every 10 surveys. There were 428 Version A surveys sent and 420 Version B surveys sent. The Version A surveys began with the survey to measure teacher attitudes toward gifted students, while the Version B surveys started with demographic questions and the survey to measure teacher efficacy. Both versions had the survey to measure differentiation in the inner two pages. A total of 213 Version A surveys were returned (49.8%), and 196 Version B surveys (46.7%) were returned. The cumulative rate was 48.2 %, or 409 surveys returned of the 848 surveys sent. Two additional surveys were received after the data collection had concluded, but were excluded from all response rate calculations and other analysis.

Of the 409 surveys received, 68 surveys were excluded because the teacher either did not meet the profile of a teacher teaching a core subject to gifted students in a regular classroom environment or the survey was substantially incomplete. Table 3 summarizes the various surveys that were excluded from this study. After removing the 68 excluded surveys, 341 surveys were available for analysis in this study. Thus, the net return rate was 40.2%. Of the 341 usable surveys, there were 176 Version A surveys (51.6%) and 165 Version B surveys (48.4%).

Table 4

Surveys Excluded from Study

Reason Excluded	Number Excluded
Wrong grade level	7
Taught only gifted	7
Taught no gifted students	26
Taught non-core subjects (art, band, careers, etc.)	6
Duplicates (served multiple schools or grade levels)	6
Substantially incomplete, did not follow directions, rewrote the question	7
Special education teacher	9
TOTAL	68

A one-way multivariate analysis of variance (MANOVA) was used to compare the two versions of the survey. Table 3 shows the descriptive statistics for the two versions of the instrument, including the number of each survey used in the MANOVA, the mean, and the standard deviation for the measures of the four dependent variables: total differentiation, total attitude, total efficacy, and years of experience. The independent variable was the version of the survey.

Table 5

Descriptive Statistics of the Two Versions of the Survey Instrument

	Version	Mean	Std. Deviation	N
Total Efficacy	Version A	87.92	10.812	154
	Version B	84.73	9.807	142
	Total	86.39	10.447	296
Total Differentiation	Version A	70.84	18.508	154
	Version B	77.04	19.598	142
	Total	73.81	19.258	296
Total Attitude	Version A	44.20	4.997	154
	Version B	45.63	4.963	142
	Total	44.89	5.023	296
Years of Experience	Version A	13.84	8.376	154
	Version B	15.78	7.925	142
	Total	14.77	8.207	296

Prior to conducting this analysis, the assumption of homogeneity of variance-covariance was checked using the Box's Test of Equality of Covariance Matrices, $F = 7.117$, $p = .72$. Since the significance level is above .001, the assumption of homogeneity of variance-covariance was not violated. The Levene's Test of Equality of Error Variances was also run to check the assumption of equal error variance. The findings indicate that equal error variance was not violated for any

of the variables tested. Table 5 shows the results of the Levene's Test of Equality of Error Variances.

Table 6

Levene's Test of Equality of Error Variances (Version)

Item	F	df1	df2	Sig.
Years of Experience	.329	1	294	.567
Total Efficacy	3.268	1	294	.072
Total Differentiation	.466	1	294	.496
Total Attitude	.329	1	294	.567

MANOVA is reasonably robust to modest violations of normality as long as there are at least 20 samples in each cell (Pallant, 2010).

There was a significant difference between Version A and Version B on the combined dependent variables, $F(3, 292) = 7.29$, $p = .000$; Wilk's Lambda = .91; partial eta squared = .09. When the results of the dependent variables were considered separately, Total Efficacy and Total Differentiation were found to be statistically significant using a Bonferroni adjusted alpha (Pallant, 2010) of .013. See Table 6 below for a comparison of the F-values, p-values, and partial eta squared values of the dependent variables.

Table 7

F-values, Significance, and Partial eta squared Values of the Dependent Variables (Version)

Dependent Variable	df	F-value	sig.	Partial eta squared
Years of Experience	1	4.190	.042	.014
Total Efficacy	1	6.999	.009*	.023
Total Differentiation	1	7.829	.005*	.026
Total Attitude	1	6.051	.014	.020

*P < .013

An inspection of our mean scores reveals that those individuals returning Version A surveys reported higher total efficacy, while those responding using Version B of the survey reported higher scores in total differentiation and total attitude. The variances show a difference in the two versions of the survey. The differing result between surveys raises the question as to whether the order of the instruments within each version of the survey may have led the participants to different response patterns. After certain teachers found that they were differentiating instruction for gifted students, did it make them feel more efficacious than those who responded to the efficacy scale with no knowledge of their differentiation practices or attitudes?

Reliability of the surveys. Cronbach's alphas were calculated for the instruments measuring both the independent variables of teacher efficacy and teachers' attitudes toward gifted children as well as the dependent variable which measures teachers' willingness to differentiate for gifted students in the regular classroom. An acceptable Cronbach's alpha of .88 was obtained for the *Teacher Sense of Efficacy Scale* which measures teachers' efficacy. The

Classroom Practices Inventory, as modified by the researcher and others during the pilot studies, used to measure the amount of differentiation a teacher reports doing for gifted students, also had an acceptable Cronbach's alpha of .91. Given the acceptable Cronbach's alphas, both of these instruments were left in their entirety as measures used in the subsequent regression analysis.

The *Survey of Practices* (Gifted Subscale) was used to measure teachers' attitudes toward gifted students. On the first pass of the Cronbach's alpha calculation, an initial alpha value of .67 was determined. The three reversed variables were checked for accurate coding. After determining the coding for the reversed variables was correct, the "Cronbach's Alpha if Item Deleted" table was consulted. It was revealed that item SOP7 was holding the alpha coefficient to a lower level, and the reliability of the survey would be enhanced if this item were deleted. Item SOP7 states, "Learning disabled students who are also gifted will need to concentrate their study to remediate their weakness so they can go on to use their area of strength." Further justification for dropping this variable was found by reviewing the survey and the missing data. Item SOP7 was not only the longest item in terms of words, it was the most often not responded to. After SOP7 was deleted, the Cronbach's alpha rose to .68. Still not having a satisfactory alpha, a second variable, RSOP10, was deleted as it was the second greatest contributor to a low alpha. RSOP10 ("Gifted students should be encouraged to direct their own learning.") is a reverse score variable.

Another run of the Cronbach's alpha coefficient yielded a Cronbach's alpha of only .69, still short of the desired level of .7 (Nunnally as cited in Pallant, 2010). At this juncture, it was decided to remove the reverse scored variable RSOP9. RSOP9 states, "Work that is too easy or boring frustrates a gifted child just as work that is too difficult frustrates an average learner." RSOP9 was the largest offender of the remaining variables. With two of the three reversed

variables removed, it was believed that the reverse wording may be a problem given the length of the overall survey instrument. The remaining 12 items yielded an acceptable alpha of .70. The revised attitude survey actually lowered the adjusted R^2 of the multiple regression analysis to .194 as compared to .196 for the complete version of the survey. Since the revised version of the survey actually weakens our model, it was decided that all further research reporting would be based on the original, unedited survey. This decision also was made for the convenience of consumers of this research who may desire a fairer comparison to other research that used the original version as developed by Tomlinson, et al. (1995).

