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## **A comparison of the effectiveness of direct reading instruction on students of Caucasian and Hispanic backgrounds**

Dana Ellen Miller  
*University of Tennessee*

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To the Graduate Council:

I am submitting herewith a dissertation written by Dana Ellen Miller entitled "A comparison of the effectiveness of direct reading instruction on students of Caucasian and Hispanic backgrounds." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Education.

C. Glennon Rowell, Major Professor

We have read this dissertation and recommend its acceptance:

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

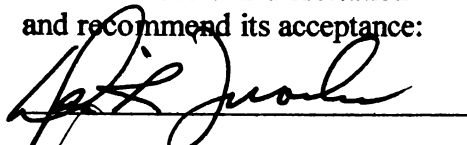
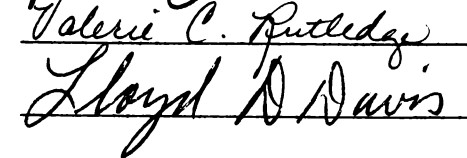
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C. Glennon Rowell, Major Professor

We have read this dissertation  
and recommend its acceptance:

  
Valerie C. Rutledge  
  
Lloyd D. Davis

Accepted for the Council:



Vice Provost and Dean of  
Graduate Studies



**A COMPARISON OF THE EFFECTIVENESS OF DIRECT READING  
INSTRUCTION ON STUDENTS OF CAUCASIAN AND HISPANIC  
BACKGROUNDS**

A Dissertation  
Presented for the  
Doctor of Education  
Degree  
University of Tennessee, Knoxville

Dana Ellen Miller  
August 2002

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2002b  
.M553

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**DEDICATION**

This dissertation is dedicated  
to my husband, Rod Miller,  
for his support in all my educational pursuits,  
and  
to my parents, Sam and Nancy Hester,  
for their constant encouragement,  
and  
to my brother Chris,  
whose perseverance and determination are an example for all,  
and  
to Mrs. Winona Robuck,  
who has served as my mentor for many years  
and  
to all the teachers who have impacted me along the way.



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I would like to thank my family members, who although they thought I was crazy for wanting to pursue a doctorate, supported me nonetheless. I give a special thanks to my mother who listened to me when my husband was sick and tired of hearing about graduate school and Direct Instruction Reading.

Finally, I would like to thank my husband for his support throughout my many educational pursuits over the last seven years—my Master's degree, Fulbright study abroad, and Doctorate. He has always pushed me to achieve my potential and has always had more confidence in my abilities than I myself. Lastly, I am thankful for my new daughter Hannah Grace whose arrival provided the impetus for me to finish this dissertation as soon as possible.

## ABSTRACT

According to U.S. census data Hispanics made up only 7% of the population of Dalton, Georgia in 1990. The 2000 census reveals the Hispanic population approaching 30%. Demographic change of this magnitude in a relatively short period of time has had a major impact on the community and the schools serving that community. One area of concern was reading instruction. Beginning in 1997, the commercially available Direct Instruction Reading Program was fully implemented by Dalton Public Schools. The focus of this research was to compare the Iowa Test of Basic Skills reading scores of Caucasians and Hispanics in second, third, and fourth grades taught using this method. A comparison was made of: (1) the average total gain over the three-year period for Caucasians and Hispanics, (2) the average gain each year for Caucasians and Hispanics, and (3) the percentage of Caucasians and Hispanics at or above grade level in reading comprehension at the end of the three years. Independent t-tests were utilized to determine if significant differences existed between Caucasians and Hispanics in each of these areas. The purpose of the study was to examine the effectiveness of the Direct Instruction Reading program for Hispanic and Caucasian students as measured by the Iowa Test of Basic Skills Reading Comprehension Test.

It was determined from examination of the results that statistically significant differences did exist favoring Caucasians and Hispanics in average total gain, average gain between second and third grade, and the percentage of students at or above grade level at the end of three years. A statistically significant difference was not found between Caucasians and Hispanics in average gain between third and fourth grades. Descriptive data not directly related to the research questions were also provided.

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## CHAPTER I

### INTRODUCTION

#### Background

According to census data for 1990, people of Hispanic origin made up approximately 7% of the population in the city of Dalton, Georgia (U.S. Census, 1990). During the 1989-1990 school year, Dalton Public Schools reported only a 3.9% Hispanic population, with the remaining student population comprised of 80.8% Caucasian, 13.6% African-American, 1.1% Asian, 0.4% Native American, and 0.2% Multiracial (Salzer, 2001). Thus, as recently as a decade ago there had been very few people of Hispanic origin in this small Northwest Georgia town which bills itself as the “Carpet Capital of the World” (Salzer, 2001). The booming economy and carpet industry had a need for workers, and Hispanics were willing to fill these jobs. The 2000 census revealed the Hispanic population in Dalton approaching 30% (U.S. Census, 2000). Dalton Public Schools as of the 2000-2001 school year were 51.5% Hispanic, 35.2% Caucasian, and 9.2% Black (Dalton Public Schools, 2001). The majority of the Hispanic immigrants in Dalton were first generation immigrants from Mexico, had little or no educational background, and spoke little or no English. Demographic change of this magnitude in such a relatively short period of time has had a major impact on the community as well as the schools serving the community (Salzer, 2001).

#### Statement of the Problem

A study released in 2000 by the National Assessment of Educational Progress (NAEP) reported that for grades 4, 8, and 12, the average reading score for Caucasian students was still higher than that for Black, Hispanic, and American Indian students

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(2000). A recent report by the National Research Council found that failure to learn to read adequately for future school success is much more common among poor children, non-Caucasian children, and nonnative speakers of English (1998). In the 1998 NAEP Reading Assessment only 29% of Caucasian fourth-graders scored below the basic level, but 56% of Hispanic students scored below basic level (Donahue, Voelkl, Campbell, & Mazzeo, 1999). Results of the 1998 NAEP for Georgia reported that in grade four, 61% of Hispanic students were considered “Below Basic” in their reading ability, while only 28% of their White peers were at this level (Learning Network, 2002). Governor Roy Barnes in the Winter of 2002 created a Closing the Achievement Gap Commission to address this issue (Learning Network, 2002).

Numerous studies have also linked non-English background with higher failure and drop-out rates (Crawford, 1989). For example, in 1999, the dropout rate for Hispanics was 28%, while it was only 7% for Caucasians (Learning Network, 2001). According to a report by the Manhattan Institute for Policy Research, two out of every three Hispanic children in the state of Georgia’s class of 1998 did not earn a high school diploma, making Georgia last in the nation for this particular group (Salzer, 2001). Given the increasing diversity of the population of students in U.S. classrooms, especially in the Southeast, the gap between students of diverse backgrounds and their peers will become even more pronounced in the new millennium, according to Au and Raphael (2000). In the 1998 National Research Council study which addressed reading difficulty in children, it was stated that:

“(W)e are most concerned with the children in this country whose educational careers are imperiled because they do not read well



enough to ensure understanding and to meet the demands of an increasingly competitive economy. ...in a technological society, the demands for higher literacy are constantly increasing, creating ever more grievous consequences for those who fall short and contributing to the widening economic disparities in our society” (p. 18).

Today large portions of school-age children have significant difficulties learning to read. In order to succeed, students must be able to read well. The literacy demands placed on today’s graduates are much greater than in the past due to technological advances, such as computers and the internet, as well as the shift from a manufacturing to a service and information economy. Unlike in the past, today few jobs require only minimal literacy skills. In fact, the literacy levels which were sufficient in the past are now insufficient (Roller, 2000). Research on reading has also shown that whether a child will graduate from high school can be predicted by that student’s reading skill at the end of the third grade (Slavin, 1994). A study conducted by the University of Chicago showed that if children were behind in reading at the end of third grade, there is an 87% chance they would never make up the deficiency (Riley, 1999).

Given the importance of reading for future success and the reading difficulties often associated with non-Caucasian and non-native English speakers, the Dalton Public Schools have made substantial changes in their curricula in order to keep up with the changing demographics. One of these alterations was the controversial adoption of the Direct Instruction Reading Program in 1997.

The term direct instruction was first coined by Rosenshine et al. (1971) when they identified teacher behaviors that correlated positively with student academic gains

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Siegfried Englemann and associates at the University of Illinois. Originally called DISTAR (Direct Instruction System for Teaching Arithmetic and Reading), the program was developed for at-risk primary students (K-3). Originally designed only for teaching reading and math, today there are numerous DI texts including Reading Mastery, Corrective Reading, Expressive Writing, and Connecting Math Concepts (published by Science Research Associates, a division of McGraw-Hill Publishing).

Direct Instruction is basically essentialist in its philosophy; it focuses on fundamental skills and knowledge, standards, testing, and mastery learning. The basic premise of Direct Instruction is that all children can be taught (Ellis & Fouts, 1993). The program supports the premise that if children do not learn to read, the teacher has not taught them effectively. It purports that, “clear instruction eliminates misinterpretations and can greatly improve and accelerate learning” (Honig, 1997). The three main components of DI are demonstration, guided practice, and independent practice (Polloway & Smith, 1982). During the demonstration phase, teachers model target responses for students. In guided practice, teachers use cues and prompts to emit target responses. Both teacher and students perform the response simultaneously. During this stage teachers elicit group responses and call on individual students as well. As students improve, teachers focus on fast and accurate responding. After students can perform responses without cues, they practice independently until they reach 85% accuracy (Polloway & Smith, 1982).

Direct Instruction Reading is a phonics-based approach that utilizes a modified alphabet to create a consistent set of sound-symbol relationships. As students progress, the modified alphabet is gradually faded. Teachers using the program follow scripted

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lessons. Each of the scripted lessons is field-tested until 90% of students being taught are successful the first time the lesson is presented (Ed Digest, 1997). DI begins first by teaching students letter-sound correspondences. Those sounds used most commonly are introduced first, and letter sounds that are similar are not taught in close proximity so that students can become adept at one sound before a similar one is introduced. Later they are taught to discriminate between similar combinations. The principal skill taught in the letter-sound correspondences is telescoping or quickly sounding out letters. The overall goal is for students to use this sounding-out strategy to decode words. Once students can identify a word without sounding it out, this procedure is faded and used only with unfamiliar words (Polloway & Smith, 1982).

