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Sean P. Dunphy

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The Effect of Explicitly Differentiated Reading Instruction Groups on Eighth-Grade  
Students' Achievement, Behavior, and Engagement in a School Seeking to Reestablish

Adequate Yearly Progress Benchmarks

By

Sean P. Dunphy

A Dissertation

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Education

In Educational Administration

Omaha, Nebraska

2010

Supervisory Committee

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**Abstract**

THE EFFECT OF EXPLICITLY DIFFERENTIATED READING INSTRUCTION  
GROUPS ON EIGHTH-GRADE STUDENTS' ACHIEVEMENT, BEHAVIOR, AND  
ENGAGEMENT IN A SCHOOL SEEKING TO REESTABLISH ADEQUATE  
YEARLY PROGRESS BENCHMARKS

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The purpose of this study was to determine the effect of explicitly differentiated reading instruction groups on eighth-grade students' achievement, behavior, and engagement in a school seeking to reestablish adequate yearly progress benchmarks. The results of this study supported student participation in explicitly differentiated reading instruction groups. Because students in High Reading Ability ( $n = 25$ ), Middle Reading Ability ( $n = 25$ ), and Low Reading Ability ( $n = 25$ ) groups maintained average to above average achievement test scores on several measures with commensurate classroom grade performance, and appropriate behavior and engagement to support school success during eighth grade, the results suggest continued implementation of explicitly differentiated reading instruction classrooms. Faced with the imperative to acquire literacy skills adequate to meet the academic demands of the high school educational process and post-secondary life as either college student or working adult, learning must be accelerated for all segments of the student population. Additionally, this acceleration is fundamental to the school's ability to meet No Child Left Behind requirements and attain levels of student achievement commensurate with legislative expectations. Researchers have clearly developed answers for pedagogical questions surrounding which instructional components enable and

accelerate the development of critical reading skills that include differentiated instruction that is intensive and frequent. Moreover, practitioners are cautioned that traditional classroom instruction may not provide enough of these components to accelerate learning and skills acquisition. The results of this study suggest that when these critical components are present in the daily educational routine, supported by the student schedule and teacher roster assignment, achievement can be significantly positively influenced.

## Acknowledgements

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## **CHAPTER ONE**

### **Introduction**

#### **Reading Achievement and Reading Failure**

It is imperative that all students learn to read and leave school literate and prepared for either continued postsecondary education or successful entry into the workforce (Falk, 2001). The direct connections that exist between unemployment, lower socioeconomic status, and literacy are manifold and confirmed by a long-standing corpus of literacy research (Falk, 2001; National Center for Education Statistics, 1999a; Sum, Kirsch, & Yamamoto, 2004). Students who do not gain basic literacy skills in reading and writing are simply not equipped to function in society (National Center for Education Statistics, 1999b; National Center for Education Statistics, 1992; Sum et al., 2004). Moreover, continued workplace globalization and competition for employment opportunities will place those with only basic literacy skills at an ever-increasing disadvantage (Falk, 2001; Freidman, 2005). According to the National Commission on Writing (2004), many employers are beginning to require entry-level salaried and hourly workers to pass remedial literacy courses. In short, children who become adults lacking basic literacy skills will not be able to adjust to rapidly changing work demands that place a premium on reading skills. Over the past 20 years, educational systems nationwide have focused on the goal of teaching all children to read well before leaving elementary school (Torgeson, 2000). However, despite this goal, reading achievement scores continue to fall far short with urban, suburban, and rural schools all sharing in a state of reading crisis (Bracey, 2004; Morrison, Morrison, & Bedford, 2007; Musti-Rao & Cartledge, 2007; National Center for Education Statistics, 2003; National Center for

Education Statistics, 2007). Additionally, multiple studies have indicated that students in the United States consistently demonstrate a lower level of literacy skills when compared to students in other countries around the world (Bracey, 2004; Wiebenga, 2004).

### **Too Many Students Fail Reading**

**Students at risk.** Students at risk of failing to acquire the commensurate skills for successful completion of high school and subsequent entry into either post-secondary education or the workforce are most often identified as early as the first-grade as having difficulty developing early sound-symbol consonant-vowel-consonant (c-a-t, b-a-t, r-a-t) reading decoding skills (Hickman, Bartholomew, Mathwig, & Heinrich, 2008).

Unfortunately, many students with identified reading delimitations require differentiated (Anderson, 2007), intensive (Denton, Fletcher, Anthony, & Francis, 2006), frequent (Ankrum & Bean, 2008), and out-loud (Cates & Rhymer, 2006; Denton et al., 2006; Lapp, Fischer, & Grant, 2008) reading instruction than is typically afforded by regular classroom reading instruction alone (Ankrum & Bean, 2008; Tobin & McInnes, 2008). It has been argued that if the aforementioned early reading interventions were implemented, 20% to 30% of students identified early on with reading skill development problems would not require later special education identification in order to receive this direct reading help (Lyon, Fletcher, Torgeson, Shaywitz, & Chhabra, 2004; Vaughn & Roberts, 2007; Vaughn et al., 2009). It is extremely important to intervene during the formative years of elementary and middle school if educators hope to reduce reading-related high school drop-out rates (Hickman, Bartholomew, Mathwig, & Heinrich, 2008).

**The impact of poverty on reading achievement.** Poverty clearly impacts early reading achievement (Adler & Fisher, 2001; Roth, Speece, & Cooper, 2002). Students

who are eligible to participate in free or reduced-price lunch programs are at an increased risk for having early reading difficulties (Adler & Fisher, 2001). Furthermore, successful preparation of toddlers for entrance into school as kindergarteners also hinges on the socio-economic status of the family and household where it has been determined that the quantity and quality of parent words used when nurturing their child and the encouragement and reinforcement of a child's early expressive language attempts differs by caregiver income and education level (Haughey, Snart, and da Costa, 2001).

According to the National Center for Education Statistics (1999b), more than twice as many students who were eligible for free or reduced-price lunches scored below basic as students who were not eligible, and only 13% were at or above proficient levels (Adler & Fisher, 2001). In urban schools where low-income and minority children are consistently identified as academically at-risk, reading failure is extensive (Musti-Rao & Cartledge, 2007) and early and constant reading intervention is imperative (Koutsoftas, Harmon, & Gray, 2009).

### **Federal Government Response to Reading Failure**

In 2002, the federal government enacted the No Child Left Behind Education Act (NCLB) for the purpose of ensuring that all students receive a high quality education to attain a level of proficiency on rigorous tests at each grade level (Bracey, 2004). Part of the compliance requirements of NCLB includes each school making adequate yearly progress toward the ultimate goal of having all students proficient by the year 2014 (NCLB Act, 2002). As many schools continue to struggle with the apparent irreconcilability of having all of their students scoring above average on high quality norm-referenced tests, many school leaders and teachers have reached beyond normal

practice and business as usual, resurrecting past methodologies, blending new and improved methods of individualization, and reaching into their communities to leverage outside resources to accelerate the learning for students falling below the proficiency level (Anderson, 2007; Ankrum & Bean, 2008).

### **NCLB Sanctions**

The NCLB legislation, in addition to providing benchmark levels of progress and proficiency for the nation's schools, also imposes sanctions for schools that fail to meet these intermediate goals (Hoff, 2008; NCLB Act, 2002; New Hampshire Department of Education, 2009). These sanctions range from public reporting of the failure to attain projected levels of proficiency to developing detailed improvement plans, providing school choice to parents, taking corrective actions that include replacement of staff and administrators, and total restructuring or privatization of the school (NCLB Act, 2002). In many schools where sanctions begin to apply, the task of accelerating learning becomes not only more structured via the School In Need of Assistance (SINA) process, but also more urgent and imposing. Since the most significant levels of sanction can occur within a five-year time frame, attempts to deliver quality instruction as well as provide meaningful interventions for non-proficient students then, in many SINA schools, take on monumental importance and a dominating aspect in the decision-making process at all levels of the SINA schools' operation from the classroom to the board room (Hoff, 2008).

As teachers and school administrators struggle to improve student achievement in order to meet the NCLB-imposed benchmarks of achievement and avoid the NCLB sanctions, many have been led to create instructional situations whereby students are

provided with more individual and differentiated instruction at their particular learning levels. Realizing that step-wise progress is arguably the most realistic course of action toward reaching the seemingly insurmountable goals of NCLB, and that the ultimate measure of a school's achievement rests on the achievement of the individual, educators have initiated strategies and structures in SINA schools that at once have both been centralized around the issue of norm-referenced achievement and have been divergent in their characteristics and features.

This study focused on a middle school with a SINA designation for reading achievement--the real-world and real-school motivation for this study. In response to the SINA designation, teacher and administrator learning communities were formed to improve reading instruction guided and informed by the most current research-based best practices and standards of care. This required instructional introspection resulted in the implementation of a radically altered reading program based on explicitly differentiated reading instruction for high, middle, and low reading ability instructional groups. The goal of the yearlong change process was to improve all students' reading test scores regardless of their reading achievement status as well as improving their everyday classroom performance.

### **Purpose of the Study**

The purpose of this study was to determine the effect of explicitly differentiated high, middle, and low reading ability instruction groups on eighth-grade students' achievement, behavior, and engagement in a school seeking to reestablish satisfactory No Child Left Behind, Adequate Yearly Progress, benchmarks.

## **Research Questions**

The following research questions were used to analyze explicitly differentiated reading instruction groups by measuring norm-referenced assessment performance outcomes, criterion-referenced grade outcomes, student behavior, and school engagement outcomes.

**Overarching Pretest-Posttest Achievement Research Question #1.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade pretest Iowa Test of Basic Skills (ITBS) compared to beginning ninth-grade posttest Iowa Test of Educational Development (ITED) Normal Curve Equivalent (NCE) reading comprehension achievement scores?

**Sub-Question 1a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE reading comprehension achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 1b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE reading comprehension achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 1c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE reading comprehension achievement scores after participating in explicitly differentiated low reading ability groups?

**Overarching Pretest-Posttest Achievement Research Question #2.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade ITBS compared to beginning ninth-grade ITED NCE vocabulary achievement scores?

**Sub-Question 2a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE vocabulary achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 2b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE vocabulary achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 2c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE vocabulary achievement scores after participating in explicitly differentiated low reading ability groups?

**Overarching Pretest-Posttest Achievement Research Question #3.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade ITBS compared to beginning ninth-grade ITED NCE science total achievement scores?

**Sub-Question 3a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE science total achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 3b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE science total achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 3c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE science total achievement scores after participating in explicitly differentiated low reading ability groups?

**Overarching Pretest-Posttest Achievement Research Question #4.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-

grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade ITBS compared to beginning ninth-grade ITED NCE language arts total achievement scores?

**Sub-Question 4a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE language arts total achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 4b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE language arts total achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 4c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE language arts total achievement scores after participating in explicitly differentiated low reading ability groups?

**Overarching Posttest-Posttest Achievement Research Question #5.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest reading comprehension, vocabulary, science total, and language arts total ITED NCE lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction

groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5a.** Were the observed lose, maintain, or improve frequencies for reading comprehension the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5b.** Were the observed lose, maintain, or improve frequencies for vocabulary the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5c.** Were the observed lose, maintain, or improve frequencies for science total the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5d.** Were the observed lose, maintain, or improve frequencies for language arts total the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-

grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Overarching Pretest-Posttest Achievement Research Question #6.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade Northwest Evaluation Association (NWEA; 2010) Measure of Academic Progress (MAP) Rausch Instructional Unit (RIT) reading comprehension scores?

**Sub-Question 6a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade NWEA reading comprehension RIT scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 6b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade NWEA reading comprehension RIT scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 6c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade NWEA

reading comprehension RIT scores after participating in explicitly differentiated low reading ability groups?

**Overarching Posttest-Posttest Achievement Research Question #7.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest reading comprehension NWEA MAP RIT lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 7a.** Were the observed lose, maintain, or improve frequencies for reading comprehension the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Overarching Pretest-Posttest Achievement Research Question #8.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade classroom reading grades?

**Sub-Question 8a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade classroom reading grades after participating in explicitly differentiated high reading ability groups?

**Sub-Question 8b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade classroom reading grades after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 8c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade classroom reading grades after participating in explicitly differentiated low reading ability groups?

**Overarching Pretest-Posttest Achievement Research Question #9.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade classroom language arts grades?

**Sub-Question 9a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade classroom language arts grades after participating in explicitly differentiated high reading ability groups?

**Sub-Question 9b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade classroom language arts grades after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 9c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade classroom language arts grades after participating in explicitly differentiated low reading ability groups?

**Overarching Pretest-Posttest Achievement Research Question #10.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade classroom science grades?

**Sub-Question 10a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade classroom science grades after participating in explicitly differentiated high reading ability groups?

**Sub-Question 10b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade classroom science grades after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 10c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade classroom science grades after participating in explicitly differentiated low reading ability groups?

**Overarching Posttest-Posttest Achievement Research Question #11.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest classroom reading, language arts, and science grades lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 11a.** Were the observed lose, maintain, or improve frequencies for classroom reading grades the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 11b.** Were the observed lose, maintain, or improve frequencies for classroom language arts grades the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading

ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 11c.** Were the observed lose, maintain, or improve frequencies for classroom science grades the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Overarching Pretest-Posttest Behavior Research Question #12.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade school attendance rates?

**Sub-Question 12a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade school attendance rates after participating in explicitly differentiated high reading ability groups?

**Sub-Question 12b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade school attendance rates after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 12c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade school attendance rates after participating in explicitly differentiated low reading ability groups?

**Overarching Posttest-Posttest Behavior Research Question #13.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest attendance rates lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 13a.** Were the observed lose, maintain, or improve frequencies for school attendance rates the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Overarching Posttest-Posttest Engagement Research Question #14.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest school sports, arts, and organizations involvement rates lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in

explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 14a.** Were the observed lose, maintain, or improve frequencies for school sports involvement rates the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 14b.** Were the observed lose, maintain, or improve frequencies for school arts involvement rates the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 14c.** Were the observed lose, maintain, or improve frequencies for school organizations involvement rates the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

### **Importance of the Study**

This study is of particular interest to school leaders and practitioners that have struggled with finding approaches to learning that accelerate achievement for all students in an atmosphere of high stakes testing and under a system of accountability that carries impending sanctions. The significance of literacy skills to the successful triumph over the myriad academic and workplace challenges that all progeny of public schools encounter is well established and understood. It is therefore vital that educators pursue all possible avenues toward addressing literacy and growth, revitalizing strategies that have been formerly abandoned and establishing new practice as necessary.

### **Assumptions of the Study**

Strong features of this study include: (a) the explicitly differentiated reading instruction groups intervention were based on best practices for reading remediation; (b) a school-wide learning community composed of teachers and administrators was responsible for development of the intervention; (c) the intervention directly addressed a clear and present concern for meeting the needs of students as they prepare for successful transition to high school and beyond; (d) trained and experienced teachers in key leadership and instructional positions provided the differentiated instruction; (e) all subjects of the study were enrolled in the same school district for the duration of the intervention, as well as for one year prior and one year following the intervention year; (f) all subjects were exposed to the instructional practices of each of the teachers involved in the intervention on a rotating basis; (g) the study subjects were randomly selected from all students involved in the intervention and who met the established criteria; and (h) all students were assessed using routinely administered district-approved norm-referenced standardized tests and district-approved classroom grading practices.

### **Delimitations of the Study**

This study is delimited to eighth-grade students enrolled in the research school. Furthermore, only the achievement, behavior, and school engagement measures from the fall of 2005 and the spring and fall of 2006 were used. Study participants were required to participate in the explicitly differentiated reading instruction groups and were scheduled accordingly. All research subjects were required to take the research school's annual norm-referenced assessment, which was the Iowa Test of Basic Skills, as well as the series of formative norm-referenced assessments, the Northwest Evaluation Association Measure of Academic Progress, delivered in fall and spring. Class grades, attendance, behavior, and school engagement data was taken from routine and uniform collection procedures throughout the school year using the student information management system.

### **Limitations of the Study**

This study was restricted to eighth-grade students ( $N = 75$ ) experiencing reading instruction in explicitly differentiated reading classes within the research school. Participants of the study were randomly selected from groups that were determined based upon student spring 2005 NWEA MAP Reading assessment RIT scores. Students participating in the low ability group ( $n = 25$ ) had reading RIT scores between 196 and 213, students participating in the middle ability group ( $n = 25$ ) had reading RIT scores between 214 and 225, and students participating in the high ability group ( $n = 25$ ) had reading RIT scores between 226 and 238. Limited subject selection and first year implementation of the intervention may limit interpretability and generalizability of the study results.

## **Definitions of Terms**

**Arts.** Arts are defined as a category of school engagement that includes student groups involved in enrichment activities in the music performing arts category outside of the regular school day and sponsored by faculty at the research school. For the purpose of this study, this category of school engagement involves only show choir and jazz band. These activities fall within the research school's handbook and student participation is subject to academic eligibility rules.

**Assessment.** Assessment is defined as a tool used in the process of documenting and measuring the knowledge, skills, or competencies that a student has attained as a result of instruction.

**Attendance.** Attendance is the physical presence of a student at school during normal operational hours on a district-determined day of school as defined by the school calendar and is measured by full day absence frequencies.

**Differentiated instruction.** Differentiated instruction embodies notions of classroom structure and philosophy characterized by beliefs that not all students learn at the same pace or in the same fashion. Therefore, differentiated instruction involves modifications in curriculum and instruction that are necessary to provide students with classroom content, processes, and products that are compatible with their particular learning needs, and many times involves allowing the student to play a role in the decision-making within the classroom.

**Direct Instruction (DI).** Direct Instruction is a form of explicit classroom instruction that is characterized by its fast pace, highly interactive, and drill-like nature.

Most often, DI lessons are composed of model, practice, and review components in a highly scripted format.

**Explicitly differentiated reading instruction groups.** Explicitly differentiated reading instruction groups are the practice of assigning students to particular sections of the same course according to their performance on standardized tests such that the entire group of students, in each performance class section, score within a given range of standard scores, abilities, and learning needs.

**Full Academic Year (FAY).** Full Academic Year students are defined as students who are continuously enrolled in the same school district for a period including the statewide standardized testing dates in that school for two consecutive academic years, inclusive.

