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Academic Intrinsic Motivation and Differentiated Instruction in the Regular Classroom: Potential Relationships During the Transition Away from Gifted Programming

Heather Lyn Houston
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ACADEMIC INTRINSIC MOTIVATION AND DIFFERENTIATED INSTRUCTION
IN THE REGULAR CLASSROOM: POTENTIAL RELATIONSHIPS DURING
THE TRANSITION AWAY FROM GIFTED PROGRAMMING

by

Heather Lyn Houston

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

May 2013
ABSTRACT
ACADEMIC INTRINSIC MOTIVATION AND DIFFERENTIATED INSTRUCTION IN THE REGULAR CLASSROOM: POTENTIAL RELATIONSHIPS DURING THE TRANSITION AWAY FROM GIFTED PROGRAMMING

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Gifted middle school students in Mississippi spend the majority of their instructional day in the general education classroom, yet much research aimed at meeting the needs of these gifted students does not focus on their experiences there. Further, much of the research surrounding the instruction received by gifted students in the regular classroom takes the perspective of the teacher alone. The purpose of this research is to examine the ways in which the activities being planned for the general education classroom serve to impact the Academic Intrinsic Motivation of both gifted and non-gifted students in sixth and seventh grades. The views of teachers and students were examined through the use of two survey instruments, the Middle School Survey of Classroom Practices for teachers, and the Children’s Academic Intrinsic Motivation Inventory for students. Student’s motivation for each core subject area (English, math, science, and social studies) and their general motivation for school along with their status as gifted or non-gifted were compared to their subject area teacher’s scores for the use of two categories of differentiation for gifted or non-gifted children. Teachers’ responses were classified as content modifications for gifted students, content modifications for non-gifted students, self-directed learning modifications for gifted students, and self-directed learning modifications for non-gifted students. Student scores were appropriately
matched to the teacher’s score in order to attempt to identify any possible correlations between the teacher’s stated use of activities and the student’s motivation for those activities. No correlations were found in relation to the Language Arts classrooms, but correlations were found in math, science, and social studies, though they varied according to differentiation category and student’s status as gifted or non-gifted.

Other findings included a significant difference in the frequency of use of the differentiation strategies between gifted and non-gifted students, and a significant difference in the type of differentiation used based on the amount of training teachers received regarding gifted education. There was no difference in the general motivational levels of gifted and non-gifted students.
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Approved:

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Director

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Dean of the Graduate School

May 2013
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CHAPTER I

INTRODUCTION

It is the geniuses, the persons of abundant talents, who have the greatest difficulty in seeking out their destiny because their gifts continually present them with so many possibilities. Rollo May (Shaunessey, 1984, p. 9)

Whether genius is defined as having an I.Q. of 130 or 160, or simply as being able to do something that others have not, studies of eminence, learning, wisdom, and intellect have not yet been able to explain the difficulties presented to those who possess the spark but lack the motivation to fulfill it. Even before Lewis Terman began his Genetic Studies of Genius, American educators questioned the characteristics of giftedness (Jolly, 2008). Were the gifted sickly? Were they ugly or short? Should they lack in some way the social accoutrements of life as compensation for their over-abundant intellect? Questions such as these began to receive answers as Terman (1925) and Hollingworth (1919) began some of the first recorded studies of the characteristics, habits, and abilities of geniuses.

The field has been plagued for decades with the specter of the prodigy turned average. The questioning of whether giftedness identified in childhood is truly a life-long moniker, or simply an instance of one who peaked too early, has followed the Terman termites, Kerr’s high school colleagues, and is now being applied to the whole range of high-achieving students as they seem to be regressing toward the mean on high-stakes standardized tests required by No Child Left Behind and other similar measures (Duffett, Farkas, & Loveless, 2008).

Society is both drawn to and repulsed by the concept that giftedness has any real substance. Readily accepting musical aptitude or athleticism as true gifts, but shunning
the idea that the mind could be used as adeptly as the ear or the body, a large number of people believe that the attempts to meet the needs of gifted learners is no more than elitism: a prejudice not strictly tied to race, color, or creed (Bianco, 2010; Colangelo & Davis, 2003). According to Jolly (2006), Hollingworth first broached the problem when she indicated the reluctance of an average tax payer to have his hard earned money funneled into a public school system if that system were creating disproportionate opportunities for the offspring of those who were his superiors at his place of employment, thereby insuring that an already unbalanced class system would be aggrandized.

Regardless of an individual’s support for or opposition to the existence of giftedness or the need for educational programs for the gifted, a shift occurs in the collective public opinion when reports arise indicating that American schools are falling behind their foreign competitors, especially in the areas of math and science (Gallager, 2009). The question has once again been raised: where are America's best and brightest? Why does their performance lag in the testing that is used to compare this nation to other nations? Many possible answers exist to these questions, but one, credited more and more often in recent years, is that the importance placed on high-stakes testing and accountability has limited the focus of teachers to those students who are falling below grade-level standards rather than those who are able to meet the standard without experiencing any form of academic challenge whatsoever (Duffett, et al., 2008). Without the attention and encouragement of concerned adults, gifted children may feel that their abilities are something to be hidden, rather than celebrated (Rimm, 1995).
A teacher who is neglectful of a student's needs, whether from her own inability, or from a misunderstanding of those needs, has profound impact on the performance of that student well beyond his time in her classroom. Research shows that a poor teacher, one who does not meet the needs of a student, impacts a child's classroom performance for a minimum of three years. This time may be prolonged if the child continues to receive poor instruction (Taylor, 2008; Tucker & Stronge, 2005). The compounding effect of poor instruction creates an impetus for the student’s teachers in later years to provide review and drill of the missing knowledge. This then, creates a focus on overcoming the student’s deficits rather than a focus on utilizing his or her individual strengths. Bianco (2010) states that such a deficit focus blinds teachers to the growth opportunities, based on strengths, of which students must take advantage in order to be successful.

Mississippi, as one of a handful of states to mandate gifted education, provides educational opportunities for gifted students that allow them to focus on their individual strengths. In Mississippi, students in grades two through six who are identified as Intellectually Gifted must receive the services of a gifted education specialist for not less than five hours of instruction per week. The definition of intellectual giftedness used by the state includes, “those children and youth who are found to have an exceptionally high degree of intelligence as documented through the identification process” (MDE, 2006, p. 1). Although the identification process allows for a variety of entry points all focused on students strengths, the final step in the process requires a student to perform “at or above the 90th percentile” (MDE, 2006, p. 9) on an approved test of individual intelligence. The regulations acknowledge that while grades may be used as one entry point on the
multi-factored identification process, they should not be used to prevent a student from being identified as intellectually gifted. Further, there is a separate process to identify each of the four types of giftedness and identification in one area does not insure inclusion in any of the other three – with one exception: “a student with an Intellectually Gifted eligibility ruling may be served in an Academically Gifted program in grades 9-12 without obtaining an Academically Gifted eligibility ruling” (MDE, 2006, p. 8). While there are many reasons for this allowance, it must also be clarified that only intellectually gifted educational programs are mandated in the state regulations and provided for with state funds, and then only for grades two through six. All other programs are considered permissible programs and do not receive funding from the state level. Schools are admonished to use careful consideration when placing intellectually gifted students into an academically gifted program in order to avoid the common misconception that an intellectually gifted child will automatically perform well in the academic arena. The regulations explicitly state that intellectually gifted children may not perform well in the regular classroom. The services provided through the intellectually gifted program allow students to enhance their strengths in ways that are “qualitatively different educational experiences not available in the regular classroom” (MDE, 2006, p. 5).

It is clear from these elements of the regulations, that the regular classroom experience for all children is intended to provide a strong background based in the rigorous exploration of the foundational elements of that course’s area of study, but is not expected to meet the needs of gifted students who display exceptional characteristics that would be outside of those foundational principles. The difference between the regular classroom and the gifted classroom allows intellectually gifted students to receive both
foundational understandings in the various fields and the opportunity to transfer that knowledge in novel ways to new situations. The two experiences, should, therefore, work together to create the optimal learning experience for students of exceptional ability and foresight.

However, following the sixth grade, intellectually gifted programs are no longer funded by the state, and in times of economic downturns are often cut at the district level as well. Students who have received the benefit of the dual support of regular and gifted education classrooms are faced with the prospect of attending only the regular classroom and losing the support and opportunity for transferring their knowledge in a gifted classroom from which they once benefitted. Because intellectually gifted students spend the majority, if not all, of their time at school in the regular classroom, it is important to examine the atmosphere of the regular classroom and the strategies used there to determine whether they are beneficial to intellectually gifted students.

New policies set by the Mississippi Board of Education, such as Response to Intervention (RTI), and the adoption of the Common Core Curriculum in Mississippi (MDE, 2011), have encouraged many schools to evaluate their current condition and emphasize their desire to participate in professional development opportunities designed to help teachers understand the differences between the current curriculum and the Common Core Standards as well as the teaching methods that have shown some success in research settings. One of these methods is differentiated instruction. While true differentiation and its successful implementation have been shown to improve student learning (Tomlinson, 1994), many professionals are unsure of the appropriate methods to
use and are particularly unlikely to use those methods with gifted students (Archambault, et al., 1993; VanTassel-Baska & Stambaugh, 2005).

Statement of the Problem

As schools attempt to push more and more students to higher levels of achievement on high-stakes tests, gifted students are sometimes left unmotivated and can become indifferent to the importance of their performance as it relates to school-wide results as well as the benefits it provides them on a personal level. This problem becomes intensified as gifted students reach middle school, when they are forced out of gifted education programs (Tomlinson, 1994). Not only are students of this age facing the natural physiological changes brought on during early adolescence, they are also attempting to cope with how they fit into a classroom climate that does not include the support of a gifted program.

According to Bonner (2005), the very existence of middle schools is an outcome of the desire to help students make important transitions based on their ability to cope with the world around them, prepare for higher levels of curricular instruction, and clarify their development as unique individuals. Bonner further claims that these goals are extremely similar to the goals of gifted education, and rather than create a conflict of interest, the existence of these similar goals should create a symbiotic relationship between gifted education and middle level education, although this is not typically the outcome (2005). While high levels of intrinsic motivation have been identified as an indication of giftedness, Bonner’s research indicates that the majority of students in the middle grades identify intrinsic motivation as necessary for success. Further, the students disconnected the concepts of giftedness and success by responding to survey questions
with indications that, in their minds, while giftedness was innate, success could be achieved by anyone. However, this research also found that gifted students in the middle grades are especially vulnerable to a shift in their locus of control from internal to external as many of them were not experiencing substantive amounts of relevant instruction that would encourage their innate skills and abilities to develop beyond rudimentary stages (Bonner, 2005).

Bellmore (2011) also indicates numerous difficulties faced by high-ability students during middle school. Because popularity and peer acceptance are listed as important factors in the affective domain for middle school students, Bellmore examined the relationship of these constructs with student Grade Point Averages (GPA). It was determined that low status among peers during middle school was associated with a drop in GPA. Further, it was determined that both rejection of peers and unpopularity became more important to students as they transitioned from elementary to middle school. Bellmore (2011) states that, “negotiating a new school context” is challenging due to “features in the new school environment . . . and because students carry liabilities associated with their peer experiences in both their prior and their current school contexts” (p. 292). It may be inferred from this statement that when students are faced with recognizable changes in the make up of their environment, including peer relationship structures, students’ performance in and motivation for school is impacted.

This study proposes that moving out of the support structure of the gifted education program and into the regular classroom on a full-time basis, may constitute what Bellmore calls *a new school context* and as such, is a transition that may impact the level of motivation and engagement students have toward their school environment.
NCLB has focused on the need to bring all students to the same level and much of the time devoted to student learning, staff development hours, and after school tutoring is related to meeting the needs of the children in the lowest percentile groups. One trend in this focus is Response To Intervention (RTI), which encourages teachers to focus on the individual needs of students and introduces the idea that all students need instruction at varying levels of difficulty in order to reach their full potential (MDE, 2010). It is possible that RTI and other initiatives have had the additional benefit of allowing teachers to incorporate strategies in their daily teaching that meet the needs of gifted students as well. In fact, RTI has received considerable attention from the gifted community, particularly in response to its inclusion of the phrase, “all students” (MDE, 2010, p. v). Gifted researchers and authors place a great amount of hope in the word *all*, knowing that RTI provides an open door to advocating for high-ability students as well as those who are not functioning on grade-level (Betts & Carey, 2009; Bianco, 2010; Brown & Abernethy, 2009; CEC/TAG, 2009; Coleman & Hughes, 2009; Hughes et al., 2009). RTI encourages the use of defensible differentiation practices that allow the regular classroom to become the entry point of learning for students from a wide range of ability levels. As teachers develop a broader base of differentiation strategies, they are more able to help all students in their classroom and therefore, may provide more suitable instruction for gifted and high-ability students as well. However, without research regarding the practices teachers are using and without research regarding the children’s response to those instructional practices, little can be said to either support or refute the ideas found in the RTI structure.
While research focused on the gifted student’s experience in the regular classroom is not common, it has been repeatedly suggested as a research focus in the gifted community (Callahan, 2001; Rizza & Gentry, 2001; Tomlinson, 1994). One of the largest and most widespread studies of differentiation for gifted students in the regular classroom was developed by the National Research Center for the Gifted and Talented in the early 1990’s (Archumbalt et al., 1993). It was this research, conducted nationally, that lead to the construction of the Classroom Practices Questionnaire (CPQ), which allows elementary school teachers to report on the various activities and techniques that they use in the classroom and the frequency with which they use the various strategies with gifted and non-gifted children. The CPQ yielded frequency scores in six categories: Questioning and Thinking, Challenges and Choices, Reading and Writing Assignments, Curricular Modifications, Enrichment Centers, and Seatwork and for two groups: gifted and non-gifted students. The study found that teachers do tend to use a different collection of strategies with gifted students as compared to non-gifted students and that they use the strategies at different frequencies with gifted and non-gifted students (Archumbalt, et al., 1993).

Following the investigation of the practices of regular classroom teachers using the CPQ, Robinson (1998), modified the CPQ to be useful for examining the practices of middle school teachers who were typically found to perform their jobs in a more departmentalized atmosphere. The revision was named the Middle School Survey of Classroom Practices (MSSCP) and, as a reflection of the more narrow focus of departmentalized teaching situations, reduced the number of frequency scores calculated to reflect the most common types of modifications departmentalized teachers typically
used: content modifications, and self-directed learning modifications (Robinson, 1998). The study found that teachers in middle grades, similar to their elementary school cohorts, tend to use a different collection of strategies and at a different frequency with gifted students than they use with non-gifted students (Robinson, 1998).

Other research in the area of classroom activities involving gifted students includes the work of Gentry and Owen (2004), who investigated high- and average-ability student’s perceptions of classroom quality, and Gentry and Springer (2002) who investigated high-ability student’s ratings of their classrooms in relation to the areas of meaningfulness of the work, amount of challenge provided, student’s ability to choose relevant projects, and appeal of the material presented. In both of these studies, students’ responses revealed unique perspectives regarding their motivation for the types of activities and opportunities provided in their classrooms. Gentry and Hu (2005) maintain that researchers must take into account the experiences of the students themselves in order to have a whole picture of the meaningfulness and relevance of school to the students. Without the students’ input, researchers run the risk of providing teachers with weak information regarding the effectiveness of teaching methods and strategies. It is of further importance to have the ability to compare the experiences of students at varying levels of ability in order to identify whether or not the efforts of teachers are truly focused on meeting the needs of all children.

While students in the preceding studies (Gentry & Hu, 2005; Gentry & Owen, 2004; Gentry & Springer, 2002) were surveyed regarding their perception of their teachers in these studies, exemplary teachers were identified based primarily on the student perceptions and not through an examination of teacher’s perceptions or practices.
The present study proposes to examine the combination of student perceptions, as measured through the Children’s Academic Intrinsic Motivation Inventory (CAIMI) (Gottfried, 1986), and teacher practices, as measured using the MSSCP (Robinson, 1998) thereby examining the regular classroom experiences of gifted and non-gifted children from two perspectives and with the intent of providing a more clearly focused image from which to draw inferences or conclusions regarding the classroom environment.

Other research regarding the differentiation provided to gifted children in the regular classroom setting tends to focus on small numbers of students in a case study approach (Olenchak, 2001). The results of such studies indicate poor fit between student placement, lack of accelerated opportunities, and unwillingness or lack of knowledge on the part of teachers regarding how to optimally differentiate instruction on a personalized basis (Olenchak, 2001). While this type of research is beneficial for supporting long held beliefs about the lack of fit of the regular curriculum for gifted students, it does not allow a comparison between high and average ability students in the classroom. It is possible that the teaching methods used in these instances are a poor fit for all students, not just those identified as gifted. When no comparison is offered, and only one perspective is taken into consideration, a large part of the picture is missing.

Many questions remain regarding the use of the differentiation strategies that are being promoted as an outcome of NCLB. Are teachers better able to meet the needs of all of the students in their classrooms? Are gifted students benefiting from the differentiation methods being used in the regular classrooms? Are differences in ability levels the best measure of the relevance of instruction to the students in this age group?
Research Questions

This study examined the levels of academic intrinsic motivation of gifted and non-gifted students and whether or not that motivation had any correlation to the differentiation methods utilized or the frequency of the application of those methods in the regular classroom.

Question 1. Are modifications to self-directed learning or to content the most frequently used methods of differentiation in the regular classrooms of school districts who perform in the range of High Performing or Successful and who have met Adequate Yearly Progress (AYP) goals?

Question 2. Is there a difference in the motivation levels of gifted students and non-gifted students in these schools overall, by grade level (indicating placement during transition), by subject area, or in classrooms where there are more frequent attempts to differentiate?

Question 3. Is there a correlation between differentiation through self-directed learning, the frequency of differentiation through self-directed learning, or the combination of the two being used in these classrooms and the motivation level of gifted students, non-gifted students, or both?

Question 4. Is there a correlation between differentiation through content modifications, the frequency of differentiation through content modifications, or the combination of the two being used in these classrooms and the motivation level of gifted students, non-gifted students, or both?

Question 5. Are there any obvious differences in motivation based on the student's demographic factors of gender and race?
Question 6. Are there any obvious differences in differentiation methods or frequency of use based on the teachers' demographic factors of subjects taught and amount of training in gifted education?

Research Hypotheses

Hypotheses include:

H1: There is no difference in the sub-scores obtained by the MSSCP for the methods used, whether self-directed learning or content modification, for gifted and non-gifted students.

H2: There is a difference in the motivation levels of gifted and non-gifted students overall as measured by the general scale of the CAIMI.

H3: There is a difference in the overall motivation levels as measured by the general scale of the CAIMI of gifted and non-gifted students according to their placement in either sixth or seventh grade.

H4: There is a correlation between the English motivation levels of gifted and non-gifted students as measured by the English subscales of the CAIMI and the English teacher's frequency scores for self-directed learning and content modification.

H5: There is a correlation between the math motivation levels of gifted and non-gifted students as measured by the math subscales of the CAIMI and the math teacher's frequency scores for self-directed learning and content modification.

H6: There is a correlation between the science motivation levels of gifted and non-gifted students as measured by the science subscales of the CAIMI and the science teacher's frequency scores for self-directed learning and content modification.
H7: There is a correlation between the social studies motivation levels of gifted and non-gifted students as measured by the social studies subscales of the CAIMI and the social studies teacher’s frequency scores for self-directed learning and content modification.

H8: There is a difference in the teacher’s use of content modification or self-directed learning modifications and the frequency of both based on the amount of training the teacher has received in gifted education.

Definition of Terms

*Academic Intrinsic Motivation* - Academic intrinsic motivation is the internal desire to perform well in a given subject area or areas (Gottfried, 1986).

*Children’s Academic Intrinsic Motivation Inventory (CAIMI)* - The CAIMI is a survey used with school-aged children that yields five separate academic intrinsic motivation scores: general, English, social studies, math, and science. Each score indicates how motivating the student finds the activities in which he or she engages in the general classroom.

*Content Modification* - Content modification refers to changes made to the content of a lesson. These changes are made by the teacher based on his or her understanding of the needs of a student. Content modifications may include changing the difficulty of a reading passage or series of math problems, giving students work from higher or lower grade textbooks, or providing students with alternative materials for further study on a concept or topic. Content modifications are intended to target a student’s academic readiness.
Differentiation - Differentiation is the systematic application of a variety of teaching methods based on the needs of an individual student or group of students (Tomlinson, 2001). The differentiation methods that are of interest in this study may be classified as either content modifications or self-directed modifications. When providing differentiated instruction, teachers should take into consideration the student’s academic readiness and individual interests.

Frequency of Use of Content Modification - The frequency of use of content modification is determined by how often a teacher uses content modification methods in the classroom.

Frequency of Use of Self-Directed Modification - The frequency of use of self-directed modification is determined by how often a teacher uses self-directed modification methods in the classroom.

Both frequency of use for content modification and frequency of use for self-directed modification will be quantified using a number scale as follows:

0 = never used
1 = one or fewer times per month
2 = a few times each month
3 = a few times each week
4 = daily
5 = more than once daily

In previous research, teacher responses to the frequency of use for each type of differentiation have been aggregated to give the teacher an overall frequency rating
ranging between zero and five for each subscale measured (Archambault, et al., 1993; Robinson, 1998).

Gifted - For the purpose of this study, gifted shall mean a student who has been formally identified as intellectually gifted according to the definition provided in the Regulations for Gifted Education Programs in Mississippi (MDE, 2006). Due to the issues already discussed it is believed that intellectually gifted students may have more difficulty performing in the regular classroom, or may experience greater fluctuations in motivation levels as they transition out of the support of gifted programming than would students who have not had that support and who may be identified as academically gifted.