### Purpose

The purpose of this study was to examine the effectiveness of the commercial Direct Instruction Reading Program for Hispanic and Caucasian students as measured by the Iowa Test of Basic Skills (ITBS) Reading Comprehension Test. To date, no comprehensive evaluation of the effectiveness of Dalton's program, especially with regard to the Hispanic population, had been undertaken. Direct Instruction was piloted at one elementary school in 1996 and fully implemented throughout the Dalton Public School System in 1997. Extensive staff training was conducted prior to its implementation in the schools and is still ongoing. Direct Instruction Reading began in kindergarten and continues through the 5<sup>th</sup> grade. Corrective DI was used from the 6<sup>th</sup> grade through 8<sup>th</sup> grade. Students receive approximately 30 minutes of DI per day. They were taught in small groups divided by skill level. Every two weeks they were reevaluated for progress.

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### Research Questions and Hypotheses

The researcher investigated the reading comprehension level of fourth and fifth grade Caucasian and Hispanic students taught DI as measured by individual verbal, comprehension, and total reading scores on the ITBS. The DI program had been fully implemented for three years in the Dalton Public School System throughout all grade levels (1997-1998, 1998-1999, 1999-2000).

The reading comprehension scores for Caucasians and Hispanics who had been instructed using DI for the full three years were compared. The study examined students who began the program in the first grade and had only been taught how to read using the DI method. A comparison was made of (1) the average total gain over the three-year period for Caucasians and Hispanics, (2) the average gain each year for Caucasians and Hispanics, (3) the percentage of Caucasians and Hispanics at or above grade level in reading comprehension at the end of the three years, and (4) the increase in gains over the three years. Independent t-tests at the  $\alpha=.05$  level of significance were utilized. For each of the three research areas, the null hypothesis was that no statistically significant differences existed between the reading comprehension gains of Caucasians and Hispanics.

$$H_0: \mu_{\text{Hispanic ITBS scores}} = \mu_{\text{Caucasian ITBS scores}}$$

$$H_a: \mu_{\text{Hispanic ITBS scores}} \neq \mu_{\text{Caucasian ITBS scores}}$$

The following sections identify the specific research questions that were associated with these hypotheses.

**Research Area One-Average Total Gain**

1. Was the total gain for Hispanics equal to that of Caucasians ?

**Research Area Two-Average Gain Each Year**

1. Were the average gains for third, fourth, and fifth grades the same for Caucasians and Hispanics?
2. Was there more gain seen in one of the grade levels for either the Caucasians or Hispanics?

**Research Area Three-Percentage of Students at or Above Grade Level**

1. Was there a difference in the percentage of Caucasian and Hispanic students at or above grade level at the end of third grade?

**Research Area Four—Increase in Gains**

1. What was the percentage of students at or above grade level at the end of fourth and fifth grade for Caucasians and Hispanics? Have these percentages increased since third grade?

**Significance of the Study**

Results of this study would hopefully provide further data as to the effectiveness of DI in teaching reading comprehension to Caucasian and Hispanic students. Numerous studies had been conducted on DI; however, the majority of these were conducted almost twenty years ago. In addition, few had directly assessed its effectiveness with the Hispanic population. In the 1998 report on *Preventing Reading Difficulties in Young Children* by the National Research Council, the council urged others, “to research what the best

Direct Instruction & instructional strategies are for developing literacy in English for non-native speakers” (1998, p. 340).

In addition, this research would add to the base of knowledge on the effectiveness of explicit phonics instruction, especially in the primary grades. Although the debate over whole-language and phonics instruction had somewhat subsided due to researchers concluding that a mixed model was most effective, this research might have provided further evidence to that end.

Finally, the results provided the Dalton Public Schools with information to help determine whether DI was producing similar results for Hispanics and Caucasians.

### **Limitations**

The following factors were deemed beyond the control of the researcher: Due to the high mobility of many students in Dalton Public Schools, only students who had been involved in DI instruction for all three years were considered for this study. Any initial differences in reading comprehension scores were not controlled for because one premise of DI was that it can accelerate reading instruction of those students who are below grade-level. Another limiting factor was that there were not enough members of other ethnic groups within the system to consider these as subgroups for analysis.

### **Delimitations**

The study was delimited to Caucasian and Hispanic students in the Dalton Public Schools because of the unique demographics of this system and because of the limited number of school districts utilizing DI in the Northwest Georgia area. There was not another system of similar type with the demographic percentages of Dalton Public Schools in the Northwest Georgia area to provide a comparison group. The study was

further delimited to examining data for students in third, fourth, and fifth grades because students in these grades take the ITBS yearly. In addition, the data in the study were delimited to the years 1997-1998, 1998-1999, and 1999-2000 school years because the state of Georgia stopped using the ITBS and began using the Stanford test for reading assessment during the 2000-2001 school year.

### **Assumptions**

The following assumptions were accepted for this study:

It was assumed that because the DI Reading program was almost entirely scripted and because teachers received extensive training in DI that the individual teacher differences would be of minimal impact on the reading scores of students. It was further assumed that additional opportunities for reading (other subject areas, library time, etc.) were similar across the different classrooms.

As well, it was assumed that the ITBS was both a valid and reliable instrument for measuring reading comprehension. The ITBS has high reliability coefficients with most subtests reliabilities being in the .80s to .90s. According to the Mental Measurements Yearbook the ITBS has some of the highest reliability in the testing industry (1995).

Finally, the fact that this study only included Dalton Public School Caucasians and Hispanic students in grades 3-5 may have limited the generalizability of results of the study and implications to other age groups or geographic areas with differing demographics.

### Definitions

For the purpose of this study and its review of literature, commonly used terms are defined as follows:

Direct Instruction—A commercial, teacher-directed, scripted program for teaching reading published by SRA (Science Research Associates).

Effect Size—“a numerical way of expressing the strength or magnitude of a reported relationship, be it causal or not” (Gay & Airasian, 2000, p. 302).

Free lunch—According to Title 7 of the Code of Federal Regulations (CFR), “a free meal is served under the National School Lunch or School Breakfast Program to a child from a household eligible for such benefits under CFR Part 245 and for which neither the child nor any member of the household pays or is required to work in the school or in the school’s food service” (USDA, 2001). Eligibility is determined by household size and income as compared to the Income Eligibility Guidelines set annually by the Secretary of Agriculture (USDA, 2001).

Hispanic – “individuals who were born in or trace the background of their families to one of the Spanish-speaking Latin American nations or to Spain. Hispanics may also come from Caribbean countries such as Puerto Rico and Cuba” (Roseberry-McKibbin, 1995, p. 61).

Phoneme—“the smallest part of spoken language that makes a difference in the meaning of words (Armbruster & Osborn, 2001).”

Phonemic awareness—“the ability to hear, identify, and manipulate the individual sounds—phonemes—in words” (Armbruster & Osborn, 2001).



Phonological awareness—“a broad term that includes phonemic awareness. In addition to phonemes, phonological awareness activities can involve work with rhymes, words, syllables, and onsets and rimes (Armbruster & Osborn, 2001).”

Phonics—“the understanding that there is a predictable relationship between phonemes (the sounds of spoken language) and graphemes (the letters and spellings that represent those sounds in written language)(Armbruster & Osborn, 2001).”

Reduced lunch—A reduced price meal is “a lunch priced at 40 cents or less, an after school snack of 15 cents or less or breakfast served at 30 cents or less, to a child from a household eligible for such benefits under 7 CFR Part 245” (USDA, 2001).

Whole language—“a style of reading instruction based on the idea that students learn best when literacy is naturally connected to their oral language (Heilman, Blair, & Rupley, 1994).

Whole word approach— “a word-identification strategy that focuses on learning words as wholes rather than by any form of analysis (Heilman, Blair, & Rupley, 1994).“

Abbreviations:

ESOL—English to Speakers of Other Languages

DPS—Dalton Public Schools

GE—Grade Equivalent.

ITBS --Iowa Test of Basic Skills

NICHHD—National Institute of Child Health & Human Development

AASA—American Association of School Administrators

DI—Direct Instruction

### **Summary**

Direct Instruction was implemented in Dalton Public Schools beginning in 1997. The focus of this research was to examine: (1) the effectiveness of DI for Caucasians and Hispanics at the end of third, fourth, and fifth grades, (2) the total gain for Caucasians and Hispanics, and (3) the percentage of students at or above grade level for each of the groups at the end of third and fifth grades.

### **Organization of the Study**

The review of literature in Chapter II will provide a brief examination of reading research including whole-language and phonics instruction, and then will address research on Direct Instruction. Chapter III will present the methodology that was employed in the study. Chapter IV will present the findings and analysis of data, while Chapter V will offer findings, conclusions, and implications for further research.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### Introduction

The Review of Related Literature will begin with a brief discussion of the history of reading instruction. A discussion of phonics, whole-word, and whole-language instruction will follow. Then, current trends and research on reading instruction will be examined. Because of the plethora of research on reading, for the purposes of this study the review will focus on summary research and national reports. The conclusion of the chapter will present a discussion about the Direct Instruction Program and research regarding its effectiveness.

#### A Brief History of Reading Instruction

The debate over how to teach children to read has been around since the first schools were established in the United States. In New England, children were taught to read using The New England Primer or hornbook—a thin strip of wood with a piece of paper attached which contained the alphabet and the Lord's prayer (Heilman et al., 1994). In the late 1700s to early 1800s, Noah Webster's American Spelling Book was popular. He believed that if children could spell, then they could read. At the same time Horace Mann was advocating the word method. Mann believed that children saw words as units and that this was the most natural way to teach them to read. Also popular during the late 1800s were McGuffey's Readers. These graded readers included stories from the Bible, Daniel Webster and Shakespeare. He was the first educator to evaluate and control how many new words appeared on each page (Barchers, 1998).

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The scientific revolution as well as influences from the work of psychologist and educator Edward L. Thorndike impacted the next major trend in teaching reading, basal textbooks. These textbooks were carefully sequenced and created with controlled vocabulary so that students were taught reading in a systematic manner. Basal reading programs were the first to include student texts and workbooks as well as teacher's manuals and supplementary materials (Barchers, 1998). The Dick and Jane readers of the 1940s were perhaps the most popular of the basal readers. They represented whole-word theory in that they attempted to teach children a specific set of words, not individual letters and sounds.