**Iowa Test of Basic Skills (ITBS).** The Iowa Test of Basic Skills is defined as the assessment developed by the Iowa Testing Service at the University of Iowa that measures student achievement in various content areas and reports reliable and valid norm-referenced data. Information about reading, language arts, math, and science skills is provided in the resulting reports to evaluate students' and schools' strengths and weaknesses and to serve as a framework for assessing growth (Iowa Testing Services, 2010).

**Iowa Test of Educational Development (ITED).** The Iowa Test of Educational Development is defined as the assessment developed by the Iowa Testing Service at the University of Iowa that measures student achievement in various content areas and reports reliable and valid norm-referenced data. Information about reading, language arts, math, and science skills is provided in the resulting reports to evaluate students' and

schools' strengths and weaknesses and to serve as a framework for assessing growth (Iowa Testing Services, 2010).

**National Standard Score (NSS).** A standard score is defined by Iowa Testing Services as a number that describes a student's location on an achievement continuum. The scale used with the ITBS and ITED was established by assigning a score of 200 to the median performance of students in the spring of fourth-grade and 250 to the median performance of students in the spring of eighth-grade. It is a scaled score, interval-level measure, allowing for meaningful statistical analysis of student achievement and growth over time.

**Normal-Curve Equivalents.** Normal-Curve Equivalents are standard scores with a mean equal to 100 and a standard deviation equal to 21.06 (Salvia & Ysseldyke, 2004).

**Norm-referenced test.** Norm-referenced tests are assessments of academic ability in which each student's performance is measured and compared to a sample group's performance on the same assessment.

**Northwest Evaluation Association Measure of Academic Progress (NWEA MAP).** Northwest Evaluation Association Measure of Academic Progress are defined as state-aligned computerized adaptive tests that accurately reflect the instructional level of each student and measure growth over time (NWEA, 2010). The MAP assessments are given in reading comprehension and math skills at the research school during the fall and spring semesters. Scores on the NWEA MAP assessments are reported and analyzed using the Rasch Unit (RIT) scale.

**Organizations.** An organization is defined as a group of students engaging in extra-curricular leadership activities sponsored by the research school. For the purpose of this study, organizations include only Leadership, Student Council, and Yearbook. These activities fall within the research school's handbook and student participation is subject to academic eligibility rules.

**Proficiency.** Proficiency is defined as the level of skill or knowledge that a student must obtain in order to have demonstrated mastery in a particular academic category. For the purpose of this study, the proficiency levels of the ITBS and ITED, as defined by No Child Left Behind, will be converted to National Standard Scores for all subtests of the ITBS and ITED assessment batteries.

**Reading comprehension.** Reading comprehension is defined as the ability to understand text that is read, or the skills to construct meaning from text. Basic comprehension generally refers to understanding a subset of individual ideas generally related to content of the text or the main idea of the text (Qian, 2002).

**Rasch Unit (RIT) score.** A Rasch Unit score (RIT) is defined as an interval-level scaled score developed by the authors of the NWEA MAP assessments.

**School engagement.** School engagement is defined as participation in extra-curricular activities outside the regular school day and sponsored by the research school. All school engagement activities fall within the research school's handbook and student participation is subject to academic eligibility rules. School engagement activities are facilitated, coached, or sponsored by faculty members of the research school.

**School information management system.** School information management system is defined as a computer-based system that manages a comprehensive set of

student data at both the school and district level for the purpose of giving administrators and teachers the ability to monitor, track, and report on student data and progress.

Student information management systems typically allow access to enrollment, student demographics, attendance, grades, scheduling, health data, and parent/guardian information.

**Shugart Associates System Interface (SASI).** SASI is defined as the particular student information system software platform developed by Pearson School Systems and used at the research school.

**Sports.** Sports are defined as a category of school engagement that includes teams of students involved in athletic activities outside of the regular school day and coached by faculty at the research school. For the purpose of this study, this category of school engagement involves football, volleyball, basketball, cross-country, wrestling, and track. These activities fall within the research school's handbook and student participation is subject to academic eligibility rules.

**Strategy Instruction (SI).** Strategy Instruction refers to the teaching and facilitating practice and application of a set of learning strategies to the student that can then be applied to particular learning circumstances the student may encounter.

### **Significance of the Study**

This study contributes to the body of research on the effect of literacy instruction, specifically: eighth-grade reading classrooms involved in explicitly differentiated reading instruction groups. The research results are of significant interest to educators, considering the national scope of NCLB and the importance of literacy to the entire academic experience.

**Contribution to Research**

Few studies have offered conclusions about the effectiveness of explicitly differentiated reading instruction groups at the middle level. This study examined the effect of explicitly differentiated high, middle, and low reading ability instruction groups on eighth-grade students' achievement, behavior, and engagement in a school seeking to reestablish satisfactory No Child Left Behind, Adequate Yearly Progress, benchmarks. The results of this study inform the theoretical literature on the effectiveness of using the groups strategies described and provide possible answers to schools in which literacy concerns are driving decisions and resource scarcity imposes upon best practice.

**Contribution to Practice**

This study offers suggestions for addressing the growing issue of adolescent illiteracy as it plays out within the context of the NCLB environment in which schools operate. Examining a systemic approach to providing differentiated instruction to groups of students may suggest effective new pedagogical practices. The goal for all schools is to facilitate the achievement of all students. Finding unique ways to bring limited resources to bear on that ultimate goal is of vital consequence. Based on the results of this study, reading teachers may be able to determine the effectiveness of this strategy and decide whether or not to try to replicate its results with students in their own classrooms.

**Contribution to Policy**

Each learner's individual needs must be met in the classroom in order for maximum achievement and growth to be realized. Research on best practices for meeting those needs--in both content and learning style--in the classroom is ubiquitous and

significant. Students deserve to be given access to those practices and educators must find solutions that both support the ethical imperative to engage in best practice and allow for practical and reasonable decisions about resource distribution and allocation. Local level policy will be impacted through the findings of this study as Race to the Top Federal grant awards will require specific interventions such as removal of the principal or hiring of a new teaching staff as a result of low student achievement. If the results show a positive impact on student achievement, a discussion should be generated to consider district-wide implementation of required interventions--even in high achieving schools.

### **Organization of the Study**

The literature review relevant to this exploratory research is presented in Chapter 2. This chapter reviews the professional literature related to the process of language acquisition from birth to graduation, common instructional models and strategies in literacy education, individualized instruction, the practice of grouping students for instruction, and differentiated instruction. Chapter 3 describes the research design, methodology, independent and dependent variables, and statistical procedures that were used to gather and analyze the data for each research question. Chapter 4 reports the research results and findings--including data analysis, tables, and descriptive statistics. Chapter 5 provides conclusions and a discussion of the research findings.

## **CHAPTER TWO**

### **Review of Literature**

#### **A Review of Selected Literature and Research**

The ability to read, write, speak, listen, and think effectively--the condition of being literate--is required to be able to learn and communicate (Meltzer, Smith, & Clark, 2001). Only through the ability to acquire information and make decisions based on that information are people able to successfully navigate our world. It is important to recognize that among the literacy skills there is no more essential skill to success in our society today than the ability to read. It is valued above nearly all other abilities and vital to both social and economic advancement of a person (Snow, Burns, & Griffin, 1998). Simply put, students must acquire basic literacy skills in reading and writing in order to function in society (National Center for Education Statistics, 1999b; National Center for Education Statistics, 1992; Sum et al., 2004).

#### **The Language Learning Process**

The National Association for the Education of Young Children has advised that, learning to read and write is a complex and multifaceted process. The foundation for these literacy skills begins at a child's first moments on earth with a parent's voice, reassuring tone, soft words, and gentle touch all contributing to receptive and expressive human correspondence (Luze et al., 2001; McCathren, Yoder, & Warren, 1999; Tomasello & Farrar, 1986). Expressive communication skills are among the most critical developmental proficiencies as they are necessary for information gathering, cognitive growth, and appropriate interactions (Crais & Roberts, 1996; Hill, 2000; Walker, Greenwood, Hart, and Carta, 1994). Research conducted as early as the mid-twentieth

century has formed a foundation for the notion that the cultural and experiential background of the learner as well as the resources of the learner's home situation plays a profound role in the literacy development process (Freire, 1969). Recent studies carried out in reaction to the literacy data (Massa & Pinhasi-Vittorio, 2009) point to these foundational skills as basic parts to an integrated literacy development model that includes perspective, connectedness, and experience. Renowned Russian psycholinguist, Vygotsky, (1978) concluded that in order for a reader to comprehend written text, a connection to the learner's prior experiences must be perceived. Therefore, to the extent that rich interactions and experiences are facilitated as early in life as possible, so too are literacy and communication skills developed.

### **Early Language Learning**

Language acquisition and the act of communicating begin at birth. Babies begin to communicate immediately following birth and the actions of the adult reacting to or responding to an infant's crying or cooing begins to illustrate both the purpose of and means for communicating with others (Goldstein, 1995). Infants less than a year old show interest in the content of books. Listening to talk, nonsensical or otherwise, begins to engage babies in language acquisition and recognition of speech patterns in addition to the basic skill of listening itself (Iowa Department of Education, 2008). The home environment is one of the most important sources of language and literacy development, providing the earliest exposure to vocabulary, print, and letters (Hart & Risley, 1995; Whitehurst & Lonigan, 2001) and parents are their child's first and most impactful teachers (Beatson, 2000).

Just as language acquisition and communication begin before an infant knows how to talk, learning to read starts well before the learner has developed the ability to decode meaning in letters and words. Pre-school literature in which the story follows familiar daily routines is enjoyed by children as young as a year old. Language and sound patterns that are the focus of rhyming and repetition are highly engaging to toddlers. Labeling objects in ABC books, playing with plastic letters, and naming animals using initial sound recognition all become part of the literacy activities that are engaging to children before the age of two. Frequently, children as young as two years old will *pretend to read* if they are read to frequently (Snow et al., 1998; Rowe, 1998).

**Pre-literacy skills.** During this emergent stage of literacy development, children who are exposed to a purposeful set of language experiences and activities focused on emergent literacy skills including phonological awareness, vocabulary, and letter-name knowledge demonstrate advanced literacy and language skill development at an earlier age (Sénéchal & Young, 2008; Whitehurst et al., 1994). Phonological awareness, or the ability to recognize the relationship between the sounds that are heard when basic letter units of a language are spoken, has been repeatedly correlated to reading ability (Wandell, Dougherty, Ben-Shachar, Deutsch, & Tsang, 2008). There are specific strategies that can be employed to facilitate phonological awareness in pre-literate children. These strategies include having an adult read to the child, which is known to influence language development and the ability to learn to read (Beals & Snow, 1994; Neuman, 1999; Watson, 2001), and engaging the child in multimodal interactions with the story, including visual, tactile-kinesthetic, auditory, and even gustatory inputs (Hill, 2000).

**Reading to children.** Reading to children at this level of development begins the process for recognizing the morphology (structure and form of words in a language), the phonology (the basic units of pronunciation called phonemes), the rules of pronunciation, the orthography of language in graphemes (the representation of language using letters) and the syllable (or basic unit of spoken language)--all required in order to achieve ultimate literacy (Snow et al., 1998). The act of reading a children's story book to a child using different voices for each character, for example, provides the child with auditory perception input (Hill, 2000). Engaging a child in phonological awareness activities in efforts focused on kindergarten readiness, for example, may include having the child clap to the letter sounds, or phonemes, as beats of consonant-vowel-consonant (CVC) words (Hill, 2000; Joseph, 2002). By exaggerating each distinct speech sound, the child is experiencing sound elements of words and is beginning to understand the alphabetic system (Hill, 2000). In order for a child to develop phonological awareness, engagement in language and print activities such as rhyming games, letter games, and interactive reading activities that focus on the structural characteristics of language is necessary (Tunmer & Hoover, 1992). Asking a child questions or pointing to words and illustrations connects the story in the book to everyday experiences (Beals & Snow, 1994). Simply turning the pages of a story as it is read is engaging the child in shifting from the tactile-visual real world to the mental imaging of that world that is required for reading, imagining, and writing stories independently (Rosenquest, 2002). A study of the language and literacy exposure in the home environment prior to entry into school was strongly correlated to their measured literacy skills in kindergarten. In their study, Dickinson and Tabors (2001) showed that predictors of children's vocabulary, writing

concepts, letter recognition, print concepts, sounds in words, and narrative production included exposure to rare words, length and frequency of focused conversations, and interaction with literature.

**Pre-school classrooms.** In addition to reading with children, best practice suggests toddler classrooms and daycare providers adhere to curriculum that connects literature to projects in art, music, role-playing activities, and spontaneous play areas (Dickinson & Sprague, 2001; Silvern, Taylor, Williamson, Surbeck, & Kelley, 1986). Research clearly indicates that developmental capabilities of children in relating an experience verbally, acting it out, and depicting it with original drawings overlap significantly (Pelligrini & Galda, 1993). The importance of a highly engaging, literacy-rich environment (at home and in pre-school) prior to a child's entrance into school cannot be understated, and the effectiveness of instruction at the pre-school age is paramount to the short- and long-term reading success of the child (Adams, 1990). Homes, preschools, and childcare facilities that provide supportive environments and experiences in literacy set the stage for successful engagement in the formal process of learning to read. Making the effort to hold one-on-one conversations with toddlers, spending the time to read books with them, providing writing materials, facilitating dramatic play that includes material from literature, demonstrating the uses of literacy, and creating a joyful and playful atmosphere around literacy activities are all ways in which the literacy learning process can be frontloaded (Hill & Thompson, 2002; Snow et al., 1998).

## **Early School Literacy Skill Development**

As children enter kindergarten, regardless of their experiences in literacy during the first five years of life, they enter the time-bound march through the educational system. Therefore, literacy becomes a priority in order to ensure that each student can face the gradual but unavoidable learning curve. Kindergarten teachers and the school systems in which they work typically acknowledge this imperative of literacy, and work to ensure the mastery of two key elements. The first is familiarization with the structural elements and organization of print. The second is an attitudinal perspective that includes seeing value in gaining information and enjoyment from print. To accomplish these goals, several methods and resources that are well-grounded in their research-based effects can be employed.

Reading aloud with kindergartners, for example, is supported with a broad base of practice and research. Besides leveling the playing field for students whose home or pre-school experiences did not provide sufficient access to literature, it is an idyllic avenue for exploring several aspects of literacy, including the structure of print, reading with prosody, and grapheme familiarity (Feitelson, Goldstein, Iraqi, & Share, 1993; Purcell-Gates, McIntyre, & Freppon, 1995; Snow & Tabors, 1993). Additionally, exposure and access to stories that connect with individual interests and experiences can provide motivation and appreciation for text.

**Trade books.** Resources specifically used by kindergarten teachers and others teaching beginning reading include patterned books, big books, and rebus books (Snow et al., 1998). A *patterned* book, also known as a *predictable* book, is just as the names imply--a book in which the text is partially predictable or at least semi-repetitive. An

example of a patterned book would be *Brown Bear, Brown Bear, What Do You See?* (Martin, 1992) in which each page repeatedly asks the question “What do you see?” and only the animal names change from page to page, progressing through a dozen or so colorfully depicted creatures. The reader is therefore repeating, on each page, “What do you see?” *Bob Books* (Maslen, 1976) is another classic example of a patterned book. This collection of books for beginning readers focuses on a particular vowel sound and uses very few words that include that sound to create a simple story with one- or two-word sentences, such as “Mat. Mat sat. Sam sat. Mat and Sam sat.” By repeating patterns and sounds, children gain practice in recognition of phonemes, the use of illustrations to make predictions, and the beginnings of book-handling habits (Snow et al., 1998).

Big books, or large print, oversized story books, have historically provided the opportunity for a large group of students to share in the reading experience with the teacher (Holdaway, 1979). Through strategies such as finger-point reading, wherein the teacher points to the words and the students read chorally, the left-to-right directionality of print is reinforced. Words that appear frequently may be identified as sight words. Letter-sound phonemes can be highlighted as well.

In rebus books, words or syllables above students’ reading levels are represented by pictures, also called rebuses. The purpose of using rebus books is to focus on the repetitive and ubiquitous function words such as *is*, *the*, and *of*. Advantages and growth resulting from students frequent use of rebus books has been shown to significantly facilitate children moving toward *real* reading (Biemiller & Siegel, 1997).

**Direct Instruction.** Generally, as students move through first- and second-grade, explicit instruction takes a more prominent position in the teaching-learning process around literacy. There are several aspects that require Direct Instruction as the reader evolves. These include providing explicit instruction in sound structures and mastering phonemic awareness, beginning to explore common spelling conventions, recognizing a growing repertoire of sight words, and reading independently (Snow et al., 1998). Stein and colleagues (1999) analyzed several basal reading programs at the first-grade level and identified explicit instruction in decoding strategies, phonemic awareness, sound/symbol relationships, oral fluency and prosody, and comprehension. Additionally, employing word boxes and word sorts has been shown to positively impact primary students' phonemic awareness, letter-sound associations, and spelling skills (Joseph, 2002). Generally, the ability to read with inflection and expression as well as the ability to comprehend reliably do not begin to emerge until sometime during the second-grade year (Chall, 1983). Other names for instruction primarily influenced by Direct Instruction include traditional instruction, skills-based instruction, phonics instruction, and code-emphasis instruction (Hill, Swain, & Nero, 2003).

### **Literacy Curriculum in the Intermediate School Years**

**Emphasis on content reading.** During the intermediate school years, the ability of students to read and comprehend both fiction and nonfiction text becomes ever-increasingly required for success in school. Expanding background knowledge, deepening vocabulary, and developing meta-cognitive skills and habits in the reading process start to emerge as ultimate goals for the learner. Making meaning of unfamiliar text to expand knowledge in a variety of content areas requires the intermediate student to

comprehend text on two levels--that of literal comprehension (the literal meaning of the printed words) and of reflective understanding (i.e. “why am I reading this?”, “do I know what the author is trying to convey and why?”, and “is this similar to my personal experience?”).

### **Middle School Literacy Goals**

The recent adoption of the Iowa Core Curriculum by the Iowa legislature (Iowa Department of Education, 2009) makes clear the purpose and focus of literacy and reading instruction at the middle level. Clearly delineated in the body of *Essential Skills and Concepts*, or overarching standards within the Iowa Core Curriculum (ICC) are expectations for students to be able to read significant books and texts each year, in both fiction and nonfiction genres. Additionally, reading skills that enhance and improve a student’s efficiency in making meaning from text, such as skimming, adjusting reading rate, re-reading, and recognizing text structure cues, are highlighted as basic skills that all students are to acquire. By the end of the middle school years, as students entering high school, silent and aloud reading fluency, including phrasing, accuracy, prosody, rhythm, and self-correction of difficulties, also comes through as paramount among the goals for reading instruction at the middle level.