Grade-level Transition - For the purpose of this study a transition is identified as a definitive change in the provision of educational services, or one that constitutes what Bellmore (2011) calls a new school context. In this case, the transition takes place following the last year that gifted services exist for a student as a provision of the state mandate to serve intellectually gifted students.

The transition in this study takes place following the completion of the sixth grade and prior to entry into the seventh grade. This transition away from gifted services takes place only for students identified as intellectually gifted students. The between grade-level transition reduces the educational services available to gifted students and thereby indicates a potential shift for the students toward greater reliance on the general education setting for meeting educational and motivational needs. Because sixth grade represents the last year of available gifted services and seventh grade represents the first year that a student must rely on his or her own capability to adapt to the regular classroom without those services, sixth and seventh grade students are the focus of this study.
Middle School Survey of Classroom Practices (MSSCP) - The MSSCP (Robinson, 1998) is a measure of the frequency with which teachers use content modifications and self-directed learning modification with both gifted and non-gifted students.

Self-Directed Modification

Self-directed modifications are changes made to a lesson by the student. Students are given the opportunity to self-select elements of a lesson that make the lesson meaningful to the student. These elements may include the topics forming the core of the lesson, the length of time spent on a lesson, the design of a project, or the evaluation of a project. Self-directed modifications are intended to encourage students to develop a vested interest in their own learning.

Delimitations

Delimitations of this study are:

1) Focus on schools reporting gifted populations greater than 10% of total enrollment; or that are in the top percentiles reported by other districts in the congressional district

2) Focus on schools in districts functioning at top two levels of school performance and meeting AYP requirements of NCLB

3) Focus on middle level students transitioning away from gifted support services

4) Focus on regular classroom teachers in standard subject areas

Assumptions

Sixth grade gifted students are in their last year of state mandated gifted programming and are typically at a point in their education, where their schedule requires more mobility, a greater exposure to a higher number of teachers, and a broader range of teaching styles. Seventh grade gifted students typically do not receive any specialized
programming for their giftedness since they are beyond the years of the state mandated programming in Mississippi. It is assumed that if a difference is to be found in the level of motivation between gifted students receiving gifted educational services and those not receiving those services, it will begin to develop during this transitional period.

Justification

While research does exist which indicates the correlation between motivation and achievement, there are few studies that show any relationship between motivation and the differentiation strategies that are currently being utilized in the regular classroom. While differences in achievement may be difficult to measure above the 90\textsuperscript{th} percentile range, the nuances of motivation are still relatively easy to determine. Since gifted students may already be high achievers, motivation may be a better indication of the effectiveness of these differentiation strategies on their learning experiences. Further, there is little research to indicate the changing motivational forces present in the educational experiences of children who are approaching or who have just completed the transition to school without the services of the gifted education department. This research will attempt to fill a void in the literature regarding both of these situations.
CHAPTER II
REVIEW OF THE LITERATURE
Challenges to Gifted Education

According to a recent survey by the National Association for Gifted Children (NAGC), “the majority of gifted children are placed in the regular classroom setting where most teachers have little to no specialized training in gifted education” (2009, p. 3). This is due to the fact that 38 states do not require teachers to have any type of training regarding the characteristics, academic needs, or teaching methods appropriate for gifted children (NAGC, 2009). Further, the arguments regarding the most effective methods for reaching and teaching gifted students have become more volatile as government mandates such as No Child Left Behind (NCLB) (2001), have forced schools to place increasing emphasis on insuring that all students conform to a standardized level of performance within the regular classroom.

With this new focus on standardization and accountability, have come mounting questions regarding the allocation of resources necessary for providing appropriate challenges for gifted students. The Jacob K. Javits Act, the only federal program dedicated to the education of gifted students, reached its funding peak in 2002 with a total appropriation of just over $11,250,000. The act has lost funding in subsequent years and has recently faced extinction (CEC, 2010; NAGC, 2008). The current administration has been quoted as stating that it believes states will provide sufficient funds for gifted programming and do not need the funding through the Javits Act (Bernstein, 2009). This statement has some appearance of validity in that no funds have been offered to the states through the Javits Act since 2006, when it was funded at $9,600,000. A provision in the
funding of the act indicates that state level funds may not be issued unless the Act is funded at greater than $7,500,000 (Bernstein, 2009; Ed.gov, 2010; NAGC, 2008). However, evidence suggests that the states will not readily supply the needed funds since few states are able to provide the funding on their own now (Bainbridge, 2009; Glass, 2004; NAGC, 2009). Throughout the country schools are looking for methods that allow for the re-allocation of funds once used for specialized programs, such as gifted and talented programs, toward the various efforts necessary to achieve realization of the Adequate Yearly Progress (AYP) goals established as part of NCLB (Phillips, 2008).

Further, as funds are cut and gifted students are returning to the regular classroom (NAGC, 2009; Phillips, 2008), new studies are challenging both the relationship between giftedness and motivation that was once thought to be stable, and the methods used to reach all students in a multilevel classroom environment (Gottfried, Gottfried, & Guerin, 2006). Further evidence that there is a shift in the focus of schools away from the needs of gifted students is supported first by research showing that teachers feel pressured to focus on lower functioning students, which goes against their personal belief that they should focus on all students (Duffet et al., 2008), and second, by the record numbers of gifted students that are now at-risk for dropping out of high school (Loveless & Petrilli, 2009). In addition, multiple studies on the phenomena of underachievement, in which students perform at a level well below their ability, abound in the common body of research on gifted and talented students (NAGC, 2009; Seigle & McCoach, 2007). Even without the shifting focus of teachers, the debates over funding, and arguments regarding proficiency levels, underachievement indicates a gifted population that is unmotivated to perform at their best ability (Glass, 2004; Rimm, 1995; Seigle & McCoach, 2007;
Whitmore & ERIC, 1985). Schools today may be meeting the requirements of governmentally induced accountability, but the environment created inspires students to no more than a state of what Bill T. Jones calls “intellectual sloth” (Rudnick, 2010).

**Examination of Classroom Practices**

Differentiation is being touted as an instructional methodology that may meet the needs of gifted students in the regular classroom. Differentiation is indeed a valuable and creative manner of teaching that allows teachers to effectively meet the needs of students at a variety of instructional levels (Adams & Pierce, 2006; Jackson, 2009; Winebrenner, 2001). However, the question at hand is whether or not these methods are used optimally in the regular classroom in order to meet the needs of gifted students in a manner that insures their continued success in schools (Phillips & Lindsay, 2006). This question is especially important when recognizing the fact that the typical functioning of a gifted child is, by definition, above the tested grade level, and as such not adequately measured by performance on the standardized tests given to all students (Loveless & Petrilli, 2009). It is therefore vitally important to discover a method of measuring the effectiveness of instructional methodologies that is linked to, but separate than, typically accepted measures of achievement (Gottfried, 1985).

This study aims to explore the connections between Academic Intrinsic Motivation and the use of differentiation in the regular classroom to determine whether the differentiation methods employed effectively meet the motivational needs of gifted students. If a correlation exists between Academic Intrinsic Motivation and the differentiation methods employed in the regular classroom, the findings of this study
could be used to help shape practices that are appropriate for use with gifted students within the regular classroom.

Antecedents of Current Trends

In order to better appreciate the possible connection between the constructs of motivation and differentiation, it will be helpful to examine the evolution of motivational concepts as they have been filtered into the classroom environment and have established the mindset of teachers toward student needs. Further, an examination of the influence of the workforce on educational practices will show the extent to which teachers are influenced by societal pressures when selecting classroom activities. Researchers must not assume that current states exist in a vacuum, but must understand the patterns of influence that have created the current embeddedness of certain mindsets that are prevalent among teachers.

Clash of Ideologies

While many factors impact the ideas, methods, and strategies used by teachers when planning lessons, they are continually encouraged to take two factors into consideration: research and practicality. In the study of student motivation, the concept of research must include the impact of the study of psychology and learning on teaching. Practicality, on the other hand, is represented by the admonition that teachers should present students with real world examples that relate what is being learned in the classroom to what is taking place in the work world in which students will one day find themselves engaged. Together, these two factors represent the continuity of the teaching profession; research representing the impact of past data and practicality representing the
desire for future results. Both of these aims are valuable for teachers in one way, but may also present difficulties in another.

*Separation between psychology and education.* According to Valisiner (1992), psychologists have not traditionally developed new terminology for the depth of the various motivational constructs that they have examined. Therefore, the language they have used has included terms such as *interest* and *motivation* that carried far greater depth of meaning to the psychologists than what was carried over into the presentations of those ideas to teachers. Further, many psychological studies were not translated to teachers with appropriate depth or attention to the subtleties of instructional applicability that would have made them more meaningful for student performance (Krapp, Hidi, & Renninger, 1992).

*Influence of commerce on education.* Vocational teachers are not the only teachers with a focus on the future employability of their students. Teachers in the regular classroom are often encouraged to use examples from the work world with their students in order to help them see the relevance of a variety of learning activities to their future lives. Deepening this relationship, are the often-negative connotations presented by the media when large groups of students seem unprepared for the workforce (Rozycki, 2009). According to this trend, teachers feel a sense of responsibility toward meeting the demands of the workforce. Although the reality is that only a small part of the responsibility of preparing students for the workforce can reasonably and statistically be attributed to teachers (Rozycki, 2009), the availability of practical resources and object lessons provided by companies, along with the cyclical recurrence of educational
initiatives such as the school-to-work efforts of the late 1990's (NSTW, 1997), continues to influence teachers to heed these admonitions.

Within these two powerful and influential constructs, lies the apperceptual mass of teaching. Apperceptual mass has been described as the sum of all the experiences, thoughts, emotions, and characteristics that make up an entity and is a continually developing construct, influenced by all that has happened or will happen. In light of this understanding, it is helpful to examine the historical links between motivation and teaching techniques as they have transformed over the past century.

*Effects on student motivation and classroom practices.* Within the classroom setting, it is important to understand that any discussion of motivation must be recognized as a discussion of behavior, for the goal of the teacher is to increase desirable behavior related to learning. While behaviorists such as Skinner (1969) asserted that all behavior was motivated by external stimuli, research in the mid-nineteen hundreds began to point out that this view of motivation was too narrow and lacked the acknowledgment that individuals had free will and could use the power of their mind to make decisions about their actions rather than responding without thought. These new theories, in opposition to behaviorism, were known as cognitive theories, in honor of the value they placed on cognition.

According to Deci (1975), there are five steps involved in the cognitive approach to behavior. These are 1) the energy source or stimulus input, 2) awareness of potential satisfaction, 3) goals or plans toward goals, 4) goal-directed behavior, and 5) rewards or satisfaction achieved. The stimulus input may be a basic physiological need, such as food or water, but may be deeper, involving the need for “feeling competent and self-
determining in dealing with [the] environment” (Deci, 1975, p. 100). These needs are the basis for Intrinsic Motivation, which Ryan and Deci define as “doing something because it is inherently interesting or enjoyable” (2000, p. 55) to that individual. When a need for feelings of competence and self-determination arises, a student becomes aware of the need for those feelings, the student plans to seek out activities that provide for those needs, engages in the activities, and thereby receives the satisfaction of those needs. Thus the five-step cycle is completed.

Teachers often act as the initiator of the stimulus. Through discussions and lectures, teachers help students to identify their position in the world, bringing them to an awareness of areas in which they feel capable of meeting the needs for competence and self-determination, but one in which those needs have not yet been met. In this manner, teachers push students into new avenues for exploration and intrinsic satisfaction in their own learning process. The challenge of this process comes from the fact that each student has individual interests and goals.

One way that teachers are encouraged to identify the activities and objects that would be intrinsically motivating to students is the use of interest inventories, questionnaires given to students early in the class requiring open ended responses that allow students to communicate their personal interests. It is assumed that including student interests in the explanations of classroom materials will provide a more enriching environment for the students and will therefore increase the students' level of performance. As a need, the concept of interest, whether centered on activities or objects, can play an extremely important role in motivating students and should therefore be examined more closely.
Agents for Change

The provision of an engaging learning experience has been recommended as a solution to increasing student motivation so often within pedagogical literature that the two are almost synonymous. However, few studies actually record elements of the environment, including teacher behaviors, and student motivation. While this type of research has become more prevalent, the recommendations regarding motivating students predate that increase. In the past, the recommendations were made, much as Valsiner (1992) suggests, without providing a direct link between teaching strategies and the psychological theories from which they were derived. Whether these connections were explicit or not, their existence may be viewed as a precursor to the constructs that we now know as intrinsic motivation and differentiated instruction.

*Interests as foundation for involvement.* Interest, as defined by Dewey, “is a name for the fact that a course of action, an occupation, or pursuit absorbs the powers of an individual in a thorough-going way” (1913, p. 65). This definition developed in response to the efforts teachers in the early twentieth century were making toward the use of interest in their classrooms. Dewey cautioned teachers against confusing interest with excitement. His work instructs teachers to examine their choices of curricular materials in order to insure that activities encourage growth of the individual being taught. In Dewey's mind, learning tasks that are tedious do not conform to his definition of interesting and as such, any exciting activities that are attached to these non-conforming tasks to induce the student to compliance, lack the meaningful level of growth necessary. Without the growth element, students begin to develop, “a longing for excitement, for its own sake,” (Dewey 1913, p. 36), thereby reducing concentration of effort toward
meaningful activities and greatly reducing the effectiveness of the learning environment. He further equates this artificial reduction with the “arrested development” (Dewey, 1913, p. 41) of both the activity and the learner. One of the strongest objections Dewey (1913) makes to the confusion between interesting and exciting teaching is to state that activities lacking true interest-inducing meaningfulness,

Signify nothing but sheer strain, constraint, and the need for some external motivation for keeping at them. They are uneducative because they fail to introduce a clearer consciousness of ends and a search for proper means of realization. They are miseducative, because they deaden and stupefy; they lend to that confused and dulled state of mind that always attends an action carried without a realizing sense of what it is all about . . . because they lead to dependence upon external ends; the child works . . . because of some alien inducement – to get some reward that has no intrinsic connection with what he is doing [emphasis in original](pp. 54-55).

Wilson (1971) later defined interest in terms of the three essential elements of notice, attention, and effort. Rather than attempt to define or categorize the various forms or topics to which students could appropriately direct their interests, Wilson insisted that interests were developed from any area, object, or line of thinking that was worthy of the student's notice. The first engagement with an interest object would provide the rationale for whether or not the student sought out the interest in the future. If the child did seek to return to the interest, and continued to do so in order to learn more about it or to master its various manifestations, this constituted prolonged attention. It was through this
extended time of attention that interests were fully developed and became intrinsically rewarding to the student.

Wilson (1971) was careful again to contrast these concepts to the short-term exciting activities that were often misidentified as interesting by teachers trying to overcome discipline problems with a momentary fix. Finally, not only did the prolonged attention provide motivational direction, the efforts a student made at mastery or full understanding gave the strongest intrinsic rewards. He cautioned teachers to avoid the thought that if students were unhappy at any given moment that the students were not motivated. He stated, “educational situations are intrinsically rewarding, and therefore intrinsically punishing too . . . the meaning educates (Wilson 1971, p. 118).” By this, Wilson's purpose was two-fold, to remind teachers that allowing misbehavior created un-educational situations and to say that students learned best through mistakes that were meaningful to their personal goals as identified through their interests.

Combining the concepts of the cognitive approach to behavior (Deci, 1975) with the ideas of Dewey (1913) and Wilson (1971) allows for a deeper understanding of the ways in which interest may be effectively translated into language that is applicable within the classroom. Utilizing these concepts paints a picture of a student who becomes engaged with an object or area of study presented by a teacher. If, after this introduction to the object, the student becomes aware of an internal need to explore his ability to manipulate the object or activity, he will return to it in order to master his abilities. When the student is allowed to make the decision to return to the object of his own free will, this decision provides the student with a sense of self-determination. The process of learning to master the object or activity through prolonged attention will begin to provide
the student with feelings of competence. The feelings of self-determination and 
competence induce in the child an engagement with the object or activity that provides a 
truly educative experience.

Without this depth of understanding of the various shades of meaning given to the 
word interest throughout educational history, teachers in the modern classroom have 
difficulty understanding exactly what is intended when administrators admonish them to 
employ student interests in the classroom. As Valsiner (1992) points out, the field of 
psychology is riddled with everyday words that have taken on a much deeper meaning as 
they are connected with the psychological concepts being studied. The difficulty with this 
phenomenon stems from the inability to truly translate the psychological concept into 
layman's terms since there was no effort to develop a new vocabulary for the concepts 
being proposed. Therefore, when psychologists discuss phenomena such as interest with 
teachers or others outside their field, they possess a vastly more intricate connotation of 
the word than the person to which they are speaking, leaving room for misinterpretation 
and a reductionist tendency to over-simplify. In fact, this phenomenon is not isolated to 
educational psychology, but may often occur as teachers are trained to use strategies that 
are new or unfamiliar to them.

Teaching methods for student support. While Dewey's influence was being 
exerted in the realm of educational psychology, the influence of Italian educator, Maria 
Montessori, was also felt during the early 1900s, but is more applicable to the concepts of 
teaching strategy than that of psychology. Her special perspective on the intricate steps 
of development necessary to produce an ordered mind while placing the teacher in the 
position of benevolent observer, if followed carefully, could produce students who were
exceptionally prepared for further educational work. However, if these steps were
followed haphazardly, they could produce an atmosphere that was either mistaken for, or
was in actuality, one where children were allowed to do what they pleased with no
direction from the teacher (Montessori, 1914). Though Montessori's ideas were clear,
explicit, and included instruction for the teacher's very purposeful interactions with the
students, the role of the teacher was that of observer and guide rather than lecturer or
disciplinarian. However, as Callahan (2001) points out regarding the implementation of
many methods of developing children's potential, “it is not the theories, conceptions, or
ideas that are flawed, but the ways in which these ideas have been interpreted or
implemented” (p. 148).

Montessori's (1914) work provided for the gradual and natural progression of a
student through a series of activities centered on a similar construct. Whether a student
learned to manipulate objects by shape, mathematical dimensions, color, or sound,
Montessori's method first introduced the student to the most basic use of the object. If a
student, of his or her own volition, returned to the object and subsequently mastered the
initial concepts, the teacher could introduce a slightly more advanced problem for the
student to solve using the object. Over time, it was the student's capacity to find meaning
in the object that produced their capacity to use the object well.

Montessori also advocated for the use of real objects in what she called a
“children's house” (1914, p. 9). The child-centered structure allowed children to work
with wooden furnishings that had to be polished, breakable plates that had to be handled
carefully, and a garden that had to be tended regularly. The use of these real-world
objects instilled in the children a sense of purpose and respect for themselves as contributing members of their world.

While Dewey admonished all teachers to attend to student interests, and Montessori advocated for the purposeful and logical ordering of lessons, another educator placed her own stamp of distinction on the world of gifted education. During the early 1900s Leta Hollingworth encountered an exceptionally gifted child whose extreme abilities would change the trajectory of her research and forever change the face of gifted education (Jolly, 2008). Although Hollingworth first believed her purpose to be championing the concept of women as valuable and reliable employees, her research focus changed after meeting a student who, at the age of eight, had an IQ of 187 (Jolly, 2008). This encounter led her through a variety of case studies, and experimental teaching at P.S. 167 and P.S. 500, known as the Speyer School.

Throughout the past century, since the work of Leta Hollingworth, researchers and teachers of the gifted have attempted to develop teaching methods appropriate to meeting the needs of gifted students. Although Hollingworth is known for her use of enrichment techniques, it must be remembered that most of the students with which she worked had already skipped an average of two grades prior to entering the Opportunities Classes provided at P.S. 165 or later, P.S. 500 (the Speyer School) (Jolly, 2006). Furthermore, the students in these classes were routinely promoted to high school at the age of 13.

With that in mind, it must be acknowledged that Hollingworth's work combined the two variations of teaching practice that are still widely utilized: acceleration and enrichment. Hollingworth was the first to develop the precursors of what is now known
as a compacted curriculum. Another practice regularly recommended by Hollingworth was the segregation of gifted students from their age peers who were not highly gifted. In fact, even the Opportunities Classes were divided into two sections based solely on variations in IQ scores. Hollingworth prescribed not only a broader curriculum, but also one that was based on project selection and seminar discussions. This was a departure from the methodology found in the heterogeneous classrooms of the time, which focused on recitation and seatwork as the primary modes of instruction.

Following these guidelines, students were to engage in research or other activities that pertained to a body of work that was inherently interesting to the students, thereby giving them both depth and breadth of knowledge. Another avenue for reaching these expectations included a change in the classroom environment. The furnishings and resources provided for the Opportunities Classes were vastly different from that provided in a regular classroom, allowing for more flexibility in movement, space for displaying collections or artifacts, and a much broader range of resources including those for conducting measurements of various kinds as well as researching a variety of topics (Jolly, 2006).

Hollingworth's methods also indicate the common admonitions still given to teachers of the gifted today, that curriculum for gifted children must show significant differences in the three areas of content, process, and product. According to VanTassel-Baska (2003), the majority of the curriculum models for gifted learners, “made the underlying assumption that good curriculum for gifted learners was developed on the basis of individual learner interest, and all models emphasized higher-order skills used in the service of creating meaningful products” (p. 175). While this seems to be
advantageous, VanTassel-Baska also recalls the limitations of focusing only on product or process learning. It is not enough to teach a process or have students create novel products if those processes and products are ineffectively linked to the environment in which the skills are most useful. If these students are to look deeply at their own expectations for their lives and to set reasonable goals for meeting those expectations, they must have the opportunities to examine a variety of real-world or simulated scenarios designed in such a manner that they begin to develop the knowledge and traits of an expert in a particular field (Tomlinson, 1994; VanTassel-Baska, 2003).