Results of Data Analysis

Multiple Regression

Two predictor variables and one control variable were run against a single dependent variable, teachers' willingness to differentiate instruction for gifted students. The two predictor variables were teachers' attitudes toward gifted students (TAtt) and teacher efficacy (TEff). A single control variable, years of teaching experiences (YrsExp) was included in the regress to determine if it may play a larger part in explaining the teachers' willingness to differentiate for gifted students than the two predictor variables being compared. It was the researcher's intuition that led to the inclusion of years of teaching experience as a variable, because it was perceived that there may be a logical relationship between this control variable and either or both of the predictor variables.

A stepwise regression was run to see how much additional information could be obtained by the addition of each successive variable. As can be seen from Table 8, a total of 20% (adjusted R-square of .20) of the variance of the dependent variable can be explained by the combined effect of the two predictor variables and the control variable. The largest contribution

to explaining the variance in differentiation practices for gifted students is contained within teacher efficacy (adjusted $R^2 = .113$) and the second largest contribution is teacher attitudes changing our cumulative adjusted R^2 by only an additional .054. Years of experience added only an additional .029 to the cumulative adjusted R^2 . Beta weights for Total Efficacy, Total Attitudes, and Years of Experience (.298, .213, and .180 respectively) also show efficacy to be the primary predictor over attitude and experience. Medium effect sizes are found at all three steps within the regression (Cohen as cited in Newton and Rudestam, 1999).

Table 8

Stepwise Regression Analysis Summary for Variables Predicting Teachers' Willingness to Differentiate for Gifted Students (N=314)

Hierarchical step	Predictor variable	Total R^2	Adjusted R^2	Additional Adjusted R^2	Effect Size
1	Total Efficacy	.116***	.113		.131
2	Total Attitude	.172***	.167	.054	.208
3	Years of Exp.	.204***	.196	.029	.256

*** $p < .001$

Tolerance scores of .962 (TEff), .941 (TAtt), and .977 (YrsExp) indicate that only a small amount of the variance in each of the predictor variables can be accounted for by the other predictor variables (Regression, 2012). Lower levels of co-linearity between variables indicate that each of the measures is a separate construct and that we do not have two or more variable essentially measuring the same construct (Table 9).

Mahalanobis distances were inspected and only one case was found to have a value larger than the critical value for 3 independent variables of 16.27. Given the large sample size (N = 308) it was decided that the impact of a single outlier would have little effect on the study. An

analysis of Cook's distance showed no variables with values larger than 1; therefore no action was taken to deal with outliers (Pallant, 2010).

Table 9

Correlation Matrix

	Total Differ.	Total Efficacy	Total Attitude	Years of Experience
Total Differentiation	1.00			
Total Efficacy	.342	1.00		
Total Attitude	.298	.194	1.00	
Years of Experience	.216	.011	.150	1.00

Timely Responders versus Late Responders

Twelve days after the surveys were mailed, an e-mail reminder was sent to all individuals who had not returned their survey. Three additional days were allowed to account for surveys that had already been mailed. After the fifteenth day, the surveys were considered to be received late. One week after the first reminder e-mail was sent, a second e-mail reminder was sent to those individuals who still had not returned their surveys. After another week, postcards were sent to the remaining participants who continued to hold their surveys. Four additional weeks were allowed for all surveys to be received. After this four week period, two additional surveys were received but not included in the study since data entry into SPSS had been completed and analysis had begun. Ultimately 183 surveys (53.7%) were received on time and 158 (46.3%) were received late.

- a) A one-way multivariate analysis of variance (MANOVA) was used to compare early responders to those that required prompting. Table 9 shows the descriptive statistics for the two groups (early responders and late responders), including the number of surveys used in the MANOVA and the mean and standard deviation for the measures of the four dependent variables: total differentiation, total attitude, total efficacy, and years of experience. The independent variable was arrival time.

Table 10

Descriptive Statistics of Early and Late Responders

	Arrival Time	Mean	Std. Deviation	N
Total Efficacy	Early	86.59	10.747	161
	Late	86.15	10.111	135
	Total	86.39	10.447	296
Total Differentiation	Early	75.94	20.318	161
	Late	71.27	17.651	135
	Total	73.81	19.258	296
Total Attitude	Early	45.30	4.646	161
	Late	44.39	5.414	135
	Total	44.89	5.023	296
Years of Experience	Early	15.62	8.183	161
	Late	13.76	8.150	135
	Total	14.77	8.207	296

Prior to conducting this analysis, the assumption of homogeneity of variance-covariance was checked using the Box's Test of Equality of Covariance Matrices, $F = 13.414$, $p = .21$. Since our significance level is above .001, we have not violated the assumption of homogeneity of variance-covariance. The Levene's Test of Equality of Error Variances was also run to check the assumption of equal error variance. The findings indicate that equal error variance was not violated for any of the variables tested. Table 11 shows the results of the Levene's Test of Equality of Error Variances.

Table 11

Levene's Test of Equality of Error Variances (Response)

Item	F	df1	df2	Sig.
Years of Experience	.028	1	294	.868
Total Efficacy	.448	1	294	.504
Total Differentiation	3.001	1	294	.084
Total Attitude	1.733	1	294	.189

There was no significant difference between the early responders and the late responders on the combined dependent variables, $F(3,292) = 1.90$, $p = .111$; Wilk's Lambda = .98; partial eta squared = .03. When the results of the dependent variables were considered separately none of the variables were statistically significant using a Bonferroni adjusted alpha (Pallant, 2010) of .013. See Table 12 below for a comparison of the F-values, p-values, and partial eta squared values of the dependent variables.

Table 12

F-values, Significance, and Partial eta squared Values of the Dependent Variables (Response)

Dependent Variable	df	F-value	sig.	Partial eta squared
Total Efficacy	1	4.382	.037	.015
Total Differentiation	1	.131	.718	.000
Total Attitude	1	2.471	.117	.008
Years of Experience	1	3.830	.051	.013

Chapter Summary

This quantitative study's primary focus was to understand the relationships between teacher efficacy and teacher attitudes toward gifted students and the role these factors have on teachers' willingness to differentiate for gifted students. Before this analysis was performed, descriptive statistics were used to determine if there were significant differences between the responses given by individuals that received Version A or Version B of the survey.

Demographic data were analyzed to find the average number of years of teaching experience the respondents (N = 341) had as well as the makeup of the sample based on gender and grade levels taught. Cronbach's alphas were also calculated for each of the scales used to measure the independent and dependent variables: teachers' self-efficacy, teachers' attitudes toward gifted students, and teachers' willingness to differentiate instruction for gifted students.