### **High School Literacy Preparation for Post-Secondary Learning**

It is generally accepted that very early on in the high school years, all reading skills have been developed and students are being introduced to new and critical vocabulary that rely on the automaticity of the acquired skills. As evidenced by the near absence of any *reading* class in high school curricula, the goals shift from acquiring literacy skills in reading to application and synthesis of those skills to an ever-increasing

complexity of content. As outlined in the Iowa core curriculum, (Iowa Department of Education, 2009), analyzing, synthesizing, summarizing, and evaluating complex literature are the expected level of mastery. Opportunities to refine and reinforce those skills extend well beyond the high school English/Language Arts and into all other content areas using text that supports disparate subject matter (Iowa Department of Education, 2009).

### **Instructional Strategies and Delivery Models in Literacy**

Over the developmental spectrum, instruction in literacy occurs regularly with incremental expectations. The strategies and models that are available to instructors vary in the amount of empirical data supporting their use, support among educators, and basis in research. Confounding the instructional decision-making process further is the current political and social climate in which education finds itself.

### **Climate of Instructional Debate**

A renewed sense of urgency in education for addressing achievement levels of students in the United States was initiated by the federal No Child Left Behind (NCLB) Act and the goals identified within NCLB, now written into Race to the Top funding inside the American Recovery and Reinvestment Act (2009), that includes the goal for all children to be able to read at grade level. NCLB also requires that evidence-based instruction is provided (NCLB, 2002). Findings from seminal research conducted to determine acceptable reading instruction agreed that reading instruction should be explicit and systematic and should include phonemic awareness, phonics, fluency, vocabulary, and comprehension--a nod to the influence of direct instruction (National

Reading Panel, 2000; Snow et al., 1998). Additionally, both studies suggested intensive and individualized intervention to meet the needs of struggling readers.

**Individual instruction.** Because the professional imperative of educators and the educational system at large includes the improvement of reading instruction, many approaches have been espoused and attempted over time. These have included individualized instruction focused on the learning styles of the individual learner (Allen & Hancock, 2008; Hsieh & Dwyer, 2009; Knowles, 2009) as well as individualized instruction focused on the manipulation of one or more of three fundamental reading instruction variables that include pace, method, and content (Snow et al., 1998).

The pace of instruction varies depending on the source of control. At one end of the spectrum, the teacher controls and imposes a timetable by which the learning will occur. At the other extreme are situations in which the student or learner has sole control over the pace, and no time limits or target dates are imposed. At times, a shared control over pace is negotiated between the teacher and the student.

**Responding to learner differences.** Instructional strategies that do not account for different styles of learning on the part of the learner do not fall into the category of individualized instruction. Historically, teachers have planned instruction around the shared characteristics of a heterogeneous group of students and then have applied varying degrees of flexibility and response once the instructional process begins (Slavin, 1986). This approach gave some limited consideration to individuals and their needs. However, because the teacher focus remained on the class as a whole, individual reading levels of students based on test results were not known and not often considered in planning reading instruction. Drawing on comparisons with commonly used terms, the practice of

inclusion or mainstreaming of special education students would be an example of instruction that is not individualized. This approach has been criticized for not serving students well because it lacks regard for individual needs of special education students (Daniel & King, 1997). In some meta-analyses of studies on the effects of inclusion, achievement scores for all students in inclusion classrooms have been shown to decline (Brockett, 1994). At the opposite extreme are situations in which instruction is planned for the specific needs and learning styles presented by an individual. Between the two are situations in which needs are presented commonly by a group of individuals and instruction is arranged accordingly.

**Holding learning constant.** It is commonly held that the least manipulated variable is content (as opposed to pace of instruction). Tracking students or providing enrichment instruction on an individual basis can be considered individualized instruction based on content. Although as recent as 2004, studies have documented few opportunities for gifted students to engage in continuous progress (Reis et al., 2004). Most often, instruction in which the learner is in control of the actual content, based on individual interest, is confined to high-achieving students. Even in those and other cases of content manipulation, there are still pre-defined limits to the range of possibilities.

### **Individualized Instruction that Holds Learning Constant**

**Keller Plan.** Keller (1968) introduced the first truly comprehensive plan of individualized instruction. Known as the Keller Plan, it is based on ten accepted educational principles, but is unique in that the components of the Keller Plan differ from generally accepted practice. Specifically, Keller identifies self-pacing and optional

learning components as integral parts of the plan. Since unit mastery is also present, content is not variable.

In years of studying the results of the Keller Plan, benefits that include higher retention rates and higher motivation have been cited. Critics point to limited instructional methods, higher dropout rates, failure to acknowledge learning style differences, and a decrease in interpersonal interactions as shortcomings of his plan (Jacobs, 1983; Keefe, 2007; Price, 1999).

**Computer-assisted instruction.** Computer-assisted instruction has played an increasingly large role in the delivery of individualized instruction in the previous three decades. Because of its potential to deliver individualized instruction at a varying pace, using interactive methods, reaching across a broad spectrum of content in any given area of study, it was said at the outset of the technology age that “a modern computer has characteristics that closely parallel those needed in any educational system that wishes to provide highly individualized instruction” (Coulson, 1970, p. 4). As computerized instruction evolved, however, criticism was raised concerning isolation, lack of inter-human dialogue, suspension of idiosyncratic behavioral responses to learning including intuitions, creative insights, cognitive leaps, and other non-linear mental processes (Olds, 1985). Cognitive psychologists have noted that the social nature of learning makes approaches of instruction that are characterized by students working in isolation for most of the instruction highly questionable (Brandt, 1992). However, the use of technology is clearly here to stay and the vast majority of elementary students would be considered digital natives. On-line reading has replaced textbook reading for many content-driven

learning activities and the positive effects on student learning are sufficient to support one-to-one laptop computer use in many schools (Bird, 2008).

### **The Problem with Individualized Instruction**

Individualized instruction, in its various forms today, is still a relatively recent innovation and as such contends with a high degree of scrutiny and criticism. Most of this disparagement centers on the preponderance of individualized instruction that varies pace of instruction, but holds content and methods static. Specifically within the realm of literacy, achievement data collected by the National Center for Education Statistics indicate that fourth-grade and eighth-grade readers were reading at higher levels in 2007 than in 1992, but that the most recent trend from 1998 to 2007 shows stagnation in some populations and a decline in achievement in others (National Center for Education Statistics, 2009). Despite some action research being conducted in individual classrooms or schools around teacher practice of individualizing instruction and the effects on student achievement (Kaftan, Buck, & Haack, 2006), the continued preponderance of traditional approaches to teaching ever-increasing populations of struggling readers belies the need for exploring the effects of individualized approaches to literacy instruction (Thames et al., 2008).

Individualized instruction is not analogous to one-on-one instruction, which itself cannot meet all learner needs. A significant body of research literature supports the notion that peer groups and cooperative learning situations are appropriate methods to meet learner needs for students along the entire spectrum of abilities--from persistently challenged students (Hill & Coufal, 2005) to those who are identified as talented and gifted (Tomlinson, 2003; Cohen et al., 2004). Middle school students benefit from

classrooms which acknowledge environmental elements including security, affiliation, support, purpose, affirmation, and affinity (Tomlinson & Doughty, 2006). This suggests that the design and application of individualized instruction must be converged with methodologies that include groups and cooperative learning experiences in order to be most effective for any given student.

### **Ability Groups**

Several purposes for the groups of students have been identified in the research literature. Easing the delivery of differentiated instruction to groups of students with similar educational needs has been identified among those purposes (Cohen et al., 2004). While tracking has been defined as the delivery of instruction to class-sized groups of like-ability students based on prior levels of achievement the commonly accepted definition of ability groups relates to periodic adjustments and re-groups of students based on instructional needs at waypoints along the curricular continuum (National Association for Gifted Children, 2009). Grouping programs that entail more substantial adjustment of curriculum to ability have clear positive effects on children (Kulik, 1992). One example, as purported by research in high ability learners, is the suggestion that ability groups is considered *least restrictive environment* for talented or gifted students (Feldhusen & Saylor, 1990). Finally, despite the converging connotations of *tracking* and *ability groups*, the importance of recognizing the research supporting the notion that groups for learner differences is effective practice for all ability levels remains (Loveless, 1999).

## **Differentiated Instruction**

Current conversation around the impetus for closing achievement gaps within and between student populations across the United States have brought about renewed interest (International Reading Association Commission on RTI, 2009) in developing methods of differentiation that are data-driven and are implemented with fidelity. It has been suggested that providing intense and differentiated instruction meeting that criteria is the clear path to intervention of reading problems (O'Connor & Simic, 2002). Recent studies reveal that many states which adopt intervention models that involve a tiered approach include differentiated instruction for all students, initiated in response to assessments of performance levels (Berkeley, Bender, Peaster, & Saunders, 2009).

**In-group instruction.** Within the classroom, teachers implementing instructional models that embed differentiated instruction use a variety of strategies. Some teachers are utilizing guided reading workshops with text selected to meet both the ability levels and skill needs of students as well as facilitate an increase in the amount of daily reading (Allington, 2002). The incorporation of mini-lessons during whole-class instruction that focus on specific skills and strategies are then practiced in small groups with teacher oversight. Holding individual conferences or additional small group work once the release of responsibility in the lesson plan has shifted to the individual student can occur and has been argued as being highly effective (McIntosh, Graves, & Gersten, 2007). When reading materials are selected to correspond at once to both instructional level and content, access to vocabulary and concepts for students who may not be reading at textbook levels is facilitated. Additionally, some students are guided toward selection of reading materials based on their ability level and personal interest for independent

reading, partner reading, and group discussion in differentiated instruction groups (Tobin, 2008). These and other means of differentiating instruction within the heterogeneous classroom hold great promise for intervening and, when provided at the classroom level emphasizes prevention rather than remediation (Walker-Dalhouse et al., 2009).

**One-on-one.** There is evidence suggesting that the increasing pressure from federal and state performance mandates have resulted in the stifling of individual classroom teachers' sense of autonomy to design instruction to meet individual learner needs (Whitaker, 2008). The result of the lack of innovation at the classroom level can be nothing other than more of the same instruction in a one-to-one setting. Recent studies suggest that barriers to differentiation exist for even the most accomplished classroom teachers, perpetuating the lack of truly individualized instruction (Whitaker, 2008). Pressure to avoid interventions that could be construed as *tracking* has led many school practitioners to shun logistical adjustments that align instruction to the needs of homogenous groups of students. The movement away from tracking is based mainly on beliefs that inequalities in student opportunities and outcomes are the natural result, though evidence to support this perspective is nearly absent from contemporary literature (Neihart, 2007). Particular attention has been paid to unfounded notions that groups damage the self-esteem of struggling learners, despite the lack of research supporting that argument (Fiedler, Lange, & Winebrenner, 2002). Of consequence is the resulting preponderance of heterogeneous classrooms that present a range of abilities for which appropriate differentiation is nearly impossible (Fiedler et al., 2002).

**Final Thoughts**

The climate of education and reading instruction today is defined by myriad factors. Pressure applied from decades of negative public opinion about the efficacy of public schools and reading achievement levels has resulted in legislation at both state and federal levels that seemingly place barriers to innovation while requiring revolutionary change particularly in schools with high numbers of non-proficient readers. Reconciling these demands with the real needs of each and every student is the challenge educators face every day. Today, teachers continue to explore creative ideas, engage in action research, and evolve in their approaches to improve reading instruction and ensure success for every student--even under a climate of legislative mandates and uncertainty.

## CHAPTER THREE

### Research Methods

The purpose of this study was to determine the effect of explicitly differentiated high, middle, and low reading ability instruction groups on eighth-grade students' achievement, behavior, and engagement in a school seeking to reestablish satisfactory No Child Left Behind, Adequate Yearly Progress, benchmarks. The study analyzed achievement, behavior, and school engagement factors for each study group--low reading achievement group, middle reading achievement group, and high reading achievement reading group--in the areas of standardized achievement in reading comprehension, vocabulary, science, and language arts; classroom grades in reading, language arts, and science; behavior as measured by absences; and school engagement levels as measured by student involvement in sports, arts, and organizations.

#### Participants

**Number of participants.** The maximum accrual for this study was ( $N = 75$ ) including a group of low-achieving students randomly selected from a naturally formed group of students with Spring NWEA Reading MAP RIT scores ranging from 196 to 213 ( $n = 25$ ), a group of middle-achieving students randomly selected from a naturally formed group of students with Spring NWEA Reading MAP RIT scores ranging from 214 to 225 ( $n = 25$ ), and a group of high-achieving students randomly selected from a naturally formed group of students with Spring NWEA Reading MAP RIT scores ranging from 226 to 238 ( $n = 25$ ).

**Gender of participants.** The gender percent in the treatment group was consistent with the gender percent of the school population.

**Age range of participants.** The study participants had an age range of 13 years to 15 years. All participants were eighth-grade students while experiencing the explicitly differentiated reading instruction. The age range of the study participants is congruent with the research school districts age range demographics for eighth-grade students.

**Racial and ethnic origin of participants.** The total number of study participants was ( $N = 75$ ), consisting of 1 African American student (1.33%), 7 Hispanic students (9.33%), 1 Asian American student (1.33%), and 66 Caucasian students (88%).

**Inclusion criteria for participants.** Students at the research school who participated in the explicitly differentiated reading instruction groups and maintained enrollment at the research school seventh-grade through ninth-grade were included in the study. Participants were randomly selected with  $n = 25$  for each level with a total maximum accrual of  $N = 75$ .

**Method of participant identification.** Of the 75 total student participants, students with Spring NWEA Reading MAP RIT scores ranging from 196 to 213 were identified as Low Ability group students ( $n = 25$ ), those with Spring NWEA Reading MAP RIT scores ranging from 214 to 225 were identified as Middle Ability group students ( $n = 25$ ), and those with Spring NWEA Reading MAP RIT scores ranging from 226-238 were identified as High Ability group students ( $n = 25$ ).

## Description of Procedures

**Research design.** The three-group pretest-posttest and posttest-posttest comparative survey study design was selected to determine potential changes over time in the measurement of the pretest-posttest achievement, behavior, and engagement dependent variables and to determine the impact of explicitly differentiated reading instruction groups on the posttest-posttest dependent variables for students with differing levels of reading ability. Following is the research design displayed in notation:

Group 1	X <sub>1</sub>	O <sub>1</sub>	Y <sub>1</sub>	O <sub>2</sub>
Group 2	X <sub>1</sub>	O <sub>1</sub>	Y <sub>2</sub>	O <sub>2</sub>
Group 3	X <sub>1</sub>	O <sub>1</sub>	Y <sub>3</sub>	O <sub>2</sub>

**Group 1 = study participants #1.** Randomly selected same school eighth-grade students assigned to participate in high achievement differentiated reading instruction groups ( $n = 25$ ).

**Group 2 = study participants #2.** Randomly selected same school eighth-grade students assigned to participate in middle achievement differentiated reading instruction groups ( $n = 25$ ).

**Group 3 = study participants #3.** Randomly selected same school eighth-grade students assigned to participate in low achievement differentiated reading instruction groups ( $n = 25$ ).

**X<sub>1</sub> = study constant, Explicitly Differentiated Reading Instruction Groups.**

**Y<sub>1</sub> = study independent variable, reading ability group, condition #1.**

Explicitly differentiated high reading ability instruction group where students ( $n = 25$ ) had spring 2005 RIT scores ranging from 226 to 241.

**Y<sub>2</sub> = study independent variable, reading ability group, condition #2.**

Explicitly differentiated middle reading ability instruction group where students ( $n = 25$ ) had spring 2005 RIT scores ranging from 214 to 225.

**Y<sub>3</sub> = study independent variable, reading ability group, condition #3.**

Explicitly differentiated low reading ability instruction group where students ( $n = 25$ ) had spring 2005 RIT scores ranging from 196 to 213.

**O<sub>1</sub> = study pretest dependent measures.** (1) Achievement as measured by (a) Iowa Test of Basic Skills (ITBS) Normal Curve Equivalent (NCE) scores on October 2005 for (i) reading comprehension, (ii) reading vocabulary, (iii) science total, and (iv) language arts total, (b) criterion referenced test scores as measured in August 2006 for criterion referenced assessment in reading comprehension, and (c) classroom grades for end of first trimester as reported by classroom teachers in November 2005 for (i) reading, (ii) language arts, and (iii) science. (2) Behavior as measured by (a) absence as reported for the first trimester of the 2005-2006 school year.

**O<sub>2</sub> = study posttest dependent measures.** (1) Achievement as measured by (a) Iowa Test of Educational Development Normal Curve Equivalent (NCE) scores on October 2006 for (i) reading comprehension, (ii) reading vocabulary, (iii) science total, and (iv) language arts total; (b) criterion referenced test scores as measured in May 2006 for criterion referenced assessment in reading comprehension; (c) classroom grades for end of third trimester as reported by classroom teachers in May 2006 for (i) reading, (ii) language arts, and (iii) science; (2) Behavior: (a) absence as reported for the third trimester of the 2005-2006 school year; (3) School Engagement: frequency count of

student involvement in school sponsored extra-curricular opportunities collected for the 2005-2006 school year for (a) sports, (b) arts, and (c) organizations.

### **Study Constant: Description of Explicitly Differentiated Reading Instruction**

#### **Groups**

Eighth-grade students who are enrolled in reading class for each given class period were grouped according to achievement levels on normative assessments (i.e. the total number of students enrolled in reading for third period will be re-grouped according to a cut score determined by formative achievement data for the third period reading student population). Groups received direct instruction and skills instruction in reading from one of three reading endorsed teachers who had the opportunity and expectation to plan and prepare for their instruction together and were given daily collaborative time in which to do so. The post-test data from each of the three terms in the school year served as formative data and allowed for the responsive redistribution of students among the three levels (high-ability, middle-ability, and low-ability) within their class period. Explicit groups also rotated through the three teacher's classrooms over the course of the school year, giving each teacher the opportunity to provide instruction in areas of strength, and control for instructor differences.

#### **Research Questions, Sub-Questions, and Data Analysis**

The following research questions were used to analyze explicitly differentiated reading instruction groups by measuring norm-referenced assessment performance outcomes, criterion-referenced grade outcomes, behavior, and school engagement outcomes.

**Overarching Pretest-Posttest Achievement Research Question #1.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade ITBS compared to beginning ninth-grade ITED NCE reading comprehension achievement scores?