The element of student interest is still deeply embedded in the framework for providing meaningful instruction to gifted learners. While Dewey (1913) and Wilson (1971) did not necessarily discriminate between regular and gifted classrooms in their studies of interest, enrichment programs, such as the ones developed by Hollingworth, focus almost entirely on the interests of the students. It is important, therefore, to maintain the links to the content knowledge of various fields to insure that the gifted student's mind, so adept at developing interesting products, has a wealth of information from which to develop substantive ideas rather than frivolous ones.

One unintended, or perhaps simply unforeseen, outcome of a too narrow focus on process and product without the element of content knowledge has produced a nationwide acceptance that enrichment is the only form of curricular adaptation necessary for gifted students. While Hollingworth herself noted that parents, teachers, and students had often refused offers to skip multiple grade levels due to the lack of socialization opportunities available to very young students who interact with much older ones, she referred not to a single grade opportunity, but to those in which students at very young
ages (five or six) were offered opportunities to join classes with students who were three years their senior. The physical development of a very young child and one who is nearing adolescence are marked and potentially threatening to young children.

Hollingworth sometimes discouraged the practice with young children, but again, it must be remembered that her recommendations for older children did include advancement to high school at the age of 13. Her recommendations also indicated that for the highly gifted (IQs greater than 180), students should seek opportunities to finish high school and enter college as early as the age of 15 (Jolly, 2006). While she has been called the “nurturant mother” (Colangelo & Davis, 2003, p. 7) of gifted education, focused on the enrichment of student’s educational pathways, she did embrace both elements of curricular adaptation. This is a fact that is often overlooked or misrepresented in discussions of her enrichment strategies (Kulick, 2003).

The work of Dewy, Montessori, and Hollingworth was held in high regard in intellectual circles. However, during the interim between World War I and World War II, social pressures placed on teachers to instill students with patriotic fortitude turned the attentions of many educators away from the application of interest to student learning, and toward student interaction within the context of the social environment. As educators explored the meaning of democracy and the relative merits of the various government systems operating during the early twentieth century, schools became hosts for a variety of efforts at social reform.

While some educators continued to examine the role of interest over the next few decades, a genuine push to examine the relationships between interest and motivation was not widely supported again until sometime during the 1950s, and then it was
examined primarily through the efforts of psychological testing and was ensconced within the frameworks of behaviorism. Therefore, many studies focused on interest in general, drawing conclusions from experimentation in isolated or contrived situations, and did not necessarily attempt to connect the theories being developed to classroom methods (Krapp et al., 1992).

During this time, Piaget's theories of development were becoming more widely accepted, leading teachers to believe that interest could not be developed further than allowable within the stage of development of any given child (Gardner, n.d.). Teachers therefore would have found it difficult to introduce materials that provided challenges or opportunities that children were not assumed to be able to process either mentally or emotionally based on their prescribed level of development which was strictly linked to age. Although Piaget's work stringently limited the age ranges in which students would be allowed to engage in certain activities, thereby limiting the possibility of accelerated learning for bright students, it did acknowledge that learning was scaffolded; new knowledge was built on the foundation of old understandings. Even though the limitations of Piaget's theories prevented differentiated learning, the concepts of cognitive constructivism began to take hold.

While notable psychologist, Lev Vygotsky was working on the concepts of interest at the same time that Piaget's theoretical work was first developed, Western educators were not introduced to his theories until at least 1962 and a comprehensive collection of his work, translated into English, was not available to researchers in the Western world until the late 1990s (Glick, 1997). However, it was in part due to the work of Vygotsky and his colleagues that the concept of constructivism was broadened from
the cognitive realm to the societal realm. In retrospect, Vygotsky's work is the bridge
between Dewey's concepts of interest and the social emphasis that began during the
World War I era. If Vygotsky's works had been available to Western educators during that
time, it is likely that interest would not have been taken out of the educational frame of
mind, but would have enhanced the push for social concepts encouraged by the political
atmosphere of the time.

The ideas found in Vygotsky's works include more flexibility and interactivity
with the environment than did Piaget's. Many educators found Vygotsky to be an answer
to the difficulties they had in operationalizing Piaget's theories in the classroom (Glick,
1997). Further, the idea of the Zone of Proximal Development (ZPD) encouraged
educators to explore the highest levels of ability that children were able to reach and to
find novel ways of helping them to reach the next higher level of development.

Around the time that the first of Vygotsky's works translated to English were
released in the West, during the 1960's and 1970's, the educational pendulum was ready
to swing back toward an examination of the ways in which teachers engaged students in
their studies (Deci, 1975; Grun, 1979). By this time, researchers were beginning to
examine the outcomes of classroom practices that, despite Dewey's admonitions
otherwise, had become a hodgepodge of exciting activities loosely connected to learning
goals and extrinsic reward systems.

Criticism of these methods, and their more recent connections to Maslow's needs
theories, were voiced by Wilson (1971). Wilson contended that, “letting children just do
as they like or prefer, or as impulse or habit inclines them, is . . . not the same thing at all
as letting them 'pursue their interests'” (1971, p. 49). He further pointed out the
differences between the interactions of a teacher who allowed a child to pursue an interest for himself rather than one who left him to pursue that interest by himself. A teacher following appropriate teaching methods would guide the student to strategies he could use for himself and engage him in elements of his interest that he had not known existed. In contrast, a teacher allowing a student to pursue his interests by himself would avoid contact with the student and would seldom provide guidance appropriate to increasing the student's ability to engage with his interest. This was apparently aimed at teachers who loosely followed the Montessori method, or the concepts of constructivism, but who had lost the valuable lessons of those methodologies regarding guiding children to the next logical level of interaction with objects and ideas.

*Shifts in Ideology*

Moving into the latter half of the twentieth century, psychologists began to examine motivation in a different way. The clash between behaviorists, cognitivists, and humanists provided a somewhat muddled view of what was meant by the term motivation, what connections motivation had to education, and whether or not certain types of motivation were more effective than others. Deci (1975) made great headway against this problem when he published his book, *Intrinsic Motivation*, in which he examined the history of various theories and their applications.

*Psychological move toward cognitive theory.* Deci (1975) was able to clarify the various differences existing in the world of psychology regarding terminology as well as practice. The development, in educational realms, of the return to child-centered teaching was paralleled in psychology with a move away from behaviorism. According to Deci, it was the lack of acknowledgment of internal processes within the methodologies of
behaviorism that created the desire among psychologists to utilize cognitive, humanistic, and affective theories for their research. These various forms of study allowed physiologists to develop what we now know as Drive Theory, Optimal Incongruity Theory, Cognitive Dissonance Theory and their various derivatives. These new theories allowed for the acknowledgment of an individual's free will, thought processes, and other concepts that focused on the impact of actions on organs outside of the central nervous system. Behaviors were once again examined in light of an individual's ability to make decisions for himself rather than expecting all behavior to be governed by involuntary responses to outside stimuli.

The research of psychologists such as Berlyne, Hunt, Dember and Earl, White, de Charms, and others opened a new world of possibilities for applying psychological research to classroom practice (Deci & Ryan, 1985). Berlyne, Hunt, and later Dember and Earl all worked with the concepts of optimal incongruity and optimal arousal. These concepts indicate that there is a point at which an individual seeks out and finds a level of stimulation that seems best to himself. These concepts were important in distinguishing cognitive theories from behavioral theories. In behavioral views, an individual acted only on external stimulation as it impacted him, but did not seek out the stimulation (Deci, 1975). Berlyne, Hunt, and Dember and Earl showed the ways in which individuals engage in stimulant finding activities in order to bring about what would later be called higher levels of self-determination.

White was the first to indicate that an exploratory drive, the impetus for interacting with novel objects or activities, did not necessarily fit the pattern of other drive motivations. The exploratory drive, White proposed, had no consummatory
response, meaning that it was not ever fully satisfied in the same way that the drive to satisfy needs such as hunger or thirst would be satisfied (Deci, 1975). De Charms added the notion that an individual wants the opportunity to make an impact on his own environment – to be the locus of causation for meaningful activities in his own world (Deci, 1975). In the classroom these ideas translate into a student's need to continually explore new concepts and make meaningful changes to his world using what he has discovered.

While these new inroads to understanding interest and motivational concepts were varied and comprehensive in nature, the terminology with which they were translated for those in the teaching profession did not differ significantly from what had been expressed using behaviorist theories (Valisiner, 1992), leading many in education to ponder the true connections between interests and rewards. The term interest had been used for decades, since Dewey's original admonition to allow students to follow their interests, but now, with the advent of these new theories, interest was assumed to be part of the larger construct of intrinsic motivation (Deci, 1975). Alternately interest has been used as an umbrella for the concepts of “attention, . . . curiosity, . . . emotion, . . . attitude, . . . value orientation, . . . motivation – especially achievement motivation, . . . intrinsic motivation, . . . and flow” (Krapp et al., 1992, p. 4). How is a classroom teacher, with no specialized training regarding these concepts, to understand their differences, much less apply them appropriately in the classroom?

Continuing impact of business on the classroom. One way that educators are encouraged to motivate their students is by providing real-world examples of the theories and activities that are taught at each grade level. This strategy is intended to induce
interest in students by providing examples of the ways in which the skills are used in jobs with which students may be familiar. Educators are continually encouraged to adopt policies and classroom practices that conform to the expectations and desires of the various industries that will become the employers of the students currently enrolled (Wise, 2008). Further, one of the main roles of the teacher in a classroom is that of classroom management. Many of the skills presented to teachers as effective for classroom management are somewhat similar to those taught in basic business management courses (Scarpaci, 2007). In light of that reality, it is helpful to examine the connections between the motivational concepts present in the business world and the way those concepts are operationalized in the classroom.

By following the links to business, it is possible to identify two theories of motivation that still hold sway in the boardroom and in the classroom, Vroom's Expectancy Theory and Maslow's Heirarchy of Needs. Tenets of these two theories, made popular in the middle of the last century, are still presented to neophyte teachers in classroom management courses as viable ways to manipulate the motivation level of the students in their classrooms. The popularity of Vroom's Expectancy Theory (Vroom, 1964) stems from its ease of application to a large number of employees with relatively little need to adjust the formula for individual differences. This theory develops a mathematical equation (Motivation = Expectancy x Instrumentality x Valance) to explain how individuals are motivated, but may also use the average expected response to the input variables to be used on a wider scale. In this equation, expectancy deals with the individual’s perception that he or she will achieve, or has the ability to achieve, a desired goal; instrumentality indicates the level of connection the individual perceives between
successful action and reward; valance indicates the individual’s level of desire to achieve the goal. Because each component is multiplied by the others, the total level of motivation will be low if any one of the components is low. For example, if the individual determines that there will be no reward for successful accomplishment of a task (Instrumentality = 0), then the solution to the equation is also zero. In other words, the individual will have no motivation to achieve the goal.

Widely used in business or organizational management, Vroom's Expectancy Theory has been used to examine the ability of a company to compensate, or reward, employees through both monetary, and non-monetary systems. Rewards may come in the form of wages, benefit packages, or recognition for loyalty or service. Companies typically select the rewards assumed, or researched, to be most attractive to the greatest number of employees. Although the world of business has found Vroom's Expectancy Theory useful for increasing the component of instrumentality, it is not always as simple to manipulate expectancy and valence.

While Vroom's Expectancy Theory does include the use of external rewards, it attempts to place equal value on internal processes in order to create balance between intrinsic and extrinsic forms of motivation. Individuals who possess a high degree of extrinsic motivation will be more likely to be motivated by forces out of their immediate control, such as rewards. Individuals who possess a high degree of intrinsic motivation, however, will be more likely to exhibit high levels of expectancy and valence. It seems that the point behind this use of both factors, mathematically situated in a formula requiring some level of both for any action to occur, is to acknowledge the interaction of the two factors rather than argue for the inherent superiority of one or the other.
The debate regarding the inclusion of intrinsic and extrinsic motivators in expectancy theories has existed for decades. From the outset, three psychologists, Atkinson, Vroom, and Locke, were the main proponents of expectancy theories and each had his own expectations regarding the manner in which the two types of motivators should be included (Deci, 1975). Atkinson's theory included a greater number of allowances for individual differences and was based on the opinion that the value of goal attainment was related to the attainment itself, whereas Vroom did not include an element of individual valuation during the goal setting phase and saw the value of goal attainment as related to the outside reward, or consequence, related to the goal rather than the satisfaction of attaining the goal in and of itself (Deci, 1975). Locke differed from Vroom in that he saw the difference in an individual's desire to achieve a goal as an indirect relationship with the difficulty of attaining the goal whereas Vroom saw the relationship as a direct one. In other words, for Vroom, the easier the task, the greater an individual's desire to achieve it; for Locke, the more engaging the task, regardless of difficulty, the greater an individual's desire to achieve it. While the theories of Atkinson and Locke certainly allow for more individual descriptors and inputs regarding goal setting and goal attainment, it is the complexity of these inclusions that made Vroom's theory more attractive to the business world. Vroom's theory made it easy for businesses to use one formula for all employees and to use the law of averages to determine the usefulness of a given compensation package without regard to the individual differences in employees in regard to the affective domain. While Deci (1975) shows more benefits, in a theoretical sense, for using the Atkinson and Locke models, and the models of others
who followed their precepts, it is easy to see how Vroom's model was widely accepted due to its ease of use.

In the classroom, Vroom's Expectancy Theory may be used to explain the successful use of a variety of activities ranging from extensive token economies to the more simple use of stickers or snacks to reward students for desired behavioral or academic performance. Recently debates regarding the use of these types of rewards have included such issues as the need to provide healthy snacks rather than candy items and the need to instil the value of autonomous learning in students rather than have them become dependent upon outside rewards (Joussemet, Koestner, Lekes, & Houlfort, 2004). Studies have shown that the presence of both types of motivators may cancel each other out, rather than provide the multiplier effect of Vroom's theory (Joussemet et al., 2004; Ryan & Deci, 2000).

Another motivational theory that is still used widely in both business and educational realms is Maslow's Hierarchy of Needs (Maslow, 1954). The Hierarchy of Needs is based on the principal that individuals’ actions are motivated by needs. Maslow separated these needs based on the origin of the need and classified them as deficiency or growth needs (Huitt, 2001). The first four levels of the hierarchy, physiological, safety, belonging, and esteem needs are considered deficiency needs. Each need may only be achieved when each need below it has already been fulfilled. Furthermore, if deficiencies in these needs arise at a later time, the individual must attend to them before moving back to any higher-level need to which he or she had previously been attending (Huitt, 2001). Initially, Maslow intended for the self-actualization needs to be the only growth need, but he later placed the elements of cognitive and aesthetic needs as subordinate to self-
actualization, and placed self-transcendence above self-actualization. A person experiencing self-actualization maintains their own motivation to initiate growth and interest in new experiences, whereas the person experiencing self-transcendence is able to move outside the scope of his or her own needs and attend to the needs of those around them, acting, in effect, as a mentor. This mentorship grows from the development of wisdom in the self-transcendent person (Huitt, 2001). Although many theorists have followed Maslow, it is interesting to note that both Steven Covey, author of *The 7 Habits of Highly Effective People*, and Robert Sternberg, known for the development of the Triarchic Theory of Intelligence, have focused their more recent writings on the formation of wisdom and its impact on the mentorship of others (Covey, 2004; Sternberg, 2000).

These transcendent efforts to share wisdom are similar to the socialization theories of Lev Vygotsky. Vygotsky posited that children do not learn passively, but construct their own understanding based on either their own experiences or the experiences of others (Isenberg & Jalongo, 2001). This theory, now known as social constructivism, states that children are most motivated to learn at the Zone of Proximal Development (ZPD) the level of understanding that is just beyond their current level of daily operation. Conversely, children will not be motivated to learn material that is either too far below or too far above their ZPD.

An examination of the similarities and differences between these theories is useful in determining how each theory has impacted the world of education. Each theory has both internal and external components. The internal component of Vroom’s Expectancy Theory lies in the expectancy variable. An individual must believe that he or she is
capable of accomplishing a given task. For Maslow, the internal component is based on
the individual’s desire to eliminate negative deficits and to increase opportunities for
personal growth. Vygotsky’s internal variable lies in the concept of scaffolding
knowledge on prior personal experiences. The internal variable in each of these theories
maintains that the individual has a belief that their actions will produce desired results.
The differences between the theories lies in the application of the individual’s will to his
or her external surroundings and the amount of power the individual believes that he or
she can exert over that environment.

Expectancy theory places a great deal of emphasis on external rewards. Although
it may be argued that the reward an individual seeks is intellectual or spiritual in nature,
in the business applications that make use of Expectancy Theory, it is most often an
external, monetary reward. Maslow’s Hierarchy places a great deal of influence on
overcoming external deficits in the physical environment. So much so, that even when
individuals are working toward self-actualization, they must climb back down the
pyramid to attend to daily food, clothing and shelter needs before making any progress
toward internal endeavours. Constructivism, by definition, cannot help students to reach
their desired goals without the help of others in their external environment who pattern
the behaviors they wish to assimilate. The difference between the three theories lies in
the point at which the external influence is exerted on the individual. Figure one shows
the point of impact of external influences for each theory.
Figure 1. Point of External Influence on Motivation

The point of impact of the external influencers has profound implications for how teachers teach and students learn. When teachers focus only on the external influencers, they are likely to miss one of the greatest aspects of motivation that is embedded within many of these theories. One of the most controversial issues found within the realm of motivational research is the difference between intrinsic and extrinsic motivation. While many educators adhere to concepts of reward similar to the payment of an employee for work performed, others argue that a student who is intrinsically motivated has greater autonomy over his or her learning and will therefore not become dependent upon a source of reward in order to perform at optimal levels.

This divergence between extrinsic and intrinsic motivation is quite clear in research terms, but may become clouded as teachers attempt to identify the activities or objects that individual students find motivating within the everyday school environment. Teachers are well accustomed to the concept of motivating students, and even that of identifying student interests, but these terms may not have the impact in the teacher
vernacular that they are intended to have. The field of motivation research, as presented in the educational realm, has a wide diversity of interpretations coupled with a limited vocabulary (Valsiner, 1992). These two elements lead to poor operationalization in the classroom. If individuals in the teaching profession are to develop a true understanding of the ways in which motivation influences all that goes on in the classroom, they must develop a deeper understanding of the language of motivation as it has changed over the decades. This understanding is necessary to avoid the misapplication of teaching strategies.

**Development of Gifted Education**

*Theories for developing genius.* Many models of giftedness are made up of a great number of interrelated components. The purpose here is not to discuss each model in detail, but to indicate the role that motivation plays within each model. In each of the theories of motivation, attainment of goals was a component of motivation.

The Differentiated Model of Giftedness and Talent (DGMT) developed by François Gagné (2003) makes a distinction between giftedness, a natural ability, and talent, which is defined as superior performance of learned material. The DGMT is comprised of the two variables of giftedness and talent as well as the four variables of intrapersonal catalysts, environmental catalysts, learning/practice, and chance. While the element of chance may act on the variables of natural abilities, environmental catalysts, and intrapersonal catalysts, it has little impact on either learning/practice, or the element of talent. Gagné’s model incorporates motivation primarily in the area of learning/practice and particularly under the concept of formal noninstitutional learning in that, “there is a conscious intention to attain specific learning goals” (Gagné, 2003, p.
Another area of the DGMT model that incorporates motivation is the area of intrapersonal catalysts. These catalysts are made of physical and psychological factors; motivation is considered to be one of the latter. Gagné makes a clear distinction between motivation and volition. In the DGMT model, motivation does not include the concept of sustaining activity or perseverance, but is defined as the ability to set goals based on needs and interests and can be intrinsic or extrinsic (Gagné, 2003). Gagné does not hold that motivation is related to social interaction, but instead maintains that social or environmental factors serve to expand or contract the area in which a student may exert his or her influence. In Gagné’s view motivation has much less power to explain differences between students than does intellect, which is a natural ability. While the view that intellect is more indicative of individual differences than motivation is not supported by the work of Gottfried et al. (2006), the separation of the two concepts is.

In Renzulli’s (2003) Three-Ring Model of Giftedness, the three major components of giftedness, above average ability, creativity, and task commitment are placed on a background resembling a hounds-tooth weave. Within the three rings, motivation falls into the realm of task commitment and is discussed as a driving force that helps students maintain effort over time. In addition to task commitment, motivation is viewed as an integral part of the hounds-tooth itself and is discussed as optimism or hope and refers to the emotional feedback a student receives from the level of commitment he or she exhibits toward work. Furthermore, optimism is related to biological needs and goal attainment. This is similar to Deci’s (1975) fifth step, satisfying needs for competence and self-determination.
Sternberg’s Theory of Successful Intelligence, is comprised of three kinds of intellectual giftedness: analytic, synthetic, and practical. The model does not directly address a motivation component. The theory focuses on patterns of thinking and ways of organizing thought rather than character traits of individuals. Within the practical intelligence component, Sternberg includes the ability to recognize needs in a situation and the ability to set goals for meeting those needs, similar to steps two and three in Deci’s (1975) explanation of cognitive approach to behavior. Sternberg has also developed a balance theory of wisdom that incorporates a social component indicating that wisdom is defined as the absence of need and must be used to impact the social environment for good.