As research continued, linguistics and phonics again came to the forefront. Rudolf Flesch's 1955 book Why Johnny Can't Read attacked whole-word teaching and called for a return to phonics instruction. In 1967, Jeanne Chall's book Learning to Read: The Great Debate was published. In it she reviewed fifty years of research on both the "meaning-emphasis method (whole-word)" and the "code-emphasis method (phonics)." She concluded that the "code-emphasis method" was best for teaching beginning reading (Coles, 2000). In 1985 the Commission on Reading published its report "Becoming a Nation of Readers" which concluded that it was not a question of whether or not phonics should be taught, but how it should be taught (Coles, 2000). In the third edition of Chall's book Learning to Read (1996), she stated that an approach to reading which addresses both meaning and the use of the alphabetic principle is necessary.

Beginning in the late 1990s, several states and even the federal government began making policies regarding reading instruction. In 1998, the Reading Excellence Act was passed into law by Congress. The purpose of the bill was to provide funding to high-

poverty districts for professional development for teachers, family literacy, and tutoring programs to improve reading (Roller, 2000). Several reading organizations, including the International Reading Association, questioned definitions in the bill that outlined what programs could apply for funding (i.e., only phonics-based programs) and the panel who would make such decisions (i.e., it was not comprised of reading instructors or professionals). In California and Texas, state legislatures have passed bills mandating phonics instruction (Coles, 2000). More recently with the publication of several national reports, the debate has begun to subside as more balanced approaches are coming into vogue (Diegmueller, 1996).

### **Phonics**

The phonics approach takes a bottom-up approach to reading. According to Barchers (1998), phonics was a reading approach that, “teaches students to recognize the relationship between letters or letter combinations and the speech sounds they represent (p. 589).” Students must have phonemic awareness, which is the “knowledge that phonemes (the smallest units of speech sounds that affect meaning) are separable and can be manipulated mentally and orally, as when blending or separating phonemes in order to identify words” (Coles, 2000). Once the students could discriminate between individual sounds in words, they could begin to understand how letters represent sounds in print.

G. Reid Lyon, the director of the National Institute of Child Health and Human Development’s research project on learning disabilities, stated to a Senate committee that the majority of reading disabilities come from a deficit in the most basic level of a language system—phonemes (Diegmueller, 1996). Marilyn J. Adams in her 1990 book Beginning to Read: Thinking and Learning About Print, also concluded that direct

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instruction in phonics was one important component of good, effective reading instruction.

### **Whole-word instruction**

The whole word, or “look-say” approach focuses on the identification of words as a single unit, without any analysis. The idea is that if students can recognize words without the need for analysis, then they can focus more on meaning and comprehension (Heilman et al., 1994).

An important component of whole-word instruction is sight-word knowledge. Sight-word knowledge refers to identifying words that “occur most frequently in reading and are often not easily analyzed through phonics or other procedures” (Collins & Cheek, 1993). The most common use of this method is in teaching students high-frequency vocabulary, such as *is*, *are*, *that*, *the*, *an*, etc. The most common high-frequency list is the Dolch list developed by Edward Dolch in 1948. This is a 220 word list with a high percentage of irregularly spelled words found in beginning reading materials. Although this list is over 50 years old, Johns, Edmond, and Mavrogenes have determined that this list still accounts for over 55% of words in student materials for grades 3-9 (Collins & Cheek, 1993).

### **Whole language**

A more recent approach to the teaching of reading is the whole-language approach which is based on the idea that students learn best when, “literacy is naturally connected to their oral language” (Heilman et al., 1994). The early roots of the whole-language movement were in New Zealand. A teacher named Marie Clay developed a program called Reading Recovery which drew upon both phonics and whole-language

instruction. However, in the U.S. only the whole-language components were seized upon and this sparked an interest in whole-language instruction during the 1980s (Lemann, 1997).

Whole-language proponents feel that children learn to read naturally the same way they learn to speak. Because of this belief, they immerse children in literature and non-fiction. They emphasize the big picture—meaning and comprehension as opposed to phonics and syntax (although some is taught). A few comparative studies during the 1980s found whole language to be more effective than phonics instruction, but more recent research has found a balanced approach to be more effective (Diegmueller, 1996).

There was also debate as to the effectiveness of whole language for at-risk students. Stahl found in analyzing comparative research on whole language up to 1989 that no study showed whole language was more effective for students of low socioeconomic status. In addition, recent evidence suggested children taught with whole language are not any more motivated in reading—a belief which was long-held by whole-language proponents—than those taught using other approaches (Diegmueller, 1996).

### **Reading Research**

In the last five years several national agencies and panels have published guidelines for effective reading instruction based on reviews of past reading research or conducting new research studies. These compilations have done much to curtail the debate over how best to teach children to read. Some of the most comprehensive of these included: the NICHD's 30 Years of Research: What We Know About How Children Learn to Read (1999), The National Reading Panel's Report (2000), and The National Research Council's Preventing Reading Difficulties in Young Children (1998).

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The report 30 Years of Research: What We Know About How Children Learn to Read is a synthesis of research from the NICHD. The research was a result of the 1985 Health Research Extension Act which charged the NICHD to conduct long-term, prospective, multidisciplinary, longitudinal research in order to improve the quality of reading research. Over 100 researchers in medicine, psychology, and education at fourteen different research centers were involved. The research studies utilized the true scientific model as well as utilizing sampling procedures to ensure that all subgroups in the population were represented in sufficient numbers (Grossen, 1999). According to the NICHD research, “the most reliable indicator of reading difficulty is an inability to decode single words” (Grossen, 1999). Phonological processing was found to be the main area where children with reading difficulties differ from other children, with the most common deficit being phonological awareness. Phonological awareness is a term which includes phonemic awareness as well as activities using rhyming, rimes, and onsets (Armbruster & Osborn, 2001). Findings also indicated that children who are behind in reading at an early age are likely to fall further and further behind. Because of this, the report recommends “not delaying intervention, but using appropriate instructional strategies at an early age, especially in kindergarten” (Grossen, 1999). The results also advised explicit, systematic instruction in sound-spelling patterns in first and second grade. Finally, predicting words from context was found to be an ineffective strategy; good readers were found to have quick, automatic word recognition skills.

The NICHD research has not gone without criticism. In his recently published book entitled Misreading Reading: The bad science that hurts children, Gerald Coles criticized the NICHD’s claims that the studies provide information about “associations”



between phonemic awareness and reading, but do not show causality (2000). He also challenged the NICHD's claim that difficulty in phonological awareness is the primary cause of poor reading, arguing that students trained in phonics did better in phonemic awareness, but not in reading comprehension. Finally, Coles purported that the researchers involved with the NICHD study were phonics and direct-instruction advocates and therefore biased in their conclusions (2000). Allington and Woodside-Jiron, in an article entitled "Thirty Years of Research in Reading: When is a research summary not a research summary?", also criticized the NICHD report stating that they found the research evidence offered in support of three of the seven principles in the "Thirty Years" document to be lacking on several counts. (Coles, 2000). It should be noted that both Coles and Goodman were ardent supporters of the whole-language approach.

The National Reading Panel (NRP) was established as a result of a 1997 congressional directive to review scientific literature in order to determine the most effective ways to teach children to read. The panel reviewed over 115,000 studies on reading and selected only experimental and quasi-experimental studies for review. The panel's conclusions in their 2000 report were: (1) children should be explicitly and systematically taught phonics; (2) guided oral reading is important for developing reading fluency; (3) silent reading's importance in comprehension was unclear; (4) reading comprehension was best taught by developing vocabulary and teaching students specific strategies and techniques; (5) research was needed in the area of teacher training; and (6) there was not enough data yet on computer-assisted reading (Donahue, 2000).

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In the fall of 2001 Put Reading First was published and summarized the results of the NRP's 2000 report for use by teachers. Put Reading First addressed five areas of reading instruction: phonemic awareness, phonics, fluency, vocabulary, and text comprehension (Armbruster & Osborn, 2001).

With regard to phonemic awareness, Armbruster and Osborn reached several conclusions: phonemic awareness could be taught and learned, phonemic awareness helped children learn to read and spell, phonemic awareness was most effective when children were taught to manipulate phonemes by using letters of the alphabet, and phonemic awareness was most effective when children are taught only one or two types of phoneme manipulations (2001).

In addressing phonics instruction, the authors found that systematic and explicit phonics instruction was most effective at significantly improving kindergarten and first-grade students' word recognition, spelling, and reading comprehension. Phonics instruction also worked for children from all social and economic backgrounds (Armbruster & Osborn, 2001). They also concluded that systematic and explicit phonics instruction was important for children with reading difficulties or those at risk for future reading difficulties, and it was most effective when introduced in the kindergarten or first grade. Armbruster and Osborn (2001) also stated that phonics instruction should not be an entire reading program in and of itself.

The third area of reading instruction discussed in Put Reading First was fluency. Fluency is defined as, "the ability to read a text accurately and quickly" and is important because it helps students to understand what they read (Armbruster & Osborn, 2001, p. 22). In their analysis, Armbruster and Osborn found that repeated, monitored, oral

reading helped to improve reading fluency as well as overall reading achievement. Additionally, there was no research to confirm that silent, independent reading improved students' fluency (Armbruster & Osborn, 2001).

The fourth area, vocabulary instruction, was found to be important because readers must know what words mean before they can understand what they are reading. Vocabulary can be developed either directly or indirectly (Armbruster & Osborn, 2001).

Finally, in addressing reading comprehension, Armbruster and Osborn concluded that good readers were purposeful and active, and that comprehension could be developed by teaching comprehension strategies to students (2001).

Recently *Reading Research Quarterly* (Ehri, et al., 2001) published a similar document "Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis." In their research, the authors attempted to determine whether phonemic awareness instruction helps children learn to read, when it is most effective and for which children, if the NRP's studies were scientifically valid, and how these findings could be applied to the classroom (Ehri, et al., 2001).