**Sub-Question 1a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE reading comprehension achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 1b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE reading comprehension achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 1c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE reading comprehension achievement scores after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #1a, 1b, and 1c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade pretest compared to ninth-grade posttest ITED NCE reading comprehension achievement

scores for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations will be displayed on tables.

**Overarching Pretest-Posttest Achievement Research Question #2.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade ITBS compared to beginning ninth-grade ITED NCE vocabulary achievement scores?

**Sub-Question 2a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE vocabulary achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 2b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE vocabulary achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 2c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE vocabulary achievement scores after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #2a, 2b, and 2c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade pretest ITBS compared to ninth-grade posttest ITED NCE vocabulary achievement scores for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Pretest-Posttest Achievement Research Question #3.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade ITBS compared to beginning ninth-grade ITED NCE science total achievement scores?

**Sub-Question 3a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE science total achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 3b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE science total achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 3c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE science total achievement scores after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #3a, 3b, and 3c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade pretest compared to ninth-grade posttest ITED NCE science total achievement scores for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Pretest-Posttest Achievement Research Question #4.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade ITBS compared to beginning ninth-grade ITED NCE language arts total achievement scores?

**Sub-Question 4a.** Was there a significant difference between students with high reading ability eighth-grade ITBS compared to ninth-grade ITED NCE language arts total achievement scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 4b.** Was there a significant difference between students with middle reading ability eighth-grade ITBS compared to ninth-grade ITED NCE language arts total achievement scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 4c.** Was there a significant difference between students with low reading ability eighth-grade ITBS compared to ninth-grade ITED NCE language arts total achievement scores after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #4a, 4b, and 4c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade pretest compared to ninth-grade posttest ITED NCE language arts total achievement scores for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Posttest-Posttest Achievement Research Question #5.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest reading comprehension, vocabulary, science total, and language arts total ITED NCE lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction

groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5a.** Were the observed lose, maintain, or improve frequencies for reading comprehension the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5b.** Were the observed lose, maintain, or improve frequencies for vocabulary the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5c.** Were the observed lose, maintain, or improve frequencies for science total the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 5d.** Were the observed lose, maintain, or improve frequencies for language arts total the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-

grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Analysis.** Research Sub-Questions #5a, 5b, 5c, and 5d were analyzed using a chi-square test of significance to compare observed verses expected lose, maintain, or improve frequencies for reading comprehension, vocabulary, science total, and language arts total by instruction groups. An alpha level of .01 was utilized to test the null hypothesis for these frequencies. Frequencies and percents were displayed in tables.

**Overarching Pretest-Posttest Achievement Research Question #6.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade Northwest Education Association (NWEA) Measure of Academic Progress (MAP) Rausch Instructional Unit (RIT) reading comprehension scores?

**Sub-Question 6a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade NWEA reading comprehension RIT scores after participating in explicitly differentiated high reading ability groups?

**Sub-Question 6b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade

NWEA reading comprehension RIT scores after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 6c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade NWEA reading comprehension RIT scores after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #6a, 6b, and 6c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade pretest compared to eighth-grade posttest NWEA reading comprehension RIT scores for students with high, middle, and low reading ability, participating in explicitly differentiated reading ability groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Posttest-Posttest Achievement Research Question #7.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest reading comprehension NWEA MAP RIT lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 7a.** Were the observed lose, maintain, or improve frequencies for reading comprehension the same for eighth-grade students who have

participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Analysis.** Research Sub-Question #7a will utilize a chi-square test of significance to compare observed versus expected lose, maintain, or improve frequencies for reading comprehension scores by instruction groups. An alpha level of .01 will be utilized to test the null hypothesis for these frequencies. Frequencies and percents will be displayed in tables.

**Overarching Pretest-Posttest Achievement Research Question #8.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade classroom reading grades?

**Sub-Question 8a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade classroom reading grades after participating in explicitly differentiated high reading ability groups?

**Sub-Question 8b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade

classroom reading grades after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 8c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade classroom reading grades after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #8a, 8b, and 8c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade first trimester classroom reading grades compared to eighth-grade third trimester classroom reading grades for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Pretest-Posttest Achievement Research Question #9.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade classroom language arts grades?

**Sub-Question 9a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade

classroom language arts grades after participating in explicitly differentiated high reading ability groups?

**Sub-Question 9b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade classroom language arts grades after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 9c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade classroom language arts grades after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #9a, 9b, and 9c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade first trimester classroom language arts grades compared to eighth-grade third trimester classroom language arts grades for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Pretest-Posttest Achievement Research Question #10.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated

reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade classroom science grades?

**Sub-Question 10a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade classroom science grades after participating in explicitly differentiated high reading ability groups?

**Sub-Question 10b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade classroom science grades after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 10c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade classroom science grades after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #10a, 10b, and 10c was analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade first trimester classroom reading grades compared to eighth-grade third trimester classroom science grades for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Posttest-Posttest Achievement Research Question #11.** Did eighth-grade students who have participated in explicitly differentiated reading

instruction groups have observed versus expected posttest classroom reading, language arts, and science grades lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 11a.** Were the observed lose, maintain, or improve frequencies for classroom reading grades the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 11b.** Were the observed lose, maintain, or improve frequencies for classroom language arts grades the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 11c.** Were the observed lose, maintain, or improve frequencies for classroom science grades the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability

instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Analysis.** Research Sub-Question #11a, 11b, and 11c were analyzed using a chi-square test of significance to compare observed verses expected lose, maintain, or improve frequencies for classroom reading, language arts, and science grades by instruction groups. An alpha level of .01 was utilized to test the null hypothesis for these frequencies. Frequencies and percents were displayed in tables.

**Overarching Pretest-Posttest Behavior Research Question #12.** Did eighth-grade students with high reading ability who participated in explicitly differentiated reading instruction groups, eighth-grade students with middle reading ability who participated in explicitly differentiated reading instruction groups, and eighth-grade students with low reading ability who participated in explicitly differentiated reading instruction groups lose, maintain, or improve beginning eighth-grade compared to ending eighth-grade school attendance rates?

**Sub-Question 12a.** Was there a significant difference between students with high reading ability beginning eighth-grade compared to ending eighth-grade school attendance rates after participating in explicitly differentiated high reading ability groups?

**Sub-Question 12b.** Was there a significant difference between students with middle reading ability beginning eighth-grade compared to ending eighth-grade school attendance rates after participating in explicitly differentiated middle reading ability groups?

**Sub-Question 12c.** Was there a significant difference between students with low reading ability beginning eighth-grade compared to ending eighth-grade school attendance rates after participating in explicitly differentiated low reading ability groups?

**Analysis.** Research Sub-Questions #12a, 12b, and 12c were analyzed using dependent *t* tests to examine the significance of the difference between eighth-grade first trimester school attendance rates compared to eighth-grade third trimester school attendance rates for students with high, middle, and low reading ability, participating in explicitly differentiated reading instruction groups. Because multiple statistical tests were conducted, a one-tailed .01 alpha level was employed to help control for Type 1 errors. Means and standard deviations were displayed on tables.

**Overarching Posttest-Posttest Behavior Research Question #13.** Did eighth-grade students who have participated in explicitly differentiated reading instruction groups have observed versus expected posttest attendance rates lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 13a.** Were the observed lose, maintain, or improve frequencies for school attendance rates the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability

instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Analysis.** Research Sub-Question #13a was analyzed using a chi-square test of significance to compare observed versus expected lose, maintain, or improve frequencies for school attendance rates by instruction groups. An alpha level of .01 was utilized to test the null hypothesis for these frequencies. Frequencies and percents were displayed in tables.

**Overarching Posttest-Posttest Engagement Research Question #14.** Did eighth-grade students who have participated in explicitly differentiated instruction groups have observed versus expected posttest school sports, arts, and organizations involvement rates lose, maintain, or improve frequencies that are the same for those eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 14a.** Were the observed lose, maintain, or improve frequencies for school sports involvement rates the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 14b.** Were the observed lose, maintain, or improve frequencies for school arts involvement rates the same for eighth-grade students who

have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Sub-Question 14c.** Were the observed lose, maintain, or improve frequencies for school organizations involvement rates the same for eighth-grade students who have participated in explicitly differentiated high reading ability instruction groups, eighth-grade students who have participated in explicitly differentiated middle reading ability instruction groups, and eighth-grade students who have participated in explicitly differentiated low reading ability instruction groups?

**Analysis.** Research Sub-Question #14a, 14b, and 14c was analyzed using a chi-square test of significance to compare observed verses expected lose, maintain, or improve frequencies for school sports, arts, and organizations involvement rates by instruction groups. An alpha level of .01 was utilized to test the null hypothesis for these frequencies. Frequencies and percents were displayed in tables.

### **Data Collection Procedure**

All student data was retrospectively analyzed using archived school information. Permission from the Education Resource Center of the Lewis Central Community School District was obtained in writing for collection and analysis. Non-coded numbers were used to display individual de-identify data.

**Performance site.** The research was conducted in the public school setting through normal educational practices. The study procedure did not interfere in any way with the normal educational practices of the public school and did not involve coercion or

discomfort of any kind. All data were analyzed in the office of the primary investigator at Lewis Central Middle School, located at 3820 Harry Langdon Boulevard, Council Bluffs, Iowa, 51503. All data were stored in spreadsheets and databases on flash drives for statistical analysis. All data remained stored on the researcher's computer, backed up on flash drives, and password protected.

**Confidentiality.** Non-coded numbers were used to display individual achievement. Individual student achievement and demographic data was de-identified after all information was linked and the data set completed.

### **Human Subjects Approval Category**

The exemption categories for this study are provided under 45CFR46.101(b) categories 1 and 4. The research was conducted using routinely collected archival data. Approval for the research was granted by the research school district and following review, approval for the study was also granted by the University of Nebraska Medical Center/University of Nebraska at Omaha Joint Institutional Review Board for the Protection of Human Subjects.

## CHAPTER FOUR

### Results

#### Purpose of the Study

The purpose of this study was to determine the effect of explicitly differentiated high, middle, and low reading ability instruction groups on eighth-grade students' achievement, behavior, and engagement in a school seeking to reestablish satisfactory No Child Left Behind, Adequate Yearly Progress, benchmarks.

The study's three dependent variables were (1) achievement, (2) behavior, and (3) school engagement. The first of these, achievement, was analyzed using the following dependent measures: (a) students' Iowa Test of Basic Skills (ITBS) Normal Curve Equivalent (NCE) pretest scores in October 2005 for (i) reading comprehension, (ii) reading vocabulary, (iii) science total, and (iv) language arts total; (b) students' NWEA MAP pretest scores as measured in August 2006 for criterion referenced assessment in reading comprehension; (c) classroom grades for end of first trimester as reported by classroom teachers in November 2005 for (i) reading, (ii) language arts, and (iii) science; (d) students' Iowa Test of Educational Development (ITED) Normal Curve Equivalent (NCE) posttest scores in October 2006 for (i) reading comprehension, (ii) reading vocabulary, (iii) science total, and (iv) language arts total; (e) NWEA MAP posttest scores as measured in May 2006 for criterion referenced assessment in reading comprehension; and (f) classroom grades for end of third trimester as reported by classroom teachers in May 2006 for (i) reading, (ii) language arts, and (iii) science. The second dependent variable, behavior, was analyzed using the following measures: (a) absence as reported for the first trimester of the 2005-2006 school year; and (b) absence

as reported for the third trimester of the 2005-2006 school year. The final dependent variable, school engagement, was analyzed using frequency counts of student involvement in school sponsored extra-curricular opportunities collected for the 2005-2006 school year for (a) sports, (b) arts, and (c) organizations. All study achievement data related to each of the dependent variables were retrospective, archival, and routinely collected school information. Permission from the appropriate school research personnel was obtained before data were collected and analyzed.

Table 1 displays demographic information of individual High Reading Ability group eighth-grade students who participated in the explicitly differentiated reading instruction groups intervention. Table 2 displays demographic information of individual Middle Reading Ability group eighth-grade students who participated in the explicitly differentiated reading instruction groups intervention. Demographic information of individual Low Reading Ability group eighth-grade students who participated in the explicitly differentiated reading instruction groups intervention is displayed in Table 3.

Table 4 displays ITBS pretest and ITED posttest reading comprehension scores converted to Normal Curve Equivalent scores for individual eighth-grade students who participated in explicitly differentiated reading instruction groups. Table 5 displays ITBS pretest and ITED posttest reading vocabulary scores converted to Normal Curve Equivalent scores for individual eighth-grade students who participated in explicitly differentiated reading instruction groups. Table 6 displays ITBS pretest and ITED posttest science scores converted to Normal Curve Equivalent scores for individual eighth-grade students who participated in explicitly differentiated reading instruction groups, and ITBS pretest and ITED posttest language arts scores converted to Normal

Curve Equivalent scores for individual eighth-grade students who participated in explicitly differentiated reading instruction groups are found in Table 7.

### **Research Question #1**

Table 8 displays beginning eighth-grade pretest ITBS compared to beginning ninth-grade posttest ITED normal curve equivalent scores for students who participated in explicitly differentiated reading instruction groups. The first pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 8, null hypotheses were not rejected for the High Reading Ability, Middle Reading Ability, and Low Reading Ability groups reading comprehension pretest-posttest comparisons. The pretest reading comprehension score for the High Reading Ability group ( $M = 74.17$ ,  $SD = 13.90$ ) compared to the posttest reading comprehension score ( $M = 71.49$ ,  $SD = 14.18$ ) was not statistically significantly different in the direction of posttest reading comprehension score digression,  $t(24) = -1.29$ ,  $p = .10$  (one-tailed),  $d = 0.19$ . The pretest reading comprehension score for the Middle Reading Ability group ( $M = 46.22$ ,  $SD = 13.15$ ) compared to the posttest reading comprehension score ( $M = 51.96$ ,  $SD = 11.99$ ) was not statistically significantly different in the direction of posttest reading comprehension score improvement,  $t(24) = 1.69$ ,  $p = .05$  (one-tailed),  $d = 0.46$ . The pretest reading comprehension score for the Low Reading Ability group ( $M = 31.93$ ,  $SD = 10.75$ ) compared to the posttest reading comprehension score ( $M = 32.40$ ,  $SD = 11.55$ ) was not statistically significantly different in the direction of posttest reading comprehension score improvement,  $t(24) = 0.21$ ,  $p = .42$  (one-tailed),  $d = 0.04$ .

### Research Question #2

Table 8 displays beginning eighth-grade pretest ITBS compared to beginning ninth-grade posttest ITED Normal Curve Equivalent scores for students who participated in explicitly differentiated reading instruction groups. The second pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 8, null hypotheses were not rejected for the High Reading Ability group and the Middle Reading Ability group reading vocabulary pretest-posttest comparison. The null hypothesis was rejected for the Low Reading Ability group reading vocabulary pretest-posttest comparison. The pretest reading vocabulary score for the High Reading Ability group ( $M = 73.04$ ,  $SD = 9.79$ ) compared to the posttest reading vocabulary score ( $M = 74.46$ ,  $SD = 13.23$ ) was not statistically significantly different in the direction of posttest reading vocabulary score improvement,  $t(24) = 0.64$ ,  $p = .26$  (one-tailed),  $d = 0.12$ . The pretest reading vocabulary score for the Middle Reading Ability group ( $M = 49.20$ ,  $SD = 11.77$ ) compared to the posttest reading vocabulary score ( $M = 53.95$ ,  $SD = 8.88$ ) was not statistically significantly different in the direction of posttest reading vocabulary score improvement,  $t(24) = 2.28$ ,  $p = .02$  (one-tailed),  $d = 0.46$ . The pretest reading vocabulary score for the Low Reading Ability group ( $M = 33.94$ ,  $SD = 9.47$ ) compared to the posttest reading vocabulary score ( $M = 38.04$ ,  $SD = 8.30$ ) was statistically significantly different in the direction of posttest reading vocabulary score improvement,  $t(24) = 2.41$ ,  $p = .01$  (one-tailed),  $d = 0.46$ .

### Research Question #3

Table 8 displays beginning eighth-grade pretest ITBS compared to beginning ninth-grade posttest ITED Normal Curve Equivalent scores for students who participated

in explicitly differentiated reading instruction groups. The third pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 8, null hypotheses were not rejected for the High Reading Ability group and the Middle Reading Ability group language arts pretest-posttest comparison. The null hypothesis was rejected for the Low Reading Ability group language arts pretest-posttest comparison. The pretest language arts score for the High Reading Ability group ( $M = 72.29$ ,  $SD = 13.77$ ) compared to the posttest language arts score ( $M = 72.38$ ,  $SD = 12.64$ ) was not statistically significantly different in the direction of posttest language arts score improvement,  $t(24) = 0.64$ ,  $p = .26$  (one-tailed),  $d = 0.12$ . The pretest language arts score for the Middle Reading Ability group ( $M = 49.20$ ,  $SD = 11.77$ ) compared to the posttest language arts score ( $M = 53.95$ ,  $SD = 8.88$ ) was not statistically significantly different in the direction of posttest language arts score improvement,  $t(24) = 2.28$ ,  $p = .02$  (one-tailed),  $d = 0.46$ . The pretest language arts score for the Low Reading Ability group ( $M = 33.94$ ,  $SD = 9.47$ ) compared to the posttest language arts score ( $M = 38.04$ ,  $SD = 8.30$ ) was statistically significantly different in the direction of posttest language arts score improvement,  $t(24) = 2.41$ ,  $p = .01$  (one-tailed),  $d = 0.46$ .

#### **Research Question #4**

Table 8 displays beginning eighth-grade pretest ITBS compared to beginning ninth-grade posttest ITED Normal Curve Equivalent scores for students who participated in explicitly differentiated reading instruction groups. The fourth pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 8, the null hypothesis was rejected for the High Reading Ability group science pretest-posttest comparison. The null hypotheses were not rejected for the Middle Reading Ability group and the Low

Reading Ability group science pretest-posttest comparison. The pretest science score for the High Reading Ability group ( $M = 71.29$ ,  $SD = 14.41$ ) compared to the posttest science score ( $M = 77.20$ ,  $SD = 14.08$ ) was statistically significantly different in the direction of posttest science score improvement,  $t(24) = 3.04$ ,  $p = .01$  (one-tailed),  $d = 0.41$ . The pretest science score for the Middle Reading Ability group ( $M = 53.68$ ,  $SD = 13.28$ ) compared to the posttest science score ( $M = 54.85$ ,  $SD = 12.44$ ) was not statistically significantly different in the direction of posttest science score improvement,  $t(24) = 0.47$ ,  $p = .32$  (one-tailed),  $d = 0.47$ . The pretest science score for the Low Reading Ability group ( $M = 41.20$ ,  $SD = 15.85$ ) compared to the posttest science score ( $M = 35.38$ ,  $SD = 13.11$ ) was not statistically significantly different in the direction of posttest science score digression,  $t(24) = -1.48$ ,  $p = .08$  (one-tailed),  $d = 0.40$ .