Another popular model of gifted learning is Bett's Autonomous Learner Model (ALM). The model is designed to be represented by a pentagonal shape; each of the five sides representative of a different avenue for the engagement of gifted learners. These sides are 1) Orientation, 2) Individual Development, 3) Enrichment, 4) Seminars, and 5) In-Depth Study. In Orientation, students are introduced to the concepts of giftedness, providing both an understanding of what it means to be gifted and opportunities for learning to work collaboratively with others. During Individual Development, students learn to monitor their own progress toward individualized goals while developing a deeper sense of their own learning styles. Enrichment introduces students to opportunities outside the classroom, such as service projects or cultural activities. Seminars focus on future studies or problem-based learning in order to develop the advanced thinking techniques of an expert. Finally, In-Depth Study includes independently chosen projects, group projects, interaction with mentors, and learning to
present research findings to authentic audiences for the purpose of assessing learning (Betts & Carey, 2009).

This model offers structure to the learning process by providing a progression of learning from teacher-focused direct instruction during Orientation, through teacher as facilitator activities during Individual Development, learner-focused exploration with the support of a teacher or facilitator during Enrichment activities, student-focused learning with the help of a facilitator during Seminars, and finally student-focused learning on a long term basis with minimal help from a facilitator during the In-Depth Study portion of the model (Betts & Carey, 2009). The ALM has been used in conjunction with RTI and is an effective tool for teachers who are attempting to develop a differentiated classroom (Betts, 2004).

Recent Assimilation of Theory and Methodology

As previously stated, few states have any requirement for teachers to be trained in the area of gifted studies. This may be a contributing factor to the lack of adherence to any of the wide variety of models of giftedness available. The application of the models of giftedness toward classroom practice follows roughly the same path as other psychological models; teachers receive instruction in many such models and select from them in a buffet-style, taking that with which they agree, and leaving the rest. The result is an inconsistency among schools, districts, and states regarding the underlying beliefs about giftedness that form the foundation of the various gifted education programs available.

Recently, NAGC and the Council for Exceptional Children (CEC), worked collaboratively to develop a set of standards for teacher knowledge and skills regarding
the needs of gifted students. These standards were adopted by the National Council for the Accreditation of Teacher Education (NCATE), marking a leap forward in insuring that teacher-training programs begin to recognize the need for new teachers to learn appropriate strategies for teaching gifted learners.

**New Understanding of Motivation**

New research by Ryan and Deci (2000) helps to make sense of both the terminology and the application of the spectrum of intrinsic and extrinsic motivation. While intrinsic motivation is still acknowledged as the more desirable form of motivation, this research indicates that intrinsic and extrinsic motivation exist on a continuum rather than in a dichotomy. This fact, in and of itself, can assist teachers in understanding the place at which each student falls within the spectrum and to identify the types of activities that will assist the student in moving further along the spectrum toward intrinsic motivation.

The range of motivation moves along the continuum from amotivation, meaning the absence of motivation, through four elements of extrinsic motivation, each with increasing levels of internal causality, and finally ends at the highest level of motivation, which is intrinsic motivation. The four levels of extrinsic motivation are External Regulation, Introjection, Identification, and Integration. At the level of External Regulation, the individual sees the activity as caused or controlled by someone other than himself and the attached reward is his only reason for participating in the activity. As an individual moves into the realm of Introjection, the causation for participation in the activity moves beyond an external reward and begins to affect the internal need to gain or maintain the approval of others or even the self. Identification indicates that the
individual places a personal value on the reward to be gained. In this realm a student may perceive the advantage of learning course material that is relevant to his ability to receive a scholarship. The final level of extrinsic motivation is Integration, in which the only true difference between intrinsic motivation is that the reward sought is external or tangible. Learning goals at this level are self-selected and sought out by the individual without fear of reprimand or control by others. Intrinsic motivation, seen as the highest level of motivation, is found in an individual who truly enjoys an activity simply for the sake of the activity itself; no external reward is necessary to induce participation (Ryan & Deci, 2000).

**Challenges to Motivation as a Construct of Giftedness**

New information from the Fullerton Longitudinal Study indicates that the connections between motivation and giftedness are not as strong as previously indicated (Gottfried, Gottfried, Cook, & Morris, 2005). Based on the concept of academic intrinsic motivation developed by Adele Gottfried, the study examined the relationship of intellectual giftedness and academic motivation. The study indicates that only a small number of students who are intellectually gifted also scored in the range that would identify them as being motivationally gifted. However, a large number of students who were not identified as intellectually gifted scored in the range of motivationally gifted. This research supports the concept of a separation between intellectual giftedness and motivation that has only been hinted at previously, (Gagné, 2003). The concept of academic intrinsic motivation is characterized by high levels of curiosity and persistence, similar to the theories of both Vygotsky and Renzulli.
**Development of Multilevel Classrooms**

While the discussion of motivation and all its various historical interpretations is extensive, it was the study of these elements that led Gottfried to develop the Children’s Academic Intrinsic Motivation Inventory and its precursors (Gottfried, 1979; 1986). Academic Intrinsic Motivation (AIM) is related to achievement motivation and directly links student’s attitudes to the activities in the classrooms.

Educators need to be aware that students of varying abilities and ability levels are present in their classrooms and should try to match their teaching style to the needs of their students. Regardless of the impact of NCLB on the needs of gifted children, its tenets have encouraged teachers to become increasingly aware of the importance of utilizing teaching strategies that are supported by research. Growing numbers of teachers are seeking for meaningful ways of engaging the interests of all students regardless of their ability level. In fact, engagement has become a new watchword for educators, but is also one that may have deeper meanings than are immediately understood (Skinner, Kinderman, & Furrer, 2009; Valsiner, 1992).

Although the word engaged is listed as a synonym for interest, the term is being used to evoke specific attention to the part of the definition that states that being engaged means “to occupy the attention or efforts” (Engaged, n.d.). Again, although this is very similar to Wilson's (1971) definition of interest, this subtle shift in the language represents the attempts of a profession to adapt a vocabulary for their unique skills and the application of those skills (Skinner et al., 2009; Valsiner, 1992).

A meta-analysis of a variety of instruments measuring engagement was recently conducted by the Regional Educational Laboratory Southeast (Fredricks et al., 2011).
The twenty-one instruments in the study all measured engagement through self-report, teacher interviews, or observational methods. Each instrument was reviewed for inclusion of the constructs or sub-constructs assumed to make up engagement, for the age range appropriate for study, the reliability and validity of the instrument, and for a sample of the types of questions on the surveys. The meta-analysis showed that engagement is indeed a construct that is connected with motivation, achievement, and on-task behavior in a school setting. However, each test focused on a general rating for each student or for a rating in a specific course (Fredricks, et al., 2011). The instruments did not provide data for one student across the range of courses being taken in order to examine the pattern of engagement as it related to each course.

The benefits of the research on engagement derive from the efforts being made to clarify the language of motivation and what it means for teachers and students. Engagement is described as a meta-construct because it involves the behavioral, emotional, and cognitive investments that students place on their school experiences (Fredricks, Blumenfeld, & Paris, 2004).

According to Carol Ann Tomlinson, “we cannot reach the mind we do not engage” (2001, p. 9). To that end, educators are seeking to use a variety of strategies designed to reach students on a deeper level and on a broader basis than ever before (Taylor, 2008). This push to reach students in new ways has, at times, lead to a chaotic mixture of experimental activities, and at others, has lead teachers to narrow the focus of what they do in order to focus on the basic and essential skills necessary for student success (Erickson, 2007; Schmoker, 2011; Tomlinson, 2001). When teachers are freed to focus on the essential skills necessary for quality learning, they are able to discern for
themselves the elements of differentiated instruction that will effectively impact their professional practice.

**Differentiated Instruction in the Multilevel Classroom**

Most of the instruction received by gifted or high-ability students takes place in the regular, heterogeneously grouped, classroom. This, along with the fact that most teachers receive little to no instruction in how to teach highly able students, creates an atmosphere for gifted students where there is likely to be little to no instruction geared toward their specific needs for advanced-level or enriching learning.

The advent of NCLB and the subsequent focus on RTI have created a push in the regular classroom to use a variety of differentiation strategies that are geared toward helping all students meet the state-required minimum levels of achievement. When teachers are able to effectively utilize the strategies and teaching methods that have been found to be useful for differentiating the instruction in a classroom, all students should benefit. The goal of this study is to measure whether or not the differentiation that takes place in the regular classroom is sufficient for the needs of gifted students. A secondary aim of this study will be to identify whether or not the level of differentiation provided is correlated to the AIM of all of the students in the classroom whether they are gifted or not.

**Elements of Differentiated Instruction Useful for Multilevel Classrooms**

According to Tomlinson, Brimijoin, and Navarez (2008), differentiated instruction is not simply the conglomeration of activities that teachers do each day to engage or interest their students, but includes the purposeful and methodical inclusion of a variety of techniques and strategies that are intended to help all students rise to the next highest
level of achievement. This goal is reminiscent of Vygotsky's concept of ZPD (Isenberg & Jalongo, 2001).

Prior to moving students to the next level, teachers must be able to identify the current level at which a student is able to function. In order to accomplish this task effectively, teachers are encouraged to develop a deep understanding of the students’ prior knowledge, interests, and learning-styles. These three foundational concepts allow a teacher to plan and execute lessons that meet the individualized needs of each student in the classroom.

Teachers need not develop completely separate lessons for each child, but should focus on the essential knowledge, understandings, and abilities that all students should derive from a lesson. While the goal of learning for each student remains the same, differentiation allows students to attain those goals through a path that is uniquely designed to meet their individual skills and gifts. Lessons may begin with whole group instruction on the basic foundational concepts to be learned, but progress through a series of opportunities for practice which allows a variety of grouping strategies to be utilized, and finally culminate in each student's ability to demonstrate his or her knowledge, skills, and abilities on an individual basis. Tomlinson's (2001) depiction of this learning process likens it to a series of waves where instruction is provided to whole groups for times of inquiry and sharing, recedes into small pools of students who research or explore concepts together based on readiness or interests, and flows together again into a whole group structure when students have prepared to present their learning to one another.

While differentiated instruction uses the three foundations of readiness, interests, and learning-style to enhance learning from the student point of view, three other
structures outline the depth and breadth of learning that the teacher must develop. These structures are the content, processes, and products that will be used to represent and demonstrate the learning that is desired (Hall, Strangman, & Meyer, 2003; Heacox, 2002; Maker, 1988; Tomlinson, 2001). Finally, all six of these elements must be housed within an environment that provides the opportunities for learning that must exist for students to fully develop their potential to learn (Maker, 1988; Roberts & Inman, 2007).

*Diagnosis of Student Needs in the Differentiated Classroom*

The goal of differentiation is to provide rigor and relevance within a flexible and ever-adapting classroom environment (Heacox, 2002). A variety of strategies for making differentiated instruction applicable to the regular classroom exist in the literature. These range from the use of tiered or layered instruction (Adams & Pierce, 2006; Lehmann, 2002), instruction focused on the use of student choice menus (Northey, 2005; Roberts & Inman, 2007; Westphal, 2007; Winebrenner, 2001), cooperative grouping strategies such as literature circles or workshops (Haager & Klingner, 2005; Northey, 2005), integrated curriculum units (Erickson, 2007; Tomlinson, 2001), and several others that incorporate similar ideas or combine a variety of ideas to form a conglomerate of instructional strategies (Heacox, 2002; Winebrenner, 2001). The multiplicative nature of these strategies stems from the fact that teachers are encouraged to use the forms of differentiation that best suit their own learning or teaching styles, adapt them to their personal teaching situations, and use their own creativity in insuring a fit between the method and the students in a particular setting (Heacox, 2002; Winebrenner, 2001). For this reason, differentiation has a somewhat ambiguous reputation in the world of education; though many teachers believe they understand the term, they may have only a
partial understanding of the entirety of its implications (Heacox, 2002). This presents another situation similar to the use of the word interest as discussed by Valsiner (1992). Fortunately, most educators can and do agree on the use of the six tenets previously mentioned.

How then does differentiation truly work? Teaching is both a science and an art (Taylor, 2008), and the effective use of differentiation strategies requires teachers to apply their knowledge in a scientific manner to diagnose student needs and match them with the strategies and activities most suited to those needs and to develop their artistic craft as they develop the deep relationships with students necessary to act as mentor and guide.

Effectiveness of Differentiated Instruction

While the rhetoric on differentiated instruction seems new, it is not. Educational reformers such as Amos Bronson Alcott and Charlotte Mason advocated for a learner-centered approach using a variety of entry points for learning as early as the beginning of the nineteenth century (Cholmondeley, 2000; Life of Bronson Alcott, n.d.). While these reformers were considered too peculiar for their own time, the echoes of their methods are found in the current push toward the use of differentiated instruction. What they knew centuries ago is now being proven through research-based initiatives.

Archambault et al. (1993) researched the use of six different categories of differentiation strategies used in the regular classroom, comparing how much more often teachers of third and fourth grade students were likely to use these strategies with gifted students than with non-gifted students. The types of strategies were 1) questioning and thinking, 2) providing challenges and choices, 3) reading and written assignments, 4)
curriculum modifiers, 5) enrichment centers, and 6) seat work. The overall findings of the study indicated that teachers in these grades did not use these differentiation strategies much more often with gifted students than with non-gifted students. However, the slight differences that were found were significant. (Two areas involving differentiation for minority students were the only areas not showing a significant difference in the frequency of differentiation.) These findings indicate that teachers were trying to meet the needs of the gifted students through the use of a variety of methods. However, the researchers reported disappointment in the results, stating that although some differentiation was taking place, that it was not of a type or frequency to indicate a true investment in the needs of gifted learners (Archumbault et al., 1993).

In 1998, Robinson revised the Archumbault et al. (1993) study and its instrumentation in order to replicate the study with middle school teachers. During this revision the six categories of differentiation were reduced to two categories and renamed to reflect changes to the questions that made them more appropriate for use at the middle school level. The new categories of differentiation that resulted were 1) self-directed learning modification, and 2) content modification (Robinson, 1998). Again, the differences found were significant, but small.

These two studies indicate that while teachers naturally attend to the needs of their students whether or not they have been formally trained in differentiation methods, there is a lack of focused effort for developing a systematic method for doing so. The impact of NCLB and initiatives such as RTI has generated more support for the documentation and systemization of teaching strategies. Whether or not this has changed the frequency of use for the various methods of differentiated instruction remains to be
seen. If such differences are found to exist, it may indicate that teachers have become more adept at recognizing student’s academic needs and using research based methods for meeting those needs.

School Transitions as Further Complication for Gifted Students

While there are many studies that investigate the ways in which students cope with transitions between grades or schools, such as moving from elementary school to middle school or from high school to college, few, if any, studies investigate a mandated transition away from a support system such as gifted education. The studies that do exist for the purpose of examining a transition away from a support service in school are primarily focused on transitioning students away from remedial or self-contained special education classes and into the regular classroom with the support of an inclusion teacher. Gifted students transitioning into a regular classroom are not afforded the luxury of an inclusion specialist that is attuned to their particular needs. As school systems in Mississippi strive to lower costs by dropping seventh and eighth grade gifted programs and returning to the strictest guidelines of the state mandate to provide gifted programming in grades two through six, many students are not even made aware that their gifted classes will be unavailable until school begins the following year. This process eliminates any potential to develop a training program for students that would help them understand how to adjust to school without the support of the gifted specialist.

While studies have shown that intellect and self-concept may increase a student’s ability to successfully cope with school transitions (Bellmore, 2011), research indicates that high-achieving students may experience achievement losses following periods of transition that may impact their self-concept in a negative way (Smith, 2006). Based on
the research of Bellmore (2011), Bonner (2005), and Smith (2006), it may be inferred that these types of rapid or unannounced transitions are likely to have a much stronger impact than currently acknowledged.

According to research by Smith (2006), the way a student copes with school transitions in middle grades has a significant impact on later transitions. Students who experience achievement losses are likely to have lower levels of interaction with resource personnel such as guidance counselors, advisors, or other mentors and remain less likely to seek the help of these professionals over time. While schools may offer some type of orientation for students entering the lowest grade served at the school, transitions within a school are more likely to go unacknowledged and may, therefore, be more difficult for students than necessary.

The preferred method of service delivery for intellectually gifted students in Mississippi is through a pull-out program design in which gifted children leave their regular classrooms for a minimum of five hours each week. Students often refer to these programs as their favorite part of school and lament the loss of them after the sixth grade (Houston, 2007). In light of that experience, it will be interesting to see whether student motivation is impacted between the sixth and seventh grades for Mississippi’s gifted students.

Conclusion

The introduction of RTI in recent years has increased the awareness of the need for differentiation for all students. Teachers are now encouraged to examine the differences between students on a much more frequent basis than previously desired. It may be interesting to determine whether or not these differences in the overall
educational environment coincide with a difference in the use of differentiation strategies for gifted students, non-gifted students, or both. Further, the previous studies did not attempt to balance the teacher reports of differentiation with any input from the students themselves regarding their experiences in the classrooms. The present study follows the advice of researcher Marcia Gentry, who advocates for reviewing the world of education from the student's point of view (Gentry & Owen, 2004; Gentry & Springer, 2002).

According to Gentry and Owen, “student beliefs are associated with achievement” (2004, p. 20) and because of that, student opinions should be measured in order to determine the effectiveness of the methods for instruction that are provided to them. Evidence suggests, however, that few instruments are available that are suitable for the purposes of examining student perceptions as they relate to learning outcomes (Popham, 2001). Because intrinsic motivation and interest have known links to achievement, it may be helpful to examine student perceptions in a manner that can guide understanding toward how those perceptions are affected by the classroom environment and the learning strategies to which they are exposed (Gentry & Springer, 2002; McCoach, 2000).

In the book Little Men by Louisa May Alcott, Jo states, “. . . half the science of teaching is knowing how much children do for one another, and when to mix them” (Alcott, 2008, p. 66). This simple statement reflects several characteristics that teachers must possess in order to differentiate instruction effectively: a depth of knowledge regarding the readiness, interests, and learning styles of students, a flexibility regarding grouping activities, an understanding of the concept of social constructivism, and a willingness to allow children to reach the desired learning through various avenues. It is
important to know, rather than assume, that these elements of teaching have the desired effect on students, their motivation, and their success.
CHAPTER III

METHODOLOGY

Overview

This study examined possible relationships between gifted and non-gifted students’ Academic Intrinsic Motivation (AIM) in general and for each of four classes: math, language, social studies, and science, and the four areas of differentiation: frequency of self-directed learning modifications for gifted, frequency of self-directed learning modifications for non-gifted, frequency of content modifications for gifted, and frequency of content modifications for non-gifted. Student scores on the Children's Academic Intrinsic Motivation Inventory (CAIMI) (Gottfried, 1986) were examined to determine if any particular subject area elicited significantly different scores in several comparison areas. Students’ scores were compared by grade level, subject area, and status as intellectually gifted or non-gifted.

Teachers received four frequency-of-differentiation scores based on their answers to the Middle School Survey of Classroom Practices (MSSCP) (Robinson, 1998). These sub-scores are as follows: 1) frequency of content modification used for gifted students, 2) frequency of content modification used for regular students, 3) frequency of self-directed learning modification used for gifted students, and 4) frequency of self-directed learning modifications used for regular students. Those scores were evaluated to determine whether teachers with more or less training in the area of gifted studies were more or less apt to use content modifications or self-directed learning modifications in their classrooms. Further, the results of the MSSCP were used to determine whether or
not these teachers used these strategies more or less frequently with gifted or non-gifted children.

Finally, the student’s scores on the CAIMI for each subject area were matched to their teacher’s scores on the MSSCP in order to determine whether a correlation existed between the children’s AIM in that subject and the teacher’s use of differentiation methods for that group of students. Scores of students identified as intellectually gifted were matched to the teacher’s frequency of content modifications for gifted students and frequency of self-directed learning modifications for gifted students, whereas scores of students not identified as intellectually gifted were matched to the teacher’s frequency of content modifications for non-gifted students and frequency of self-directed learning modifications for non-gifted students.

Research Design

The first phase of this study, in which the teachers completed the MSSCP and the students completed the CAIMI, collected both demographic and survey information from teachers and their students. In addition to the basic information requested as part of each instrument, a cover page for students (see Appendix A) requested further demographic information regarding their participation in gifted programming and asked students to identify, based on codes provided, the teachers from whom they were currently receiving instruction in the four areas of math, language, social studies, and science. The cover sheet included a pre-coded, randomly generated student identification number that was used to maintain student anonymity.
Participants

Four instructional locations were selected for this study based on their inclusion in two qualifying categories. First, the school district must have reported greater than ten percent of their enrollment in grades two through twelve as gifted for the most current school year for which data was available. Alternately, the school must have shown a percentage of enrollment of gifted students that is substantially higher than those of other schools in the same congressional district. Second, the school district must have received at least a High Performing rating based on their participation in the state wide criterion referenced testing for the most current year that data was available. An initial search for schools meeting these criteria was conducted with the intent of identifying one testing location in each of Mississippi’s four congressional districts. Information identifying schools that met the requirements found on the Mississippi Department of Education Website and through information provided on request by the office of Gifted Education (MDE, 2012; MDE-ORS, 2011). Two congressional districts either had no schools meeting the criteria, or had no schools meeting the criteria who were willing to participate; administrators cited a concern for maintaining instructional time necessary to maintain or improve their status in the state rating system. The search was then expanded, maintaining the qualifications for percentage of gifted students and high ratings, but removing the limitation of one location from each congressional district. The result of this expansion yielded three instructional locations from congressional district four, Sumrall, Purvis, and South Jones, and one instructional location from congressional district one, Oxford (see Appendix B for letters of permission from each location). From Sumrall, Purvis, and Oxford, a middle school was selected that served sixth and seventh
grade students. At South Jones an elementary school serving sixth grade and a middle school serving seventh and eighth grades were chosen. From these four locations, two participant groups were identified.