After examining 52 controlled experiments published in peer-reviewed journals, the overall effect size of phonemic awareness was found to be large at  $d=.86$ , while the overall effect size on reading was moderate at  $d=.44$  (Ehri et al., 2001). These values were similar to those found in a previous meta-analysis conducted by Brennan and Ireson in 1997. (Effect size generally ranges from 0-1. In educational research, an effect size of .25, or  $\frac{1}{4}$  standard deviation, is considered significant.) The overall conclusions reached by the authors included: phonemic awareness instruction was more effective than other forms of instruction or no instruction at all, phonemic awareness was one of the two best

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predictors of future reading success, instruction in only one or two phonemic-awareness skills was most effective (i.e., segmenting words into phonemes, blending phonemes); phonemic instruction does benefit reading comprehension, and that phonemic awareness can help children with spelling acquisition. The researchers cautioned that although phonemic awareness “contributes significantly” to reading acquisition, there is much more that children need to be taught to become good readers and writers (Ehri et al., 2001).

The National Council of Research also had examined reading practices, in particular addressing students with reading difficulties. One of their main findings was the importance of identifying children who are at-risk (e.g., low socio-economic level, non-native English speakers, ADHD) for reading difficulties at the preschool or kindergarten level in order to provide early interventions. Their suggestions for the best methods to teach reading were very similar to those outlined above. The Council also examined basal readers and found that a majority did not include the most important components of explicit phonics instruction and the application of the alphabetic principle in writing. They urged districts, schools, and teachers to require textbook companies to provide evidence to the efficacy of their programs. In addition, they stressed the importance of teacher training and professional development as it relates to reading instruction (Snow, Burns, & Griffin, 1998).

### **Direct Instruction Research**

The term Direct Instruction (DI) has a plethora of meanings in the educational literature. Many educators believe that any systematic instruction that includes modeling and task analysis was Direct Instruction. However, the Direct Instruction Model

implemented in Dalton Public Schools developed by Englemann et al. is a commercial, scripted, teacher-directed, phonics-based approach intended to teach children not only to read, but to comprehend, and to understand (Carnine & Kamueenui, 1997).

The beginnings of DI research go back to Project Follow Through, the largest educational research study ever conducted. In 1968, the Office of Economic Opportunity funded a competition to discover the “best practices” for teaching disadvantaged students. The study included nine educational models, including DI, implemented in hundreds of school districts across the U.S. In each district, one school implemented a model while another was used as a comparison or control group. Students involved in the study began in the kindergarten or first grade and were evaluated at the end of third grade on academic, cognitive, and affective skills measures. Analyses found Direct Instruction placed first in all three areas including math, reading, spelling, language, and self-esteem (Viadero, 1999).

Immediately there was criticism of the study by a group funded by the Ford Foundation because many of those involved in the meta-analysis had direct ties to DI. However, a reanalysis was conducted by Bereiter and Kurland in 1981-1982. Using more stringent criteria, the results showed Direct Instruction was even more effective than in the original analysis. Becker and Carnine (1980) also conducted a reanalysis because they felt that there were significant differences between the Follow Through sites and their comparison sites. (They also did not include one site in their analysis because there was a change of program director in the middle of the program and DI was not continued at that site.) With these changes (almost one-third of the data were withdrawn), DI results were even higher than previously. In 1984, Gersten, Becker, Heiry, and White analyzed data

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from five groups in the Follow Through study who had been pre-tested with the Wide Range Achievement Test and the Slosson Intelligence Test and were retested each spring during the study. They analyzed the results by grouping students based on IQ level. Results showed that with DI all groups made consistent improvement in achievement. Becker and Gersten also conducted a follow-up study of fifth and sixth graders who had been involved in Project Follow Through. After two to three years without DI, students' scores dropped, but they still showed a statistically significant difference in reading scores compared to non-DI students (.25 effect size). Another follow-up study looked at students in New York City at the end of ninth grade where similar results were found (.25 effect size). In addition, the graduation rates and college acceptance rates for this group were 60% as compared to 40% for non-DI students (Adams & Engelmann, 1996).

A meta-analysis of 25 years of DI research was conducted in 1996 by Adams and Engelmann. The meta-analysis examined 350 studies on DI from 1960-1996. This included all DI programs, not just Reading (39 language, 43 reading, 9 social skills, 33 math, 27 spelling, 6 health, 4 legal concepts, and 10 science). Studies were chosen only if they provided: means and standard deviations of the groups, the use of an acceptable comparison group, unbiased assignment of subjects into groups, and pretest scores (Adams and Engelmann, 1996). No one-shot studies were included. Thirty-seven articles met these criteria. An independent research professor then reviewed the studies chosen by Adams. An interrater reliability of .94 was found between those chosen by Adams and the independent reviewer (Adams & Engelmann, 1996). The chosen studies were then divided into four groups: regular education, special education, the Follow Through Project, and follow-up studies. Effect size was calculated using the formula:

$$ES = \frac{m_{\text{exp}} - m_{\text{con}}}{sd_p}$$

Mean of experimental minus mean of control  
divided by the pooled standard deviation  
(Gay & Airasian, 2000).

In the meta-analysis, the researchers first examined the percentage of studies that favored DI. In polling the statistically significant outcomes, 64.1% favored DI, 34.7% showed no statistically significant difference, and 1.2% favored non-DI groups. The average mean effect size per study was .75. According to Gay and Airasian (2000), an effect size of zero shows the control and experimental groups performed the same, effect sizes in the twenties show that a treatment has had a small effect, and an effect size in the eighties would tend to show a treatment had a strong effect. Only one study included in the meta-analysis had a small negative effect size, six were not significant, four had a small positive effect size, four had a medium effect size (approximately .5), and nineteen had a large effect size (>.75).

Adams and Engelmann further examined particular categories such as regular and special education, and elementary and secondary education. The average effect size for regular education was .82 while the average effect size of special education was .90. This refuted critics' claims that DI only worked with special education students. Both these effect sizes indicated this to be false. In elementary education the effect size was .78, while in secondary education it was 1.11 (This may be due to a small sample size for this group.). The reading effect size was lower at .69. However, compared to Stahl and Miller's 1989 meta analysis of whole language (which was .09), this was still very high. Other variables

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considered in the meta analysis were the effect size of causal-comparative 1.2 versus experimental .85.

As can be seen from the meta analysis, DI appeared to be effective in all categories and variables. However, there has been criticism of the meta analysis because Adams and Engelmann were directly involved with Reading Mastery and because many of the studies included were conducted by researchers associated with the program (Stahl, et al., 1998). Robert Slavin, a researcher with Johns Hopkins University who coauthored a book with Olatokunbo S. Fashola entitled *Show Me the Evidence: Proven and Promising Programs for America's Schools*, stated that even though many of the studies were conducted by people involved with the program (as is common with much educational research), the fact remained that even studies conducted independently still show the same positive results (Viadero, 1999).

Another criticism with DI was that there has been very little research conducted in recent years. In a search of ERIC as well as EBSCO Host and educational journals, only two studies were found dated after the 1996 meta analysis. One entitled, "The Effectiveness of Direct Instruction on the Reading Achievement" involved a group of 30 sixth graders randomly selected from a pool of 72 students at Arna W. Bontemps Public School located in Chicago, Illinois. The instrument used was the Iowa Test of Basic Skills. No statistically significant differences were found (Mosley, 1997). However, some questions can be raised about the validity of the results of this study. Another study in 1996 tested the effectiveness of DI on different reading achievement categories. This study examined a sample of 60 third grade students in Chicago area public schools, 30 who had been taught with DI for two years, and 30 who had been taught with a basal text. It again



utilized the ITBS and found that the DI group had statistically significant differences in nine of ten reading achievement categories over the non-DI group (Wroebel, 1996).

### **Summary**

The Review of Related Literature suggested that the explicit teaching of phonics paired with the teaching of comprehension skills was the most effective method of teaching reading. DI met many of the criteria put forth by these national studies and had been shown to be an effective method of teaching reading, especially to disadvantaged students as shown by Project Follow Through.

**CHAPTER III**  
**METHODOLOGY**

**Introduction**

This causal-comparative study utilized post hoc data to document the reading achievement (as measured by the Iowa Test of Basic Skills) of Caucasian and Hispanic students involved in the Direct Instruction program over a three-year period from 1997-2000. The researcher examined the reading comprehension scores of the students at the end of second grade, third grade and fourth grade. In addition, the researcher examined the overall gain in reading scores from second to fourth grade and the percentage of students below grade level at the end of second, third and fourth grades.

Research was conducted in Dalton Public Schools located in Dalton, Georgia. Dalton Public Schools (DPS) was a relatively small school district in North Georgia consisting of only seven schools—four elementary schools (Pre-K-3), one intermediate school (4-5), one middle school (6-8), and one high school (9-12). The system served approximately 5,000 students. Fifty percent of DPS students were eligible for free or reduced lunch. Approximately 50% of the students were Hispanic, 36% Caucasian, 6% African American, and 8% other nationalities. Twenty-one percent of the system's students were enrolled in English to Speakers of Other Languages Programs (ESOL) (Georgia Department of Education, 2001).

Each of the elementary schools housed between 400 and 600 students (Georgia Department of Education, 2001). Two of the elementary schools, Roan and Park Creek, were approximately 85% Hispanic, 10% Caucasian, and 10% African American. At Roan and Park Creek 80% to 90% of students were eligible for free or reduced lunch.

The other two elementary schools, Westwood and Brookwood, were approximately 30% Hispanic, 60% Caucasian, and 10% African American. At Brookwood and Westwood, only 40% to 50% of students were eligible for free or reduced lunch. The intermediate school which served approximately 850 students was approximately 60% Hispanic, 30% Caucasian, and 10% African American (Georgia Department of Education, 2001). Sixty-four percent of the intermediate school's students were eligible for free or reduced lunch. The middle school served approximately 1200 students, and the high school 1400 students.

### **Procedures**

Form A, Application for Review of Research Involving Human Subjects, was completed and submitted for approval by the University of Tennessee. This application was reviewed and permission to conduct the study was obtained. (Appendix A). Written consent was also obtained from the superintendent of Dalton Public Schools, Dr. Allene Magill through a letter (Appendix B). This letter described the purpose of the study, type of data to be gathered, assurance of anonymity of subjects, and relevance of the study outcomes.