Multiple regression analysis indicated that teacher self-efficacy, teachers' attitudes, and teaching experience were all significant predictors of teachers' willingness to differentiate instruction for gifted students. It was determined that teacher self-efficacy was the best predictor

of the three. It was also found that the combined predictive ability of all three variables only explained 20% of the dependent variable. Testing found no statistical difference between those individuals who responded early and those that required reminder notifications.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Introduction

Chapter V starts with a review of the major findings from studies involving differentiation of instruction for gifted students in the regular classroom. This discussion leads to the researcher's decision to study teacher self-efficacy and teachers' attitudes toward gifted students as two possible factors that explain teachers' willingness to differentiate instruction for gifted students in the regular classroom. The major findings of the study are then outlined and discussed in relation to what has been previously discovered by other researchers. Where possible, conclusions are drawn and implications for application of the findings for both practice and theory are stated. Finally, this chapter concludes with recommendations for further research.

Even before the passage of No Child Left Behind (NCLB), differentiation of instruction for gifted students being taught in the regular classroom had been an area of concern for educational researchers (Archambault et al., 1993; Westberg, Archambault, Dobyms, & Salvin, 1993). These early studies showed that only minor modifications were made for gifted students in regular classrooms in both public and private schools. The passage of NCLB exacerbated the problem of meeting the needs of gifted students in the regular classroom. Criticisms have been based on the law's focus to bring students to a minimum level of proficiency while providing no incentive for schools to attend to the needs of students who had already met proficiency (Golden, 2003; Goodkin & Gold, 2007; Tomlinson, 2002).

A synthesis performed by Rogers (2007) found that gifted students have needs different from other students and that gifted students should receive differentiated instruction in each subject area. According to Tomlinson (2005), "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” (p. 14). The importance of differentiation is highlighted because there are over three million gifted students in the nation, and most are being educated in the regular classroom (NAGC, 2009). Hertberg-Davis (2009) stated that it is hard to argue with the idea that a student learns better when the instruction is geared toward the student’s needs. Despite the limited amount of empirical evidence to validate the effectiveness of differentiation, there is a general consensus in the literature that differentiation is an effective practice for dealing with a classroom of diverse learners, including gifted students (Burns et al., 2002; Troxclair, 2000; Winebrenner, 2011).

Sisk (2009) stated that without professional development and a willingness to address the needs of gifted students on the part of the teacher, it is a challenge for regular classroom teachers to effectively differentiate, given the call for accountability that accompanied the implementation of NCLB. This finding is in contradiction to the work of Westberg and Daoust (2003) who found no correlation between teachers’ training experiences and their classroom practices. They did note one exception: university coursework in gifted education tended to increase curriculum modifications for gifted students. Westberg’s and Daoust’s study was a replication of the study performed by Archambault et al. (1993). These researchers concluded that despite teachers having more professional development, their practices were not reflective of the additional training. Two reasons given by Westberg and Daoust for the lack of change in practice were that teachers felt pressured to perform on state-test and that many districts do not provide follow-up experiences after training. Numerous reasons have been given by researchers for the lack of differentiation for gifted students. Van Tassel-Baska and Stambaugh (2005) listed such reasons as lack of training in classroom management skills, lack of planning time, lack of training in

differentiation, and lack of administrative support, among other reasons. They also explained that differentiation for gifted students is more challenging than for other populations. Still, other researchers have blamed the focus of education on high-stakes testing (Moon, Brighton, & Callahan, 2003) and the lack of systematic monitoring (Van-Tassel-Baska, Quek, & Feng, 2007).

While many researchers focused on factors external to the teacher, others focused on internal factors which tend to have an influence on a teacher's willingness to differentiate for gifted students. Two such factors became the focus of this study: teachers' attitudes toward gifted students and teacher self-efficacy. Eyre and Geake (as cited in Geake & Gross, 2008) have contended that negative attitudes may endanger effective differentiation and undermine professional development efforts. Pierce and Adams (2003) explained that the positive attitude they found for established teachers was a result of their years of association with gifted students. Pierce and Adams reported a mean score of 45.1 (SD = 3.6) using the Survey of Practices for Students with Varying Needs (SOP). Scores between 45 and 52 are considered positive on the SOP. Others have claimed that positive attitudes toward diverse learners may not be reflected in classroom practice (Tomlinson et al., 1994; Hootstein, 1998). McCoach and Siegle (2007) stated that despite 50 years of research on teachers' attitudes toward gifted students, there is still no consensus as to the current state of teachers' attitudes toward gifted students and gifted education. The study performed by McCoach and Siegle suggested that while training may increase teachers' understanding of the needs of the gifted, it does not lead to support for meeting those needs.

Another internal factor that showed promise in explaining teachers' willingness to differentiate instruction for gifted students in the regular classroom was self-efficacy. Self-efficacy is believed to be a predictor of what people do with the knowledge and skills they have

(Pajares, 2002). Starko and Schack (1989) stated that the successful completion of a target behavior is the most potent source of self-efficacy. The Starko and Schack study found that it is not enough for teachers to recognize that a particular instructional strategy may meet the needs of gifted students; a teacher must be confident in his or her ability to implement the needed strategy. Henson (2001) found that teachers with high efficacy tended to experiment with teaching matters and teaching methods more than teachers who were less efficacious.

After a review of the literature that included various barriers to differentiation of instruction for gifted students, including factors both internal and external to teachers, what appeared to be missing in the literature is research that identifies which of the two human factors, teachers self-efficacy or teachers' attitudes toward gifted students, is a better predictor of a teacher's willingness to differentiate instruction for gifted students.

Given this gap in the literature, it was the purpose of this researcher to explore the relationship between teacher self-efficacy and teachers' willingness to differentiate instruction for gifted learners in the regular classroom, as well as, the relationship between teachers' attitudes toward gifted students and teachers' willingness to differentiate instruction for gifted learners in the regular classroom. More specifically, the researcher set out to determine which of these two internal factors is a better predictor of a teachers' willingness to differentiate instruction for gifted students.

Summary of Research Findings

Survey Response

To obtain information from teachers regarding their attitudes toward gifted students, their self-efficacy, their teaching practices regarding differentiating instruction for gifted students, and a limited amount of demographic information, a four-page survey was constructed. This survey

included a limited number of demographic questions, the *Survey of Practices for Students With Varying Needs* (gifted questions only) (SOP), the *Teachers' Sense of Efficacy Scale* (TSES), and a version of the *Heacox Differentiation Scale* modified by the researcher to reflect teacher practices in delivering differentiated instruction to gifted students in regular classrooms (referred to in this study as the *Survey of Instructional Practices*). Cronbach's alphas were calculated for all three instruments. Acceptable alphas were found for the *Teachers' Sense of Efficacy Scale* and the *Survey of Instructional Practices*. The Cronbach's alpha for the SOP was below the desired .7 level, but the survey was retained in full after the deletion of items to raise the Cronbach's alpha actually weakened the relationship between this variable and others in subsequent analysis. Retaining the instrument in its original form also helps consumers of this research make fairer comparisons with other research that employs the SOP.