The first group of participants in this study was sixth and seventh grade students attending schools in Mississippi that have reported higher than average percentages of students identified as gifted and that have shown, through performance on a battery of state-wide criterion tests that they are functioning in the highest rated levels awarded by the state. All students in these grades at the participating schools were given the opportunity to participate in the study, however participation was voluntary.

The second group of participants in this study was the sixth and seventh grade teachers of English, math, science, and social studies currently working at the participating schools. The participation of the teachers was critical to the ability to conduct the correlational components of the study, but remained strictly voluntary. Prior to conducting the study, a power analysis indicated that a minimum of 50 teachers and 150 students should yield a 75% power to detect moderate relationships at the .05 level of significance.

Data Collection

Following the selection of schools based on the selected criteria, administrators at the schools were contacted in order to identify appropriate dates for conducting the surveys with the students. In the week prior to testing, permission forms were sent home with students (see Appendix C for letters to parents). On the day scheduled for testing, students were directed to a common location and were provided with surveys and instructions for completing them. Students whose permission forms indicated that their
parents did not want them to participate were provided an alternate setting or alternate activities to complete during the time set aside for surveys. Three of the four locations chose to gather all students in a common location, such as the cafeteria, for testing, while the fourth location opted to offer the survey during each student’s social studies class time. For this location, the researcher provided extra training for teachers administering the surveys and maintained telephone availability throughout the day to provide assistance when needed. The training provided instructions for reading the introduction to and instructions for completing the CAIMI, and suggestions for providing appropriate levels of assistance to students if necessary. Surveys were also given to the teachers on the days scheduled for student testing.

Testing procedures were explained to each of the teachers and other adults who helped to supervise the students during the time selected for the student surveys to be given. All students were given the same instructions for filling out and completing the survey and demographic information. Following the administration of the survey with the students, the researcher collected the surveys at the end of the day.

Instrumentation

*Children’s Academic Intrinsic Motivation Inventory (CAIMI)*

The Children’s Academic Intrinsic Motivation Inventory (CAIMI) was developed during and after a 1979 study conducted by Adele E. Gottfried for the purpose of determining whether intrinsic motivation was itself differentiated into specific subject areas and whether intrinsic motivation for a subject area was directly correlated to achievement in that subject area (Gottfried, 1979; Gottfried, 1985). Both hypotheses were supported by Gottfried’s early research and resulted in the development of the
CAIMI. The CAIMI measures the construct of Academic Intrinsic Motivation (AIM) which is defined as “enjoyment of school learning characterized by an orientation toward mastery; curiosity; persistence; task-endogeny; and the learning of challenging, difficult, and novel tasks” (Gottfried, 1985, p. 632) and rates children’s intrinsic motivation in the sub-scales reading, math, social studies, science, and general.

The construction of the test is rather unique. Twenty-four of the question stems are linked to a response for each of the four classes: English, social studies, math, and science. These twenty-four questions are formulated using a five point Likert Scale with answers ranging from strongly agree to strongly disagree. Several questions are reverse scored to insure that survey respondents are answering each question with the appropriate attention. These questions are used to determine the levels of AIM a student has in each of the four classes. Eighteen more questions are asked using the same Likert Scale, but only require one answer and are used for determining the student’s general level of AIM. Finally, two questions are asked regarding the four subject areas using a two-option mutually exclusive answer format.

The sub-scores obtained using the CAIMI were compared to the level of differentiation for the corresponding teacher. The scores of a particular teacher’s students on the CAIMI were compared to that teacher's use of content modification or self-directed learning modification as indicated on the MSSCP. Subject area scores for gifted students in that teacher’s classroom were compared to that teacher’s scores for use of self-directed learning modifications for gifted students and content modifications for gifted students. Subject area scores for average students in that teacher’s classroom were compared to that teacher’s scores for use of self-directed learning modifications for
average students and content modifications for average students. In that way it was determined whether a correlational relationship existed between the subscores of content modifications or self-directed learning modifications provided to a student in a classroom and the academic intrinsic motivation displayed by that student in the classroom.

**Reliability.** Reliability for the CAIMI was determined based on measures of internal consistency as well as test-retest reliability. Internal consistency coefficients ranged from .83 to .93. Retest reliability ranged from .66 to .76 after a two-month period (Posey, 1989).

**Validity.** The CAIMI was found to be significantly correlated with academic achievement as measured by the Stanford Achievement Tests (r = .24 - .44 on matched subtests) (Posey, 1989), was negatively correlated to measures of academic anxiety, and the lack of overlap between the various subject areas (average shared variance of the subscales: r = .15) (Posey, 1989) indicates that AIM is differentiated between subject areas and is not a general trait of the student (Gottfried, 1979). The CAIMI is a commercially produced instrument that is readily obtained by individuals possessing the qualifications for conducting research that are required by the publisher. Prior to the study, the researcher contacted the publisher and confirmed the existence of those qualifications thereby obtaining permission to use the CAIMI for this research.

*Middle School Survey of Classroom Practices (MSSCP)*

The Middle School Survey of Classroom Practices (MSSCP) is an adaptation of the Classroom Practices Questionnaire (CPQ), which was developed by the National Research Center on the Gifted and Talented (NRC/GT) in order to determine whether general education teachers utilize content modification or self-directed modification and
the incidence rates for those methods. The MSSCP was developed by George J. Robinson (1998) using the same format as the CPQ. According to NAGC (2009) most gifted students in the U.S. participate in specialized programming for the gifted for less than five hours per week and are therefore receiving the majority of their instruction in the general education classroom. The CPQ and the MSSCP have, therefore, been instrumental in judging whether or not general education classrooms are meeting the needs of gifted students.

One important modification of the CPQ included in the MSSCP allows teachers to identify whether they teach math, language, science, or social studies classes. The author of the MSSCP included this modification in order to use the survey with higher-grade levels than had been used with the CPQ. The added benefit for this study is the ease with which the MSSCP may be examined in direct relationship to the CAIMI, which divides student motivation by the same subject areas.

The difference between the CPQ and the MSSCP is primarily related to the inclusion of questions related to Middle School Issues such as collaborative or interdisciplinary teaming, flexible scheduling, and grouping practices. This makes the MSSCP uniquely adapted to exploring numerous issues faced by middle level educators. The MSSCP contains questions in four areas.

*Part I – teacher information.* The Teacher Information section of the MSSCP includes six questions regarding demographic data such as gender, ethnicity, number of years taught, subject area taught, and teaching experience. The Teacher Information section of the MSSCP is identical to the CPQ except for one question asking the subject area taught, rather than only the grade level taught as in the original CPQ.
**Part II - middle school issues.** This section includes thirteen questions revolving around the concepts of collaborative teaming, indicating whether the teachers are able to meet in interdisciplinary teams, have access to gifted personnel during those meetings, and whether their classes are heterogeneously or homogeneously grouped. The second section of the MSSCP replaced part of the CPQ due to the fact that this section focuses on issues that were specific to the grade range of the teachers participating in the survey; therefore the MSSCP focuses on middle-school structures whereas the CPQ focuses on elementary structures.

**Part III - school and district information.** School and District Information includes fifteen questions that detail the teacher’s knowledge of district practices for the identification of gifted students. The third section of the MSSCP is also closely related to the CPQ with only minor wording changes in order to reflect the middle-school focus. Finally, the Classroom Practices section took only nine questions from the CPQ and fourteen more were added.

**Part IV – classroom practices.** Part IV is made up of twenty-five questions on a six-point Likert type scale indicating the frequency of the teacher’s use of either content modification or self-directed learning modification strategies. For each of the twenty-five items the teacher is asked to indicate the frequency with which he or she uses the strategies listed as follows:

0 – Never

1- Once a month, or less frequently

2 – A few times a month
A few times a week
4 – Daily

Teachers are instructed to answer each question for both high-achieving and average students. The survey defines high-achieving students as those who routinely score in the top fifteen percent of the teacher's class.

In developing the new section of the instrument, Robinson created 30 new questions based on a review of the literature that suggested the three content areas of content modifications, assignment modifications, and independent-study modifications. A panel of thirteen experts rated the questions on their placement in the content areas and provided a measure of the confidence with which they had selected their answers. Survey items were considered to have content validity if two-thirds of the judges placed them in the particular category for which they were written and if they received an appropriate strength rating.

The survey was field tested in two states, New York and Iowa, using a total of 228 teachers from various locations. The MSSCP was then subjected to factor analysis using a varimax rotation. Alpha reliability coefficients were .92 and .93 for the elements of the two-factor solution which showing loadings for gifted and non-gifted students. Three questions were deleted due to having a factor loading of less than .34. Two others, showing dichotomous loadings, were moved to other sections of the survey as stand-alone questions not contributing to the two factors of self-directed modifications or content modifications. Therefore, the final revision of the MSSCP had twenty-five questions in the Classroom Practices section. Factor loadings on only two of the proposed constructs remained: those for self-directed learning modifications and those for
content modifications. Of the twenty-five questions, numbers 2, 5, 7, 9, 11, 12, 13, 17, 18, 19, 22, 24, and 25 make up the self-directed learning modifications subscale and have a Cronbach’s alpha reliability coefficient of .92. Questions 1, 3, 4, 6, 8, 10, 14, 15, 16, 20, 21, and 23 make up the content modifications subscale and have a Cronbach’s alpha reliability coefficient of .93 (Robinson, 1998).

Therefore, when determining the differentiation methods and frequencies for each teacher, four sub-scores will be used: 1) frequency of content modifications for gifted students, 2) frequency of content modifications for average students, 3) frequency of self-directed learning modifications for gifted students, and 4) frequency of self-directed learning modifications for average students. Other information from the demographics section of the MSSCP will be used to establish the amount of training in gifted education, grade level taught, and subjects taught for each teacher. Prior to conducting the survey, the researcher contacted Dr. Robinson and obtained permission to use the MSSCP for this study (see Appendix D for correspondence related to gaining permission to use the MSSCP and Appendix E for the MSSCP itself).

Demographic Information

Students in sixth and seventh grades in the four instructional locations were the participants of the study. The school districts selected have identified between 12% and 16% of their student population as gifted. All four locations show greater than 40% of students performing at or above Proficient on the Mississippi Curriculum Test 2nd Edition (MCT2).

The first instructional location reports an ethnic make-up of 43% Black, 50% White, 3% Asian, and 3% Hispanic; gender differences include Male, 53%, Female 47%
and the poverty level is reported as 44%. The second instructional location reports an ethnic make-up of 18% Black, 79% White, 3% Hispanic, and 0% Asian; gender differences include Male 51%, Female 49%; and the poverty level is reported as 46%.

From instructional location three, an ethnic make-up of 9% Black, 90% White, and 1% Hispanic; gender differences include 50% Male, 50% Female; and the poverty level is reported as 40%. Finally, the fourth instructional location shows an ethnic make-up of 12% Black, 87% White, 1% Native American, and 1% Hispanic, with 57% Male and 43% Female students; and the poverty rate is reported as 41%.

Procedures

As stated previously, students at the selected schools completed the CAIMI during a class period that was determined as appropriate by the individual schools. Prior to this day, the researcher sent home a letter to parents describing the purpose of the study, asserting the anonymity of the student, and asking that the parent sign an attached form indicating their desire for their child's participation or non-participation in the study. The researcher worked closely with each district and with appropriate authorities to ensure that proper permission for educational testing was observed (see Appendix F for paperwork submitted to and approved by the Internal Review Board).

On the scheduled testing day, students were given instructions for participating in the survey and were given another opportunity to refuse to complete the survey if they chose. Students were instructed to leave their names off of the protocol. Instructions for the students included a statement indicating that their teachers would not see the results of the survey and therefore they were able to feel free to be honest regarding their opinions of each class and of their performance in the class. Each protocol was assigned
a student code and contained a cover page that asked the students to fill in a teacher code based on which teacher they had for each subject area. Teacher codes were created with the help of the principals or their appointed agents responsible for scheduling at the various schools. Teachers who filled out the MSSCP received the corresponding code to use on their protocols. Teachers were assured that the code was only to be used as a way to correlate student responses to the appropriate teacher and results for individual teachers would not be reported back to any district personnel.

Limitations

Objectivity of Student Participants: because the survey involved children rating the activities in which they participated and related their enjoyment of those activities to the subject area, it is possible that students rated a subject area lower if they did not have a good rapport with that teacher.

Objectivity of Teacher Participants: Teachers may have unwittingly rated themselves higher or lower on the MSCCP due to lack of information regarding the types of activities that constitute differentiation, or they may have rated themselves higher or lower than their normal practices should indicate. Since this was a one-time, self-reported survey, teachers may have had trouble remembering the exact frequency of the number of times that they had used various methods throughout the year.

Data Analysis

A variety of statistical analyses were conducted to examine the findings in this study. A doubly multivariate analysis in which the General Linear Model using a repeated measures ANOVA determined the effects of using either content modifications or self-directed modifications with either gifted or non-gifted students. Independent samples t-
tests were performed in order to determine whether a difference existed between the frequency of content modifications or the frequency of self-directed learning modifications methods used with gifted and non-gifted students, and whether there was an overall difference in the motivation levels of gifted and non-gifted students based on the general scale of the CAIMI. A two-way ANOVA evaluated the differences in levels of motivation for gifted and non-gifted students based on grade level. Pearson correlation was used to determine whether a relationship exists between the subject area motivation scales on the CAIMI and the corresponding subject area teacher’s frequency scores for both content modifications and self-directed modifications to instruction. Finally, one-way ANOVAs were conducted to determine whether there were differences in the type and frequency of differentiation a teacher provided based on amount of training the teacher had in gifted education.
CHAPTER IV

RESULTS

Introduction

Information contained in this chapter consists of the descriptive information, statistical analyses, and ancillary findings related to the eight research hypotheses developed for the purposes of this study.

Demographic Information Related to the MSSCP

Included in the study were 53 teachers of sixth (31) and seventh (22) grade students. These teachers provided instruction in the general education classroom for the subject areas of English (17), math (18), science (5), and social studies (12). These teachers, and their students, were identified as study subjects based upon a greater than average percentage of gifted students identified in their school district and their school’s typical performance on the statewide standardized tests. Teachers completed the Middle School Survey of Classroom Practices (MSSCP) in order to identify their use of two categories of differentiation: content modifications or self-directed learning modifications. Of the teachers completing the survey, 12 were male (22.6%), and 41 were female (77.4%). Although each school participating in the study employs teachers of various racial or ethnic backgrounds, all teachers of the core subject areas at these schools reported to be Caucasian. Twenty-one teachers who elected to participate in the study had between six and ten years of experience (39.6%), twelve teachers had greater than fifteen years of experience (22.6%), nine had less than five years of experience (17.0%), and six did not report the number of years they had been teaching (11.3%). Teachers were somewhat evenly distributed in the area of highest degree earned with 23
having a bachelor’s degree (43.4%), and 24 having master’s degrees (45.3%). The majority of teachers did not have training in gifted education (72.3%). Of those who did have training in gifted education, four had received that training through district-level professional development (8.5%), five had taken an undergraduate course in gifted education (10.6%), and four had taken a graduate level course in gifted education (8.5%). Tables 1-3 show the breakdown of teachers based on years of experience and training.

Table 1

*Years of Teaching Experience*

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 – 5</td>
<td>9</td>
<td>17.0%</td>
</tr>
<tr>
<td>6-10</td>
<td>21</td>
<td>39.6%</td>
</tr>
<tr>
<td>11-15</td>
<td>5</td>
<td>9.5%</td>
</tr>
<tr>
<td>16-20</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>21+</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>Unreported</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>53</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Table 2

*Training in Gifted Education*

<table>
<thead>
<tr>
<th>Type of Training</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Training</td>
<td>34</td>
<td>64.2%</td>
</tr>
<tr>
<td>District-level Professional Development</td>
<td>4</td>
<td>7.5%</td>
</tr>
<tr>
<td>Undergraduate Course</td>
<td>5</td>
<td>9.4%</td>
</tr>
<tr>
<td>Graduate Course</td>
<td>4</td>
<td>7.5%</td>
</tr>
<tr>
<td>Unreported</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3

*Highest Degree Earned*

<table>
<thead>
<tr>
<th>Highest Degree Earned</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors (BS/BA)</td>
<td>23</td>
<td>43.4%</td>
</tr>
<tr>
<td>Masters (MS/MA)</td>
<td>24</td>
<td>45.3%</td>
</tr>
<tr>
<td>Unreported</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>

In addition to information regarding the amounts of experience, training, and education teachers received, the survey asked teachers to provide information regarding the school setting and their current teaching experiences, opportunities, and limitations. The teachers in the study were asked whether or not their school or district required them
to participate in an interdisciplinary team for the purpose of planning or support, whether
gifted specialists attended interdisciplinary team meetings, and whether teachers at the
same grade-level were given common planning times to facilitate those meetings. Tables
4-6 present information regarding teacher’s responses to those types of questions.

Table 4

*Frequency of Interdisciplinary Team Meetings*

<table>
<thead>
<tr>
<th>Interdisciplinary Meetings</th>
<th>Frequency of Teacher’s Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Such Team Exists</td>
<td>11</td>
<td>20.8%</td>
</tr>
<tr>
<td>Weekly</td>
<td>13</td>
<td>24.5%</td>
</tr>
<tr>
<td>Monthly</td>
<td>16</td>
<td>30.2%</td>
</tr>
<tr>
<td>Once per Semester</td>
<td>2</td>
<td>3.8%</td>
</tr>
<tr>
<td>Not Reported</td>
<td>4</td>
<td>7.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 5

*Gifted Specialist’s Attendance at Interdisciplinary Team Meetings*

<table>
<thead>
<tr>
<th>Gifted Specialist’s Attendance</th>
<th>Frequency of Teacher Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None in attendance</td>
<td>26</td>
<td>49.1%</td>
</tr>
<tr>
<td>Does Attend</td>
<td>5</td>
<td>9.4%</td>
</tr>
<tr>
<td>I Don’t Know</td>
<td>12</td>
<td>22.6%</td>
</tr>
<tr>
<td>Does Not Apply</td>
<td>9</td>
<td>17.0%</td>
</tr>
<tr>
<td>Not Reported</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>
Teachers were also asked about the student grouping and scheduling policies in place at their schools. When asked if teachers had the authority to temporarily adjust student schedules the majority of the teachers indicated that they did not (52.8%). Teachers further indicated that they lacked the authority to temporarily adjust student groups (50.9%). According to the teachers, schools involved in the study were most likely to group students heterogeneously, without regard to ability levels, in their English (39.6%), Math (35.8%) and Social Studies (60.4%) classes, but were more likely to group students according to ability levels in Science (54.7%). Tables 7-9 show the student grouping methods most frequently reported by teachers in the study.
Table 7

*Allowance of Flexible Scheduling by Teachers*

<table>
<thead>
<tr>
<th>Flexible Scheduling</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>28</td>
<td>52.8%</td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>24.5%</td>
</tr>
<tr>
<td>Teacher Unaware of Policy</td>
<td>11</td>
<td>20.8%</td>
</tr>
<tr>
<td>Unreported</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 8

*Allowance of Flexible Grouping by Teachers*

<table>
<thead>
<tr>
<th>Flexible Grouping Allowed</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>27</td>
<td>50.9%</td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>24.5%</td>
</tr>
<tr>
<td>Teacher Unaware of Policy</td>
<td>12</td>
<td>22.6%</td>
</tr>
<tr>
<td>Unreported</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 9

*Student Grouping Methods by Subject Area*

<table>
<thead>
<tr>
<th>Grouping Method</th>
<th>English</th>
<th>Math</th>
<th>Science</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homogeneous</td>
<td>6</td>
<td>9</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Percentage</td>
<td>11.3%</td>
<td>17.0%</td>
<td>0%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Heterogeneous</td>
<td>21</td>
<td>19</td>
<td>29</td>
<td>32</td>
</tr>
<tr>
<td>Percentage</td>
<td>39.6%</td>
<td>35.8%</td>
<td>54.7%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Combination</td>
<td>16</td>
<td>18</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Percentage</td>
<td>30.2%</td>
<td>34%</td>
<td>24.5%</td>
<td>28.3%</td>
</tr>
<tr>
<td>Not Reported</td>
<td>10</td>
<td>7</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Percentage</td>
<td>18.9%</td>
<td>13.2%</td>
<td>20.8%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>53</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Percentage</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Another area of the MSSCP asked teachers to identify their understanding of district policies on acceleration, acceptable methods of acceleration, and their knowledge of the available gifted programs in their schools. Although all schools participating do have gifted programs, nine teachers (17%) reported that there was no such program in their school. Further, although all schools in the state operate under a state-mandate for serving intellectually gifted students in grades 2-6, when asked whether the school had a definition of giftedness, 20 teachers (37.7%) said they did not know; another 13 teachers (24.5%) elected not to answer the question. Table 10 addresses these issues.
Table 10

*Teacher’s Awareness of District Policies*

<table>
<thead>
<tr>
<th>District Policy</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existence of Policy on Acceleration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy Does Not Exist</td>
<td>13</td>
<td>24.5%</td>
</tr>
<tr>
<td>Policy Exists</td>
<td>8</td>
<td>15.1%</td>
</tr>
<tr>
<td>Teacher is Unaware</td>
<td>31</td>
<td>58.5%</td>
</tr>
<tr>
<td>Unreported</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Acceleration Method Encouraged by District</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Allowed in Any Form</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>Provide Material from Next Grade-Level</td>
<td>9</td>
<td>17.0%</td>
</tr>
<tr>
<td>Enrich - Do Not Accelerate</td>
<td>9</td>
<td>17.0%</td>
</tr>
<tr>
<td>Unreported</td>
<td>34</td>
<td>64.2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Existence of District-wide Definition of Giftedness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition Does Not Exist</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Definition Exists</td>
<td>20</td>
<td>37.7%</td>
</tr>
<tr>
<td>Teacher is Unaware</td>
<td>20</td>
<td>37.7%</td>
</tr>
<tr>
<td>Unreported</td>
<td>13</td>
<td>24.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 10 (continued).

