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The Impact Of Reading Instructional Processes On Literacy Aquisition

Doreen O. Ryan
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THE IMPACT OF READING INSTRUCTIONAL PROCESSES
ON LITERACY ACQUISITION

BY

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ABSTRACT
THE IMPACT OF READING INSTRUCTIONAL PROCESSES
ON LITERACY ACQUISITION

The Committee on the Prevention of Reading Difficulties in Young Children found "Reading is essential to success in our society" (Snow, Burns, & Griffin 1998). Reading instructional processes of twenty-seven suburban New Jersey school districts within the same District Factor Grouping were examined. The relationship between reading performance and processes of reading instruction for the literacy variables of gender, socioeconomic status (SES), ethnicity, special education classification, and linguistic diversity was compared for suburban elementary students using NJ ASK4 Language Arts Literacy sub-tests.

Research in beginning reading instruction, programs and instructional processes of teaching reading, and the role of gender, socioeconomic status, ethnicity, special education classification, and linguistic diversity in literacy was reviewed. Data analyzed included Language Arts Literacy Scaled Scores and Reading cluster raw scores for state benchmark tests for each school included in the study.

An ANOVA was used in this study for comparing sample means. Findings revealed differential effects for reading processes on literacy acquisition rates for each of the literacy variables. In addition, findings also revealed

significant differences in mean scores for reading processes by literacy variables.

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The Impact of Reading Instructional Processes
on Literacy Acquisition

CHAPTER I

INTRODUCTION

Introduction to the Research Problem

Children acquire literacy at different rates. Many factors come into play when children learn to read. The purpose of this study was to explore the philosophical differences between several distinct reading approaches, and compare sample populations to determine if these different approaches produced significant differences in literacy acquisition rates. This study further explored whether these various instructional processes differentially impact literacy acquisitions for literacy variables such as gender, Socio-Economic Status (SES), ethnicity, special education classification, and linguistic diversity.

Data to be analyzed were state benchmark grade 4 Language Arts Literacy sub-test results from the 2003 and 2004 NJ Ask results for each district in the study.

Statement of the Problem

This research proposed to determine whether or not literacy acquisition is impacted by reading instructional processes and program. This study attempted to determine if different teaching strategies produced more effective

results for sample populations. Relationships of different teaching strategies were examined for boys and girls. In addition, this study also examined the impact of different teaching strategies on reading acquisition for varying SES, special education classification, ethnicity, and linguistic diversity. Participants were of mixed reading abilities in several heterogeneously grouped samples of elementary school students.

Students from sample populations were from suburban New Jersey public schools that are very similar in district factor grouping (one state formula used to compare SES level between New Jersey school districts), ethnic makeup, special education classification, and linguistic diversity.

In this study, reading performance refers to fluency and comprehension with the expectation that the students can do both at their current grade level. Reading performance was measured through the collection of data from the Language Arts Literacy sub-test of the NJ ASK 4 given to students in the 4th grade with a proficient or advanced proficient score being acceptable and desired.

Reading Instructional Processes refers to the instructional framework that underlies the reading approach used by the school and reading teacher in the classroom. For this study, reading instructional processes were categorized into Direct Phonetic Instruction, which is systematic and explicit phonics instruction in letter-sound correspondence practiced in decodable text, Embedded Code

Approach, which would be a less direct phonetic instruction or a balance of phonics instruction and whole language, and Implicit Code Approach, which would be incidental or infrequent phonics instruction.

Purpose of the Study

The purpose of this study was to investigate the role of reading instruction processes on literacy acquisition as well as to examine whether reading instruction processes differentially effect literacy acquisition for a number of variables related to literacy acquisition. This investigation compared the means of several sample populations in the area of Language Arts Literacy. Proficiency assessment on state benchmark tests for grade four was compared for each of the sample populations.