#### **Research Question #5**

The analyses of research question 5 are displayed in Tables 9 through 12. Table 9 displays High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups ITED posttest reading comprehension improve or lose score frequencies and percents. High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups, ITED posttest reading vocabulary improve or lose score frequencies and percents are displayed in Table 10. Table 11 displays High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups ITED posttest science improve or lose score frequencies and percents. Table 12 displays High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups ITED posttest language arts improve or lose score frequencies and percents.

The fifth hypothesis sub-question 5a was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 9 for the posttest comparison of ITED reading comprehension scores were not statistically different ( $X^2(2, N = 75) = 3.78, ns$ ) so the null hypothesis of no difference or congruence for the ITED posttest comparison of reading comprehension scores was not rejected. The fifth hypothesis sub-question 5b was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 10 for the posttest comparison of ITED reading vocabulary scores were not statistically different ( $X^2(2, N = 75) = 2.42, ns$ ) so the null hypothesis of no difference or congruence for the ITED posttest comparison of reading vocabulary scores was not rejected. The fifth hypothesis sub-question 4c was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 11 for the posttest comparison of ITED science scores were not statistically different ( $X^2(2, N = 75) = 5.82, ns$ ) so the null hypothesis of no difference or congruence for the ITED posttest comparison of science scores was not rejected. The fifth hypothesis sub-question 4d was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 12 for the posttest comparison of ITED language arts scores were not statistically different ( $X^2(2, N = 75) = 2.88, ns$ ) so the null hypothesis of no difference or congruence for the ITED posttest comparison of language arts scores was not rejected.

Table 13 displays NWEA pretest and posttest reading comprehension RIT scores for individual eighth-grade students who participated in explicitly differentiated reading instruction groups.

#### **Research Question #6**

Table 14 displays beginning eighth-grade pretest NWEA reading RIT scores compared to ending eighth-grade posttest NWEA reading RIT scores for students who

participated in explicitly differentiated reading instruction groups. The sixth pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 14, the null hypothesis was rejected for the High Reading Ability group, the Middle Reading Ability group, and the Low Reading Ability group NWEA reading pretest-posttest comparisons. The pretest NWEA reading score for the High Reading Ability group ( $M = 231.40$ ,  $SD = 43.25$ ) compared to the posttest NWEA reading score ( $M = 235.72$ ,  $SD = 54.13$ ) was statistically significantly different in the direction of posttest NWEA reading score improvement,  $t(24) = 3.29$ ,  $p = .002$  (one-tailed),  $d = 0.77$ . The pretest NWEA reading score for the Middle Reading Ability group ( $M = 216.92$ ,  $SD = 45.99$ ) compared to the posttest NWEA reading score ( $M = 224.28$ ,  $SD = 58.04$ ) was statistically significantly different in the direction of posttest NWEA reading score improvement,  $t(24) = 5.46$ ,  $p = .0001$  (one-tailed),  $d = 1.02$ . The pretest NWEA reading score for the Low Reading Ability group ( $M = 207.08$ ,  $SD = 55.08$ ) compared to the posttest NWEA reading score ( $M = 212.00$ ,  $SD = 81.00$ ) was statistically significantly different in the direction of posttest NWEA reading score improvement,  $t(24) = 2.58$ ,  $p = .01$  (one-tailed),  $d = 0.59$ .

### **Research Question #7**

The analysis of research question 7 is displayed in Table 15. Table 15 displays High, Middle, and Low reading ability students who participated in explicitly differentiated reading instruction groups NWEA posttest reading comprehension improve or lose score frequencies and percents. The hypothesis sub-question 7a was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 15 for the posttest comparison of NWEA reading comprehension scores were not statistically different ( $X^2(2, N = 75) =$

1.10, *ns*) so the null hypothesis of no difference or congruence for the NWEA reading comprehension scores was not rejected.

Table 16 displays student pretest and posttest reading class grades reported on a 4.0 grading scale for individual eighth-grade students who participated in explicitly differentiated reading instruction groups.

### **Research Question #8**

The analysis of research question 8 is displayed in Table 17. Table 17 displays beginning eighth-grade pretest first trimester reading grades compared to posttest third trimester reading grades for students who participated in explicitly differentiated reading instruction groups. The eighth pretest-posttest hypothesis was tested using the dependent *t* test. As seen in Table 17, the null hypothesis was rejected for the High Reading Ability group, the Middle Reading Ability group, and the Low Reading Ability group reading grades pretest-posttest comparisons. The pretest reading grades for the High Reading Ability group ( $M = 3.21$ ,  $SD = 1.11$ ) compared to the posttest reading grades ( $M = 3.72$ ,  $SD = 0.25$ ) was statistically significantly different in the direction of posttest reading grades improvement,  $t(24) = 3.88$ ,  $p = .001$  (one-tailed),  $d = 0.65$ . The pretest reading grades for the Middle Reading Ability group ( $M = 2.40$ ,  $SD = 1.06$ ) compared to the posttest reading grades ( $M = 3.27$ ,  $SD = 0.43$ ) was statistically significantly different in the direction of posttest reading grades improvement,  $t(24) = 5.17$ ,  $p = .001$  (one-tailed),  $d = 1.03$ . The pretest reading grades for the Low Reading Ability group ( $M = 1.93$ ,  $SD = 1.01$ ) compared to the posttest reading grades ( $M = 2.44$ ,  $SD = 0.98$ ) was statistically significantly different in the direction of posttest reading grades improvement,  $t(24) = 2.41$ ,  $p = .01$  (one-tailed),  $d = 0.51$ .

Table 18 displays student pretest and posttest language arts class grades reported on a 4.0 grading scale for individual eighth-grade students who participated in explicitly differentiated reading instruction groups.

### **Research Question #9**

The analysis of research question 9 is displayed in Table 19. Table 19 displays beginning eighth-grade pretest first trimester language arts grades compared to posttest third trimester language arts grades for students who participated in explicitly differentiated reading instruction groups. The ninth pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 19, the null hypothesis was not rejected for the High Reading Ability group, the Middle Reading Ability group, and the Low Reading Ability group language arts grades pretest-posttest comparisons. The pretest language arts grades for the High Reading Ability group ( $M = 3.52$ ,  $SD = 0.51$ ) compared to the posttest language arts grades ( $M = 3.59$ ,  $SD = 0.40$ ) was not statistically significantly different in the direction of posttest language arts grades improvement,  $t(24) = 1.00$ ,  $p = .16$  (one-tailed),  $d = 0.15$ . The pretest language arts grades for the Middle Reading Ability group ( $M = 2.92$ ,  $SD = 0.60$ ) compared to the posttest language arts grades ( $M = 3.03$ ,  $SD = 0.54$ ) was not statistically significantly different in the direction of posttest language arts grades improvement,  $t(24) = 0.84$ ,  $p = .20$  (one-tailed),  $d = 0.19$ . The pretest language arts grades for the Low Reading Ability group ( $M = 1.67$ ,  $SD = 0.94$ ) compared to the posttest language arts grades ( $M = 1.59$ ,  $SD = 1.37$ ) was not statistically significantly different in the direction of posttest language arts grades digression,  $t(24) = -0.32$ ,  $p = .38$  (one-tailed),  $d = 0.51$ .

Table 20 displays student pretest and posttest science class grades reported on a 4.0 grading scale for individual eighth-grade students who participated in explicitly differentiated reading instruction groups.

### **Research Question #10**

The analysis of research question 10 is displayed in Table 21. Table 21 displays beginning eighth-grade pretest first trimester science grades compared to posttest third trimester science grades for students who participated in explicitly differentiated reading instruction groups. The tenth pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 21, the null hypothesis was not rejected for the High Reading Ability group and the Middle Reading Ability group science grades pretest-posttest comparisons. The null hypothesis was rejected for the Low Reading Ability group science grades pretest-posttest comparison. The pretest science grades for the High Reading Ability group ( $M = 3.55$ ,  $SD = 0.55$ ) compared to the posttest science grades ( $M = 3.47$ ,  $SD = 0.46$ ) was not statistically significantly different in the direction of posttest science grades digression,  $t(24) = -0.83$ ,  $p = .21$  (one-tailed),  $d = 0.15$ . The pretest science grades for the Middle Reading Ability group ( $M = 2.92$ ,  $SD = 1.47$ ) compared to the posttest science grades ( $M = 2.57$ ,  $SD = 0.74$ ) was not statistically significantly different in the direction of posttest science grades digression,  $t(24) = -1.31$ ,  $p = .10$  (one-tailed),  $d = 0.31$ . The pretest science grades for the Low Reading Ability group ( $M = 1.85$ ,  $SD = 1.96$ ) compared to the posttest science grades ( $M = 1.39$ ,  $SD = 1.34$ ) was statistically significantly different in the direction of posttest science grades digression,  $t(24) = -2.11$ ,  $p = .02$  (one-tailed),  $d = 0.27$ .

**Research Question #11**

The analyses of research question 11 are displayed in Tables 22 through 24. Table 22 displays High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups posttest reading grades improve or lose score frequencies and percents. High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups posttest language arts grades improve or lose score frequencies and percents are displayed in Table 23. Table 24 displays High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups posttest science grades improve or lose score frequencies and percents.

The eleventh hypothesis sub-question 11a was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 22 for the posttest comparison of reading grades were not statistically different ( $X^2(2, N = 75) = 5.97, ns$ ) so the null hypothesis of no difference or congruence for the posttest comparison of reading grades was not rejected. The eleventh hypothesis sub-question 11b was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 23 for the posttest comparison of language arts grades were not statistically different ( $X^2(2, N = 75) = 7.70, ns$ ) so the null hypothesis of no difference or congruence for the posttest comparison of language arts grades was not rejected. The eleventh hypothesis sub-question 11c was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 24 for the posttest comparison of science grades were statistically different ( $X^2(2, N = 75) = 11.98, p < .01$ ) so the null hypothesis of no difference or congruence for the posttest comparison of science grades was rejected.

Table 25 displays attendance pretest and posttest rates reported as full-day absences for individual eighth-grade students who participated in explicitly differentiated reading instruction groups.

### **Research Question #12**

The analysis of research question 12 is found in Table 26. Table 26 displays beginning eighth-grade pretest absence frequencies compared to ending eighth-grade posttest absence frequencies for students who participated in explicitly differentiated reading instruction groups. The twelfth pretest-posttest hypothesis was tested using the dependent  $t$  test. As seen in Table 26, the null hypothesis was not rejected for the High Reading Ability group absence frequencies pretest-posttest comparisons. The null hypothesis was rejected for the Middle Reading Ability group and the Low Reading Ability group absence frequencies pretest-posttest comparison. The pretest absence frequencies for the High Reading Ability group ( $M = 1.20$ ,  $SD = 3.67$ ) compared to the posttest absence frequencies ( $M = 2.08$ ,  $SD = 3.83$ ) was statistically significantly different in the direction of posttest increased absence frequencies,  $t(24) = 2.92$ ,  $p = .004$  (one-tailed),  $d = 0.45$ . The pretest absence frequencies for the Middle Reading Ability group ( $M = 1.60$ ,  $SD = 2.83$ ) compared to the posttest absence frequencies ( $M = 2.60$ ,  $SD = 7.25$ ) was statistically significantly different in the direction of posttest increased absence frequencies,  $t(24) = 2.01$ ,  $p = .03$  (one-tailed),  $d = 0.45$ . The pretest absence frequencies for the Low Reading Ability group ( $M = 2.20$ ,  $SD = 6.75$ ) compared to the posttest absence frequencies ( $M = 3.00$ ,  $SD = 5.42$ ) was not statistically significantly different in the direction of posttest increased absence frequencies,  $t(24) = 1.18$ ,  $p = .13$  (one-tailed),  $d = 0.32$ .

**Research Question #13**

The analyses of research question 13 are displayed in Table 27. Table 27 displays High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups posttest attendance improve or lose absence frequencies and percents.

The thirteenth hypothesis sub-question 13a was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 27 for the posttest comparison of absence frequencies were not statistically different ( $X^2(2, N = 75) = 0.42, ns$ ) so the null hypothesis of no difference or congruence for the posttest comparison of reading grades was not rejected.

Table 28 displays school engagement posttest rates reported as participation in sports, arts, and organizations for individual eighth-grade students who participated in explicitly differentiated reading instruction groups.

**Research Question #14**

The analyses of research question 14 are displayed in Table 29. Table 29 displays High, Middle, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups posttest school engagement in sports, arts, and organizations improve or lose absence.

The fourteenth hypothesis sub-question 14a was tested using chi-square ( $X^2$ ). The results of  $X^2$  displayed in Table 29 for the posttest comparison of school engagement rates were not statistically different ( $X^2(2, N = 75) = 10.63, ns$ ) so the null hypothesis of no difference or congruence for the posttest comparison of reading grades was not rejected.

Table 1

*Demographic Information of Individual High Reading Ability Group Eighth-Grade Students Who Participated in the Explicitly Differentiated Reading Instruction Groups Intervention*

Student Number	Gender	Ethnicity	Free or Reduced Price Lunch Program	Special Education
1.	Male	Caucasian	No	No
2.	Male	Black	No	No
3.	Female	Caucasian	No	No
4.	Female	Caucasian	No	No
5.	Male	Caucasian	No	No
6.	Female	Caucasian	No	No
7.	Male	Caucasian	Yes	No
8.	Male	Caucasian	No	No
9.	Male	Caucasian	No	No
10.	Male	Caucasian	No	No
11.	Female	Caucasian	No	No
12.	Female	Caucasian	No	No
13.	Male	Caucasian	No	No
14.	Female	Caucasian	No	No
15.	Female	Caucasian	Yes	No
16.	Male	Caucasian	No	No
17.	Female	Caucasian	No	No
18.	Male	Caucasian	No	No
19.	Male	Caucasian	No	No
20.	Male	Caucasian	No	No
21.	Female	Hispanic	No	No
22.	Female	Caucasian	No	No
23.	Male	Caucasian	Yes	No
24.	Male	Caucasian	No	No
25.	Male	Caucasian	No	No

*Note.* All students were in attendance in the research school district seventh-grade through ninth-grade.

Table 2

*Demographic Information of Individual Middle Reading Ability Group Eighth-Grade Students Who Participated in the Explicitly Differentiated Reading Instruction Groups Intervention*

Student Number	Gender	Ethnicity	Free or Reduced Price Lunch Program	Special Education
1.	Female	Caucasian	No	No
2.	Female	Caucasian	Yes	No
3.	Female	Caucasian	No	No
4.	Male	Caucasian	No	No
5.	Male	Caucasian	No	No
6.	Female	Caucasian	No	No
7.	Female	Caucasian	No	No
8.	Female	Caucasian	No	No
9.	Male	Caucasian	No	No
10.	Female	Caucasian	No	No
11.	Male	Caucasian	No	No
12.	Female	Caucasian	No	No
13.	Male	Caucasian	No	No
14.	Female	Caucasian	No	No
15.	Female	Caucasian	No	No
16.	Male	Caucasian	No	No
17.	Female	Caucasian	Yes	No
18.	Female	Hispanic	Yes	No
19.	Female	Caucasian	No	No
20.	Male	Caucasian	No	No
21.	Female	Caucasian	No	No
22.	Female	Hispanic	Yes	No
23.	Male	Caucasian	No	No
24.	Female	Caucasian	Yes	No
25.	Female	Caucasian	No	No

*Note.* All students were in attendance in the research school district seventh-grade through ninth-grade.

Table 3

*Demographic Information of Individual Low Reading Ability Group Eighth-Grade Students Who Participated in the Explicitly Differentiated Reading Instruction Groups Intervention*

Student Number	Gender	Ethnicity	Free or Reduced Price Lunch Program	Special Education
1.	Female	Hispanic	Yes	No
2.	Female	Caucasian	No	No
3.	Female	Caucasian	No	No
4.	Male	Caucasian	No	No
5.	Male	Caucasian	Yes	No
6.	Female	Caucasian	No	No
7.	Male	Asian	No	No
8.	Female	Caucasian	Yes	Yes
9.	Female	Caucasian	Yes	No
10.	Female	Caucasian	No	Yes
11.	Male	Hispanic	No	Yes
12.	Male	Hispanic	No	No
13.	Male	Caucasian	No	No
14.	Female	Caucasian	Yes	No
15.	Female	Caucasian	No	No
16.	Male	Caucasian	Yes	No
17.	Male	Caucasian	Yes	Yes
18.	Male	Hispanic	Yes	No
19.	Female	Caucasian	Yes	No
20.	Female	Caucasian	Yes	No
21.	Female	Caucasian	No	Yes
22.	Male	Caucasian	Yes	Yes
23.	Female	Caucasian	No	No
24.	Female	Caucasian	No	No
25.	Female	Caucasian	No	Yes

*Note.* All students were in attendance in the research school district seventh-grade through ninth-grade.