The target population of this study was teachers within the nine participating school districts within the First District RESA of Georgia. School contacts were used to distribute the survey packets within the schools where school contacts could be obtained. Survey packets were mailed directly to the teachers in schools where contacts could not be obtained. Of the surveys mailed directly to teachers, 74 of the 186 surveys mailed were returned for a response rate of 39.8%. Those delivered via contacts within the school yielded a response rate of 50.1% (335 returned of 662 sent).

Two versions of the survey packet were used, alternating the version of the survey every 10 surveys. 428 Version A surveys were sent and 420 Version B surveys were sent. The Version A surveys began with the survey to measure teachers' attitudes toward gifted students, while the Version B surveys started with demographic questions and the survey to measure teacher efficacy. Both versions had the survey to measure differentiation in the inner two pages.

A total of 213 Version A surveys were returned (49.8%), and 196 Version B surveys (46.7%) were returned. The cumulative return rate was 48.2%, or 409 surveys returned of the 848 surveys sent. Two additional surveys were received after the data collection had concluded, but were excluded from all response rate calculations and other analyses. Of the 409 surveys received, 68 surveys were excluded because the teacher either did not meet the profile of a teacher teaching a core subject to gifted students in a regular classroom environment or the survey was substantially incomplete. Of the 341 usable surveys, there were 176 Version A surveys and 165 Version B surveys.

A one-way multivariate analysis of variance (MANOVA) was performed to compare the two versions of the survey. There was a significant difference between Version A and Version B on the combined dependent variables, $F(3, 292) = 7.29, p = .000$; Wilk's Lambda = .91; partial eta squared = .09. When the results of the dependent variables were considered separately, Total Efficacy ($p = .009$) and Total Differentiation ($p = .005$) were found to be statistically significant using a Bonferroni adjusted alpha (Pallant, 2010) of .013.

Descriptive Statistics

The population of this study comprised 303 women (88.9%), 36 men (10.5%), and two non-responses to gender (.6%). The variable of Grade Taught indicated only that the majority of teachers teach at a single grade level. The Grade Taught variable was included primarily as a screening device to assure that the individuals in the study met the requirement of teaching in a grade between third and eighth. It was determined that the mean number of years of teaching experience of the teachers surveyed equaled 15 (SD= 6.7).

Timely Responders versus Late Responders

Timely responders were defined as those that responded before being prompted by a reminder e-mail. Of the 341 surveys received, 183 (53.7%) were timely and 158 (46.3%) were late. A one-way MANOVA was used to compare timely responders to late responders. There was no significant difference between the early responders and the late responders on the combined dependent variables, $F(3,292) = 1.90$, $p = .111$; Wilk's Lambda = .98; partial eta squared = .03.

Multiple Regression

Two predictor variables and one control variable were run against a single dependent variable, teachers' willingness to differentiate instruction for gifted students. The two predictor variables were teachers' attitudes toward gifted students (TAtt) and teacher efficacy (TEff). A single control variable, years of teaching experiences (YrsExp) was included in the regression to determine if it might play a larger part in explaining teachers' willingness to differentiate for gifted students than the two predictor variables being compared. It was the researcher's intuition that led to the inclusion of years of teaching experience as a variable because it was perceived that there may be a logical relationship between this control variable and either or both of the predictor variables.

Stepwise regression was calculated to see how much additional information could be obtained by the addition of each successive variable. A total of 20% (adjusted R-square of .20) of the variance of the dependent variable can be explained by the combined effect of the two predictor variables and the control variable. The largest contribution to explaining the variance in differentiation practices for gifted students is contained within teacher efficacy (adjusted $R^2 =$

.113) and the second largest contribution is teacher attitudes changing our cumulative adjusted R^2 by only an additional .054. Years of experience added only an additional .029 to the cumulative adjusted R^2 . Beta weights for Total Efficacy, Total Attitudes, and Years of Experience (.298, .213, and .180 respectively) also show efficacy to be the primary predictor over attitude and experience. Medium effect sizes are found at all three steps within the regression (Cohen, as cited in Newton & Rudestam, 1999).

Tolerance scores of .962 (TEff), .941 (TAtt), and .977 (YrsExp) indicate that only a small amount of the variance in each of the predictor variables can be accounted for by the other predictor variables (Regression, 2012). Lower levels of co-linearity between variables indicated that each of the measures is a separate construct and that we do not have two or more variables essentially measuring the same construct.

Discussion of Research Findings

Response Rates

The estimated number of systems that agreed to allow their teachers to participate in this study, nine, was exactly the 50% predicted by the researcher. The researcher decided to use a more conservative estimate of the number of solicited teachers that would respond than the 60% advocated by Asch, Jedrziewski, and Christakis (as cited in Hoonakker and Carayon, 2009). The 50% response rate predicted by the researcher was extremely close to the 48.2% actual gross response rate. What was not predicted was that 83% of the received surveys indicated that the respondent fit the profile of our desired sample of third to eighth grade teachers who taught a core subject(s) of math, social studies, science, and/or language arts. Van Tassel-Baska (as cited

in “Program,” 2004) stated that approximately 37 percent of gifted students are being educated in a regular classroom setting.

Descriptive Results

Despite the fact that the Version A and Version B surveys were found to be significantly different in terms of Total Efficacy and Total Differentiation, the per item mean of Total Efficacy for the two versions combined was 7.2 as opposed to the mean of 7.1 reported by Tschannen-Moran and Hoy (2001). In terms of total score, the instrument average total would be 85.2 as compared to 86.4 from this study. Total Attitude for the combined surveys yielded a mean score of 44.9 which compares favorably to the mean of 45.1 reported for experienced teachers by Pierce and Adams (2003). A score of 45 to 52 indicates a positive attitude toward gifted students. No comparisons could be made for Total Differentiation since the instrument used to measure total differentiation for gifted students had not previously been used. The average score per item was 4.9, which is slightly above a neutral position of 4.5 on the 0 to 9 scale.

Inferential Results

No previous studies were reviewed that attempted to find whether teacher self-efficacy or teachers’ attitudes toward gifted students is a better predictor of teachers’ willingness to differentiate instruction for gifted students. In this study, a teacher’s total years of teaching experience (YrsExp) was also included as an independent variable. What was found is that the total adjusted R^2 for the independent variables of Total Efficacy, Total Attitudes, and Years of Experience was .20 indicating that only 20% of the variance of the dependent variable (Total Differentiation) can be explained by the combined effect to the independent variables. The

original research question was answered in that it was found that efficacy was a better predictor of a teacher's willingness to differentiate instruction for gifted students. Attitudes was the second best predictor and a teacher's years of teaching experience had a marginal contribution to explaining a teacher's willingness to differentiate for gifted students. Medium effect sizes were found at all three steps within the regression.

Conclusions

While this study found statistically significant results for both of the internal factors studied, efficacy and attitude, as predictors of teachers' willingness to differentiate instruction for gifted students, it explains only a small part of a teacher's willingness to differentiate instruction for gifted students in the regular classroom. A teacher's years of experience is even a poorer predictor than teacher self-efficacy or teachers' attitudes toward gifted students. While these variables do provide a piece of the puzzle in our search for reasons that teachers are or are not willing to differentiate instruction for gifted students in the regular classroom, there is far more left unexplained. A review of the literature showed that the number of studies relating efficacy to differentiation of instruction was very limited.