In this study the literacy acquisition timeframe was clearly established as the end of grade four. Students were assessed after four continuous years utilizing the same district reading program. Review of literature has established that by the end of grade four, it is expected that students will have learned to read with accurate decoding of words, and have already begun the process of reading to learn, or, comprehending with understanding. Research has shown that different reading instructional processes impact this literacy acquisition in different ways and that some instructional processes are more effective in achieving literacy acquisition as demonstrated

by performance on Reading Cluster sub-tests on state benchmark assessments.

The Research Question

The proposed research question for investigation was: How do various reading instructional processes have differential impacts on student performance in literacy acquisition? Twenty-seven sample populations of heterogeneous groups of children (who demonstrate above average, average, and below-average language and reading abilities) were used to address the research question. Further investigation also proposed to answer whether these different instructional processes differently impact literacy acquisition in respect to gender, SES group, ethnicity population, special education classification, or linguistic diversity? Specifically, the proposed research attempted to answer the following questions:

Subsidiary Questions

1. What is the effect, if any, between reading instructional processes and gender on reading performance?
2. What is the effect, if any, between reading instructional processes and SES on reading performance?
3. What is the effect, if any, between reading instructional processes and ethnicity on reading performance?

4. What is the effect, if any, between reading instructional processes and special education classification on reading performance?

5. What is the effect, if any, between reading instructional processes and linguistic diversity on reading performance?

Significance of the Study

Educational leaders are charged by the state and federal government to oversee the assessment of student progress. This progress is an essential component of effective instruction. Assessment is especially important in early literacy programs, since children in the primary grades are expected to develop a wide variety of reading-related skills rapidly. Principals and other educational leaders are not only entrusted with ensuring that student progress is within acceptable levels, the leaders are penalized when the progress falls short. Now, more than ever, it is imperative that educational leaders invest in the performance of the students for whom they are responsible.

Whether an educator is called a principal, a teacher, a professor, a foundation official, or a parent, education's most vital work is promoting human learning. That is the very core of what it means to be an educator. Barth (1997) created the metaphor of the oxygen mask when considering learning in schools. Too many schools are full

of academic adult "corpses"--faithfully, conscientiously, persistently administering oxygen to others while the principals themselves are anoxic. That scenario does not inspire the vision of success in leadership. The task and the call to action are to lead others toward learning. For educational leaders to be successful they must first be successful as educators. They must study learning and constantly seek to improve learning for those in their care. They must lead actively and with action.

In 1997, Congress asked the Director of the National Institute of Child Health and Human Development (NICHD), in consultation with the Secretary of Education, to convene a National Reading Panel (NRP) to "assess the status of research-based knowledge, including the effectiveness of various approaches to teaching children to read" (NICHD, 2000).

On April 13, 2000, the NRP concluded its work and submitted "Teaching Children to Read: An Evidence-Based Assessment of the Scientific Literature on Reading and Its Implications for Reading Instruction," at a hearing before the U.S. Senate Appropriations Committee's Subcommittee on Labor, Health and Human Services, and Education.

U.S. legislation based on the panel's findings became a reality on January 8, 2002, when President Bush signed into law the research-based "No Child Left Behind Act of 2001" (NCLB). The NCLB Act is the most sweeping reform of the Elementary and Secondary Education Act (ESEA) since

ESEA was enacted in 1965. It redefines the federal role in K-12 and is based on four basic principles: stronger accountability for results, increased flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work (Brabham & Villaume, 2003).

The NCLB purpose (with regard to Reading) is to "help close the achievement gap between disadvantaged and ethnicity students and their peers" (Brabham & Villaume, 2003). School district administrators are given the task of ensuring that by the year 2012, 100 percent of district students will be reading on grade level.

Toward that reading purpose, a key component of the NCLB act is the "Reading First" provision. "Reading First" allocates 360 million dollars in federal funds, out of the total 900 billion for the entire NCLB act, for each district to create a plan to meet the 2012 100% reading goal.