Table 4

*ITBS Pretest and ITED Posttest Reading Comprehension Scores Converted to Normal Curve Equivalent Scores for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Reading Comprehension		Middle Reading Ability Reading Comprehension		Low Reading Ability Reading Comprehension	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	83.24	99.74	40.59	51.61	16.76	41.18
2.	83.24	81.55	16.76	77.40	26.90	22.60
3.	72.16	61.21	60.60	59.41	43.47	31.23
4.	72.16	69.57	29.60	65.10	40.59	36.25
5.	72.16	75.12	54.32	65.10	26.90	34.20
6.	64.42	67.24	53.23	46.23	33.49	31.23
7.	93.91	93.91	37.54	31.23	48.39	53.23
8.	70.40	81.55	48.39	49.46	54.32	51.61
9.	93.91	65.10	41.76	51.61	41.76	38.17
10.	83.24	77.40	39.40	41.18	21.33	6.09
11.	67.99	85.17	40.59	55.42	21.33	34.20
12.	99.74	81.55	43.47	28.74	35.58	31.23
13.	62.46	67.24	23.78	51.61	26.90	34.20
14.	72.16	67.24	64.42	51.61	32.01	31.23
15.	53.23	46.23	55.97	41.18	23.78	41.18
16.	64.42	65.10	60.60	77.40	46.77	31.23
17.	62.46	57.10	46.77	44.58	16.76	19.96
18.	70.40	69.57	57.66	51.61	35.58	19.96
19.	99.74	85.17	72.16	57.10	16.76	36.25
20.	70.40	77.40	29.60	39.40	46.77	46.23
21.	40.59	36.25	54.32	57.10	26.90	22.60
22.	77.40	67.24	35.58	39.40	21.33	12.57
23.	80.04	67.24	45.68	51.61	33.49	22.60
24.	64.42	57.10	48.39	53.23	33.49	49.46
25.	80.04	85.17	54.32	60.60	26.90	31.23

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 5

*ITBS Pretest and ITED Posttest Reading Vocabulary Scores Converted to Normal Curve Equivalent Scores for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Reading Vocabulary		Middle Reading Ability Reading Vocabulary		Low Reading Ability Reading Vocabulary	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	99.74	90.21	44.58	50.00	40.00	38.79
2.	80.04	71.26	57.66	57.10	34.90	42.90
3.	65.10	71.26	57.66	59.41	34.90	45.68
4.	77.40	71.26	34.90	47.85	24.88	33.49
5.	72.16	63.75	48.39	63.75	44.58	45.68
6.	62.46	61.21	65.10	61.21	28.74	40.59
7.	80.04	99.74	42.34	45.68	16.76	38.79
8.	77.40	90.21	51.07	59.41	34.90	31.23
9.	75.12	83.24	53.23	50.00	42.34	40.59
10.	67.99	74.08	42.34	51.61	48.39	33.49
11.	75.12	71.26	37.54	61.21	21.33	24.88
12.	87.43	87.43	59.41	42.90	32.01	44.58
13.	69.57	83.24	40.00	66.51	24.88	42.90
14.	69.57	53.23	57.66	59.41	21.33	27.84
15.	72.16	59.41	48.39	47.85	34.90	42.90
16.	75.12	87.43	44.58	51.61	37.54	54.86
17.	57.66	59.41	53.23	40.59	21.33	21.33
18.	81.55	74.08	55.42	61.21	21.33	21.33
19.	65.10	90.21	48.39	53.23	40.00	44.58
20.	80.04	71.26	24.88	50.00	46.77	45.68
21.	57.66	61.21	48.39	51.61	34.90	36.25
22.	87.43	69.57	42.34	42.90	48.39	40.59
23.	66.51	75.12	72.16	68.77	28.74	31.23
24.	55.42	50.00	28.74	36.25	42.34	36.25
25.	77.40	83.24	72.16	68.77	42.34	44.58

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 6

*ITBS Pretest and ITED Posttest Science Scores Converted to Normal Curve Equivalent Scores for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Science		Middle Reading Ability Science		Low Reading Ability Science	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	99.74	99.74	51.61	56.53	51.61	61.83
2.	67.24	85.17	70.40	60.00	40.59	21.33
3.	81.55	90.21	65.10	63.75	40.59	43.47
4.	67.24	72.16	42.34	77.40	38.79	46.23
5.	81.55	72.16	63.10	67.24	46.23	54.86
6.	53.23	67.24	54.86	37.54	46.23	21.33
7.	90.21	99.74	50.00	46.23	40.59	34.20
8.	77.40	93.91	63.10	48.93	46.23	46.23
9.	67.24	81.55	42.34	46.23	12.57	40.59
10.	56.53	72.16	46.23	46.23	48.39	25.92
11.	70.40	70.40	24.88	40.59	31.23	16.76
12.	99.74	80.04	48.39	48.93	36.25	32.01
13.	60.60	68.77	40.59	46.23	40.59	43.47
14.	50.00	65.10	63.10	54.86	31.23	16.76
15.	50.00	43.47	48.39	54.86	36.25	43.47
16.	70.40	80.04	58.82	74.08	99.74	21.33
17.	60.60	65.10	54.86	50.54	40.59	25.92
18.	85.17	93.91	63.10	65.10	31.21	16.76
19.	77.40	74.08	65.10	74.08	24.88	37.54
20.	74.08	90.21	21.33	25.92	63.10	56.53
21.	63.10	67.24	54.86	72.16	24.88	25.92
22.	70.40	61.83	51.61	48.93	31.23	21.33
23.	65.10	67.24	81.55	54.86	42.34	30.43
24.	53.23	68.77	53.23	50.54	48.39	50.54
25.	90.21	99.74	63.10	59.41	36.25	25.92

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 7

*ITBS Pretest and ITED Posttest Language Arts Scores Converted to Normal Curve Equivalent Scores for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Language Arts		Middle Reading Ability Language Arts		Low Reading Ability Language Arts	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	76.22	72.16	52.69	52.69	45.14	26.90
2.	63.10	80.04	67.99	80.04	44.58	44.58
3.	65.10	90.21	55.42	57.66	48.93	42.90
4.	68.77	80.04	43.47	63.75	27.84	28.74
5.	48.93	63.75	46.77	49.46	40.59	42.90
6.	93.91	75.12	63.10	51.07	28.74	31.23
7.	77.40	85.17	45.68	39.40	55.97	54.86
8.	99.74	85.17	58.82	51.07	30.43	22.60
9.	67.99	75.12	28.74	44.58	40.59	42.90
10.	67.99	59.41	54.32	59.41	44.58	12.57
11.	78.67	65.10	42.90	52.69	23.78	12.57
12.	90.21	99.74	53.77	41.18	47.31	22.60
13.	62.46	63.75	57.10	55.97	38.79	41.18
14.	66.51	57.66	78.67	65.10	39.40	38.17
15.	67.99	49.46	61.83	49.46	30.43	38.17
16.	68.77	65.10	68.77	77.40	39.40	46.23
17.	68.77	70.40	46.77	49.46	32.01	36.90
18.	68.77	77.40	52.15	55.97	60.00	33.49
19.	47.85	70.40	68.77	70.40	44.58	35.58
20.	63.10	72.16	21.33	32.23	55.42	49.46
21.	68.77	49.46	52.15	61.83	31.23	28.74
22.	93.91	77.40	60.00	51.07	36.25	22.60
23.	99.74	77.40	42.90	49.46	26.90	22.60
24.	63.10	57.66	51.61	57.66	50.00	38.17
25.	69.57	90.21	55.42	52.69	39.86	34.01

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 8

*Beginning Eighth-Grade Pretest ITBS Compared to Beginning Ninth-Grade Posttest ITED Normal Curve Equivalent Scores for Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

Source	Pretest ITBS Scores		Posttest ITED Scores		<i>d</i>	<i>t</i> <sup>a</sup>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
<u>Reading Comprehension</u>							
A	74.17	(13.90)	71.49	(14.18)	0.19	-1.29	.10 <sup>†</sup>
B	46.22	(13.15)	51.96	(11.99)	0.46	1.69	.05 <sup>†</sup>
C	31.93	(10.75)	32.40	(11.55)	0.04	0.21	.42 <sup>†</sup>
<u>Reading Vocabulary</u>							
A	73.04	(9.79)	74.46	(13.23)	0.12	0.64	.26 <sup>†</sup>
B	49.20	(11.77)	53.95	(8.88)	0.46	2.28	.02 <sup>†</sup>
C	33.94	(9.47)	38.04	(8.30)	0.46	2.41	.01**
<u>Language Arts</u>							
A	72.29	(13.77)	72.38	(12.64)	0.00	0.03	.49 <sup>†</sup>
B	53.25	(12.41)	54.83	(11.03)	0.13	0.85	.20 <sup>†</sup>
C	39.86	(9.81)	34.01	(10.88)	0.56	-2.78	.01**
<u>Science</u>							
A	71.29	(14.41)	77.20	(14.08)	0.41	3.04	.01**
B	53.68	(13.28)	54.85	(12.44)	0.09	0.47	.32 <sup>†</sup>
C	41.20	(15.85)	35.38	(13.11)	0.40	-1.48	.08 <sup>†</sup>

*Note.* A = High Reading Ability Group; B = Middle Reading Ability Group; and C = Low Reading Ability Group.

<sup>a</sup>Negative *t* result is in the direction of lower posttest mean scores.

<sup>†</sup>*ns* (the significance level for this study was  $p < .01$ ). \*\* $p < .01$ .

Table 9

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups ITED Posttest Reading Comprehension Improve or Lose Score Frequencies and Percents*

ITED Reading Comprehension	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	10	(40)	16	(64)	10	(40)	
Lose	15	(60)	9	(36)	15	(60)	
Totals	25	(100)	25	(100)	25	(100)	3.78 <sup>at</sup>

*Note.* See Table 4 for students' ITED Reading Comprehension scores.

<sup>a</sup>Observed versus expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*

Table 10

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups ITED Posttest Reading Vocabulary Improve or Lose Score Frequencies and Percents*

ITED Reading Vocabulary	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	13	(52)	17	(68)	18	(72)	
Lose	12	(48)	8	(32)	7	(28)	
Totals	25	(100)	25	(100)	25	(100)	2.42 <sup>at</sup>

*Note.* See Table 5 for students' ITED Reading Vocabulary scores.

<sup>a</sup>Observed versus expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*



Table 12

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups ITED Posttest Language Arts Improve or Lose Score Frequencies and Percents*

ITED Language Arts	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	13	(52)	16	(64)	10	(40)	
Lose	12	(48)	9	(36)	15	(60)	
Totals	25	(100)	25	(100)	25	(100)	2.88 <sup>at</sup>

*Note.* See Table 7 for students' ITED Language Arts scores.

<sup>a</sup>Observed versus expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*

Table 13

*NWEA Pretest and Posttest Reading Comprehension RIT Scores for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Comprehension		Middle Reading Ability Comprehension		Low Reading Ability Comprehension	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	247	242	214	231	212	217
2.	231	235	227	223	191	214
3.	231	243	223	238	213	199
4.	234	244	215	215	201	215
5.	230	235	219	226	209	213
6.	227	225	211	224	203	213
7.	235	239	214	218	217	230
8.	241	247	220	229	206	208
9.	234	233	210	220	217	206
10.	228	234	210	216	205	224
11.	222	242	212	226	200	211
12.	240	241	211	227	221	226
13.	232	242	211	224	211	207
14.	225	230	223	239	202	216
15.	225	217	227	225	216	211
16.	226	240	219	232	197	210
17.	232	241	223	225	206	199
18.	233	240	227	226	212	214
19.	235	235	228	234	213	218
20.	227	234	207	215	212	212
21.	217	221	212	225	195	192
22.	229	234	208	210	201	205
23.	238	240	224	220	204	199
24.	227	229	210	210	207	220
25.	239	230	218	229	206	221

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 14

*Beginning Eighth-Grade Pretest NWEA Reading RIT Scores Compared to Ending Eighth-Grade Posttest NWEA Reading RIT Scores for Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

Source	Pretest NWEA Reading RIT Scores		Posttest NWEA Reading RIT Scores		<i>d</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
A	231.40	(43.25)	235.72	(54.13)	0.77	3.29	.002**
B	216.92	(45.99)	224.28	(58.04)	1.02	5.46	.0001***
C	207.08	(55.08)	212.00	(81.00)	0.59	2.58	.01**

*Note.* A = High Reading Ability Group; B = Middle Reading Ability Group; and C = Low Reading Ability Group.

\*\**p* < .01. \*\*\**p* < .001.

Table 15

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups NWEA Posttest Reading Comprehension Improve or Lose Score Frequencies and Percents*

NWEA Reading Comprehension	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	20	(80)	21	(84)	18	(72)	
Lose	5	(20)	4	(16)	7	(28)	
Totals	25	(100)	25	(100)	25	(100)	1.10 <sup>at</sup>

*Note.* See Table 13 for students' NWEA Reading scores.

<sup>a</sup>Observed versus expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*

Table 16

*Student Pretest and Posttest Reading Class Grades Reported on a 4.0 Grading Scale for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Reading Class Grades		Middle Reading Ability Reading Class Grades		Low Reading Ability Reading Class Grades	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	2.667	3.333	3.333	4.000	3.000	4.000
2.	3.667	4.000	0.000	3.000	2.000	3.000
3.	3.000	4.000	3.333	3.667	2.000	1.000
4.	4.000	4.000	2.667	2.000	2.000	3.000
5.	0.000	2.333	2.000	2.667	0.000	1.000
6.	3.333	4.000	2.667	3.667	2.000	2.667
7.	3.333	4.000	3.000	3.333	3.000	3.333
8.	3.667	4.000	3.000	3.333	0.000	3.000
9.	4.000	4.000	0.000	2.000	1.333	1.667
10.	4.000	4.000	3.000	3.000	2.000	2.667
11.	4.000	4.000	0.000	2.333	1.000	2.333
12.	4.000	4.000	3.000	3.000	2.000	2.667
13.	2.667	3.333	3.000	4.000	3.333	4.000
14.	3.000	3.333	3.000	4.000	1.667	2.333
15.	1.000	3.000	3.333	3.333	3.333	4.000
16.	1.333	2.667	3.000	4.000	1.000	2.333
17.	3.333	4.000	2.000	3.000	1.667	1.000
18.	4.000	4.000	3.000	3.667	2.333	3.667
19.	4.000	4.000	3.333	4.000	2.333	0.667
20.	3.333	4.000	2.333	3.333	3.000	3.000
21.	3.000	3.000	1.333	3.333	1.667	2.000
22.	3.667	4.000	2.000	3.667	0.000	1.667
23.	4.000	4.000	2.667	3.667	2.667	2.333
24.	2.667	4.000	2.333	2.000	3.333	1.333
25.	4.000	4.000	2.667	4.000	2.333	3.000

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 17

*Beginning Eighth-Grade Pretest First Trimester Reading Grades Compared to Posttest Third Trimester Reading Grades for Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

Source	Pretest Reading Grades		Posttest Reading Grades		<i>d</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
A	3.21	(1.11)	3.72	(0.25)	0.65	3.88	.001***
B	2.40	(1.06)	3.27	(0.43)	1.03	5.17	.001***
C	1.93	(1.01)	2.44	(0.98)	0.51	2.41	.01**

*Note.* A = High Reading Ability Group; B = Middle Reading Ability Group; and C = Low Reading Ability Group.

\*\**p* < .01. \*\*\**p* < .001.

Table 18

*Student Pretest and Posttest Language Arts Class Grades Reported on a 4.0 Grading Scale for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Language Arts Class Grades		Middle Reading Ability Language Arts Class Grades		Low Reading Ability Language Arts Class Grades	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	2.667	2.667	3.667	4.000	2.333	4.000
2.	4.000	4.000	2.667	3.667	2.000	2.000
3.	3.667	4.000	4.000	3.333	1.333	0.000
4.	3.667	3.667	3.000	1.667	2.000	2.000
5.	2.000	2.667	2.000	2.000	0.000	0.000
6.	3.667	4.000	3.333	3.667	2.000	1.667
7.	4.000	4.000	2.333	2.000	2.333	2.000
8.	4.000	4.000	3.000	3.000	1.000	1.000
9.	4.000	4.000	1.667	3.000	2.000	0.000
10.	4.000	4.000	3.000	2.333	2.667	0.667
11.	4.000	4.000	1.000	2.000	1.667	2.667
12.	4.000	4.000	3.000	4.000	2.667	2.000
13.	3.333	3.000	3.000	3.000	3.667	3.000
14.	1.667	2.333	3.333	3.000	1.333	0.000
15.	2.000	2.333	3.333	3.000	2.667	2.333
16.	3.000	2.333	4.000	4.000	2.333	2.333
17.	3.333	4.000	3.000	2.667	0.000	3.333
18.	4.000	4.000	3.667	4.000	2.000	2.667
19.	4.000	4.000	3.667	3.333	0.000	0.000
20.	4.000	4.000	2.333	2.000	2.000	1.333
21.	4.000	3.333	1.333	2.333	2.000	2.333
22.	4.000	4.000	3.333	3.333	1.000	0.667
23.	4.000	4.000	3.333	3.667	0.000	1.667
24.	3.333	3.333	3.000	3.000	2.000	0.000
25.	3.667	4.000	3.000	3.667	0.667	2.000

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 19

*Beginning Eighth-Grade Pretest First Trimester Language Arts Grades Compared to Posttest Third Trimester Language Arts Grades for Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

Source	Pretest Language Arts Grades		Posttest Language Arts Grades		<i>d</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
A	3.52	(0.51)	3.59	(0.40)	0.15	1.00	.16 <sup>†</sup>
B	2.92	(0.60)	3.03	(0.54)	0.19	0.84	.20 <sup>†</sup>
C	1.67	(0.94)	1.59	(1.37)	0.06	-0.32	.38 <sup>†</sup>

*Note.* A = High Reading Ability Group; B = Middle Reading Ability Group; and C = Low Reading Ability Group.

<sup>a</sup>Negative *t* results are in the direction of lower posttest scores.

<sup>†</sup>*ns.*

Table 20

*Student Pretest and Posttest Science Class Grades Reported on a 4.0 Grading Scale for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Science Class Grades		Middle Reading Ability Science Class Grades		Low Reading Ability Science Class Grades	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	3.667	3.667	4.000	3.667	3.000	3.667
2.	3.667	3.333	2.000	3.667	0.000	1.333
3.	3.000	3.667	4.000	2.667	0.667	0.000
4.	4.000	4.000	4.000	3.000	3.000	2.000
5.	1.000	1.333	3.333	2.333	0.000	0.000
6.	4.000	3.667	4.000	3.333	0.000	1.333
7.	4.000	4.000	2.333	2.333	2.667	2.000
8.	3.667	4.000	3.667	2.333	1.333	0.000
9.	4.000	4.000	0.667	3.000	0.000	0.000
10.	4.000	4.000	2.333	1.667	4.000	2.000
11.	4.000	3.333	0.000	0.000	2.000	0.667
12.	4.000	4.000	3.333	2.667	0.000	2.000
13.	4.000	2.667	3.333	2.333	2.333	2.667
14.	3.000	2.333	4.000	1.667	1.667	0.000
15.	2.333	2.667	3.000	2.667	3.333	3.000
16.	4.000	3.000	4.000	4.000	2.000	0.667
17.	3.667	3.000	2.667	1.667	0.667	0.000
18.	4.000	4.000	3.000	2.333	2.333	1.333
19.	3.333	3.667	4.000	3.000	0.667	0.000
20.	4.000	4.000	2.000	2.667	2.667	2.333
21.	2.333	3.000	3.333	2.667	0.667	0.000
22.	4.000	4.000	3.000	2.000	4.000	1.667
23.	4.000	4.000	4.000	2.667	4.000	2.333
24.	4.000	4.000	3.000	2.000	3.333	2.000
25.	3.000	3.333	0.000	4.000	3.000	2.667

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 21

*Beginning Eighth-Grade Pretest First Trimester Science Grades Compared to Posttest Third Trimester Science Grades for Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

Source	Pretest Science Grades		Posttest Science Grades		<i>d</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
A	3.55	(0.55)	3.47	(0.46)	0.15	-0.83	.21 <sup>†</sup>
B	2.92	(1.47)	2.57	(0.74)	0.31	-1.31	.10 <sup>†</sup>
C	1.85	(1.96)	1.39	(1.34)	0.27	-2.11	.02 <sup>†</sup>

*Note.* A = High Reading Ability Group; B = Middle Reading Ability Group; and C = Low Reading Ability Group.