### **Subjects**

Data describing all students involved in the DI program from 1997-2000 who were in the second through fourth grades were obtained from Ms. Diane Evans, instructional supervisor for Dalton Public Schools. These data included a student identification number, race, gender, free or reduced lunch status, and ITBS reading scores (verbal, comprehension, and total) from second through fourth grades. All fourth and fifth grade Caucasian and Hispanic students who had been in the DI program for at

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least three years were considered for this study. For the fifth graders three years of ITBS data were available (2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> grade scores) and for the fourth graders two years of ITBS data were available (2<sup>nd</sup> and 3<sup>rd</sup> grade scores).

### **Instrumentation**

The Iowa Test of Basic Skills was utilized to provide reading comprehension scores of the students. The ITBS was administered each year in March to all students in the third through eighth grades as a part of statewide testing in Georgia. According to the 1995 Mental Measurements Yearbook, the ITBS has reliability levels among the highest in the testing industry. Most subtest reliabilities were in the .80s and .90s across Forms K, L, and M. For the most part, the lower levels have a reliability of about .80. The test's validity was dependent upon the correspondence between the curriculum and its content descriptions (Mental Measurements Yearbook, 1995).

### **Data Analysis**

The collected data were entered into the computer program *SPSS Graduate Pack 9.0 for Windows* (1998). Independent *t*-tests as well as descriptive statistics will be presented in Chapter IV.

### **Research Area One-Average Total Gain**

1. Was the total gain for Hispanics equal to that of Caucasians?

An independent *t*-test at the  $\alpha = .05\%$  level will be presented in Chapter IV to determine if a statistically significant difference is evident between Caucasians and Hispanics. Descriptive data on the total gain for each group will also be presented.

**Research Area Two**

1. Were the average gains for second, third, and fourth grades the same for Caucasians and Hispanics?

An independent t-test will be presented in Chapter IV at the  $\alpha = .05\%$  level to determine if a statistically significant difference is evident between Caucasians and Hispanics at each grade level.

2. Was there more gain seen in one of the grade levels for either of the groups?

Descriptive statistics will be presented in Chapter IV to determine if more gain is seen at a particular grade level for either of the groups.

**Research Area Three**

1. Was there a difference in the percentage of Caucasian and Hispanic students at or above grade level at the beginning of second grade?

Descriptive statistics will be presented in Chapter IV to determine if there is a difference in the percentage of students at or above grade level at the beginning of second grade.

**Research Area Four**

1. What was the percentage of students at or above grade level at the end of third and fourth grades for Caucasians and Hispanics? Had these percentages increased since second grade?

Descriptive statistics will be presented in Chapter IV to determine if there is a difference in the percentage of students at or above grade level at the end of third and fourth grades. The percentage of students at or above grade level at the end of second

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grade was compared to the percentage of students at or above grade level at the end of fourth grade to determine if the percentages had increased.

### Summary

Chapter III presented the methodology employed in the study. The discussion included the selection of subjects, instrumentation, data collection, and statistical analysis. Findings and analyses of data will be presented in Chapter IV. Findings, conclusions, and implications for further research will be presented in Chapter V.

## CHAPTER IV

### FINDINGS AND ANALYSIS OF DATA

#### Introduction

This chapter presents the findings from the post hoc analysis of data collected from Dalton Public Schools and offers results of the statistical analysis utilized in addressing the stated research questions. These data were provided to the researcher by Dalton Public Schools and included Iowa Test of Basic Skills reading testing data from 1997-2000 as well as demographic data. The data provided included: race, gender, free and reduced lunch status, number of years in Dalton Public Schools, verbal percentiles, verbal grade equivalents, verbal scale scores, comprehension percentiles, comprehension grade equivalents, comprehension scale scores, total reading percentiles, total reading grade equivalents, and total reading scale scores. Some variables analyzed were directly related to the research questions. Other variables, while not directly related to the research questions, were analyzed to determine if there were any relevant trends. First, descriptive analysis of the data will be presented. Following this will be the descriptive data and analyses related specifically to the research questions. Incomplete student records were not used.

#### Descriptive Analysis of Demographic Data

The analyzed data set consisted of 324 fourth and fifth grade students (as of the time of data collection, Spring 2001) in Dalton Public Schools who had been involved with DI reading instruction for at least three years and had taken the ITBS each of these years. The total number of fourth and fifth grade students at this time was approximately 800 students, therefore this sample represented approximately 40% of the overall

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population of fourth and fifth grade students. One hundred sixty-eight students (51.9%) were fourth graders and one hundred fifty-six (48.1%) were fifth graders. One hundred sixty-seven students were Caucasian and 153 were Hispanic. The population included 153 males and 171 females. Approximately 39% of the students qualified for free or reduced lunch. Students had been educated in the Dalton Public Schools System for an average of 5.5 years. Tables 4.1 through 4.4 illustrate these percentages.

Of the Hispanic students, sixty-seven were male and ninety were female. Eighty-seven of the Hispanic students were fourth graders and seventy were fifth graders. One hundred and twenty, or over 76%, of the Hispanic students qualified for free or reduced lunch

Of the Caucasian students, eighty-six were male, eighty-one were female. Eighty-one of the Caucasian students were fourth graders and eighty-six were fifth graders. Only 15.6% of the Caucasian students qualified for free or reduced lunch. The average number of years spent in the Dalton Public School System was 5.6 years. Table 4.5 presents the descriptive statistics for Caucasians and Hispanics.

As can be seen, the number of Hispanic and Caucasian students was roughly equal, as were the number of males and females and the number of fourth and fifth graders. The only noticeable difference was in the percentage of Hispanic and Caucasian students on free and reduced lunch.



Table 4.1

Number and percentages of male and female fourth and fifth grade students in Dalton Public Schools (DPS), Spring 2001 who had completed at least 3 years of DI

Gender	Number	Percentage
Male	153	47.2%
Female	171	52.8%
Total	324	100.0%

Table 4.2

Number and percentages of fourth and fifth grade students in DPS, Spring 2001, who had completed at least 3 years of DI.

Grade level	Number	Percentage
Fourth	168	51.9%
Fifth	156	48.1%
Total	324	100.0%

Table 4.3

Number and percentages of Caucasian and Hispanic fourth and fifth grade students in DPS, Spring 2001, who had completed at least 3 years of DI.

Race	Number	Percentage
Caucasian	167	51.5%
Hispanic	157	48.5%
Total	324	100.0%

Table 4.4

Number and percentages of fourth and fifth grade students on free or reduced lunch in DPS, Spring 2001, who had completed at least 3 years of DI.

Socio-economic Status	Number	Percentage
Free lunch	102	31.5%
Reduced	23	7.1%
Total	125	38.6%

Table 4.5

Comparison of numbers and percentages of Caucasian and Hispanic students with regard to gender, grade level, free/reduced lunch, and average years in DPS.

	Caucasian	Hispanic
Male	86	67
Female	81	90
Fourth grade	81	87
Fifth grade	86	70
Free/reduced lunch	15.6%	76.0%
Average years in DPS	5.6	5.5

### **Descriptive Analysis of ITBS Reading Data**

The following sections will present the analysis for each of the ITBS variables for each grade level including: verbal scale scores, verbal grade level equivalents, verbal percentiles, comprehension scale scores, comprehension grade level equivalents, comprehension percentiles, total reading scale scores, total reading grade level equivalents, and total reading percentiles. For each grade level, analysis results will be provided for the entire sample (Hispanics and Caucasians) as well as for each group individually.

#### **Second Grade Descriptive Analysis**

For the second grade, the mean verbal percentile for the entire sample (Caucasians and Hispanics) was 50.67, while that for Caucasians was 70.79, and Hispanics 29.26. The mean verbal grade level equivalents were 2.89 for the entire sample, 3.71 for Caucasians, and 2.03 for Hispanics. Scale scores for each of the groups ranged from 120 to 232. The entire sample verbal mean scale score was 169.03, the verbal mean score for Caucasians was 183.58, and the verbal mean scale score for Hispanics was 153.56.

Comprehension scores reflected similar patterns. The mean comprehension percentile for the entire sample was 53.83. For Caucasians the mean comprehension percentile was 70.21, and for Hispanics, 36.41. The comprehension grade level equivalents were 3.11 for the entire sample, 3.76 for Caucasians, and 2.42 for Hispanics. The total sample mean comprehension scale score was 171.93. Caucasians had a mean scale score of 182.79 and Hispanics had a mean scale score of 160.37.

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The total reading scores for the entire sample were 52.01 for percentiles, 3.01 grade level equivalents, and 170 scale score. Caucasians had mean scores of 71.59 for percentiles, 3.77 grade level equivalents, and 183.28 scale scores. For Hispanics, the mean percentile was 31.19, the mean grade level equivalent was 2.23, and the mean scale score was 157.13. Table 4.6 provides an overview of the descriptive analysis for second grade.

From the above descriptive data, it was apparent that second-grade Hispanics are significantly lower in each of the areas of verbal and comprehension than Caucasians

Table 4.6\*

Descriptive analysis of ITBS reading scores for second grade students in DPS

	Entire sample	Caucasian	Hispanic
Verbal percentile	50.67	70.79	29.26
Verbal GE	2.90	3.71	2.03
Verbal scale score	169.03	183.58	153.56
Comprehension percentile	58.83	70.21	36.41
Comprehension GE	3.11	3.76	2.42
Comprehension scale score	171.93	182.79	160.37
Total percentile	52.01	71.59	31.19
Total GE	3.02	3.77	2.22
Total scale score	170.61	183.28	157.13

\* The scores for the entire sample were computed using all 324 subjects. The scores for Caucasians were computed utilizing the 167 Caucasian students, and the scores for Hispanics were computed utilizing the 157 Hispanic students.

which translates into lower total reading scores. The descriptive analysis for the entire group placed Dalton Public Schools' second graders at approximately the 50<sup>th</sup> percentile in comparison to other second graders taking the ITBS. However, when looking at the Caucasian and Hispanic scores, one could see how the high scores of the Caucasians and low scores of the Hispanics produced this outcome. If one were only looking at the overall data, Dalton Public Schools would appear to be average in their reading scores, when in reality some sub-groups were quite high, while others were quite low.