This study indicated that teachers have a positive attitude toward gifted students similar to those found in the Pierce and Adams (2003) study, but these attitudes show little influence as a predictor of a teacher's classroom practices. Number of years of teaching experience proved to be a poor predictor of classroom practices.

Despite the differences between the two versions of the survey, a casual inspection of the means of this study as compared to previous studies suggested that the instruments used in the survey may be sound while the order of the instruments within one or both surveys may have

been flawed. It is also possible that the length of the survey may have made a difference. Without further testing, the variation between the two versions of the survey cannot be determined.

Implications

This research indicated that teacher self-efficacy is a better predictor than teachers' attitudes toward gifted students when trying to predict teachers' willingness to differentiate instruction for gifted students being taught in the regular classroom. While the original research question was answered as stated above, the findings only provide a piece of the puzzle. This study indicates that more research is needed to uncover other internal and external factors that affect a teacher's willingness to differentiate instruction for gifted students. Further research is necessary if a comprehensive model is to be developed that will give meaningful insights into why some teachers differentiate for gifted students and others are not willing.

To close the gap on the other 80% of the explanation of why teachers either do or do not differentiate for gifted students, it would be reasonable to explore the obstacles reported in previous research (Van Tassel-Baska & Stambaugh, 2005; Moon, Brighton, & Callahan, 2003; and Van Tassel-Baska, Quek, & Feng, 2007). It may well be that external factors such as lack of training, lack of planning time, lack of administrative support, and other external factors may greatly add to our understanding of teachers willingness to differentiate for gifted students. The effects that NCLB has had on gifted education should also be considered.

The overall importance of this study is that it truly highlights our lack of understanding as to why some teachers are willing to differentiate for gifted students while others are not willing.

This study also confirms a common theme that only a modest amount of differentiation is taking place for gifted in the regular classroom.

Recommendations for Future Research

The results of this study helped explain why some teachers are willing to differentiate instruction for gifted students while others are not. While statistically significant, the results were not robust enough to have application in practice. The following are recommendations for further research.

1. Using surveys that ask respondents to rate a list of both internal and external factors believed to influence differentiation for gifted students on how much they believe each factor influences their decisions to differentiate instruction might produce a broader view of what teachers believe to be obstacles to differentiation.
2. The construction of a more comprehensive model which attempts to produce a more complete explanation of why teachers differentiate instruction for gifted students in the regular classroom. The variables for this study may be comprised of variables from previous research to include both internal and external obstacles to differentiation.
3. Using mixed-method techniques to compare teachers' descriptions of their teaching practices with quantitative instruments that rely on self-reporting may give a more realistic picture of teachers' differentiation practices. If resources are available, structured observations could also be included to provide triangulation.
4. Surveying teachers in regard to past professional development experiences, with emphasizes on the exposure they had to vicarious experiences provided through demonstrations and opportunities to practice the methods being taught. Are teachers provided any feedback on their teaching of the methods learned once they return to the

classroom? Also, are additional training sessions provided after the initial implementation of the strategies? Vicarious experience and successful completion of a task are both known to contribute to teacher efficacy.

Final Thoughts

This research found evidence to substantiate that the majority of gifted students within public schools are being educated in the regular classroom. The downturn of the American economy has necessitated the decline of the pull-out model in favor of placing gifted students in heterogeneously grouped classrooms. Popular opinion is that there are no signs of a rapid economic recovery. The increased focus on students meeting minimum competency at the expense of challenging more accomplished students brought on by the passage of No Child Left Behind is believed to be another hindrance to educating America's most capable youth. Given that the majority of gifted students are now in regular classrooms, differentiation of instruction is a logical method to meeting the need of gifted students. Until the circumstances which have necessitated educating gifted students in heterogeneously grouped classrooms changes, we have no choice but to continue training teachers to employ effective teaching strategies to differentiate instruction for gifted students.

Previous research has cast doubt as to the effectiveness of staff development in increasing teachers' use of differentiation strategies for gifted students in regular classrooms. Since staff development is the primary approach to training experienced teachers, it is in best interest of gifted students to find the reasons why staff development has not been effective in changing teacher practice in regard to differentiating instruction for these students. This study found efficacy a more powerful predictor of a teacher's willingness to differentiate instruction for

gifted students than either teachers' attitudes toward gifted students or the number of years a teacher has taught. Efficacy is known to be enhanced by exposure to vicarious experiences. It is also known that teachers with higher efficacy are more likely to experiment with materials and methods than those with lower efficacy. Since staff development is the primary method of influencing the beliefs and behaviors of experienced teachers, it is incumbent upon administrators and those that deliver staff development to find how to improve staff development so that it delivers the results needed to provide an appropriate education for our brightest students. Given the role efficacy plays in teachers' willingness to change their behaviors, it would seem that more research should be done that studies how staff development can impact teachers efficacy.

REFERENCES

- Adams-Byers, J., Whitsell, S., & Moon, S. M. (2004). Gifted students' perceptions of the academic and social/emotional effects of homogeneous and heterogeneous grouping. *Gifted Child Quarterly*, 48(1), 7-20.
- Allinder, R. M. (1995). An examination of the relationship between teacher efficacy and curriculum-based measurement and student achievement. *Remedial & Special Education*, 16(4), 247.
- Allison, P. D. (1999). *Multiple regression: A primer*. Thousand Oaks: Pine Forge Press.
- Anderson, K. M. (2007). Tips for teaching: Differentiating instruction to include all students. *Preventing School Failure*, 51(3), 49-54.
- Archambault, F., Westberg, K., Brown, S., Hallmark, B., Emmons, C., & Zhang, W. (1993). Regular classroom practices with gifted students: Results of a national survey of classroom teachers (Research Monograph 93102). Storrs, CT: University of Connecticut, The National Research Center on the Gifted and Talented.
- Beebe, T. J., Rey, E., Ziegenfuss, J. Y., Jenkins, S., Lackore, K., Talley, N. J., & Locke III, R. G. (2010). Shortening a survey and using alternative forms of prenotification: Impact on response rate and quality. *BMC Medical Research Methodology*, 1050-1058.
doi:10.1186/1471-2288-10-50
- Bernal, E. M. (2003). To no longer educate the gifted: Programming for gifted students beyond the era of inclusionism. *Gifted Child Quarterly*, 47(3), 183.