School districts and schools that fail to make adequate yearly progress (AYP) toward statewide proficiency goals will, over time, be subject to improvement, corrective action, and restructuring measures aimed at getting them back on course to meet State standards. The stakes for failing to meet AYP are so high for district administrators under this law that the final sanction for districts that repeatedly fail to meet adequate yearly

progress is the possible loss of jobs for top administrators (P.L. 107-110, 2002).

Limitations and Delimitations

The scope of this study is the comparison of several philosophical approaches to reading instruction, and the relationship between gender, SES, ethnicity, special education classification, and linguistic diversity, within several whole group settings to reading processes. A potential limitation of this study is the ability to generalize results to specific reading programs.

Due to instrumentation constraints, this study cannot control for the impact of:

- (a) individualized instruction and reading achievement.
- (b) intelligence and reading achievement.
- (c) homework and reading achievement.

This study utilized individual student achievement data in 27 suburban elementary schools from the mid-range District Factor Grouping (DFG) of 21 counties in New Jersey. Therefore, the results of this study may not be generalizable to other regions of the state, other states and regions outside of New Jersey.

Definitions of Key Terms

1. Comparable Schools- Suburban New Jersey schools with a Limited English Proficiency population of

between 9 and 15% and with a ethnicity population of between 20-40% located in the district factor grouping of GH.

2. Direct Phonetic Instruction-, which is systematic and explicit phonics instruction in letter-sound correspondence, practiced in decodable text (Foorman, et al, 1998).
3. Disadvantaged- referring to poverty and standard of living.
4. Disaggregated- to separate into component parts, as in state testing data to separate by SES, special needs, ethnicity, etc.
5. District Factor Grouping (DFG) - the comparison made by the state of New Jersey between districts based on Socio-Economic Status. DFG groups include: A, B, CD, EF, FG, GH, I, and J with A being the lowest and J being the highest. The New Jersey Department of Education introduced the District Factor Grouping system (DFG) in 1975. This system provides a means of ranking school districts in New Jersey by their socioeconomic status (SES). The first DFG was based on data from the 1970 decennial Census. A revision was made in 1984 to take into account new data from the 1980 Census and to slightly change the theoretical model of socioeconomic status. The third DFG, reflecting data from the 1990 Census (NJ Department of

Education) was used until late 2004 when the 2000 Census replaced all DFG classifications. 2003 and 2004 NJ ASK4 data is aligned to the 1990 Census.

6. Effect- something brought about by a cause or agent; a result. A phenomenon that follows that follows and is caused by some previous phenomenon. In this research study, the term "effect" refers to the results of the statistical treatment of ANOVA.
7. Embedded Code Approach- which would be a less direct phonetic instruction or a balance of phonics instruction and whole language (Foorman, et al, 1998).
8. Hegemonic- leading, controlling, ruling, dominant (Harris & Hodges, 1995).
9. Heterogeneous grouping- the organization for instruction of students of differing levels of ability in one or more skills or participants (Harris & Hodges, 1995).
10. Impact- the effect or impression of one thing on another. The use of impact as a verb meaning "to have an effect" has been in modern, figurative, and scientific language dating from 1935. In this research study, the term "impact" refers to statistical treatment of the dependent variable by the independent variables.

11. Implicit Code Approach- which would be incidental or infrequent phonics instruction (Foorman, et al, 1998).
12. Instructional Framework- structure of learning and instruction used by teachers after determining what information and skills students need to know by clarifying the standards that provide clear direction and competency of skills for learners.
13. Literacy Acquisition- to develop the skills or ability to read and write (Harris & Hodges, 1995).
14. Linguistic Diversity- children who have spoken and/or partial reading and writing fluency in a language other than the language of the majority (English).
15. Ethnicity- a group of people who differ racially from the larger group of which it is part, as in non-white or Hispanic, Asian, Native Indian, or black.
16. Phonemic awareness- awareness of the constituent sounds of words in learning to read and spell (Harris & Hodges, 1995).
17. Phonics- a way of teaching reading and spelling that stresses symbol-sound relationships (Harris & Hodges, 1995).
18. Phonology- refers to the way sounds of the language operate (Harris & Hodges, 1995).