<table>
<thead>
<tr>
<th>Existence of Gifted Programming</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Does Not Exist</td>
<td>9</td>
<td>17.0%</td>
</tr>
<tr>
<td>Program Exists</td>
<td>40</td>
<td>75.5%</td>
</tr>
<tr>
<td>Unreported</td>
<td>4</td>
<td>7.5%</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>

The MSSCP provided teachers with the opportunity to indicate their use of a variety of methods that were not considered as content modifications or self-directed learning modifications. These included the teacher’s use of pretests, portfolio assessments, and systematic encouragement for students to set their own learning goals. The majority of teachers reported using pretests (77.4%), and occasionally allowed students to set their own learning goals (71.7%). The greatest number of teachers (39.6%) did not, however, use portfolio assessments. Table 11 addresses these teaching methods.
Table 11

*Teacher’s Use of Pretests, Portfolio Assessments, and Student Goal Setting*

<table>
<thead>
<tr>
<th>Teaching Method</th>
<th>Frequency of Use</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use of Pretests</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Used</td>
<td>11</td>
<td>20.8%</td>
</tr>
<tr>
<td>Used</td>
<td>41</td>
<td>77.4%</td>
</tr>
<tr>
<td>Unreported</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Use of Portfolios</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never Used</td>
<td>21</td>
<td>39.6%</td>
</tr>
<tr>
<td>Seldom Used</td>
<td>11</td>
<td>20.8%</td>
</tr>
<tr>
<td>Sometimes Used</td>
<td>19</td>
<td>35.8%</td>
</tr>
<tr>
<td>Frequently Used</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>Unreported</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Use of Student Goal Setting Techniques</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>2</td>
<td>3.8%</td>
</tr>
<tr>
<td>Seldom</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>38</td>
<td>71.7%</td>
</tr>
<tr>
<td>Frequently</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>Unreported</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>
Demographic Information Related to the CAIMI

Also included in the study were 687 sixth (238) and seventh grade (449) students at four middle or junior high schools from various locations around the state of Mississippi. Of these students 55 attended a school from which no teachers chose to participate. Therefore, their responses are not included in the hypotheses that require matching the student to a teacher, but are included in the hypotheses related to identifying overall student motivation in the various subject areas. Out of the total number of students, 319 were male, 363 were female, and five students did not report their gender; 463 were not officially identified as gifted, 221 were identified as gifted and had participated in a program for intellectually gifted children, while three students did not report their identification status. Since status as gifted was self-reported, secondary questions were asked of students to verify their truthfulness without jeopardizing their anonymity. For all students reporting that they had participated in gifted programming, answers to these questions were accurate and thereby confirmed their honesty. A chart representing the gifted status, grade level, and gender of student participants is presented in Table 12.
Table 12

*Frequencies and Percentages of Student Subjects by Gifted Status, Grade Level, and Gender*

<table>
<thead>
<tr>
<th>Gifted Status</th>
<th>Grade Level</th>
<th>Number</th>
<th>Percentage</th>
<th>Gender</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6th</td>
<td>79</td>
<td>12%</td>
<td>Male</td>
<td>36</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>43</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>7th</td>
<td>141</td>
<td>21%</td>
<td>Male</td>
<td>69</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>72</td>
<td>11%</td>
</tr>
<tr>
<td>Non-gifted</td>
<td>6th</td>
<td>153</td>
<td>22%</td>
<td>Male</td>
<td>78</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>75</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>7th</td>
<td>307</td>
<td>45%</td>
<td>Male</td>
<td>133</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>174</td>
<td>25%</td>
</tr>
<tr>
<td>Totals</td>
<td>680</td>
<td>100%</td>
<td>680</td>
<td>100%</td>
<td>680</td>
<td>100%</td>
</tr>
</tbody>
</table>

Students participating in the research were enrolled in the same schools from which the pool of teacher subjects was recruited. The students in the study represent the majority of students in each participating teacher’s classroom. Students were asked to provide their opinion of classroom activities in each of the four core subject areas of English, math, science, and social studies on the CAIMI. Motivations scores for each of the areas and in general were obtained based on student responses. The mean score for general motivation in gifted students was 62.52 whereas the mean score for general
motivation in non-gifted students was 61.09. Table 13 provides the means and standard deviations of each of the motivation scores for gifted and non-gifted students.

Table 13

*Means and Standard Deviations for the CAIMI Subscales by Gifted Status*

<table>
<thead>
<tr>
<th>Gifted Status</th>
<th>Subscale on the CAIMI</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gifted</td>
<td>Reading</td>
<td>221</td>
<td>77.51</td>
<td>20.33</td>
</tr>
<tr>
<td></td>
<td>Math</td>
<td>221</td>
<td>84.05</td>
<td>19.78</td>
</tr>
<tr>
<td></td>
<td>Social Studies</td>
<td>217</td>
<td>85.59</td>
<td>18.68</td>
</tr>
<tr>
<td></td>
<td>Science</td>
<td>221</td>
<td>78.03</td>
<td>20.58</td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>221</td>
<td>62.52</td>
<td>10.28</td>
</tr>
<tr>
<td>Non-Gifted</td>
<td>Reading</td>
<td>463</td>
<td>78.06</td>
<td>18.97</td>
</tr>
<tr>
<td></td>
<td>Math</td>
<td>463</td>
<td>82.64</td>
<td>19.81</td>
</tr>
<tr>
<td></td>
<td>Social Studies</td>
<td>462</td>
<td>85.24</td>
<td>17.25</td>
</tr>
<tr>
<td></td>
<td>Science</td>
<td>463</td>
<td>79.66</td>
<td>19.59</td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>463</td>
<td>61.09</td>
<td>9.60</td>
</tr>
</tbody>
</table>

*Note:* The maximum possible score for the General area is 90, and for Subject Areas is 124. Minimum Scores evidenced in this study were as follows: Reading 6, Math 15, Social Studies 27, Science 11, and General 27.

These results are somewhat inconsistent with the norms found during the development of the CAIMI. Mean scores for this study are consistently approximately ten points lower than the mean scores found during the normative process (Gottfried, 1986).

Tests of Hypotheses

Tests for each of the eight hypotheses proposed in this study are found below.

The first hypothesis indicated:
H1: There is no difference in the sub-scores obtained by the MSSCP for the methods used, whether self-directed learning or content modification, for gifted and non-gifted students.

The results of the test for Hypothesis 1 are presented in Table 14. Null hypothesis 1 regarding self-directed learning is not supported ($t(57) = 3.441, p = .001$). Data indicate that there is a significant difference in the frequency with which teachers use self-directed learning modifications with gifted and non-gifted students. As Table 14 shows, teachers use self-directed learning modifications more frequently with gifted students than with non-gifted students. Null Hypothesis 1 regarding content modification is also not supported ($t(57) = 2.707, p = .009$). The test data indicate that there is also a significant difference in the frequency with which teachers use content modifications with gifted and non-gifted students. Again, Table 14 indicates that teachers use content modifications more frequently for gifted than non-gifted students.

Table 14

*Mean Sub-scores on MSSCP by Gifted Status*

<table>
<thead>
<tr>
<th>Sub-score</th>
<th>Mean</th>
<th>N</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-directed modifications for gifted</td>
<td>17.06</td>
<td>52</td>
<td>9.31</td>
</tr>
<tr>
<td>Self directed modifications for non-gifted</td>
<td>15.54</td>
<td>52</td>
<td>7.97</td>
</tr>
<tr>
<td>Content modifications for gifted</td>
<td>29.75</td>
<td>52</td>
<td>10.90</td>
</tr>
<tr>
<td>Content modifications for non-gifted</td>
<td>28.13</td>
<td>52</td>
<td>9.36</td>
</tr>
</tbody>
</table>

*Note.* Scores for self-directed modifications ranged from 0-47; scores for content modifications ranged from 0-59.
H2: There is a difference in the motivation levels of gifted and non-gifted students overall as measured by the general scale of the CAIMI.

The results of the tests for hypothesis 2 are presented in Table 15. The hypothesis is not supported \( (t(682) = 1.785, p = .075) \). There is no significant difference between the general motivation levels of gifted and non-gifted students.

Table 15

*General Academic Intrinsic Motivation by Gifted Status*

<table>
<thead>
<tr>
<th>General AIM by Gifted Status</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-gifted</td>
<td>463</td>
<td>61.09</td>
<td>9.60</td>
</tr>
<tr>
<td>Gifted</td>
<td>221</td>
<td>62.52</td>
<td>10.28</td>
</tr>
</tbody>
</table>

*Note.* Non-gifted students’ scores ranged from 27 to 86; gifted students’ scores ranged from 32 to 86.

H3: There is a difference in the overall motivation levels as measured by the general scale of the CAIMI of gifted and non-gifted students according to their placement in either sixth or seventh grade.

Hypothesis 3 in relation to gifted status is not supported \( (F(1,680) = 1.684, p = .195) \). There is no difference in AIM between gifted and non-gifted students. Hypothesis 3 in relation to grade-level is also not supported \( (F(1, 680) = .060, p = .807) \). There is no difference in AIM between sixth and seventh grade students. Hypothesis 3 in relation to the interaction of gifted status and grade-level is also unsupported \( (F(1, 680) = 1.900, p = .169) \). There is no interaction between gifted status and grade-level in the sixth and seventh grades. Table 16 presents the data related to Hypothesis 3.
Table 16

*Mean AIM by Grade-Level and Gifted Status*

<table>
<thead>
<tr>
<th>Gifted Status</th>
<th>Grade Level</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-gifted</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>61.72</td>
<td>9.95</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>7&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>60.77</td>
<td>9.42</td>
<td>307</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>61.09</td>
<td>9.60</td>
<td>463</td>
</tr>
<tr>
<td>Gifted</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>61.65</td>
<td>10.70</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>7&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>63.01</td>
<td>10.03</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>62.52</td>
<td>10.28</td>
<td>221</td>
</tr>
<tr>
<td>Total</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>61.69</td>
<td>10.19</td>
<td>236</td>
</tr>
<tr>
<td></td>
<td>7&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>61.47</td>
<td>9.66</td>
<td>448</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>61.55</td>
<td>9.85</td>
<td>684</td>
</tr>
</tbody>
</table>

*Note.* Sixth grade students' scores ranged from 30 to 91; seventh grade students' scores ranged from 33-91.

H4: There is a correlation between the English motivation levels of gifted and non-gifted students as measured by the English subscales of the CAIMI and the English teacher's frequency scores for self-directed learning and content modification.

Hypothesis 4 is not supported in relation to non-gifted students reading AIM and language arts teachers’ use of content modification ($r = .005, p = .929$). In relation to non-gifted students’ reading AIM and language arts teachers’ use of self-directed learning modifications, Hypothesis 4 is not supported ($r = .037, p = .506$). Hypothesis 4 is also not supported in relation to either gifted students reading AIM and language arts teachers’ use of content modifications ($r = .098, p = .219$), or gifted students reading AIM and language arts teachers’ use of self-directed learning modifications ($r = .006, p = .935$).
H5: There is a correlation between the math motivation levels of gifted and non-gifted students as measured by the math subscales of the CAIMI and the math teacher's frequency scores for self-directed learning and content modification.

Hypothesis 5 is not supported in relation to non-gifted students math AIM and math teachers’ use of content modifications ($r = .053, p = .288$). It is, however, supported in relation to non-gifted students’ math AIM and math teachers’ use of self-directed learning modifications ($r = .130, p = .008$). The impact of teaching methods is reversed when related to gifted students, in that Hypothesis 5 is supported for gifted students’ math AIM and math teachers’ use of content modifications ($r = .157, p = .025$), but is not supported for gifted students’ math AIM and math teachers’ use of self-directed learning modifications ($r = .113, p = .108$).

H6: There is a correlation between the science motivation levels of gifted and non-gifted students as measured by the science subscales of the CAIMI and the science teacher's frequency scores for self-directed learning and content modification.

Hypothesis 6 is not supported in relationship to non-gifted students’ science AIM and science teachers’ use of content modification ($r = -.020, p = .712$), but is supported in relation to non-gifted students’ science AIM and science teachers’ use of self-directed learning modifications ($r = -.182, p = .001$). The hypothesis is not supported for gifted students’ science AIM in relationship to science teacher’s use of content modifications ($r = .028, p = .713$), or their use of self-directed learning modifications ($r = -.079, p = .299$).

H7: There is a correlation between the social studies motivation levels of gifted and non-gifted students as measured by the social studies subscales of the CAIMI and the
social studies teacher's frequency scores for self-directed learning and content modification.

Hypothesis 7 is not supported for non-gifted students’ social studies AIM in relation to teachers’ use of content modifications ($r = .053, p = .279$) or self-directed learning modifications ($r = -.062, p = .207$). It is also not supported for gifted students’ social studies AIM in relation to social studies teachers’ use of content modifications. It is, however, supported in relation to gifted students’ social studies AIM and social studies teachers’ use of self-directed learning modifications ($r = -.186, p = .008$).

H8: There is a difference in the type and frequency of differentiation used based on the amount of training the teacher has received in gifted education.

Hypothesis 8 was supported only in relation to teachers use of self-directed learning for gifted students ($F(3,42) = 2.886, p = .047$). The means and standard deviations of the test for hypothesis 8 are presented in Table 17.
Table 17

Mean MSSCP scores by Training in Gifted Education

<table>
<thead>
<tr>
<th>Modifications</th>
<th>Level of Training</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content modifications for gifted</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>34</td>
<td></td>
<td>29.82</td>
<td>11.55</td>
</tr>
<tr>
<td>District In-service</td>
<td>3</td>
<td></td>
<td>35.33</td>
<td>11.55</td>
</tr>
<tr>
<td>Undergraduate course</td>
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<td>22.20</td>
<td>4.32</td>
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<tr>
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<td>41.00</td>
<td>5.48</td>
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<td>Total</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>34</td>
<td></td>
<td>28.06</td>
<td>10.14</td>
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<td>9.63</td>
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<td></td>
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Table 17 (continued).

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<tr>
<td></td>
<td>Total</td>
<td>47</td>
<td>8.35</td>
<td>8.35</td>
</tr>
</tbody>
</table>

Note. Teachers’ scores for content modifications ranged from 7 to 50; scores for self-directed learning modifications ranged from 4 to 51.

Post Hoc analysis using Tukey’s LSD confirmed that teachers who had graduate level training in gifted education used self-directed learning modifications with gifted students at levels significantly above those with no training in gifted education. These results also showed an even greater difference between those with graduate level training and undergraduate level training, with graduate trained teachers using the methods at a greater frequency. There was no significant difference between teachers who received graduate level training and those who received district level professional development training in gifted education.

Ancillary Findings

Much of the demographic data made available due to its presence on the MSSCP provides ample opportunity to examine a variety of interesting secondary data. Although the data was not analyzed by school in the original eight hypotheses, several anomalies seem to exist when approaching the data from that perspective. It was evident when
entering the data, that teachers who worked at the same school often had quite different opinions or understandings regarding the gifted programs available to their students, the ways in which the students were identified, what constituted acceleration and whether it was an acceptable practice, and even the number of students at the school who were formally identified as gifted. For example, question number 25 on the MSSCP asks teachers to indicate whether their district had adopted a formal definition of giftedness. All districts in the study have, by means of a state mandate for serving intellectually gifted students in grades two through six, a definition of giftedness and all districts have an above average number of gifted students enrolled. However, of the 54 teachers participating in the study, 20 answered yes, 20 answered no, and 14 did not answer the question at all.

When examining this data for the three main schools participating, the information seems to be broken across grade lines. Of the 21 teachers from the largest school, ten of the seventh grade teachers left the question unanswered and only two indicated their awareness of an existing definition. However, among the sixth grade teachers from the same location, eight teachers indicated that they were aware of a definition, three indicated no awareness of a definition and no teachers left the question blank. Of the 13 teachers from the second largest school, three sixth grade teachers indicated their awareness of a definition, three indicated a lack of awareness and one declined to answer. Of the seven seventh grade teachers at that location four indicated no awareness of a definition and three declined to answer. Finally, at the third location four of the eight sixth grade teachers indicated awareness of a definition, while the other four
indicated a lack of awareness. All four of the seventh grade teachers indicated a lack of awareness of a definition.

At the largest location, when asked how many students the teacher taught that were identified as gifted, three of the eleven sixth grade teachers indicated that they were aware of the existence of gifted students at the school, but estimated the number of students to be between 30-45 students depending on the teacher’s estimate. Yet, none of the 10 seventh grade teachers at that school indicated the awareness of the existence of any gifted students at their school. Of the 13 teachers at the second largest school, all of the sixth grade teachers indicated their awareness of gifted students in their classrooms, but count estimates varied between 15 and 30 students. Again, none of the seventh grade teachers in the second largest school had any awareness of the existence of gifted students in their classrooms. At the third location a grade-level difference was not as predominate, but answers for all teachers varied. Of the eight sixth grade teachers, one believed there were no gifted children in the school, three estimated a count between 20 and 32, and the other four declined to answer. Of the four seventh grade teachers, one indicated the belief that no gifted students attended their school; another believed that there were potentially 10 gifted students, and the other two declined to answer.
CHAPTER V

SUMMARY

Purpose

The purpose of this study was to identify the potential relationships between teachers’ use of content modifications and self-directed learning modifications for gifted and non-gifted students in the regular education classroom, and the students’ Academic Intrinsic Motivation in those classes. The goal of the study was to determine whether teachers in the regular classroom are using these differentiation strategies more or less frequently with gifted or non-gifted students and whether or not the student’s motivation for each class was impacted by the strategies that the teacher was using. This information may provide an opportunity for teachers to become aware of the ways in which they are meeting the learning needs of students at all levels in their predominately heterogeneously grouped classrooms.

Summary of Procedures

Prior to the study several schools throughout the state of Mississippi were identified as potential candidates for participation based on their identification of higher than average numbers of intellectually gifted students within their district. As a secondary qualification, schools were identified based on their high levels of performance on the statewide school rating system. Originally, the intent was to procure permission to test students and teachers at a qualified middle school in each congressional district within the state, thereby representing all socioeconomic areas of the state. However, after the initial inquiries, no schools meeting the qualifications and desiring to participate in the study could be found in two of the congressional districts. Therefore the search was
broadened to include any middle schools within school districts in the state that met the qualifications of higher than average numbers of gifted students and the district’s successful rankings in the statewide rating system.

The 688 students participating in the survey were comprised of sixth and seventh grade students from various locations around Mississippi. Students in the study were identified as intellectually gifted or non-gifted based on their indications that they were currently or had previously participated in their school’s program for intellectually gifted students. Participation in the gifted programs was verified by asking a series of follow up questions that would prohibit students who had not participated from answering correctly. Students completed the Children’s Academic Intrinsic Motivation Inventory (CAIMI) (Gottfried, 1986) in order to obtain their scores on Academic Intrinsic Motivation in general and for each of the four core subject areas: English, math, science, and social studies. One district had an extremely low return rate for teacher participants, so the 55 students from that district were only included in the analyses involving determination of differences in general motivation between gifted and non-gifted children. Their scores were unable to be matched to a participating teacher for determining correlative data.

The 54 teachers who participated in the study were comprised of the sixth and seventh grade core subject teachers of the student participants. Teachers were asked to complete the Middle School Survey of Classroom Practices (MSSCP) (Robinson, 1998) in order to determine the frequencies with which they employed a variety of differentiation strategies that could be categorized as content modifications and self-directed learning modifications for both gifted and non-gifted students. In order to obtain the correlative information, students identified their teachers using a pre-coded guide.
Each student’s CAIMI scores could therefore be compared to their teachers’ scores on the MSSCP.

Data were initially collected at the first participating schools in the spring semester of 2012. After the criteria for having one school in each congressional district was dropped, the search for new participants required that the research be continued into the next school year. In order for students to provide accurate responses to the CAIMI, they needed to be completely familiar with the classroom activities planned and provided by the current year’s teacher. Therefore the remaining data collection was extended into the spring semester of 2013.

All student responses were provided on hand-scored forms of the CAIMI and teacher responses were provided on hand-scored copies of the MSSCP (permission given by the author). Responses were entered into spreadsheet software, exported to the most recent version of SPSS, and analyzed using statistics appropriate for each hypothesis.

Summary of Major Findings

The following information restates each hypothesis and summarizes the results of the tests that were conducted for each.

H1: There is no difference in the sub-scores obtained by the MSSCP for the methods used, whether self-directed learning or content modification, for gifted and non-gifted students.

Hypothesis 1 was tested using a paired samples t-test and was not supported by the research. There are significant differences in teachers’ use of self-directed learning modifications for gifted and non-gifted students and content modifications for gifted and
non-gifted students. Both types of differentiation are used at significantly higher rates with gifted students.

H2: There is a difference in the motivation levels of gifted and non-gifted students overall as measured by the general scale of the CAIMI.

Hypothesis 2 was tested using an independent samples t-test and was not supported by the research. There was no significant difference between the general academic intrinsic motivation levels of gifted and non-gifted students.

H3: There is a difference in the overall motivation levels as measured by the general scale of the CAIMI of gifted and non-gifted students according to their placement in either sixth or seventh grade.

Hypothesis 3 was tested using a two-way ANOVA and was not supported by the research. There were no significant differences between the motivation levels of gifted and non-gifted students between the sixth and seventh grades.

H4: There is a correlation between the English motivation levels of gifted and non-gifted students as measured by the English subscales of the CAIMI and the English teacher's frequency scores for self-directed learning and content modification.