- Brighton, C. M., Hertberg, H. L., Moon, T. R., Tomlinson, C. A., Callahan, C. M., & National Research Center on the Gifted and, T. (2005). The feasibility of high-end learning in a diverse middle school. *National Research Center on the Gifted and Talented*.
- Burns, D. E., Gubbins, E. J., Reis, S. M., Westberg, K. L., Dinnocenti, S. T., & Tieso, C. T. (2002). Applying gifted education pedagogy in the general education classroom: Professional development module. Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks: SAGE Publications, Inc.
- Curtis, E. A., & Redmond, R. A. (2009). Survey postal questionnaire: optimising response and dealing with non-response. *Nurse Researcher*, 16(2), 76-88.
- Dinnocenti, S. T., & National Research Center on the Gifted and Talented (1998). Differentiation: Definition and description for gifted and talented. Retrieved from <http://www.gifted.uconn.edu/nrcgt/newsletter/spring98/sprng985.html>
- Drane, J., Rainey, C. J., Valois, R. F., & Guevara, E. (1998). Improving mailback questionnaire data: Postcard and imputation methodologies. *American Journal of Health Studies*, 14(3), 161.

- Engle, A. M. (1953). The challenge of the slow learning child. *Educational Leadership*, 11(3), 151-155. Retrieved from http://www.ascd.org/ASCD/pdf/journals/ed_lead/el_195312_engel.pdf
- Faul, F., Buchner, A., Erdfelder, E., Lang, A.-G. (2009). G*Power 3 Version 3.1.2 [computer software]. Retrieved from <http://www.psych.uni-duesseldorf.de/abteilungen/aap/gpower3/download-and-register>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149-1160. doi:10.3738/BRM.41.4.1149
- Ford, R., & Bammer, G. (2009). A research routine to assess bias introduced by low response rates in postal surveys. *Nurse Researcher*, 17(1), 44-53.
- Freese, T. (1953). The challenge of the gifted child. *Educational Leadership*, 11(3), 156-159. Retrieved from http://www.ascd.org/ASCD/pdf/journals/ed_lead/el_195312_freese.pdf
- Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). New York: Pearson Education.
- Garson, G. D. (2008). Survey research. Statnotes: Topics in Multivariate Analysis. Retrieved from <http://faculty.chass.ncsu.edu/garson/pa765/statnote.htm>

- Geake, J. G., & Gross, M. M. (2008). Teachers' negative affect toward academically gifted students: An evolutionary psychological study. *Gifted Child Quarterly*, 52(3), 217-231.
- Gentry, M., Rizza, M. G., & Owen, S. V. (2002). Examining perceptions of challenges and choice in classrooms: The relationship between teachers and their students and comparisons between gifted students and other students. *Gifted Child Quarterly*, 46(2), 145.
- Golden, D. (2004, February 4). Numbers game: With eye on scores, schools fight over gifted kids. *Wall Street Journal - Eastern Edition*. pp. A1-A9.
- Goodkin, S., & Gold, D. G. (2007, August 27). The gifted children left behind. *Washington Post*.
- Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and Teacher Education: An International Journal of Research and Studies*, 4(1), 63-69.
- Hall, T. (2002). Differentiated instruction: Effective classroom practices report. Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved from <http://www.cast.org/system/galleries/download/ncac/DifInstruc.pdf>
- Harland, T. (2003). Vygotsky's zone of proximal development and problem-based learning: Linking a theoretical concept with practice through action research. *Teaching in Higher Education*, 8(2), 263-272.
- Heacox, D. (2002). *Differentiating instruction in the regular classroom: How to reach and teach all learners, Grades 3-12*. Minneapolis, MN: Free Spirit Publishing.

- Henson, R. (2001, January). Teacher self-efficacy: Substantive implications and measurement dilemmas. Paper presented at the Annual Meeting of the Educational Research Exchange. College Station, Tx. Retrieved from <http://www.des.emory.edu/mfp/EREkeynote.PDF>
- Hertberg-Davis, H. (2009). Myth 7: Differentiation in the regular classroom is equivalent to gifted programs and is sufficient: Classroom teachers have the time, the skill, and the will to differentiate adequately. *Gifted Child Quarterly*, 53(4), 251-253.
- Hoonakker, P., & Carayon, P. (2009). Questionnaire survey nonresponse: A Comparison of postal mail and internet surveys. *International Journal of Human-Computer Interaction*, 25(5), 348-373. doi:10.1080/10447310902864951
- Hootstein, E., & Metropolitan Educational Research Consortium, R. A. (1998). Differentiation of instructional methodologies in subject-based curricula at the secondary level. Research Brief #38.
- Huberty, C. J. (2003). Multiple correlation versus multiple regression. *Educational and Psychological Measurement*, 63(2), 271-278.
- Kettler, T. (2007). Contrary views on gifted story. *School Administrator*. Retrieved from http://findarticles.com/p/articles/mi_m0JSD/is_5_64/ai_n27245031/pg_2/?tag=content;col=1
- Knobel, R., & Shaughnessy, M. (2002). A Reflective conversation with Joe Renzulli. *Gifted Education International*, 16(2), 118-126.

- Koziol, S. R., & Burns, P. (1986). Teachers' accuracy in self-reporting about instructional practices using a focused self-report inventory. *Journal of Educational Research*, 79(4), 205-209.
- McCoach, D., & Siegle, D. (2007). What predicts teachers' attitudes toward the gifted? *Gifted Child Quarterly*, 51(3), 246-255.
- McIntosh, J. (2007). Contrary views on gifted story. *School Administrator*. Retrieved from http://findarticles.com/p/articles/mi_m0JSD/is_5_64/ai_n27245031/pg_2/?tag=content;col1
- Miller, L. E., & Smith, K. L. (1983). Handling nonresponse issues. *Journal of Extension*, 21, 45-50.
- Moon, T. R., Brighton, C. M., & Callahan, C. M. (2003). State standardized testing programs: friend or foe of gifted education? *Roeper Review*, 25(2), 49-60.
- National Association for Gifted Children. (2008). Teacher training. Retrieved from <http://www.nagc.org/index.aspx?id=3422>
- National Association for Gifted Children. (2009). State of the nation in gifted education. Retrieved from http://www.nagc.org/uploadedFiles/Information_and_Resources.State_of_the_States_2008-2009/2008-09%20State%20of%20the%20Nation%20overview.pdf
- Newton, R. R. & Rudestam, K. E. (1999). *Your statistical consultant: Answers to your data analysis questions*. Thousand Oaks: SAGE Publications.

No Child Left Behind Act of 2001, 20 U.S.C. § 6301 *et seq.* (2002)

Pallant, J. (2010). *SPSS survival manual*. New York: McGraw-Hill.

Parjares, F. (2002). Overview of social cognitive theory and of self-efficacy. Retrieved from <http://wwwemory.edu/EDUCATION/mfp/eff.html>

Parker, R. M. (1990). Power, control, and validity in research. *Journal of Learning Disabilities*, 23(10), 613-620.

Petrolia, D. R., & Bhattacharjee, S. (2009). Revisiting incentive effects. *Public Opinion Quarterly*, 73(3), 537-550. doi:10.1093/poq/nfp038

Pierce, R., & Adams, C. (2003). Attitudes of preservice and experienced teachers toward gifted learners: An expanded abstract. Retrieved from http://www.hiceducation.org/Edu_Proceedings/Rebecca%20L.%20Pierce.pdf

Ponder, G., & Doyle, W. (1977). Teacher practicality and curriculum change: An ecological analysis. Paper presented at the American Educational Research Association Annual Meeting New York. Retrieved from ERIC database.