### **Third Grade Descriptive Analysis**

The third grade percentiles for verbal, comprehension and total reading scores all dropped several points from the second grade scores. The percentiles for the entire sample were 43.36 for verbal, 50.98 for comprehension, and 46.45 for total reading scores. The same drop from second grade was also true for both Caucasians and Hispanics. For Caucasians the percentiles were 65.44 for verbal, 67.02 for comprehension, and 66.98 for total reading. Hispanics had 19.66 for verbal percentile, 33.91 for comprehension percentile, and 24.63 overall.

The mean verbal grade level equivalent for the total sample was 3.40, for Caucasians 4.40, and for Hispanics 2.33. The comprehension grade equivalents were much higher for each of the groups with the total sample being 3.99, Caucasians 4.83, and Hispanics 3.10. The total reading grade level equivalents were 3.73 for the total sample, 4.62 for Caucasians, and 2.77 for Hispanics.

Scale scores for the entire sample were 177.59 for verbal, 186.35 for comprehension, and 182.00 for total reading score. Caucasians had a mean verbal scale score of 193.74, 199.63 for comprehension, and 196.62 for total reading score.

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Hispanics' mean scale scores were 160.40, 172.22, and 166.44, respectively. Table 4.7 presents a summary of the third grade analysis.

The data for third grade showed that for Caucasians, increases from the second grade scores can be seen in several areas, particularly in comprehension and in the total scale scores. Hispanics did not appear to be making significant gains in any of the areas, and have dropped several percentile points in each of the areas. Hispanics have also

Table 4.7\*

### Descriptive analysis of ITBS reading scores for third grade students in DPS

	Entire sample (n= 324)	Caucasian (n=167)	Hispanic (n=157)
Verbal percentile	43.26	65.44	19.69
Verbal GE	3.40	4.40	2.33
Verbal scale score	177.59	193.74	160.4
Comprehension percentile	50.98	67.02	33.92
Comprehension GE	4.0	4.83	3.10
Comprehension scale score	186.35	199.63	172.22
Total percentile	46.46	66.98	24.63
Total GE	3.73	4.62	2.77
Total scale score	182.00	196.62	166.44

\* The scores for the entire sample were computed using all 324 subjects. The scores for Caucasians were computed utilizing the 167 Caucasian students, and the scores for Hispanics were computed utilizing the 157 Hispanic students.

only increased .5 grade levels since second grade, while Caucasians had increased .85 grade level equivalents.

#### **Fourth Grade Descriptive Analysis**

Fourth grade mean verbal scores for the entire sample were 46.32 for percentiles, 4.66 for grade level equivalent, and 195.12 for scale scores. The mean verbal percentile for Caucasians was 66.74, their mean grade level equivalent was 5.80, and their mean scale score was 212.51. For Hispanics, the mean verbal percentile was 17.84, with the mean grade level equivalent of 3.26, and mean scale score of 173.74.

Comprehension scores for both groups were again higher than the verbal scores, with Caucasians having a mean percentile of 66.69 and Hispanics 37.29. The grade level equivalents for Caucasians and Hispanics were 6.16 and 4.22, respectively. Scale scores were 216.86 for Caucasians and 188.59 for Hispanics. For the entire sample the overall comprehension percentile was 46.32, grade level equivalent was 4.66, and scale score was 195.12.

The total reading scores for each group showed significant gains. The mean total reading percentile was 49.96, the mean total grade level equivalent was 4.92, and the mean total scale score was 199.60. For Caucasians, the means were 67.83 for percentile, 5.98 for grade level equivalent, and 214.69 for scale scores. Hispanics still did not score as high as their Caucasian peers, but did appear to be closing the gap with 28 for mean percentile, 3.62 for grade level equivalent, and 181.07 for scale score. Table 4.8 presents a summary of the fourth grade descriptive data.

Table 4.8\*

Descriptive analysis of ITBS reading scores for fourth grade students in DPS

	Entire sample	Caucasian	Hispanic
Verbal percentile	46.32	66.74	21.23
Verbal GE	4.66	5.80	3.26
Verbal scale score	195.12	212.51	173.74
Comprehension percentile	53.50	66.69	37.29
Comprehension GE	5.29	6.16	4.22
Comprehension scale score	204.17	216.86	188.59
Total percentile	49.96	67.84	28.00
Total GE	4.92	5.98	3.62
Total scale score	199.60	214.69	181.07

\* The scores for the entire sample were computed using all 324 subjects. The scores for Caucasians were computed utilizing the 167 Caucasian students, and the scores for Hispanics were computed utilizing the 157 Hispanic students.



### Research Questions Analysis

The following sections will present the analysis of data, including *t*-tests and descriptive data, related to each of the research questions.

#### Research Area One

1. Was the total gain for Hispanics equal to that of Caucasians even though there are initial differences in language skills and abilities?

A variable was created that was the difference between the fourth grade scale scores and the second grade scale scores. Another variable was created that was the difference between the fourth grade level equivalent and the second grade level equivalent. *T*-tests at the  $\alpha=.05\%$  were conducted to determine if a statistically significant differences existed between the average total gain for Hispanics of 23.94 in scale scores and 1.4 in grade level equivalents, and the average total gain for Caucasian students of 31.41 and 2.2 respectively. A statistically significant difference did exist between the two groups in both scale scores and grade level equivalents. Table 4.9 illustrates the total gains for Whites and Hispanics and Table 4.10 and 4.11 provide *t*-test results.

Table 4.9

Average total gains for Caucasian and Hispanic students from 2<sup>nd</sup>-4<sup>th</sup> grades in scale scores and grade level equivalents.

Average total gains-grades 2-4	Scale scores	Grade Level Equivalents
Caucasian	31.41	2.2
Hispanic	23.94	1.4

Table 4.10

T-test of total scale score gains for Caucasian and Hispanic students

t-value	df	Significance	Mean difference	Std. Error of Dif.
3.759*	154	.000	9.3339	2.4828

\*Significant at  $\alpha=.05$

Table 4.11

T-test of total grade equivalent gains for Caucasian and Hispanic students

t-value	df	Significance	Mean difference	Std. Error of Dif.
5.228*	154	.000	.9137	.1748

\*Significant at  $\alpha=.05$

**Research Area Two**

1. Were the average gains for second, third, and fourth grades the same for Caucasians and Hispanics?
2. Was there more gain seen in one of the grade levels for either of the groups?

The average reading total scale score for Hispanics in the 2<sup>nd</sup> grade was 157.13, in the 3<sup>rd</sup> grade 166.44, and in the 4<sup>th</sup> grade 181.07. For Caucasians, the average reading total score was 183.28 in the 2<sup>nd</sup> grade, 196.62 in the 3<sup>rd</sup> grade, and 214.69 in the 4<sup>th</sup> grade. In grade level equivalents, the average total grade level equivalent for Hispanics in 2<sup>nd</sup> grade was 2.03, for third grade 2.77, and for 4<sup>th</sup> grade 3.62. For Caucasians, the average total grade level equivalent for 2<sup>nd</sup> grade was 3.77, for third grade 4.62, and for fourth grade 5.98. Table 4.12 presents a summary of these results.

A repeated measures ANOVA was performed utilizing only fifth grade data to determine whether the scores between 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> grades change differently for Caucasians and Hispanics. In examining the results of the ANOVA, the interaction of grade year and race was significant ( $p=.001$ ). Therefore there was a significant difference in the way the Caucasians and Hispanics change over the three year period. A

Table 4.12

Average scale scores and grade level equivalents for 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> grade level equivalent (GE) for Caucasian and Hispanic students

	2 <sup>nd</sup> Scale	2 <sup>nd</sup> GE	3 <sup>rd</sup> Scale	3 <sup>rd</sup> GE	4 <sup>th</sup> Scale	4 <sup>th</sup> GE
Caucasian	183.28	3.77	196.62	4.62	214.69	5.98
Hispanic	157.13	2.03	166.44	2.77	181.07	3.62

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graph of this would be parallel if there were no interaction. However, there seemed to be less gain between 2<sup>nd</sup> and 3<sup>rd</sup> grade for Hispanics, while the gains between 3<sup>rd</sup> and 4<sup>th</sup> grades seemed equal for both races.

Independent *t*-tests at the  $\alpha=.05$  were performed to determine if a statistically significant difference existed between the average scale score gains for Caucasians and Hispanics for the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> grades. The average total gain from 2<sup>nd</sup> through 4<sup>th</sup> grades for Caucasians was 35.48, while for Hispanics the average total gain was 26.14. The average gain for Caucasians between 2<sup>nd</sup> and 3<sup>rd</sup> grades was 13.34 and for Hispanics, 9.31. Between the 3<sup>rd</sup> and 4<sup>th</sup> grades the average gain for Caucasians was 19.56 and for Hispanics, 18.09. The differences between the 2<sup>nd</sup> and 3<sup>rd</sup> grades and between the 2<sup>nd</sup> and 4<sup>th</sup> grades were statistically significant. The average total gain between 3<sup>rd</sup> and 4<sup>th</sup> grades for Caucasians and Hispanics was not found to be statistically significant.

Table 4.13 presents the gains between 2<sup>nd</sup> and 3<sup>rd</sup> grade and 3<sup>rd</sup> and 4<sup>th</sup> grade for Caucasians and Hispanics. Table 4. 14 presents the t-test results.

Table 4.13

Average gains for Caucasians and Hispanics in scale scores from 2<sup>nd</sup>-4<sup>th</sup> grades

	2 <sup>nd</sup> -3 <sup>rd</sup> grade	3 <sup>rd</sup> -4 <sup>th</sup> grade	2 <sup>nd</sup> -4 <sup>th</sup> grade
Caucasian	13.34	19.56	35.48
Hispanic	9.31	18.09	26.14

Table 4.14

T-tests for average gains for Caucasians and Hispanics in scale scores from 2<sup>nd</sup>-4<sup>th</sup> grades

t	df	Significance	Mean difference	Std. Error of Dif
2.854*	321	.005	4.0336	1.4132

\*Significant at  $\alpha=.05$ .