Hypothesis 4 was tested using Pearson’s Correlation and was not supported by the research. There is no significant relationship between the student motivation levels for English and the differentiation methods used in the English Classroom.

H5: There is a correlation between the math motivation levels of gifted and non-gifted students as measured by the math subscales of the CAIMI and the math teacher's frequency scores for self-directed learning and content modification.

Hypothesis 5 was also tested using Pearson’s Correlation and results varied as
follows: for non-gifted students, there is no significant correlation between students’ motivation for math and teachers’ use of content modifications, but there is a significant correlation between non-gifted students’ motivation for math and teachers’ use of self-directed learning modifications. For gifted students the relationships are opposite: there is a significant correlation between gifted students’ motivation for math and the content-modifications provided by the teacher, but no significant correlation between gifted students’ motivation for math and the self-directed learning modifications provided by teachers.

H6: There is a correlation between the science motivation levels of gifted and non-gifted students as measured by the science subscales of the CAIMI and the science teacher's frequency scores for self-directed learning and content modification.

Hypothesis 6 was tested using Pearson’s Correlation also. This hypothesis also has varied results. For non-gifted students, there is a significant relationship between the student’s motivation for science and the teachers’ use of self-directed learning modifications. No other significant relationships were found for gifted or non-gifted students.

H7: There is a correlation between the social studies motivation levels of gifted and non-gifted students as measured by the social studies subscales of the CAIMI and the social studies teacher's frequency scores for self-directed learning and content modification.

Hypothesis 7 was also tested using Pearson’s Correlation. The hypothesis was not supported for non-gifted students, or for gifted students in relation to teachers’ use of
content modifications, but was supported for gifted students motivation for social studies and the teachers’ use of self-directed learning modifications.

H8: There is a difference in the type and frequency of differentiation used based on the amount of training the teacher has received in gifted education.

Hypothesis 8 was tested using a one-way ANOVA and is supported by the research. Teachers who had taken graduate level courses in gifted education, and teachers who had participated in a district in-service (professional development training) related to gifted learners were more likely to use self-directed learning modifications with gifted students than teachers who had taken undergraduate courses in gifted education or teachers who had no training in gifted education. Teachers who had taken graduate courses were more likely to provide self-directed learning than were teachers who had participated in the district level professional development training. Post Hoc analysis using Tukeys LSD indicated significant differences between graduate training and undergraduate training and between graduate training and no training.

Limitations of the Study

One major limitation of the study was the low number of schools who met the original criteria of above average percentages of gifted students and high-performance on statewide school rating scales. Not only were there few schools in the state that met the rigorous criteria, but the state rating system is also subject to drastic fluctuations each year, meaning that schools that met the criteria one year may not be eligible for participation in the next year. The rating system for middle schools is focused primarily on the performance of students on two subject area tests that are only given once each year and is not averaged over more than one year. Although there are schools that do
perform well year after year, the rating scales do not reward long-term performance, nor do they forgive short-term deficiencies.

This limitation impacted the study in that of the four locations that participated in the research, three were located in the same congressional district. Further, while each school district that participated maintained high ratings, each individual school that was targeted for participation experienced fluctuations in performance between the time that the study began and the time that the final data were calculated. This means that at the time of the research at each school, the school was performing at a satisfactory level, but either rose to that level in the second year of the study allowing them to participate, or dropped from that level after being identified for participation in the first year. While it may be argued that the rating system was, therefore, not a satisfactory criterion for subject selection, it is currently the only way that the state department of education rates schools. Future studies should attempt to gain a multiple year average of performance or some other means of determining the quality of each school. It will be interesting to observe how the advent of Common Core Curricula will impact the state’s rating system.

Another potential limitation to studies of this type, and also related to the state’s testing system, is in the ability of a researcher to help schools that are willing to participate to find an appropriate time to conduct research at their school. To conduct a study of this nature, it is extremely important that the researcher is able to insure that students’ motivation toward the classroom activities are related to the current year’s experiences and not based on residual impressions left from a previous year’s teacher. That being said, there is a very small window of opportunity to conduct testing between the time that this type of a relationship is formed between the students and their current
teachers and the time when schools are most pressured to protect the instructional time necessary to prepare students for the upcoming state testing regimen. Because the ratings can fluctuate so drastically from year to year, even schools with typically high performance are under extreme pressure to maintain that level of performance and their administrators express reluctance to participate in a variety of types of research. This is especially true for schools in particular areas of the state where high performance is rare.

A final limitation to this study is the inability to make general statements regarding the habits of teachers of a given subject area alone without regard to their student counterparts. While there are enough teachers in the study to make general claims regarding whether teachers in general are making efforts to differentiate instruction, it would be irresponsible to say that the results of this study could indicate what English teachers are likely to do or what math teachers are likely to do. The aim of this study was to examine a large number of students in relation to their experiences with those teachers that they encounter each day and to determine the impact that those few teachers have on those students. While surveys do exist regarding the habits of teachers in each subject area, they have not typically included information about the impact the teachers have on individual students. The goal of this study in relation to teachers was to relate a measure of student motivation to the activities that they were experiencing in the classroom. The teacher portion of the study provides a basis for which to make that connection.

Discussion

Differentiated instruction has become a buzz-word in educational realms in recent years, sometimes mentioned as the golden bullet solution to all manner of problems, and
at other times criticized as consisting of little more than glittering generalities and rhetorical flim-flam (Schmoker, 2011). Frankly speaking however, differentiated instruction is a concept that has experienced as much misconceptualized praise and criticism as Gardner’s Multiple Intelligences (Walker, 2006) did a decade ago. The actual concepts behind the terminology began as intelligent and meaningful attempts to positively impact the world of education, but with oversimplification and buffet-style approaches to the methods, they have lost their original impact and simplicity. Schmoker’s (2011) criticism of differentiation is related to its morphologic properties - differentiation is whatever a teacher decides that it is on any particular day. However, with surveys like the MSSCP and its predecessor, the CPQ, researchers can categorize and clearly identify the methods and strategies that are most useful in motivating students toward higher levels of achievement and may be able to help teachers clearly identify and define ways of adjusting instruction to meet the needs of a wide variety of students.

This research study provides many insights into the current conditions of schools in our state, beginning with the lack of support for the first hypothesis. The finding of significant differences in the use and frequency of two categories of differentiation based on the ability levels of students is encouraging. While the hypothesis indicated that no difference was expected, it was certainly hoped for. Finding these differences provides evidence that teachers do understand that students of differing ability levels need to have instruction that provides a challenge and a sincere effort at focusing on making learning relevant. Further, since this research asked teachers to focus on gifted, or high-ability, students it shows that the extreme focus on differentiating instruction for students on the
lower end of the performance spectrum has not entirely blinded teachers to the need for appropriately challenging teaching to be provided to students at all levels.

Another exciting result of this study comes in the lack of support for Hypothesis 2. For years, motivation has been discussed as a personality trait that is essential to intellectual giftedness. The results of this study, and others, such as the Fullerton Longitudinal Study (Gottfried et al., 2006), are beginning to establish that this may not be entirely true, once again opening the discussion regarding the definition of giftedness and holding it up to scrutiny. As IQ tests have undergone significant changes in the last several decades, shifting from ratio IQs to deviation IQs (Silverman, Gilman, & Falk, 2004), using non-verbal intelligence tests, and the development of tests using a variety of measures, the face of gifted programming in schools has also changed. What has not changed at a similar rate is the connotation of the words “IQ score”. Teachers often still expect “gifted” students to make perfect grades in class, to be highly motivated for all things related to learning, and to be exemplary students in relation to discipline. The Gottfried’s research (Gottfried et al., 2006) began to indicate that motivation in and of itself may not be as strongly tied to intellectual performance as previous definitions of giftedness have indicated. As this study echoes the research of the Gottfrieds, and as other research into the realm of motivation may show, motivation may began to be seen as the trait that Terman (1925) sought out so long ago – the cusp of the argument relating to performance and potential – the key to unlock experienced giftings that the IQ score has not been. Terman’s termites did not experience the glory, fame, and adulthood success that was expected, nor did Kerr’s (1985) high-school classmates. Perhaps it is
because IQ alone cannot and never has been the best indicator of genius, of potential, or of greatness that it was once expected to be.

Another possibility is that underachievement is truly at play in our general education classrooms, not only for gifted students, but potentially for average ability students as well. This thought is potentially supported by the low levels of motivation found across the board for the students in this study. As previously stated, mean scores for this study were consistently approximately ten points lower than those found during the normative process associated with the development of the CAIMI (Gottfried, 1986).

In relation to Hypothesis 3, the fact that no difference was found between the overall motivation of gifted and non-gifted students in the sixth and seventh grades does not yield to much valid interpretation. There are a few possible reasons for the lack of difference to occur. First, if gifted students in the seventh grade are extending the skills that were learned in the gifted program, or are using the process skills and higher order thinking skills taught in the gifted program while they are in their regular classrooms, then the lack of difference could show that the gifted programming that was provided through the sixth grade has adequately prepared them to transition into the new learning situation while maintaining high levels of motivation. If the program used elements of Bett’s Autonomous Learner Model (Betts & Carey, 2009) or another similar approach, then this situation could be highly likely. Another possibility is that the gifted program does not provide adequate support during the sixth grade year and would therefore leave students with lower motivation than would be expected during that year as well as following years. A third reason for the lack of difference between gifted students in the sixth and seventh grades may be related to the evidence that there is also no difference
between motivation in gifted and non-gifted students. This may, again, point to the inappropriateness of assuming that the existence of high levels of motivation is essentially inherent to giftedness. As the indicated by the Fullerton Longitudinal Study (Gottfried et al., 2006), high levels of motivation have been found to exist independently of intellectual giftedness. Further examination of the data in could yield similar results, but is outside the scope of the current research.

Hypotheses four through eight present interesting situations for continued analysis. Student motivation for reading was the only AIM score that did not have any relationship for either gifted or non-gifted students to either type of differentiation. While this finding does not indicate that students lack motivation for reading, it does indicate that students’ motivation is not related to the methodologies with which they have been taught. This is not an unusual finding; during the normative process for the CAIMI, middle level students were found to have lower levels of reading AIM than those in lower grades (Gottfried, 1986). Further examination may indicate whether reading teachers are simply not attempting to use differentiation methods or whether those methods are not effective in the classroom.

Student motivation for math was significantly related to the type of differentiation provided and status as gifted or non-gifted. Content modifications were related to the motivational scores of gifted math students, whereas self-directed learning modifications were related to the motivational scores of non-gifted math students. This may indicate more about the pacing of math classes than anything. Gifted students’ potential need for acceleration would require a teacher to included skills from another grade level, which is considered a content modification. Non-gifted students’ need for a slower pace would
require a teacher to allow them to set their own goals for when and how to master a skill, which is considered a self-directed learning modification. However, both needs are potentially related to pacing, or the speed at which the student would be able to master the material. The issue of pacing would require teachers to make different types of modifications for students at various levels. Math, being very skill based, and progression in math being dependent on skill mastery, may lend itself well to adjustments in pacing which could explain the relationships found in the data set.

Student motivation levels in science showed no relationship to differentiation methods used except for non-gifted students’ motivation and self-directed learning modifications. Possible factors that could impact the outcome of this statistic may be the availability or lack of availability of lab space and the amount of focus a teacher may place on independent experimentation. It may be that non-gifted students, theoretically less able to grasp various concepts without hands-on learning opportunities, would be more motivated to learn in an environment that provided more opportunity to use lab equipment, develop their own hypotheses, and view the outcomes of their own decisions in relation to the topics being presented. Each of these activities would be related to a teacher’s adjustments to self-directed learning, more so than content modifications.

In social studies, only the motivation scores of gifted students showed any relationship to the teachers’ use of differentiation strategies and that was in the area of self-directed learning. This would make sense if the teacher allowed gifted students to conduct individual research into areas of interest.

In each subject area, certain types of differentiation lend themselves well to the habits of mind required in that subject area. Other types of differentiation may not be as
easily incorporated and therefore a teacher may not be as adept at using them in the classroom. This could explain the reasons that so few of the areas in Hypotheses six through eight showed significance for the students, and why the areas that did were significant in spite of their small size. However, if teachers were more aware of how to incorporate the various types of differentiation, it could lead to larger effect sizes.

The results of Hypothesis 8 are exciting because they show that training in gifted education does impact the ways that teachers are creating classroom experiences. Teachers who took graduate level courses showed significantly higher frequencies of the use of self-directed learning modifications with gifted students than teachers who had no training in gifted education and those who had undergraduate courses in gifted education. What is also interesting is that teachers who had no course work in gifted education, but did have district-level professional development in the area of gifted education showed higher usage of self-directed learning modifications with gifted students than those of teachers who had no training or those who had undergraduate courses in gifted education. This may indicate that districts having an interest in the needs of their gifted students are providing development opportunities for teachers that truly impact the needs of the students. What is surprising, but in a negative way, is that teachers who had undergraduate courses in gifted education were less likely than any other group to use self-directed learning modifications for gifted or non-gifted students. It would be interesting to know what, if anything, in their training could have produced an aversion to the use of self-directed learning techniques.
Recommendations for Practice

Two areas related to the practical application of these findings stand out: practices at the district level, and practices at the classroom level. The relationship between these two areas can be managed so that training provided to teachers at the district level is supportive of what the teachers need to focus on in their individual classrooms. At the district level, this research indicates that teachers who were trained to teach gifted students at either the graduate level or in district-level professional development were much more likely to use self-directed learning strategies in their classrooms. It is therefore likely that the training they received was focused on the use of such strategies. Although self-directed learning strategies showed a higher correlation with motivation for only two groups (non-gifted math students and gifted social studies students), the higher frequency of use indicates that teachers are willing to adjust their classroom practices based on the training they receive.

A criticism that is currently arising as schools transition to the use of Common Core State Standards, is that districts are not providing appropriate staff development that supports their teachers as they attempt to utilize new strategies that are appropriate for teaching the standards. Not only does this potentially lessen the rigor of the standards as they are presented to students, but lowers the overall moral of teachers (Mullenholz, 2013). Districts should be careful to spend their limited resources for professional development on training that is targeted toward strategies that are useful in each subject area, rather than those types of training that provide only superficial overviews of new policies.
Nevertheless, teachers who want to provide appropriately motivating lessons to their students do not have to wait for their district to provide such training. The differences among students that were seen in this research are indicative of the existence of a variety of student needs that an astute teacher may identify and utilize for guiding instruction. One practical way for teachers to access these needs early on in the school year is through the use of two types of instruments: interest inventories, and skill-based pre-tests that target the areas to be covered during the current year as well as some skills above the current year’s focus. In this way, the teacher will not only have an awareness of each student’s progression through the skills to be taught, but will gain an awareness of the topics that provide inroads into the student’s areas of interest. These concepts are closely related to the theories of Vygotsky (Glick, 1997), Wilson (1971), and Deci (1975) in that they allow for the scaffolding of concepts that will be taught, the initiation of interest, and the development of the motivational cycle as students move toward more and more goal-directed, or self-selected, activities. For example, if an English teacher designs a unit focused on the tools of persuasion, she may provide a wide variety of activities to accompany her lessons. These may include traditional note taking, a skill based activity used for scaffolding knowledge (Glick, 1997), but may also allow for some flexibility by assigning students the task of developing their own product along with the advertising brochures to accompany it, a self-selected and goal-directed process (Deci, 1975). The unit may be completed by having the student research peer impressions of the usefulness of the product and designing a presentation to give to members of the class or other authentic audiences. This type of planning incorporates self-directed learning strategies because it allows the student to determine his own goals for product design and
encourages the student to identify practical applications for the product and for the persuasive techniques he has learned to use while designing his presentation and selecting his audience.

This research indicates that there are differences in the motivational impact of the two types of differentiation that were reviewed in the MSSCP based on the course and status as gifted. For science classrooms, non-gifted students showed a motivational correlation to the use of content modifications. For math classrooms, gifted students showed motivational correlations to the use of content modifications and non-gifted students showed motivational correlations to the use of self-directed learning modifications. For science classrooms, gifted students showed a motivational correlation to self-directed learning modifications. These results show that for students to be motivated toward learning, they need to have instruction that is targeted to their level of ability and their needs within the domain specific techniques related to the subject area (Glick, 1997).

In relation to the findings for science, the motivational correlation to content modifications may indicate that the hands on nature of the class is meeting the students’ need for hands-on learning opportunities, providing a manner in which student activities echo those encouraged by Montessori (1914). In a lab setting, students are more able to explore the practicality of the subject through hands-on learning strategies. Since this correlation was found in non-gifted students, this may indicate that simply reading about the scientific concepts from a textbook requires more abstract thinking than the students are prepared for. Using the book and the lab equipment allows the students to see the concepts in a practical way, so that the next time they are required to read, they may be
able to imagine the processes they are reading about than they were prior to the hands-on activities being presented.

As discussed previously, the relationships found in the area of math are interesting and possibly related to the issue of pacing. In this case, the non-gifted students preferred self-directed learning strategies and the gifted students were more motivated by content modifications. This is not surprising. If gifted students have already grasped the abstract concepts presented in their math class, they may desire to move forward and explore other, more difficult forms of math that a content modification such as acceleration or curriculum compacting would allow. For the non-gifted students, self-directed learning would allow them to focus on finding practical applications for the math that they are using in class each day. One way in which teachers could encourage this exploration in the classroom is to collaborate with a vocational classroom such as computer technology or career discovery in order to research the various jobs opportunities that exist in the local area that utilize the math skills that the students have just learned. In this way students see the practical application of the math skill and no-longer have to think of the mathematical functions in a strictly theoretical manner.

In relation to the findings regarding social studies, gifted students were shown to have more motivation when presented with self-directed learning strategies in their classrooms. Again, this allows the teacher to design units of study that allow students to apply their learning in unique and practical ways. Units focusing on forms of government could require students to research the history of a particular culture and determine which cultural aspects make the current forms of government work, or not work, for that culture. The students would further be able to design a mock government
and would have to apply the concepts they had learned to develop a constitution or code of law.

Units of study in any classroom must be focused on allowing students to master basic concepts, but must also allow them to expand their understanding of those concepts in unique ways that allow the student to put his or her own personality, emotions, and dreams into the end products (Dewey, 1913; Wilson, 1971). In this way, teachers can adequately design learning experiences that contain content modifications and self-directed learning.

The low levels of motivation found in gifted and non-gifted students gives rise to questions involving underachievement in a broader range than that term has yet been applied (Glass, 2004; Rimm, 1995; Seigle & McCoach, 2007; Whitmore & ERIC, 1985). The results of this study may indicate that underachievement is not a problem relegated to gifted students alone, but may be indicative of a greater problem that extends into a larger population of students as well. The pressures that teachers feel to meet the needs of students functioning below grade-level may be limiting their ability to reach all students at an even more alarming rate that previously thought (Duffet et al., 2008) and contributing to the “intellectual sloth” that some believe exists in our society today (Rudnick, 2010).

Recommendations for Further Study

Many questions arise from the results of this research that could be useful for conducting future research.

1. An investigation should be made into teacher’s lack of knowledge regarding the gifted programming that students in their classrooms are receiving. Teachers are
currently responsible for the educational outcomes of students with learning deficiencies and must adhere to the Individual Education Plan (IEP) prepared for each student in that category in order to maintain the appropriate mixture of teaching strategies for those students. This is certainly not the case with gifted students. As this research indicates, few teachers are even aware of their students’ ability levels, much less do they receive any support to create appropriate lessons for their high-ability students. If the state values its gifted students, as the presence of the current mandate for intellectually gifted students would suggest, then appropriate development and monitoring of programs for those students should exist. Currently the mandate’s power lies in its focus on pull-out programming for intellectually gifted students in the elementary grades. While it makes allowances for programs in upper grades for academically, artistically, and creatively gifted children, programs for these students are not monitored for their widespread availability or outcomes.

2. State universities should invest in the provision of high-quality gifted education courses at all levels of teacher education programs and should attempt to identify what misconceptions could be causing undergraduate students who have had gifted education courses to reject the use of differentiation methods with their gifted students.

3. Further research should be conducted regarding the outcomes of the existing programs for gifted students at all grade levels. By definition, gifted students should show higher levels of motivation. If this is not true, it may be possible that the programming currently being provided is not meeting the social-emotional needs of those students or that they are not being trained effectively to extend the skills they have learned beyond the gifted classroom and into their regular courses.
4. Studies replicating portions of the Fullerton Longitudinal study should be conducted for the purpose of identifying highly motivated students regardless of their status as intellectually gifted. If a category of highly motivated students could be identified, programming that met their needs for engaging lessons, appropriately differentiated for student interest (Deci, 1975) and other motivation factors, could be designed and implemented. Longitudinal studies of children receiving such training could compare the outcomes of the current forms of gifted programming to the motivationally gifted programs for the purpose of answering some of the field’s oldest questions regarding the characteristics of genius.
APPENDIX A

STUDENT COVER PAGE

Student Survey Cover Page and Instructions for the Research Project:
ACADEMIC INTRINSIC MOTIVATION AND DIFFERENTIATED INSTRUCTION
IN THE REGULAR CLASSROOM: POTENTIAL RELATIONSHIPS DURING THE
TRANSITION AWAY FROM GIFTED PROGRAMMING

STUDENT CODE:

Prior to answering the survey questions, please fill out the following information.

Grade: 6th ____________________ 7th ____________________

Gender: Male ____________________ Female ______________

Mrs. Houston will provide you with teacher codes for each subject. Please write down the code for your teacher in each of the following subjects:

Language Arts (English): ________________________________

Math: ________________________________________________

Science: ______________________________________________

Social Studies: _________________________________________

Are you now or have you ever participated in your school’s gifted program or a gifted program at another school that you have attended?