<sup>a</sup>Negative *t* results are in the direction of lower posttest scores.

<sup>†</sup>*ns* (the significance level for this study was  $p < .01$ ).

Table 22

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups Posttest Reading Grades Improve or Lose Score Frequencies and Percents*

Reading Grades	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	25	(100)	23	(92)	20	(80)	
Lose	0	(0)	2	(8)	5	(20)	
Totals	25	(100)	25	(100)	25	(100)	5.97 <sup>at</sup>

*Note.* See Table 16 for students' Reading grades.

<sup>a</sup>Observed verses expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*

Table 23

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups Posttest Language Arts Grades Improve or Lose Score Frequencies and Percents*

Language Arts Grades	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	22	(88)	16	(64)	13	(52)	
Lose	3	(12)	9	(36)	12	(48)	
Totals	25	(100)	25	(100)	25	(100)	7.70 <sup>at</sup>

*Note.* See Table 18 for students' Language Arts grades.

<sup>a</sup>Observed versus expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*

Table 24

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups Posttest Science Grades Improve or Lose Score Frequencies and Percents*

Science Grades	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	18	(72)	7	(28)	8	(32)	
Lose	7	(28)	18	(72)	17	(68)	
Totals	25	(100)	25	(100)	25	(100)	11.98 <sup>a**</sup>

*Note.* See Table 20 for students' Science grades.

<sup>a</sup>Observed versus expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

\*\* $p < .01$ .

Table 25

*Attendance Pretest and Posttest Rates Reported as Full-day Absences for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability Absences		Middle Reading Ability Absences		Low Reading Ability Absences	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
1.	1	3	0	0	9	3
2.	4	4	6	4	1	5
3.	2	0	1	5	0	7
4.	1	0	0	1	0	0
5.	0	4	1	1	1	6
6.	0	2	1	1	6	0
7.	1	0	2	0	1	2
8.	0	1	3	10	0	2
9.	0	1	1	0	0	1
10.	1	2	2	2	0	1
11.	0	2	3	3	0	2
12.	1	3	0	0	1	4
13.	1	1	3	5	0	2
14.	5	4	1	0	2	3
15.	1	2	1	5	5	5
16.	2	0	0	0	6	4
17.	0	1	5	5	3	4
18.	0	0	0	5	1	1
19.	0	3	0	0	8	3
20.	0	1	0	1	1	4
21.	8	9	4	5	2	1
22.	0	3	0	3	3	2
23.	2	3	2	1	1	2
24.	0	1	1	7	2	10
25.	0	2	3	1	2	1

*Note.* Student numbers correspond with Tables 1, 2, and 3.

Table 26

*Beginning Eighth-Grade Pretest Absence Frequencies Compared to Ending Eighth-Grade Posttest Absence Frequencies for Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

Source	Pretest Absence Frequencies		Posttest Absence Frequencies		<i>d</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
A	1.20	(3.67)	2.08	(3.83)	0.45	2.92	.004**
B	1.60	(2.83)	2.60	(7.25)	0.45	2.01	.03 <sup>†</sup>
C	2.20	(6.75)	3.00	(5.42)	0.32	1.18	.13 <sup>†</sup>

*Note.* A = High Reading Ability Group; B = Middle Reading Ability Group; and C = Low Reading Ability Group.

<sup>a</sup>Positive *t* results are in the direction of higher posttest absence frequencies.

<sup>†</sup>*ns* (the significance level for this study was  $p < .01$ ). \*\* $p < .01$ .

Table 27

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups Posttest Attendance Improve or Lose Absence Frequencies and Percents*

Absence Frequencies	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Improve	5	(20)	6	(24)	7	(28)	
Lose	20	(80)	19	(76)	18	(72)	
Totals	25	(100)	25	(100)	25	(100)	0.42 <sup>at</sup>

*Note.* See Table 25 for students' Absence Frequencies.

<sup>a</sup>Observed verses expected cell percents used for calculation with  $df = 2$  and a tabled value = 9.210 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*

Table 28

*School Engagement Posttest Rates Reported as Participation in Sports, Arts, and Organizations for Individual Eighth-Grade Students Who Participated in Explicitly Differentiated Reading Instruction Groups*

	High Reading Ability School Engagement Rates			Middle Reading Ability School Engagement Rates			Low Reading Ability School Engagement Rates		
	A	B	C	A	B	C	A	B	C
1.	1	1	0	2	1	0	0	0	0
2.	3	0	0	0	0	0	2	0	0
3.	0	0	0	1	0	0	0	0	0
4.	3	0	0	2	0	0	2	0	0
5.	0	0	0	3	0	0	0	0	0
6.	1	2	0	1	1	0	0	0	0
7.	2	0	0	2	1	0	1	0	0
8.	2	0	0	2	0	2	0	0	0
9.	2	1	2	1	0	0	0	0	0
10.	0	1	2	1	0	0	0	0	0
11.	3	0	1	0	0	0	3	0	0
12.	2	0	2	1	0	0	1	0	0
13.	1	1	0	1	1	0	2	0	0
14.	0	1	0	0	0	0	0	0	0
15.	0	0	0	2	0	0	0	0	0
16.	0	0	0	1	0	1	0	0	0
17.	0	0	0	0	0	0	1	0	0
18.	3	0	0	0	0	0	0	0	0
19.	2	0	0	3	1	1	1	0	0
20.	1	1	1	2	0	0	0	0	0
21.	0	0	0	2	0	0	1	0	0
22.	2	1	1	0	0	0	0	0	0
23.	4	1	1	0	0	0	0	0	0
24.	3	0	1	1	0	0	0	0	0
25.	0	1	0	0	0	0	0	0	0

*Note.* Student numbers correspond with Tables 1, 2, and 3. A = Sports; B = Arts; and C = Organizations.

Table 29

*High, Middle, and Low Reading Ability Students Who Participated in Explicitly Differentiated Reading Instruction Groups Posttest School Engagement in Sports, Arts, and Organizations Frequencies and Percents*

School Engagement	Explicitly differentiated reading instruction groups						$X^2$
	High Reading Ability		Middle Reading Ability		Low Reading Ability		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Sports	35	(58)	28	(76)	14	(100)	
Arts	11	(18)	5	(13)	0	(0)	
Organizations	14	(23)	4	(11)	0	(0)	
Totals	60	(100)	37	(100)	14	(100)	10.63 <sup>at</sup>

*Note.* See Table 28 for students' School Engagement Frequencies.

<sup>a</sup>Observed versus expected cell percents used for calculation with  $df = 4$  and a tabled value = 13.277 required to obtain an alpha level of .01, the threshold for statistical significance for this research question.

<sup>†</sup>*ns.*

## CHAPTER FIVE

### Conclusions and Discussion

The following conclusions may be drawn from the study for each of the fourteen research questions.

#### Research Question #1 Conclusion

Overall, pretest-posttest results indicated beginning eighth-grade pretest ITBS reading comprehension Normal Curve Equivalent scores compared to beginning ninth-grade posttest ITED reading comprehension Normal Curve Equivalent scores for High Reading Ability, Middle Reading Ability, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups were not statistically significantly different. Comparing High Reading Ability students' posttest ITED reading comprehension Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest reading comprehension Normal Curve Equivalent score mean of 71.49 is congruent with a Percentile Rank of 84, a Stanine Score of 7 (the lowest stanine of the above average range), and an achievement qualitative description of above average. Comparing Middle Reading Ability students' posttest ITED reading comprehension Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest reading comprehension Normal Curve Equivalent score mean of 51.96 is congruent with a Percentile Rank of 53, a Stanine Score of 5 (the middle stanine of the average range), and an achievement qualitative description of average. Comparing Low Reading Ability students' posttest ITED reading comprehension Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest

reading comprehension Normal Curve Equivalent score mean of 32.40 is congruent with a Percentile Rank of 19, a Stanine Score of 3 (the highest stanine of the below average range), and an achievement qualitative description of below average.

Finally, the High Reading Ability group lower posttest ITED reading comprehension score (-2.68) and the Middle Reading Ability group higher posttest ITED reading comprehension score (5.74) were measured within the above average and average ranges, respectively. However, the Low Reading Ability group higher posttest ITED reading comprehension score (0.47) was measured within the below average range. The pattern of above average, average, and below average range posttest reading comprehension score stability from pretest to posttest indicated that while the differentiated instruction groups did not result in statistically significant reading comprehension score improvement on this measure, it may be that from a psychometric perspective score stability represents improved, albeit not significantly so, learning over time as students must learn more for their norm-referenced test scores to stay the same. This finding should inform teachers who are working with Low Reading Ability students who may need more individual out loud reading time to ensure that decoding errors are not interfering with comprehension skill acquisition.

### **Research Question #2 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest ITBS reading vocabulary Normal Curve Equivalent scores compared to beginning ninth-grade posttest ITED reading vocabulary Normal Curve Equivalent scores for High Reading Ability, Middle Reading Ability, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups were not statistically significantly

different. Comparing High Reading Ability students' posttest ITED reading vocabulary Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest reading vocabulary Normal Curve Equivalent score mean of 74.46 is congruent with a Percentile Rank of 87, a Stanine Score of 7 (the lowest stanine of the above average range), and an achievement qualitative description of above average. Comparing Middle Reading Ability students' posttest ITED reading vocabulary Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest reading vocabulary Normal Curve Equivalent score mean of 54.00 is congruent with a Percentile Rank of 58, a Stanine Score of 6 (the highest stanine of the average range), and an achievement qualitative description of average. Comparing Low Reading Ability students' posttest ITED reading vocabulary Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest reading vocabulary Normal Curve Equivalent score mean of 38.04 is congruent with a Percentile Rank of 27, a Stanine Score of 4 (the lowest stanine of the average range), and an achievement qualitative description of average.

Finally, the High Reading Ability group higher posttest ITED reading vocabulary score (1.42), the Middle Reading Ability group higher posttest ITED reading vocabulary score (4.80), and the Low Reading Ability group higher posttest ITED reading vocabulary score (4.10) were all measured within the above average, average, and average ranges, respectively. The pattern of above average, average, and average range posttest reading vocabulary score improvement from pretest to posttest indicated that the differentiated instruction groups resulted in statistically significant reading vocabulary

score improvement on this measure for the Low Reading Ability group. This finding indicated that differentiated instructional groups for these students provided positive reading vocabulary skill development.

### **Research Question #3 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest ITBS language arts Normal Curve Equivalent scores compared to beginning ninth-grade posttest ITED language arts Normal Curve Equivalent scores for High Reading Ability, Middle Reading Ability, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups were not statistically significantly different in the direction of improvement for High and Middle Reading Ability group students but were significantly different in the direction of digression for the Low Reading Ability group students. Comparing High Reading Ability students' posttest ITED language arts Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest language arts Normal Curve Equivalent score mean of 72.38 is congruent with a Percentile Rank of 84, a Stanine Score of 7 (the lowest stanine of the above average range), and an achievement qualitative description of above average. Comparing Middle Reading Ability students' posttest ITED language arts Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest language arts Normal Curve Equivalent score mean of 54.83 is congruent with a Percentile Rank of 58, a Stanine Score of 6 (the highest stanine of the average range), and an achievement qualitative description of average. Comparing Low Reading Ability students' posttest ITED language arts Normal Curve Equivalent scores with other derived achievement scores puts their performance in

perspective. A posttest language arts Normal Curve Equivalent score mean of 34.01 is congruent with a Percentile Rank of 23, a Stanine Score of 4 (the lowest stanine of the average range), and an achievement qualitative description of average.

Finally, the High Reading Ability group higher posttest ITED language arts score (0.09) and the Middle Reading Ability group higher posttest ITED language arts score (1.58) were measured within the above average and average ranges, respectively. However, the Low Reading Ability group lower posttest ITED language arts score (-5.85) was measured within the average range. The pattern of above average and average range posttest language arts score range stability from pretest to posttest indicated that while the differentiated instruction groups did not result in statistically significant language arts score improvement on this measure, it may be that maintaining positive achievement score ranges is more important than the statistical significance of the change of the scores or the direction of their change.

#### **Research Question #4 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest ITBS science Normal Curve Equivalent scores compared to beginning ninth-grade posttest ITED science Normal Curve Equivalent scores for High Reading Ability students who participated in explicitly differentiated reading instruction groups were statistically significantly different in the direction of improvement. Pretest-posttest results indicated beginning eighth-grade pretest ITBS science Normal Curve Equivalent scores compared to beginning ninth-grade posttest ITED science Normal Curve Equivalent scores for

Middle Reading Ability group students, were not statistically significantly different in the direction of improvement. However, pretest-posttest results indicated beginning eighth-grade pretest ITBS science Normal Curve Equivalent scores compared to beginning ninth-grade posttest ITED science Normal Curve Equivalent scores for Low Reading Ability students were not statistically significantly different in the direction of digression. Comparing High Reading Ability students' posttest ITED science Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest science Normal Curve Equivalent score mean of 77.20 is congruent with a Percentile Rank of 76, a Stanine Score of 7 (the lowest stanine of the above average range), and an achievement qualitative description of above average. Comparing Middle Reading Ability students' posttest ITED science Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest science Normal Curve Equivalent score mean of 54.85 is congruent with a Percentile Rank of 58, a Stanine Score of 6 (the highest stanine of the average range), and an achievement qualitative description of average. Comparing Low Reading Ability students' posttest ITED science Normal Curve Equivalent scores with other derived achievement scores puts their performance in perspective. A posttest language arts Normal Curve Equivalent score mean of 35.38 is congruent with a Percentile Rank of 23, a Stanine Score of 4 (the lowest stanine of the average range), and an achievement qualitative description of average.

Finally, the High Reading Ability group higher posttest ITED science score (5.91) and the Middle Reading Ability group higher posttest ITED science score (1.17) were measured within the above average and average ranges, respectively. The Low Reading

Ability group lower posttest ITED science score (-5.82) was also measured within the average range. The pattern of above average and average range posttest science score range stability from pretest to posttest indicated that while the differentiated instruction groups did not result in statistically significant science score improvement for all groups on this measure, it may be that maintaining positive achievement score ranges is more important than the statistical significance of the change of the scores or the direction of their change.

### **Research Question #5 Conclusion**

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose ITED posttest reading comprehension score frequencies and percents. Percents for High Reading Ability students' ITED posttest reading comprehension score change was improve 40% and lose 60%. Percents for Middle Reading Ability students' ITED posttest reading comprehension score change was improve 64% and lose 36%, while percents for Low Reading Ability students' ITED posttest reading comprehension score change was improve 40% and lose 60%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest ITED reading comprehension assessment even though only the Middle Reading Ability group posted a higher improve score percent.

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose ITED posttest reading vocabulary score frequencies and percents. Percents for High Reading Ability students' ITED posttest reading vocabulary score change was

improve 52% and lose 48%. Percents for Middle Reading Ability students' ITED posttest reading vocabulary score change was improve 68% and lose 32%, while percents for Low Reading Ability students' ITED posttest reading vocabulary score change was improve 72% and lose 28%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest ITED reading vocabulary assessment particularly since the High Reading Ability, Middle Reading Ability, and Low Reading Ability groups each posted a higher improve score percent.

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose ITED posttest science score frequencies and percents. Percents for High Reading Ability students' ITED posttest science score change was improve 80% and lose 20%. Percents for Middle Reading Ability students' ITED posttest science score change was improve 56% and lose 44%, while percents for Low Reading Ability students' ITED posttest science score change was improve 48% and lose 52%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest ITED science assessment particularly since the High Reading Ability and the Middle Reading Ability groups both posted a higher improve score percent.

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose ITED posttest language arts score frequencies and percents. Percents for High Reading Ability students' ITED posttest language arts score change was improve 52%

and lose 48%. Percents for Middle Reading Ability students' ITED posttest language arts score change was improve 64% and lose 36%, while percents for Low Reading Ability students' ITED posttest language arts score change was improve 40% and lose 60%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest ITED language arts assessment particularly since the High Reading Ability and the Middle Reading Ability groups both posted a higher improve score percent.

Finally, posttest compared to posttest findings indicated that Middle Reading Ability students participating in the explicitly differentiated reading instruction groups had higher improve score percents for all four posttest-posttest ITED measures including reading comprehension, reading vocabulary, science, and language arts. High Reading Ability students participating in the explicitly differentiated reading instruction groups had higher improve score percents for three posttest-posttest ITED measures including reading vocabulary, science, and language arts. Low Reading Ability students participating in the explicitly differentiated reading instruction groups had higher improve score percents for one posttest-posttest ITED measure, reading vocabulary.

#### **Research Question #6 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest NWEA reading RIT scores compared to ending eighth-grade posttest NWEA reading RIT scores for High Reading Ability, Middle Reading Ability, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups were statistically significantly different in the direction of posttest score improvement. Comparing High Reading Ability students' posttest NWEA reading RIT scores with other derived

achievement scores puts their performance in perspective. A posttest reading RIT score mean of 235.72 is congruent with a Percentile Rank of 85, a Stanine Score of 7 (the lowest stanine of the above average range), and an achievement qualitative description of above average. Comparing Middle Reading Ability students' posttest NWEA reading RIT scores with other derived achievement scores puts their performance in perspective. A posttest reading RIT score mean of 224.28 is congruent with a Percentile Rank of 55, a Stanine Score of 5 (the middle stanine of the average range), and an achievement qualitative description of average. Comparing Low Reading Ability students' posttest NWEA reading RIT scores with other derived achievement scores puts their performance in perspective. A posttest reading RIT score mean of 212.00 is congruent with a Percentile Rank of 23, a Stanine Score of 4 (the lowest stanine of the average range), and an achievement qualitative description of average.