Program delivery models for the gifted (2004, Fall) *Duke Gifted Letter* 5(1). Retrieved from http://www.dukegiftedletter.com/articles/vol5no1_ef.html

Regression with SPSS. UCLA: Academic Technology Services, Statistical Consulting Group. Retrieved from <http://www.ats.ucla.edu/stat/spss/webbooks/reg/chapter2/spssreg2.htm> (accessed March 17, 2012).

Resources manual for gifted education services (2009). *Official Code of Georgia*. Retrieved from Georgia Department of Education database.

Ridley, K., & White, K. (2004). What works for gifted and talented pupils. *Education Journal*, (75), 28-29.

Roberts, L. M., Wilson, S. S., Roalfe, A. A., & Bridge, P. P. (2004). A randomized controlled trial to determine the effect on response of including a lottery incentive in health surveys [ISRCTN32203485]. *BMC Health Services Research*, 430-438. doi:10.1186/1472-6963-4-30

Rogelberg, S. G., & Luong, A. (1998). Nonresponse to mailed surveys: A review and guide. *Current Directions in Psychological Science (Wiley-Blackwell)*, 7(2), 60-65.
doi:10.1111/1467-8721.ep13175675

Rogers, K. B. (2007). Lessons learned about educating the gifted and talented: A synthesis of the research on educational practice. *Gifted Child Quarterly*, 51(4), 382-396.

Shaw, M. J., Beebe, T. J., Jensen, H. L., & Adlis, S. A. (2001). The use of monetary incentives in a community survey: Impact on response rates, data quality, and cost. *Health Services Research*, 35(6), 1339-1346.

Sisk, D. (2009). Myth 13: The regular classroom teacher can "go it alone". *Gifted Child Quarterly*, 53(4), 269-271.

- Skidmore, S. (2008, February). Experimental design and some threats to experimental validity: A primer. Paper presented at the annual meeting of the Southwest Educational Association, New Orleans, LA. (ERIC Document Reproduction Service No. ED499991)
- Smith, E. J. (2007). Weaving the gifted into the full fabric. *School Administrator*, 64(2), 10.
- Sprinthall, R. C. (2003). *Basic statistical analysis*. Boston: Allyn & Bacon.
- Starko, A. J., & Schack, G. D. (1989). Perceived need, teacher efficacy, and teaching strategies for the gifted and talented. *Gifted Child Quarterly*, 33(3), 118-122.
- Stein, M., & Wang, M. C. (1988). Teacher development and school improvement: The process of teacher change. *Teaching and Teacher Education*, 4(2), 171-187.
- Tomlinson, C., & ERIC Clearinghouse on Disabilities and Gifted Education, R. A. (1995). Differentiating instruction for advanced learners in the mixed-ability middle school classroom. *ERIC Digest E536*.
- Tomlinson, C. A. (1997). Meeting the needs of gifted learners in the regular classroom: Vision or delusion? National Association for Gifted Children. Retrieved from <http://www.nagc.org/index.aspx?d=658>
- Tomlinson, C. A. (2000). Differentiation of instruction in the elementary grades. *ERIC Digest*. Retrieved from <http://eric.ed.gov/PDFS/ED443572.pdf>
- Tomlinson, C. A. (2002). Proficiency is not enough. *Education Week*, 22(10), 36-38.

- Tomlinson, C. A. (2004). Sharing responsibility for differentiating instruction. *Roeper Review*, 26(4), 188-189.
- Tomlinson, C. A. (2005). *The differentiated classroom: Responding to the needs of all learners*. Upper Saddle River, NJ: Pearson Education, Inc.
- Tomlinson, C., Brighton, C., Hertberg, H., Callahan, C. M., Moon, T. R., Brimijoin, K., & ... Reynolds, T. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: A review of literature. *Journal for the Education of the Gifted*, 27(2-3), 119-145.
- Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M., & Virginia Univ., C. E. (1995). Preservice teacher preparation in meeting the needs of gifted and other academically diverse students. Retrieved from <http://eric.ed.gov/PDFS/ED429392.pdf>
- Tomlinson, C., Tomchin, E., & Callahan, C. (1994, April). Preservice teachers' perceptions of and responses to the differential needs of gifted students in their classrooms. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA. Retrieved from <http://www.etseo.org/info/raas/DI%20Review%20of%20Lit.pdf>
- Troxclair, D. A. (2000). Differentiating instruction for gifted students in regular education social studies classes. *Roeper Review*, 22(3), 195.

- Tschannen-Moran, M., & Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783-805.
- VanTassel-Baska, J., Quek, C., & Feng, A. (2007). The development and use of a structured teacher observation scale to assess differentiated best practice. *Roeper Review*, 29(2), 84-92.
- VanTassel-Baska, J., & Stambaugh, T. (2005). Challenges and possibilities for serving gifted learners in the regular classroom. *Theory Into Practice*, 44(3), 211-217.
doi:10.1207/s15430421tip4403_5
- Westberg, K. L., & Archambault, F. X. (1997). A multi-site case study of successful classroom practices for high ability students. *Gifted Child Quarterly*, 41(1), 42-51.
- Westberg, K. L., Archambault, F. X., Jr., Dobyns, S. M., & Salvin, T. (1993). An observational study of instructional and curricular practices used with gifted and talented students in regular classrooms (Research Monograph 93104). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.
- Westberg, K., & Daoust, M. (2003, Fall). The results of the replication of the classroom practices survey replication in two states. The National Research Center on the Gifted and Talented at the University of Connecticut. Retrieved from <http://www.gifted.uconn.edu/nrcgt/newsletter/fall03/fall032.html>
- Willard-Holt, C. (2003). Raising expectations for the gifted. *Educational Leadership*, 61(2), 72-75.

Winebrenner, S. (2001). *Teaching gifted kids in the regular classroom: Strategies and techniques every teacher can use to meet the academic needs of the gifted and talented.*

Minneapolis, MN: Free Spirit Publishing Inc.