In examining grade level equivalents, results were similar. For Hispanics, the gain between 2<sup>nd</sup> and 3<sup>rd</sup> grades was .54, between 3<sup>rd</sup> and 4<sup>th</sup> grades was .85, and the overall gain was 1.39. For Caucasians, the gain between 2<sup>nd</sup> and 3<sup>rd</sup> grades was .92, between 3<sup>rd</sup> and 4<sup>th</sup> grades was 1.36, and the overall gain was 2.28. Independent *t*-tests at the  $\alpha=.05$  were performed to determine if a statistically significant difference existed between grade level equivalent gains for Caucasians and Hispanics for the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> grades. Statistically significant differences were found between the 2<sup>nd</sup> and 3<sup>rd</sup> grades, 3<sup>rd</sup> and 4<sup>th</sup> grades, as well as the overall gains for Caucasians and Hispanics. Average grade level gains are presented in table 4.15 and t-test results are presented in table 4.16.

As can be seen in the data in Tables 4.13 and 4.15, more gains were seen between the 3<sup>rd</sup> and 4<sup>th</sup> grades than between the 2<sup>nd</sup> and 3<sup>rd</sup> grades. This was true for both Caucasians and Hispanics. For Caucasians the total gain in scale scores from 2<sup>nd</sup> to 3<sup>rd</sup> grade was only 13.34, but between 3<sup>rd</sup> and 4<sup>th</sup> grades the total gain was 18.07. In grade level equivalents, from 2<sup>nd</sup> to 3<sup>rd</sup> grades there was a gain of only 0.92, while from 3<sup>rd</sup> to 4<sup>th</sup> grades there was a gain of 1.36. For Hispanic students between 2<sup>nd</sup> and 3<sup>rd</sup> grades the gain in scale scores was 9.31, but for 3<sup>rd</sup> and 4<sup>th</sup> grades the gain was 14.63. The gains for grade level equivalents for Hispanics were 0.74 between 2<sup>nd</sup> and 3<sup>rd</sup> grades and 0.85 between 3<sup>rd</sup> and 4<sup>th</sup> grades.

Table 4.15

Average grade level equivalent gains for Caucasians and Hispanics from 2<sup>nd</sup> -4<sup>th</sup> grades

	2 <sup>nd</sup> -3 <sup>rd</sup>	3 <sup>rd</sup> -4 <sup>th</sup>	2 <sup>nd</sup> -4 <sup>th</sup>
Caucasian	.92	1.36	2.28
Hispanic	.54	.85	1.39

Table 4.16

T-test for average grade level equivalent gains for Caucasians and Hispanics from 2<sup>nd</sup>-4<sup>th</sup> grades

t	df	Significance	Mean difference	Std. Error of Dif.
3.004*	324	.003	.3114	.1036

\*Significant at  $\alpha=.05$

**Research Area Three**

1. Was there a difference in the percentage of Caucasian and Hispanic students at or above grade level at the beginning of second grade?

Because students in Dalton Public schools took the ITBS in March of each year, the determination for “at or above grade level” was set at 2.7, 3.7, and 4.7 for 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> grades respectively (because March is the seventh month of the school year). At the beginning of the second grade 84.4% of Caucasian students were at or above grade level (2.7 grade level equivalent or higher). For Hispanics, only 23.6% of students were at or above grade level.

**Research Area Four**

1. What is the percentage of students at or above grade level at the end of third and fourth grade for Caucasians and Hispanics? Had these percentages increased since second grade?

By the end of the third grade, only 74.9% of Caucasians were at or above grade level (3.7 grade level equivalent) compared to 12.1% of Hispanics. At the end of fourth grade, 74.4% of Caucasians were at or above grade level (4.7 grade level equivalent or higher) while only 15.7% of Hispanics were at or above grade level. Table 4.17 illustrates these percentages. Thus, there was a 10% drop in the number of Caucasian students at or above grade level between the 2<sup>nd</sup> and 4<sup>th</sup> grades, and a 7.9% drop for Hispanics for the same time period.

**Summary**

Chapter IV presented descriptive statistics about the data as well as results of statistical analyses. Chapter V will present a summary of the findings, conclusions, and implications for further research.

Table 4.17

Percentage of Caucasian and Hispanic students at or above grade level for 2<sup>nd</sup>-4<sup>th</sup> grades

	2 <sup>nd</sup> grade	3 <sup>rd</sup> grade	4 <sup>th</sup> grade
Caucasian	84.4%	74.9%	74.4%
Hispanic	23.6%	12.1%	15.7%

**CHAPTER V**  
**FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND**  
**IMPLICATIONS FOR FURTHER RESEARCH**

**Introduction**

This researcher investigated the effectiveness of Direct Instruction Reading for Caucasian and Hispanic students in the Dalton Public School System from 1997-2000 as measured by the Iowa Test of Basic Skills. In investigating the effectiveness of this program the following questions were addressed: (1) Was the total gain for Hispanics equal to that of Caucasians even though there are initial differences in language skills and abilities?, (2) Were the average gains for second, third, and fourth grades the same for Caucasians and Hispanics?, (3) Was there a significant increase in average gain in one of the grade levels for either of the groups?, (4) Was there a difference in the percentage of Caucasian and Hispanic students at or above grade level at the beginning of third grade?, (5) What was the percentage of students at or above grade level at the end of the fourth grade for Caucasians and Hispanics? (6) Had the percentages of students at or above grade level increased since the second grade?

Independent *t*-tests at the  $\alpha=.05$  level were used to compare the total gains for Caucasians and Hispanics. A repeated measures ANOVA was utilized to compare the gains for each race over all three grade levels. Descriptive statistics were utilized to determine the percentage of students at or above grade level in the second and fourth grades and if these percentages had changed. Analyses suggested that there were statistically significant differences between Caucasians and Hispanics for each of the



ITBS variables with the exception of the gains in scale scores between third and fourth grades. The percentages of students at or above grade level dropped from the second to fourth grade for both Hispanics and Caucasians. In this chapter, conclusions regarding each of the identified research questions will be addressed. In addition, implications for further research that relates to these findings will be suggested.

### **Findings Related to Research Questions**

The findings related to each of the following research questions will be the focus of this section: (1) Was the total gain for Hispanics equal to that of Caucasians even though there are initial differences in language skills and abilities?, (2) Were the average gains for second, third, and fourth grades the same for Caucasians and Hispanics?, (3) Was there a significant increase in the average gain seen in one of the grade levels for either of the groups?, (4) Was there a difference in the percentage of Caucasian and Hispanic students at or above grade level at the beginning of second grade?, (5) What was the percentage of students at or above grade level at the end of the fourth grade for Caucasians and Hispanics? (6) How much have the percentages of students at or above grade level changed since the second grade?

### **Research Area One—Total gains**

Hispanics did not have total gains in scale scores similar to those of the Caucasian students. Also, Hispanics gained only 1.4 grade level equivalents between the second and fourth grades, while Caucasians gained 2.2 grade levels during the same time period. The Caucasian students gained only slightly more than would have been expected for two years of school, while Hispanics did not gain the equivalent of one grade level in reading per year. This was despite the fact that both sets of students had been in the Dalton

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Public Schools System for an average of 5.5 years and had received DI instruction for at least three years, and, in most cases, for four or five years. These differences may have been due to socio-economic status since almost two-thirds of Hispanics were on free or reduced lunch while only 15% of Caucasians were on free or reduced lunch. In addition, given the fact that these students were the children of recent immigrants (from the last 5-10 years), many of their parents may not have spoken English at all or did not use English in their homes which might also have impacted the scores of the Hispanic children.

### **Research Area Two**

The average gains in scale scores and grade level equivalents between second and third grades were not the same for Caucasians and Hispanics. Between second and third grades, Caucasians made greater gains than their Hispanic peers. Between third and fourth grades, however, the average gains in scale scores and grade level equivalents for Hispanics and Caucasians were not statistically significant. A repeated measure ANOVA confirmed that Caucasians made greater gains between 2<sup>nd</sup> and 3<sup>rd</sup> grades, but that the gains between 3<sup>rd</sup> and 4<sup>th</sup> grades seem equal for both races. This suggested that as the Hispanic students progress, their scores become more similar to their Caucasian peers. However, several more years of data would be needed to test this hypothesis. More gains were seen between the third and fourth grades, almost double the gains between second and third grades, for both Hispanics and Caucasians. This also might have indicated that DI does eventually increase the amount of gain per year, but that this is not immediately evident. Again, several years more of data or a follow-up study might provide an answer to this question.

**Research Area Three**

At the beginning of second grade there was a large difference in the number of Hispanics at or above grade level (23.6%), and Caucasians at or above grade level (84.4%). By the end of third grade, instead of increases in the number of students at or above grade level, which might be expected given the gains in scale scores, the percentages of both groups decreased. At the end of third grade, only 74.9% of Caucasians and 12.1% of Hispanics were at or above grade level.

**Research Area Four**

By the end of fourth grade, the percentage of Hispanic students on grade level had risen only slightly to 15.7%, while the percentage of Caucasian students had remained virtually the same at 74.4%. Despite the fact that scale scores did increase for these groups on the ITBS, approximately 25% of Caucasian students were not on grade level and over 84% of Hispanic students were not on grade level by the end of fourth grade. This was a disturbing statistic given the implications it has for the future educational careers of these students, i.e., that they are more likely to be high school drop-outs and have other difficulties in school.

**Additional Findings****Gender**

One interesting finding which was not related to any of the research questions was that there were no statistically significant differences in the scores of males and females for Hispanics or Caucasians on any of the variables. NAEP reading research has suggested that there are gender differences in reading, in particular at certain age levels.

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In the 2000 NAEP, fourth-grade female students had higher scores than their male peers and more females scored at or above the “Proficient” level (Donahue et al., 2000).