Yes ____________________ No ____________________

If you answered yes, what was the name of your teacher in the gifted program?

____________________________________________________

What is the name of the gifted program in which you participate(d)?

________________________________________________________________________

If you attended the gifted program at another school, what was the name of your school?

________________________________________________________________________

Please listen carefully to the instructions for filling out the Children’s Academic Intrinsic Motivation Inventory.

Thank you for your participation in this research project.
Dear Mrs. Houston:

In response to your recent email, in which you requested the opportunity to conduct research in our county for your dissertation, I hereby grant your request. Our district will be pleased to participate in your research.

Understanding the connections between teaching and learning is a topic that touches us all.

Once you have finalized your research, please proved us with information regarding the performance of our schools.

Sincerely,

Stacey Pace, middle school curriculum supervisor
April 26, 2012

Heather Houston
32 Pine Meadow Loop
Hattiesburg, MS 39402

Dear Mrs. Houston:

In response to your email of April 17, 2012, in which you requested the opportunity to conduct research in our county for your dissertation, I hereby grant your request. Our district will be pleased to participate in your research.

Understanding the connections between teaching and learning is a topic that touches us all.

Once you have finalized your research, please provide us with information regarding the performance of our schools.

Sincerely,

Tommy Parker
Superintendent of Education
Jones County School District

TDP/pa
April 27, 2012

Dear Mrs. Houston:

In response to your email request of April 17, 2012, in which you requested the opportunity to conduct research in our school for your dissertation, I hereby grant your request. Our school will be pleased to participate in your research.

Understanding the connections between teaching and learning is a topic that touches all of us.

Once you have finalized your research, please provide us with information regarding the performance of our school.

Sincerely,

[Signature]

Jeff Clay
Principal

Cc: Mr. Brian Harvey, Superintendent
Heather Houston  
32 Pine Meadow Loop  
Hattiesburg, MS  39402  

Dear Mrs. Houston:  

After speaking to you about your desire to conduct your doctoral research at our school and reviewing the documentation you provided, I am pleased to inform you that we are interested in participating in your study.  

I believe that the information your research will provide can help us to identify the most positive teaching methods currently in use at our school. Further, I feel that this will allow our students to have an opportunity to voice their motivational needs and potentially implement those needs as part of our PBIS system.  

We look forward to working with you throughout this project.  

Sincerely,  

[Signature]

Jackie [Last Name]
APPENDIX C
LETTER TO PARENTS

Dear Parents:

My name is Heather Houston and I am a doctoral student at The University of Southern Mississippi. I have worked closely with the Frances A. Karnes Center for Gifted Studies over the past several years teaching at the Summer Gifted Studies, Saturday Gifted Studies, and Leadership Studies Programs. In addition to my work there, I teach Advanced English to eighth grade students in my hometown and coordinate the state level poetry competition for the Mississippi Jr. Beta Club.

I am currently conducting research regarding the Academic Intrinsic Motivation of sixth and seventh grade students and how that motivation may be related to the attempts that teachers are making in their classrooms to adjust instruction to meet the individual needs of their students. I believe that we can learn a great deal about how students are motivated by examining the practices of teachers in districts that show high levels of performance and that have a reputation for success. Because your district has that kind of a reputation, I would like for your child to participate in this research project.

During the next few weeks, I will be coming to your child’s school to administer the Children’s Academic Intrinsic Motivation Inventory (CAIMI) to students in the sixth and seventh grades. This survey will take between 30 to 45 minutes to complete. The survey asks students about their motivation for a variety of activities used in their language arts, math, science, and social studies classes. Students will also be asked to identify their gender and whether or not they are currently or have ever participated in your school’s gifted program. Student’s names will not appear on the surveys and their responses will not be viewed by anyone at their school. All results will be reported in aggregate form. Students who do not participate in the research study will stay in their regularly scheduled classes.

I have attached information regarding the study. If you do not wish for your child to participate in the study, please indicate that by signing and returning the attached form to your school within the next two days. If you have any questions, feel free to leave a message at (601) 577-1367. I will return your call within 24 hours.

Thank you for your consideration. Your child’s participation in this project will be greatly appreciated.

Sincerely,

Heather Houston
heather houston <heather.houston@lamarcountyschools.org> 7/21/11
to lisa.muller, siamak.vahidi

32 Pine Meadow Loop
Hattiesburg, MS 39402
March 8, 2011
Lisa Muller

National Research Center on the Gifted and Talented

Dear Ms. Muller:

My name is Heather Houston. I am a doctoral student at The University of Southern Mississippi working under the tutelage of Dr. Frances A. Karnes in the area of Curriculum, Instruction, and Special Education, with an emphasis in Gifted Education.

I am requesting your permission to use the most recent version of the Classroom Practices Questionnaire in my dissertation research this fall. The purpose of my study is to ascertain whether or not the differentiation methods used by teachers in the general classroom are correlated to the motivation of their students, both gifted and non-gifted. The Classroom Practices Questionnaire appears to be exactly the type of instrument I need to conduct this study.

I am currently in the process of seeking approval from my dissertation committee and our Internal Review Board and am interested in receiving a review copy of the instrument as well as information regarding its reported reliability and validity. If approved, I will survey 6\textsuperscript{th} and 7\textsuperscript{th} grade teachers from four school districts in Mississippi.

Your consideration is greatly appreciated. Please contact me through e-mail at the following address:

heather.houston@lamarcountyschools.org.
Heather Houston

I am pleased that you are interested in the research completed by The National Research Center on the Gifted and Talented. The Classroom Practices Study was conducted with grades 3 and 4 teachers across the country. Several items reflected the instructional strategies and technological resources available almost 2 decades ago. I do not think that instrument is appropriate for use with grades 6 and 7 teachers.

All of our monographs are available on our website and you may download a copy of Regular Classroom Practices With Gifted Students: Results of a National Survey of Classroom Teachers (Archambault et al., 1993). The instrument and the reliability and validity data are included. Here is the direct link to the monograph:

http://www.gifted.uconn.edu/nrcgt/reports/rm93102/rm93102.pdf

May I suggest that you access a dissertation by George James Robinson entitled Classroom Practices With High Achieving Students: A National Survey of Middle School Teachers, which uses a modified version of the original classroom practices survey appropriate for older students. The study was completed in 1998 at the University of Connecticut. The instrument and the reliability and validity data are included in the dissertation. Here is the abstract.

Classroom practices with high-achieving students: A national survey of middle school teachers
George James Robinson, University of Connecticut
Abstract
The Middle School Classroom Practices Survey was conducted to determine the extent to which high achieving seventh grade students received differentiated education in regular classrooms across the United States. This research parallels previous work recently completed on third and fourth grade students by researchers at the National Research Center on the Gifted and Talented. The survey focused on self-reported information from teachers about their classrooms, districts, and their perceptions of pertinent middle school issues. Classroom practices, in relation to the curriculum modification for high achieving and average students, were analyzed. The survey sample was drawn from 1008 seventh grade teachers across the United States. The questions that guided this study involved the extent middle school classroom teachers in heterogeneous classes believe they modify instructional practices and curricular materials to meet the needs of high ability students; the instructional practices used with high ability students in middle school classrooms across the country; and the differences in the types of regular classroom services provided high ability students in middle schools with and without interdisciplinary teams. Results indicated that modifications for the high achieving students were limited and included
variations in the content taught and in self-directed learning. Seventh grade teachers reported that they made only minor modifications in the regular curriculum to meet the needs of high achieving students. Teachers who provided modifications for high achieving students gave students content from a higher grade, asked students to synthesize information, and adjusted the pace for students who mastered the content quickly. However, these modifications were not unique to these students and were also made for average students in the heterogeneous classroom. In addition, this study found that teachers on interdisciplinary teams did not make content modifications or provide self directed learning opportunities more frequently for average or high achieving students than teachers not on teams. No meaningful differences were found to be made in curriculum for high achieving and average students in heterogeneous and homogeneous classrooms in different content areas.

Recommended Citation
http://digitalcommons.uconn.edu/dissertations/AAI9918094

You have a wonderful opportunity to pursue your research with Dr. Frances A. Karnes. She is an incredible scholar and I know that you will benefit from her guidance as you implement your own research. When you have completed your dissertation, please send us a copy of your results.

Let me know if you need any other resources from the NRC/GT. Please visit our website www.gifted.uconn.edu.

E. Jean Gubbins

--
E. Jean Gubbins, Ph.D.
Associate Professor
Associate Director
The National Research Center on the Gifted and Talented
University of Connecticut
2131 Hillside Road Unit 3007
Storrs, CT 06269-3007
Phone: 860-486-4041
Fax: 860-486-2900

From: Lisa Muller <lisa.muller@uconn.edu>
Date: Fri, 22 Jul 2011 09:12:16 -0400
To: "E. Jean Gubbins" <ejean.gubbins@uconn.edu>
Subject: FW: NRC/GT

Jean
Sia usually handles these requests. Does this student need special permission to use the Classroom Practices Survey for her dissertation? Will one of the research monographs have the reliability and validity?

Lisa

From: heather houston [mailto:heather.houston@lamarcountyschools.org]
Sent: Thursday, July 21, 2011 3:49 PM
To: Muller, Lisa
Cc: Vahidi, Siamak
Subject: NRC/GT

heather houston <heather.houston@lamarcountyschools.org> 7/22/11
to Elizabeth

Thank you so much for the suggestion. I have briefly reviewed the modified instrument and it looks like it may work. I am concerned with gaining Dr. Robinson's permission to use the instrument. Do you happen to know his current contact information?

Thank you again,

Heather Houston

Gubbins, Elizabeth <ejean.gubbins@uconn.edu> 7/22/11
to me

Heather Houston

Dr. Robinson has retired from his position at New Rochelle, NY. I will look for contact information.

E. Jean Gubbins

Sent from my iPhone
Instrument
5 messages

George Robinson <geo.robinson@hotmail.com>  Tue, Jul 26, 2011 at 8:00 AM
To: heather.houston@lamarcountyschools.org

Heather,

You have my permission to use my instrument.

George

George J. Robinson Ph.D.
Director
The Galileo School for Gifted Learning
Sanford, Florida

heather houston <heather.houston@lamarcountyschools.org>  Tue, Jul 26, 2011 at 7:01 PM
To: George Robinson <geo.robinson@hotmail.com>

Thank you so very much!

Heather Houston
Purvis Middle School
English Department
Jr. Beta Sponsor
Economics Liaison
APPENDIX E

MSSCP

Middle School Survey
of
Classroom Practices

This study is about the nature of middle school classroom practices used with students of various achievement levels. You can help us learn more about these practices by taking a few minutes to complete this survey. Please be assured that your answers will be kept strictly confidential and all reporting will be done at the groups level.

☐ Yes, I would like to receive the results of this survey.

I. Teacher Information: Please check the box that describes you.

1. Gender □ Male □ Female

2. Ethnicity
   □ Hispanic-American □ African-American
   □ Native-American □ Caucasian-American
   □ Asian-American/Pacific Islander □ Other ________________

3. Years of teaching experience _______________________________________

4. Highest degree earned
   □ BA/BS □ Sixth Year/Professional Diploma
   □ MA/MS □ PhD/EdD

5. Training in teaching of gifted/talented students
   □ District In-service □ Educational degree in area
   □ Undergraduate School Course(s) □ None
   □ Graduate School Course(s)

6. Subject area(s) now teaching in Middle School:
   □ English
   □ Social Studies
   □ Math
   □ Science
   □ Self-Contained
   □ Other ________________

II. Middle School Issues:

7. How is your school building organized?
   □ Middle School □ Junior High School □ Other ________________
8. Which grades are in your middle school or junior high school? _________________

9. Is your school a Magnet School?
   □ Yes (Our theme is _______________) □ No

10. How often does your interdisciplinary team meet?
    □ Every day □ Once a month
    □ 2-4 times a week □ Once a quarter
    □ Once a week □ Once a semester
    □ Once every two weeks □ No Team

11. Does a gifted and talented specialist attend these meetings?
    □ Yes □ No □ Don’t Know □ Does not apply

12. Do grade-level teachers in your school have common planning times?
    □ Yes □ No

13. Does your school use flexible scheduling (having a structure that allows a team of teachers to adjust the schedule on a periodic basis)?
    □ Yes □ No □ Don’t Know

14. Does your school use flexible grouping (having a structure that allows a team of teachers to rearrange student grouping on a periodic basis)?
    □ Yes □ No □ Don’t Know

15. Does your school have an advisor-advisee program?
    □ Yes □ No □ Don’t Know

16. How are students grouped in grade-level classes?
    • homogeneously – students of the same or similar ability – or
    • heterogeneously – students of mixed ability – or
    • combination – one or more homogeneous classes and the rest heterogeneous

<table>
<thead>
<tr>
<th>Subject</th>
<th>Homogeneous</th>
<th>Heterogeneous</th>
<th>Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Studies</td>
<td></td>
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<td></td>
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<tr>
<td>Science</td>
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<td></td>
</tr>
<tr>
<td>Math</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

□ Homogeneous
□ Homogeneous
□ Homogeneous
□ Homogeneous

17. Do you use pretests to determine if students have already mastered the content of a
unit?

□ Yes □ No □ Don’t Know

18. Do you allow students to set individual learning goals in your classes?

□ Frequently □ Sometimes □ Seldom □ Never

19. Do you use portfolio assessment in your classes?

□ Frequently □ Sometimes □ Seldom □ Never

III. School and District Information:

20. In which setting is your school located?

□ Rural □ Urban □ Suburban

21. What is the total enrollment for your grade level in your building?

22. Does your district have a policy regarding the acceleration of high achieving students through the regular curriculum?

□ Yes □ No □ Don’t Know

23. If yes, which of the following applies?

□ Classroom teachers are encouraged to accelerate students into the next content level (e.g. 7th graders study 8th grade content) or the next academic grade.

□ Classroom teachers are encouraged to provide high level or enriched content material in their classrooms, but are not permitted to accelerate students into the next level or academic grade.

□ Classroom teachers are not allowed to provide advanced level curriculum for higher achieving students and are not permitted to accelerate students into the next level or academic grade.

□ Other Specify

24. Does your school have a gifted and talented program?

□ Yes Please answer questions 25 through 35.

□ No Please go directly to section IV Classroom Practices.
25. Has a formal definition of giftedness been adopted by your district?

☐ Yes  ☐ No  ☐ Don’t Know

26. Which of the following measures and/or checklists does your district use to formally identify gifted students? (Check all that apply.)

☐ IQ Tests  ☐ Student Self-Nomination
☐ Teacher Nomination  ☐ Peer Nomination
☐ Creativity Tests  ☐ Teacher Rating Scales
☐ Achievement Tests  ☐ Student Products/Portfolios
☐ Parent Nomination  ☐ Don’t Know
☐ Student Interviews  ☐ Other
☐ Grades
________________________

27. For which middle school grades does your school have a formal gifted program?

☐ 5  ☐ 8
☐ 6  ☐ 9
☐ 7  ☐ Other
________________________

28. Does your school employ a district coordinator for the gifted?

☐ Yes  ☐ No  ☐ Don’t Know

29. Is there a full-time teacher of the gifted in your school building?

☐ Yes  ☐ No  ☐ Don’t Know

30. Is there a part-time teacher of the gifted in your school building?

☐ Yes  ☐ No  ☐ Don’t Know

31. How often do you interact professionally with the teacher of the gifted?

☐ Every day  ☐ Once a year
☐ 2-4 times a week  ☐ Once a month
☐ Once a week  ☐ Once a quarter
☐ Once every two weeks  ☐ Once a semester

32. Are students in your school building regularly transported to a different school or site
to participate in the gifted program?

☐ Yes  ☐ No  ☐ Don’t Know

33. Do students in your school building go to a resource room (pull-out program) for instruction provided by a teacher of the gifted?

☐ Yes  
☐ No  
☐ Don’t Know
34. How many students are formally identified as gifted students in the grade that you teach in your school building?

_______________________________________________________

35. Are there students in the grade that you teach that you believe are gifted but have not been formally identified as such by your district?

☐ Yes (Approximately how many? ______________)
☐ No
☐ Don’t Know

IV. Classroom Practices:

This section is designed to provide information about the instructional strategies and approaches you use in your classroom. It is very important that the answers you provide reflect actual practices. Please be assured that your individual responses will be kept completely confidential.

Directions:

Please use the following response scale based on the academic year to indicate what actually occurs in your classroom. Circle the most appropriate response for what you do with both the average (left hand side) and the high achieving students (top 15% in your class) (right hand side).

Response Scale
0 – never
1 - Once a month, or less frequently
2 – A few times a month
3 – A few times a week
4 – Daily
5 – More than once a day
Response Scale
0 – never
1 - Once a month, or less frequently
2 – A few times a month
3 – A few times a week
4 – Daily
5 – More than once a day

<table>
<thead>
<tr>
<th>Average Students</th>
<th>High Achieving Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 3 4 5</td>
<td>0 1 2 3 4 5</td>
</tr>
</tbody>
</table>

36. Give students the task of interpreting facts.
37. Allow students to select their own projects.
38. Eliminate content that students have mastered.
39. Propose that students create an alternate solution to a problem.
40. Permit students to design their own projects.
41. Adjust the pace for students who can master content quickly.
42. Authorize students to determine how their projects will be presented.
43. Have students relate the topic under discussion or investigation to their own lives.
44. Encourage students to develop the criterion for evaluating their projects.
45. Ask students to synthesize information.
46. Allow students to evaluate their own projects.
47. Present a mini-lesson on research skills.
48. Expand a lesson by having an expert in the field discuss the topic with the students.
49. Give the students the challenge of evaluating different solutions to a problem.
50. Make available higher grade level textbooks.
51. Require students to refine their original product or concept.
52. Permit students to find their own problem to investigate.
53. Invite students to support one side of a controversy.
54. Give students the choice of working independently rather than with the class.
55. Make available a wide variety of primary source materials to complement a unit.
56. Request that students find a solution to a real world problem.
57. Allow students the option to work elsewhere in the school.
58. Include content areas from the 8th and/or 9th grade curriculum.
59. Encourage students to present to an audience outside the classroom.
60. Assign students to the library for research.

Thank you very much for your help with this research project.
APPENDIX F

IRB FORMS

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

The risks to subjects are minimized.
The risks to subjects are reasonable in relation to the anticipated benefits.
The selection of subjects is equitable.
Informed consent is adequate and appropriately documented.
Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
Appropriate additional safeguards have been included to protect vulnerable subjects.
Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 12050202
PROJECT TITLE: Academic Intrinsic Motivation and Differentiated Instruction in the Regular Classroom: Potential Relationships During the Transition Away From Gifted Programs
PROJECT TYPE: Dissertation
RESEARCHER(S): Heather Lyn Houston
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Curriculum, Instruction, & Special Education
FUNDING AGENCY: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF PROJECT APPROVAL: 05/03/2012 to 05/02/2013

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair
MEMO Requesting Adjustment to Current Protocol:  
RE: Permission Form Adjustment

While several schools have already participated in this research under the currently approved protocol, the potential to obtain a greater level of participation from the small number of schools in the state that meet the criteria for participation would be enhanced if an adjustment could be made to the type of permission form being used. This request for an adjustment is being made in response to requests from several of the principals with which this researcher is attempting to work. If the request is denied, the currently approved forms will continue to be used, or the schools in question may elect not to participate.

During the course of obtaining the data for this research, more than one of the principals from which I initially gained approval to conduct research, has indicated that the efforts to obtain permission forms from students has taken an excessive amount of time away from the daily routines of their teachers. Their comments indicate that this problem is not related only to this form, but is systemic in the middle school environment. According to their comments, parents at the middle school level are not as involved in the day to day activities of their children as they are in elementary school, and as such require multiple contacts from teachers – either in writing, through calls or emails home, or through reminding the students during class time – in order to obtain any documents requested by the school, whether they are permission forms or progress reports, or anything in between.

Because of this, the teachers attempting to participate in this research are taking greater and greater amounts of time out of their instructional day to remind students to turn in the permission forms, thereby invalidating the purpose of this research. The research is intended to assess the time teachers spend on various classroom activities and to assess the students’ interest in and motivation for those activities. While schools desire to participate in the research, they are finding this to be such a change to their instructional day, that they are questioning the validity of the answers teachers and students will give on the survey instruments. The same principals have indicated to the researcher that they have used passive permission forms for other studies such as the long-term study, which annually requires students to complete the Smart Track survey regarding student’s drug use (a topic much more invasive and private than this study).

Due to the fact that this research survey poses no risk to the student greater than would normally be expected in a regular school day and the fact that the only documentation connecting the student with this research would be the parental permission form, passive permission would present greater anonymity to the student than would conventional active consent forms. The schools projected for the study already participate in numerous studies utilizing this form of consent such as the Smart Track survey regarding student drug use and have stated their interest in insuring student anonymity through this type of documentation. The schools also believe that this type of form would reduce the time that it takes to obtain the permission forms back from the students and would therefore allow teachers to maintain the appropriate balance of academic activities in the classroom and would allow them to participate in the survey within the timeframe allowable due to their need to focus on the state testing schedules. This request is therefore being made in effort to work with the schools and meet their desires for participation within the current time constraints of their testing schedules and the need to protect the instructional time of the teachers, which is the focus of this study.
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: C12050202
PROJECT TITLE: Academic Intrinsic Motivation and Differentiated Instruction in the Regular Classroom: Potential Relationships During the Transition Away From Gifted Programs
PROJECT TYPE: Previously Approved Project
RESEARCHER(S): Heather Houston
COLLEGE/DIVISION: College of Educaton & Psychology
DEPARTMENT: Curriculum, Instruction, & Special Education
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 12/13/2012 to 12/12/2013

Lawrence A. Hosman, Ph.D.
Institutional Review Board
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