APPENDICES

APPENDIX A

SURVEY OF PRACTICES WITH STUDENTS OF VARYING NEEDS

SURVEY OF PRACTICES

Mark the response that applies best to you. SD = Strongly Disagree, D = Disagree, A = Agree,

SA = Strongly Agree, DK = Don't Know

1. Gifted students can make it on their own and need no special provisions. (SD) (D) (A) (SA) (DK)
2. Gifted students will take their regular assignments and make them more challenging on their own. (SD) (D) (A) (SA) (DK)
3. An effective way to identify gifted students is to look for students with the highest grades. (SD) (D) (A) (SA) (DK)
4. Allowing gifted students to work on assignments that are different from the rest of the students' is playing favorites and fostering elitism. (SD) (D) (A) (SA) (DK)
5. Gifted students need longer assignments since they work faster. (SD) (D) (A) (SA) (DK)
6. Working too hard in school leads to burn-out in gifted students. (SD) (D) (A) (SA) (DK)
7. Learning disabled students who are also gifted will need to concentrate their study to remediate their weaknesses so they can go on to use their areas of strength. (SD) (D) (A) (SA) (DK)
8. Gifted students are easy to identify in the classroom. (SD) (D) (A) (SA) (DK)
- 9.* Work that is too easy or boring frustrates a gifted child just as work that is too difficult frustrates an average learner. (SD) (D) (A) (SA) (DK)
- 10.* Gifted students should be encouraged to direct their own learning. (SD) (D) (A) (SA) (DK)
- 11.* Some underachievers are actually gifted students. (SD) (D) (A) (SA) (DK)
12. If a gifted student is doing poorly in spelling, it is necessary to deal with the weakness in spelling before presenting more advanced content in other areas. (SD) (D) (A) (SA) (DK)
13. Removing special education and gifted students from the classroom for special classes is disruptive to the class schedule. (SD) (D) (A) (SA) (DK)
14. In teaching gifted students, teachers should modify the content only, since all students need to use the same processes and can generate the same projects. (SD) (D) (A) (SA) (DK)
15. Having gifted students work on individual projects or assignments isolates them from the rest of the class. (SD) (D) (A) (SA) (DK)

APPENDIX B

TEACHERS' SENSE OF EFFICACY SCALE

APPENDIX C

SURVEY OF INSTRUCTIONAL PRACTICES

Classroom Practices Inventory

Use this inventory to look at what you are already doing in your classroom to differentiate instruction for gifted students. "Gifted students" refers to only those students who are officially designated as gifted in accordance with the guidelines established by the Georgia Department of Education.

Mark an "X" on each line to show where your current teaching practices lie on each continuum.

Traditional classroom:

Differentiated classroom:

Covering the curriculum is my first priority and directs my teaching.

I base my teaching of gifted students' on their learning needs as well as on the curriculum.

Learning goals remain the same for all students.

Learning goals are adjusted for gifted students based on their needs.

I emphasize mastery of content and skills for all students.

I emphasize critical and creative thinking and the application of learning when teaching gifted students.

Students use the same informational resources (books, articles, Web sites).

I match gifted students to specific informational resources based on their learning needs and abilities.

I primarily use whole-class instruction.

I use a variety of instructional formats (for example, whole class, small groups, partners, individuals) when teaching gifted students.

I tend to group students heterogeneously.

As appropriate, I group students for instruction based on ability.

All students move through the curriculum together and at the same pace.

The pace of instruction varies for gifted students.

All students complete the same activities.

I give gifted students opportunities to choose activities based on their interests.

Classroom Practices Inventory continued . . .

All students complete all activities.

Gifted students complete different activities based on their needs or learning preferences.

All students are involved in all instructional activities.

I use methods for testing out of work and for compacting (speeding up, eliminating, replacing) work, as appropriate for gifted students.

I tend to offer enrichment equally to all students.

I tend to offer more enrichment work to gifted students.

In teaching, I provide the same amount of practice for all students.

In teaching, I tend to require less practice for gifted students.

My teaching activities typically involve lower-level thinking—knowledge and comprehension for all students.

My teaching activities for gifted students demand higher-level thinking.

I assume that students have limited or no knowledge of curriculum content.

Before beginning a unit, I use preassessment strategies to determine what gifted students already know and then compact the content.

I typically use the same assessment tools, products, or projects for all students.

I typically allow for gifted learner differences by providing a variety of ways to show learning.

APPENDIX D

INTERNAL REVIEW BOARD PERMISSION

Georgia Southern University Office of Research Services & Sponsored Programs		
Institutional Review Board (IRB)		
Phone: 912-478-0843		Veazey Hall 2021
		P.O. Box 8005
Fax: 912-478-0719	IRB@GeorgiaSouthern.edu	Statesboro, GA 30460

To: Daniel Caldwell
Dr. James Green

cc: Charles E. Patterson
Vice President for Research and Dean of the Graduate College

From: Office of Research Services and Sponsored Programs
Administrative Support Office for Research Oversight Committees
(IACUC/IBC/IRB)

Date: 11/2/11

Initial Approval Date: 11/2/11

Expiration Date: 3/15/12

Subject: Status of Application for Approval to Utilize Human Subjects in Research

After a review of your proposed research project numbered H12131 and titled "Educating Gifted Students in the Regular Classroom: Efficacy, Attitudes, and Differentiation of Instruction," it appears that your research involves activities that do not require full approval by the Institutional Review Board according to federal guidelines.

According to the Code of Federal Regulations Title 45 Part 46, your research protocol is determined to be exempt from full review under the following exemption category(s):

- B2 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.

Therefore, as authorized in the Federal Policy for the Protection of Human Subjects, I am pleased to notify you that your research is exempt from IRB approval. You may proceed with the proposed research.

Please notify the IRB when you have completed the project by emailing irb@georgiasouthern.edu. Include the date of completion, the number of subjects (records) utilized and if there were any unexpected events related to the subjects during the project. (If none, state no unexpected or adverse events occurred during the conduct of the research.)

Sincerely,



Eleanor Haynes
Compliance Officer

APPENDIX E

TEACHER LETTER AND CONSENT



DEPARTMENT OF LEADERSHIP, TECHNOLOGY, & HUMAN DEVELOPMENT

November 7, 2011

Dear Teacher,

My name is Bill Caldwell, and I am a candidate for the Ed.D. in Educational Administration at Georgia Southern University. Presently, I am conducting research for my dissertation. In that connection, I am inviting you to participate in a dissertation study of instructional practices for gifted students. Specifically, I will be looking at how the factors of teacher efficacy and teachers' attitudes toward gifted education influence teachers' willingness to differentiate instruction for gifted students in mixed-ability classrooms. I am surveying teachers in grades three through eight within schools throughout the First District RESA.

The survey will take you only an estimated 12 minutes to complete. If you should decide to participate, please complete the enclosed survey and return it to me in the self-addressed, stamped envelope I have provided. Your completion of the survey is implied consent. It is hoped that this study will give teachers additional insight into their teaching practices and help future researchers by providing insight into how the factors of efficacy and attitudes may influence the differentiation of instruction. It is possible, however that some teachers may experience discomfort as they gain insights into their teaching practices, attitudes, or sense of control. I want to assure you that confidentiality is of primary concern and that all identifiers will be removed from your survey when it is received. Also, no individuals, schools, or school systems will be identified in reporting the results, and all responses will remain confidential.

Your decision to participate is strictly voluntary and you are free to discontinue your participation in this study at any time. Your decision whether or not to participate in this study will not prejudice your relationship with Georgia Southern University.

If you have any questions about this research project, please contact me, Bill Caldwell, at (912) 856-1214, bill.caldwell@yahoo.com or you may contact my faculty advisor, Dr. James Green, at (912) 478-5567. To contact the Office of Research Compliance for answers to questions about the rights of research participants or for privacy concerns please email IRB@georgiasouthern.edu or call (912) 478-5465. This project has been reviewed and approved by the GSU Institutional Review Board under tracking number H12131.

Thank you for your time and consideration.

Sincerely,

Bill Caldwell