### **Free or reduced lunch**

The differences in the percentages of students on free and reduced lunch for Caucasians (15%) and Hispanics (75%) was so drastic that it was impossible to make a true comparison given the sample sizes of each (only 26 Caucasian students compared to 120 Hispanic students). There was a statistically significant difference between those on free or reduced lunch and their peers in each of the ITBS variables. The 2000 NAEP report found similar results. Of those students eligible for free and reduced lunch, only 14% performed at or above “Proficient” level while 41% of non-eligible students performed at or above proficient level (Donahue et al., 2000). This might suggest that instead of looking at race, perhaps socio-economic status played a more important role in impacting reading scores.

### **Conclusions**

The findings of this study lead to the following major conclusions:

1. The Direct Instruction reading program did not appear to be benefiting Hispanic students as much as their Caucasian counterparts.
2. Socio-economic factors may have been more important than race in looking at factors affecting student’s reading ability.
3. The gains between third and fourth grade showed almost identical gains among Caucasians and Hispanics which may suggest an upward trend for Hispanics in DI that, if continued, might indeed close the gap.

### **Conclusion One**

It was clear from the data that Hispanics are not achieving the same results as their Caucasian peers in the DI program. Hispanics were not achieving at least one grade level equivalent in gain per year and their scale scores and percentiles are much lower than their Caucasian peers. What was troubling about suggestions from these data was that both the Hispanics and Caucasian students had been in Dalton Public Schools for an average of 5.5 years, which for the majority of students would be from first grade through fourth or fifth grade. Also, the students had received DI reading instruction for a minimum of three years.

It could not be automatically assumed that DI is the reason for this discrepancy. This research was a comparative study to determine if differences existed between the two groups, not to determine causality. Other factors such as socio-economic status, language spoken in the home, or teacher differences could have been the cause of these results. Further study and analysis would be needed to try to determine why Hispanics are scoring lower even though they have been in Dalton Public Schools for the same number of years as their peers.

### **Conclusion Two**

The huge discrepancy between the number of Caucasian students on free and reduced lunch and Hispanic students on free and reduced lunch indicated that this might be an underlying factor affecting reading scores and perhaps was more important than race. If a large enough sample were available (Only 26 Caucasian students were on free or reduced lunch, compared to 120 Hispanics.), it would be helpful to compare Caucasian students on free or reduced lunch with their Hispanic peers also on free and reduced

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lunch. Perhaps then a determination could be made as to whether or not SES has some effect on reading scores.

### Conclusion Three

There did appear to be a slightly upward trend for both groups towards the end of fourth grade and perhaps, given more time, the program would produce greater reading gains. Both Caucasians and Hispanics made much higher gains between 3<sup>rd</sup> and 4<sup>th</sup> grades than between 2<sup>nd</sup> and 3<sup>rd</sup> grades. Perhaps the rate of learning for these students in reading would increase even more in each subsequent year. Without several years more of data, this would be impossible to determine. However, given the fact that many reading studies have shown that whether or not a student is on grade level at the end of third grade can have important consequences for later schooling, even if this were true, it might not be soon enough to benefit students (Riley, 1999; Slavin, 1994).

### Implications for Further Research

A long-term study of the effectiveness of DI similar to Project Follow Through, would be necessary to determine whether or not the results observed for the three-year period from 1997-2000 is representative of other grade levels and students. Given the large percentage of Hispanic (74%) and Caucasian (25%) students not on grade level at the end of third grade, it would be beneficial to look at the long-term effects this has on these students' future reading ability, as well as such factors as drop-out rates, and future school success.

Based on the current demographics in Dalton, there were not enough members of other ethnic groups to use as a comparison. Future studies might investigate the

effectiveness of DI for other groups such as Asians or African-Americans, or compare other non-native English speaking populations to see if similar results are found.

One variable that might be interesting to investigate would be the number of parents who spoke English, or whether or not English was the primary language spoken at home. If the Hispanic children were only speaking English while at school (and then only to other Caucasians), this might partially explain their lower reading scores.

Even though DI is a scripted program and extensive training and observation was provided by Dalton Public Schools, teacher attitudes toward the program may have affected how well students learned how to read. In addition, observations of teachers might be examined to determine how closely teachers followed the scripts and whether or not they modified the program for use in their class.

### **Recommendations**

Numerous possible explanations could be suggested as to why the Hispanic students did not achieve the same reading results as Caucasians taught using DI. With so many other possible factors influencing students and their reading ability (primary language, etc.) perhaps the answer was to simply provide more reading instruction for those lagging behind instead of trying to address other forces over which the school system has no control.

One option DPS might consider would be to offer students not reading at grade level summer reading remediation to “narrow the gap.” Those students not reading on grade level must be brought up to grade level as quickly as possible in order to have the best opportunity for future success in school.

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**APPENDIX A**



October 31, 2001

This letter is to confirm that we authorize and permit Dana E. Miller, an employee of our school system, and a doctoral student at the University of Tennessee-Knoxville, use of school system data concerning student reading testing, scores and records for the limited purpose of completing her doctoral dissertation. This includes both access to view materials and permission to use and include the same in her academic research.

Sincerely,

DALTON PUBLIC SCHOOLS

A handwritten signature in cursive script that reads "Allene H. Magill".

Allene H. Magill, Ed.D.  
Superintendent

AHM:fb

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**APPENDIX B**



IRB # \_\_\_\_\_

**Certification for Exemption from IRB Review for Research Involving Human Subjects**

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**A. PRINCIPAL INVESTIGATOR(s) and/or CO-PI(s):**

Student: Dana E. Miller Faculty: Dr. C. Glennon Rowell

**B. DEPARTMENT:** College of Education

**C. COMPLETE MAILING ADDRESS AND PHONE NUMBER OF PI(s) and CO-PI(s):**

Dana E. Miller	C. Glennon Rowell
755 Samples Chapel Rd.	341 Claxton Complex
Cleveland, TN 37323	Knoxville, TN 37996
(423) 476-1612	(865) 974-2201

**D. TITLE OF PROJECT:** A comparison of the effectiveness of Direct Instruction on White and Hispanic students

**E. EXTERNAL FUNDING AGENCY AND ID NUMBER (if applicable):** N/A

**F. GRANT SUBMISSION DEADLINE (if applicable):** N/A

**G. STARTING DATE: (NO RESEARCH MAY BE INITIATED UNTIL CERTIFICATION IS GRANTED.)** January 30, 2002

**H. ESTIMATED COMPLETION DATE (Include all aspects of research and final write-up.):** June, 2002

**I. RESEARCH PROJECT:**

1. **Objective(s) of Project (Use additional page, if needed.):**

The purpose of this research is to investigate the effectiveness of the commercial Direct Instruction Reading Program for White and Hispanic students as measured by the Iowa Test of Basic Skills (ITBS) Reading Comprehension Test in Dalton Public Schools.

2. **Subjects (Use additional page, if needed.):**

Data on all White and Hispanic students involved in the Direct Instruction program from 1997-2000 will be obtained from Dalton Public Schools (see attached letter). This data will include race, ITBS scores, gender, school, and grade level. Students' identifiers such as name or social security number will not be included.

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3. **Methods or Procedures** (Use additional page, if needed.):

Iowa Test of Basic Skills reading scores will be provided by Dalton Public Schools to the researcher without student names or other identifiers. This data will be analyzed using SPSS 9.0 to determine:

1. Is the total gain for Caucasians equal to that of Hispanics?
2. Are the average gains for each grade level the same for Caucasians and Hispanics? Is there more gain seen in a particular grade level for either group?
3. Is there a difference in the percentage of Caucasians and Hispanic students at or above grade level at the beginning of third grade? Does this percentage change by the fifth grade?

4. **CATEGORY(S) FOR EXEMPT RESEARCH PER 45 CFR 46** (see reverse side for categories): 1,2,4

**J. CERTIFICATION:** The research described herein is in compliance with 45 CFR 46.101(b) and presents subjects with no more than minimal risk as defined by applicable regulations.

Principal Investigator Dana E. Miller Dana E. Miller 2-01-02  
Name Signature Date

Student Advisor C. Gloria Rowell C. Gloria Rowell 1-28-02  
Name Signature Date

Dept. Review Comm. Chair Tina Bickett [Signature] 1/29/02  
Name Signature Date

APPROVED: Dept. Head C. Gloria Rowell C. Gloria Rowell 1/29/02  
Name Signature Date

## VITA

Dana Ellen Miller was born in Dalton, Georgia on August 3, 1974. At the age of eight she moved to Cobb County, Georgia, where ten years later she graduated from North Cobb High School. In August 1992 she entered the University of Georgia in Athens, Georgia where she majored in Foreign Language Education-Latin and was the recipient of the Del Jones Memorial Scholarship, the Maureen O'Donnell Teacher Training Scholarship, and an Alumni Scholarship. Also at UGA, she was initiated into Kappa Delta Epsilon, Eta Sigma Phi, Golden Key National Honor Society, and Kappa Delta Pi. In June 1995, she graduated Summa Cum Laude from the University of Georgia with a Bachelor of Science in Education degree.

In July 1995, she married Rodney Craig Miller, and moved to Memphis, Tennessee where he was attending law school. In August 1995 she began teaching Latin and Spanish at Briarcrest Christian School in Memphis. In January 1996, Mrs. Miller entered the University of Memphis where she was later named a Part Time Graduate Master's Fellow and initiated into Phi Kappa Phi. In 1998, she was awarded the Dr. Clair E. Cox Award for Teacher Excellence from Briarcrest Christian School. Mrs. Miller graduated from the University of Memphis in May 1998 with a Master of Science degree concentrated in Leadership-School Administration and Supervision.

In the fall of 1998, Mrs. Miller and her spouse moved to Cleveland, Tennessee and she began teaching with Dalton (Georgia) Public Schools. In 1999, she was awarded a Senator J. William Fulbright Scholarship and studied abroad in Rome and Cumae, Italy

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for two months. Also in 1999, she was accepted into and commenced coursework in the Doctor of Education degree program at the University of Tennessee-Knoxville.

Mrs. Miller currently teaches Latin and Spanish at Dalton High School, where she also acts as advisor to the Latin Club/Junior Classical League. She is licensed as a teacher and administrator in both Georgia and Tennessee, and is a member of the Professional Association of Georgia Educators. Her first child, Hannah Grace Miller, was born on April 7, 2002.

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09/24/02 VA MRB 