Finally, the High Reading Ability group higher posttest NWEA reading RIT score (5.42) was measured in the above average range. Middle Reading Ability group higher posttest NWEA reading RIT score (7.36) and the Low Reading Ability group higher posttest NWEA reading RIT score (4.92) were measured within the average range. The pattern of above average and average range higher posttest reading RIT score change from pretest to posttest across High, Middle, and Low Reading Ability groups indicated that the differentiated instruction groups resulted in statistically significant reading score improvement on this measure. This finding suggests the clearest evidence that the explicitly differentiated reading instruction groups resulted in skill development and test score improvement for students of all reading ability levels.

**Research Question #7 Conclusion**

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose NWEA posttest reading score frequencies and percents. Percents for High Reading Ability students NWEA posttest reading score change was improve 80% and lose 20%. Percents for Middle Reading Ability students NWEA posttest reading score change was improve 84% and lose 16%, while percents for Low Reading Ability students NWEA posttest reading score change was improve 72% and lose 28%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest NWEA reading assessment particularly since the High Reading Ability, Middle Reading Ability, and Low Reading Ability groups each posted a higher improve score percent.

Finally, posttest compared to posttest findings indicated that Middle Reading Ability students participating in the explicitly differentiated reading instruction groups had the highest improve score percents (84) for NWEA reading. High Reading Ability students participating in the explicitly differentiated reading instruction groups had the next highest improve score percents (80) for NWEA reading followed by the Low Reading Ability students participating in the explicitly differentiated reading instruction groups who had an improve score percent of 72 for NWEA reading.

**Research Question #8 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest reading grades compared to ending eighth-grade posttest reading grades for High Reading Ability, Middle Reading Ability, and Low Reading Ability students who participated in

explicitly differentiated reading instruction groups were statistically significantly different in the direction of posttest reading grades improvement. Translating High Reading Ability students' posttest reading grades to industry-standard letter grades puts their performance in perspective. A posttest reading grade mean of 3.72 equates to a letter grade of "A" and an achievement qualitative description of above average. Translating Middle Reading Ability students' posttest reading grades to industry-standard letter grades puts their performance in perspective. A posttest reading grade mean of 3.27 equates to a letter grade of "B" and an achievement qualitative description of above average. Translating Low Reading Ability students' posttest reading grades to industry-standard letter grades puts their performance in perspective. A posttest reading grade mean of 2.44 equates to a letter grade of "C+" and an achievement qualitative description of average.

Finally, the High Reading Ability group higher posttest reading grades (0.51) and the Middle Reading Ability group higher posttest reading grades (0.87) were measured within the above average range. The Low Reading Ability group higher posttest reading grades (0.51) was measured within the average range. The pattern of above average and average range posttest reading grades improvement from pretest to posttest and the statistically significantly improved reading grade change across High, Middle, and Low Reading Ability groups indicated that the differentiated instruction groups resulted in statistically significant reading skills improvement as measured at the classroom level. This finding suggests that the explicitly differentiated reading instruction groups resulted in significantly improved reading classroom performance.

**Research Question #9 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest language arts grades compared to ending eighth-grade posttest language arts grades for High Reading Ability and Middle Reading Ability students who participated in explicitly differentiated reading instruction groups were not statistically significantly different in the direction of posttest language arts grades improvement. Pretest-posttest results indicated beginning eighth-grade pretest language arts grades compared to ending eighth-grade posttest language arts grades for Low Reading Ability students who participated in explicitly differentiated reading instruction groups were not statistically significantly different in the direction of posttest language arts grades digression. Translating High Reading Ability students' posttest language arts grades to industry-standard letter grades puts their performance in perspective. A posttest language arts grade mean of 3.59 equates to a letter grade of “B+” and an achievement qualitative description of above average. Translating Middle Reading Ability students' posttest language arts grades to industry-standard letter grades puts their performance in perspective. A posttest language arts grade mean of 3.03 equates to a letter grade of “B” and an achievement qualitative description of above average. Translating Low Reading Ability students' posttest language arts grades to industry-standard letter grades puts their performance in perspective. A posttest language arts grade mean of 1.59 equates to a letter grade of “D+” and an achievement qualitative description of below average.

Finally, the High Reading Ability group higher posttest language arts grades (0.07) and the Middle Reading Ability group higher posttest language arts grades (0.11) were measured within the above average range. The Low Reading Ability group lower

posttest language arts grades (-0.08) was measured within the below average range. The above average posttest language arts grades for the High and Middle Reading Ability groups indicated that the differentiated instruction groups resulted in not statistically significant language arts grade improvement. The below average posttest language arts grades for the Low Reading Ability group indicated that the differentiated instruction groups resulted in a not statistically significant language arts grade digression. This finding suggests that the explicitly differentiated reading instruction groups did not result in significantly different language arts classroom performance across reading ability levels.

#### **Research Question #10 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest science grades compared to ending eighth-grade posttest science grades for High Reading Ability, Middle Reading Ability, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups were not statistically significantly different in the direction of posttest science grades digression. Translating High Reading Ability students' posttest science grades to industry-standard letter grades puts their performance in perspective. A posttest science grade mean of 3.47 equates to a letter grade of "B+" and an achievement qualitative description of above average. Translating Middle Reading Ability students' posttest science grades to industry-standard letter grades puts their performance in perspective. A posttest science grade mean of 2.57 equates to a letter grade of "C+" and an achievement qualitative description of average. Translating Low Reading Ability students' posttest science grades to industry-standard letter grades puts their performance in perspective. A posttest science grade mean of 1.39

equates to a letter grade of “D+” and an achievement qualitative description of below average.

Finally, the High Reading Ability group lower posttest science grades (-0.08) and the Middle Reading Ability group lower posttest science grades (-0.35) were measured within the above average and average ranges, respectively. The Low Reading Ability group lower posttest language arts grades (-0.46) was measured within the below average range. The above average posttest science grades for the High Reading Ability group, the average posttest science grades for the Middle Reading Ability group, and the below average posttest science grades for the Low Reading Ability group indicated that the differentiated instruction groups resulted in not statistically significant science grades digression. This finding suggests that the explicitly differentiated reading instruction groups did not result in significantly different science classroom performance across reading ability levels.

### **Research Question #11 Conclusion**

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose posttest reading grades frequencies and percents. Percents for High Reading Ability students’ posttest reading grades change was improve 100% and lose 0%. Percents for Middle Reading Ability students’ posttest reading grades change was improve 92% and lose 8%, while percents for Low Reading Ability students’ posttest reading grades change was improve 80% and lose 20%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest reading classroom-level assessment particularly

since the High Reading Ability, Middle Reading Ability, and Low Reading Ability groups each posted a higher improve grade percent.

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose posttest language arts grades frequencies and percents. Percents for High Reading Ability students' posttest language arts grades change was improve 88% and lose 12%. Percents for Middle Reading Ability students' posttest language arts grades change was improve 64% and lose 36%, while percents for Low Reading Ability students' posttest language arts grades change was improve 52% and lose 48%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest language arts classroom-level assessment particularly since the High Reading Ability, Middle Reading Ability, and Low Reading Ability groups each posted a higher improve grade percent.

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were statistically different in their improve and lose posttest science grades frequencies and percents. Percents for High Reading Ability students' posttest science grade change was improve 72% and lose 28%. Percents for Middle Reading Ability students' posttest science grade change was improve 28% and lose 72%, while percents for Low Reading Ability students' posttest science grade change was improve 32% and lose 68%. Given the statistical difference observed it may be said that the explicitly differentiated reading instruction groups did not equally prepare students for posttest science classroom-level assessment particularly since only the High Reading Ability group posted a higher improve score frequency and percent.

Finally, posttest compared to posttest findings indicated that High Reading Ability students participating in the explicitly differentiated reading instruction groups had higher improve grade percents for all three posttest-posttest classroom grade measures including reading, language arts, and science. Middle Reading Ability and Low Reading Ability students participating in the explicitly differentiated reading instruction groups had higher improve grade percents for two posttest-posttest classroom grade measures including reading and language arts.

### **Research Question #12 Conclusion**

Overall, pretest-posttest results indicated beginning eighth-grade pretest absence frequencies compared to ending eighth-grade posttest absence frequencies for High Reading Ability, Middle Reading Ability, and Low Reading Ability students who participated in explicitly differentiated reading instruction groups were statistically significantly different in the direction of higher posttest absence frequencies. Comparing High Reading Ability students' posttest absence frequencies to school absence policy puts their performance in perspective. A posttest absence frequencies mean of 2.08 is 3.92 days below the threshold for an intervention letter and 5.92 days below the threshold for county attorney intervention. Translating Middle Reading Ability students' posttest absence frequencies to school absence policy puts their performance in perspective. A posttest absence frequencies mean of 2.60 is 3.40 days below the threshold for an intervention letter and 5.40 days below the threshold for county attorney intervention. Translating Low Reading Ability students' posttest absence frequencies to school absence policy puts their performance in perspective. A posttest absence frequencies mean of

3.00 is 3.00 days below the threshold for an intervention letter and 5.00 days below the threshold for county attorney intervention.

Finally, the High Reading Ability group higher posttest absence frequencies (0.88), the Middle Reading Ability group higher posttest absence frequencies (1.00), and the Low Reading Ability group lower posttest absence frequencies (0.80) were still measured below the school's thresholds for intervention and consequences. The increase of absence frequencies from pretest to posttest was statistically significantly different for the High Reading Ability group and not statistically significantly different for the Middle and Low Reading Ability groups. Overall, the results indicated that students in all groups could be considered to have maintained appropriate levels of behavior throughout the year as measured by school absence frequencies.

#### **Research Question #13 Conclusion**

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their improve and lose posttest absence frequencies and percents. Percents for High Reading Ability students' posttest absence change was improve 20% and lose 80%. Percents for Middle Reading Ability students' posttest absence change was improve 24% and lose 76%, while percents for Low Reading Ability students' posttest absence change was improve 28% and lose 72%. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest behavior as measured by absence rates particularly since the High Reading Ability, Middle Reading Ability, and Low Reading Ability groups each posted a lower improve absence percent.

Finally, posttest compared to posttest findings indicated that High Reading Ability students, Middle Reading Ability students, and Low Reading Ability students participating in the explicitly differentiated reading instruction groups had lower improve absence percents for the posttest-posttest school behavior measure of absence rates.

#### **Research Question #14 Conclusion**

Overall, posttest compared to posttest findings indicate that the explicitly differentiated reading instruction groups were not statistically different in their Sports, Arts, and Organizations posttest participation frequencies and percents. Frequencies for High Reading Ability students' posttest school engagement measures were Sports 35, Arts 11, and Organizations 14. Frequencies for Middle Reading Ability students' posttest school engagement measures were Sports 28, Arts 5, and Organizations 4, while frequencies for Low Reading Ability students' posttest school engagement measures were Sports 14, Arts 0, and Organizations 0. Given the statistical equipoise observed it may be said that the explicitly differentiated reading instruction groups equally prepared students for posttest school engagement as measured by participation rates in Sports, Arts, and Organizations.

Finally, posttest compared to posttest findings indicated that High Reading Ability students, Middle Reading Ability students, and Low Reading Ability students participating in the explicitly differentiated reading instruction groups had the highest participation percents in Sports and lower frequencies of participation in Arts and Organizations for the posttest-posttest school engagement measure of participation rates.

## **Discussion**

The results of this study supported student participation in explicitly differentiated reading instruction groups. Because students in High Reading Ability, Middle Reading Ability, and Low Reading Ability groups maintained average to above average achievement test scores on several measures with commensurate classroom grade performance, and appropriate behavior and engagement to support school success during eighth-grade, the results suggest continued implementation of explicitly differentiated reading instruction classrooms. Faced with the imperative to acquire literacy skills adequate to meet the academic demands of the high school educational process and post-secondary life as either college student or working adult, learning must be accelerated for all segments of the student population (National Center for Education Statistics, 1999b; National Center for Education Statistics, 1992; Sum et al., 2004). Additionally, this acceleration is fundamental to the school's ability to meet NCLB requirements and attain levels of student achievement commensurate with legislative expectations (Hoff, 2008; NCLB Act, 2002).

**Implications for practice.** Researchers have clearly developed answers for pedagogical questions surrounding which instructional components enable and accelerate the development of critical reading skills that include differentiated instruction that is intensive and frequent (Ankrum & Bean, 2008; Anderson, 2007; Cates & Rhymer, 2006; Denton et al., 2006; Lapp, Fischer, & Grant, 2008). Moreover, practitioners are cautioned that traditional classroom instruction may not provide enough of these components to accelerate learning and skills acquisition (Ankrum & Bean, 2008; Tobin & McInnes, 2008). The results of this study suggest that when these critical components are present in the daily educational routine, supported by the student schedule and teacher

roster assignment, achievement can be significantly positively influenced. Through deep understanding of the language acquisition process, and the application of instructional strategies that are delivered to students at their instructional readiness level despite their age or grade, practitioners increase the likelihood of affecting accelerated skill acquisition and ultimate literacy (Snow et al., 1998).

This study highlights the notion that students vary greatly in the language skills they have developed by the time they reach middle school age. Factors such as socio-economic background, the quality and quantity of adult interactions experienced as an infant and toddler, and the quality of literacy instruction through the primary grades all have deep and lasting impact on achievement levels of students by the time they reach the middle school years (Adler & Fisher, 2001; Roth, Speece, & Cooper, 2002; Freire, 1969; Snow et al., 1998). As individual student needs are discovered and diagnosed by practitioners and the myriad assessments used in schools today, educators must look to research and best practice to implement structures within their systems to provide appropriate instruction to meet them.

**Explicitly differentiated reading instruction.** Building leaders and teachers used pretest data to group students of similar ability ranges in order to provide classroom experiences that met individual needs. By arranging groups to minimize the range of abilities within a given classroom during a given class period, teachers were able to focus instruction and differentiate in meaningful ways. Teachers and administrators worked together to make placement decisions, monitor achievement progress, and develop lessons. Teachers were given daily cooperative planning time to coordinate and collaborate with one another about students, pedagogy, and resources. Teachers rotated

groups at each trimester to provide instruction that leveraged their individual teaching skills and experience.

**Instructional components.** Curricular decisions and strategy decisions were both deliberately addressed in planning the instructional components of the explicitly differentiated reading instruction groups. With regard to curriculum, the goals for students exiting the middle school, as outlined by the state curriculum, included silent and aloud reading fluency, including phrasing, accuracy, prosody, rhythm, and self-correction of difficulties (Iowa Department of Education, 2009). As a result, they also came through as paramount among the goals for reading instruction at the middle level in this school.

Seminal research conducted to determine acceptable practice agreed that reading instruction should be explicit and systematic and should include components that recognize the influence of direct instruction, and suggested that intensive and individualized intervention is necessary to meet the needs of struggling readers (National Reading Panel, 2000; Snow et al., 1998). Additionally supported by research and long-standing practice in individualized instruction, this explicitly differentiated reading instruction focused on the manipulation of each of three fundamental reading instruction variables that include pace, method, and content (Snow et al., 1998). However, since the research literature supports peer groups and cooperative learning situations as appropriate methods to meet learner needs for students of all abilities, instruction was delivered to homogenous classes of students instead of individuals (Cohen et al., 2004; Hill & Coufal, 2005; Tomlinson, 2003). Moreover, because middle school students benefit from classrooms which acknowledge environmental elements including security, affiliation,

support, purpose, affirmation, and affinity, this particular design was a deliberate attempt to combine individualized instruction with methodologies that included groups and cooperative learning experiences (Tomlinson & Doughty, 2006).

**Implications for policy.** Educators need to provide support appropriate to help eighth-grade students attain the necessary literacy skills for success at the high school level and beyond. While many schools, including the study school, implement at-risk programs, special education classes, before-, during-, and after-school interventions, co-taught classes, and other supports, those efforts are simply not enough.

Educators in the study district who were directly involved in developing and implementing the explicitly differentiated reading instruction groups were confident of its value and impact on eighth-grade students' academic and affective development. Unfortunately the use of the explicitly differentiated reading instruction groups was discontinued in the study district after its first year of implementation, before data were available to truly evaluate its efficacy. Due to perceptions of some decision-makers who admittedly ascribe to philosophies that may not recognize the body of research surrounding literacy and middle level education, the explicitly differentiated reading instruction groups was deemed incongruent with district philosophy, from their viewpoint, and discontinued.

While multiple alternative efforts to support the acceleration of achievement in literacy at the study school have been implemented since the explicitly differentiated reading instruction groups, they lack specificity, consistency, and fidelity in terms of implementation. Consideration needs to be given to infuse explicitly differentiated reading instruction groups at all grade levels at the middle school. This can be

accomplished in each of the grade-level teams, since literacy classes are present in the existing schedule structure and multiple literacy teachers are already assigned to each grade level. Teachers who are assigned to each grade level have common planning time that already exists in their schedules. The study school has multiple data points by which groups decisions can be made and schedules of like-ability students can be aligned. Additionally, the study school's academic year is defined by trimesters, allowing for the redistribution of students on a regular basis, based on each individual's rate of skill acquisition and subsequent achievement status. The state curriculum has been approved and adopted, and alignment work is already underway at the study district that would enable monitoring of implementation.

**Implications for further research.** The results of this study point to the need for further research in several key areas. Despite the research that exists to support language acquisition from birth through primary grades, there is little to inform practice for educating the vast populations of middle level learners identified as lacking in literacy skills. A great deal more can be learned with additional research into the efficacy of support efforts provided for students who are identified as having multiple risk factors, below grade level achievement scores, and literacy skill deficiencies--all of which puts them at increased risk of failure in high school and beyond.

Qualitative information would also provide educators with valuable information to use in planning support efforts for students. A comprehensive student and parent survey to explore the perceived effectiveness of literacy instruction and literacy support interventions could yield important information about perceptions and efficacy. With

that information in hand, literacy instructors would have a clearer support for instructional decisions that could be shared and replicated within the school.

Finally, educators should sustain programs that they know directly and even indirectly help students acquire necessary literacy skills. Clearly, literacy and language skills and abilities are prerequisites to all students' ability to realize academic success, demonstrate positive behaviors, and become actively engaged in school, which in turn increases the likelihood of high achievement during the remainder of their journey to adulthood even if these individual student improvements do not immediately result in a change in the NCLB status of the school. Overall, the results of this study suggest continued use of instructional components associated with the study school's former explicitly differentiated reading instruction groups.

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