19. Schema- a continuous active organizer of knowledge structures (Harris & Hodges, 1995).
20. Semantics-refers to the ways that language conveys meaning (Harris & Hodges, 1995).
21. Socio-Economic Status (SES)- The socio-economic status is characterized by the economic, social and physical environments in which individuals live and work, as well as demographic and genetic factors. Measures for SES may include Income or Income Adequacy, which the NJ State Department of Education has also related to free/reduced lunch ratio, Education, Occupation, or Employment. New Jersey State Department of Education refers to SES by using the term Economically Disadvantaged.
22. Syllable- in phonology, a minimal unit of sequential speech sounds comprised of a vowel or vowel-consonant combination (Harris & Hodges, 1995).

Organization of the Study

This study was organized into five chapters. Chapter I presents the Introduction to the study which includes the following: (a) Introduction to the Research Problem, (b) Statement of the Problem, (c) Purpose of the Study, (d) Research Question and Subsidiary Questions, (e) Significance of the Study, (f) Limitations and Delimitations of the Study, and (g) Definition of Key Terms.

Chapter II presents the Review of the Literature. Chapter III presents The Design-Methods and Procedures, Sampling, Instrumentation, The Data, Data Collection, and Data Analysis and the Specific Treatment of each Sub-problem and Chapter IV presents the Findings. Chapter V presents the Summary, Conclusions, and Implications and Recommendations for further study. References and Appendix are included for complete documentation.

CHAPTER II
REVIEW OF RELATED LITERATURE

The Importance of Reading

"Literacy is an important precondition for organizing and understanding the past, the present, and the future to determine one's role in the world" (Grant & Wong, 2003, p. 387). Reading and literacy have been established as being critical to success in today's society (Snow et al, 1998, Graves et al, 2000, Juel & Minden-Cupp, 2000, Kuhn & Stahl, 2000).

According to the Commissioner of Education for the state of New Jersey, "Literacy is the key to understanding every subject we offer in school" (Librera, 2004, p. 20). The most important ability that children come to school to learn is the ability to read. The ability to read is highly valued and crucial for future social and economic success (Snow et al, 1998).

In 1998, the Committee on the Prevention of Reading Difficulties in Young Children for the National Research Council

presented its report: "Preventing Reading Difficulties in Young Children" (National Academy of Sciences, 1998). The report was most concerned with children in the United States whose educational careers are in danger because they do not have the necessary reading skills to ensure adequate understanding and to meet the

demands of an increasingly competitive economy (Snow et al, 1998, NICHD, 2000).

However, according to the National Center for Education Statistics for the state of New Jersey on the National Assessment of Educational Progress (NAEP), 69% percent of the fourth-grade public school students that were tested in 1992 performed at the Basic level, with only 35% at the Proficient level. Basic refers to partial mastery of prerequisite knowledge and skills fundamental for proficient work at the grade level. Proficient refers to solid academic performance for the grade level assessed.

Students that were tested in 1994 in fourth-grade from public schools in New Jersey showed 65% percent at the Basic level of achievement, with only 33% at the Proficient level. Reading results by percentage for 2003 for New Jersey indicate that 70% of the fourth-grade public school students that were tested performed at the Basic level, with a modest increase to 39% at the Proficient level.

The trend of declining literacy scores continues to the present day. "The U.S. Department of Education estimates that at-risk students make up anywhere from 20-40 percent of the nations student population and represent every type of ethnicity, language, learning style, and economic condition" (Urquhart, 2002, p. 25). Recognizing the problem is not enough. Educational leaders must act. "With the proper early instruction, the national prevalence

of reading failure can be reduced significantly" (Lyon, 2003, p. 21).

Gender Issues in Literacy

"Reading is essential to success in our society" (Snow et al, 1998). Beyond the literacy being practiced is the assumption that knowledge is worth having, for both girls and boys, and that the 'literate' route to knowledge is uncomplicated for those who are able to read (Daly, 1999). Uncomplicated, yet girls often outperform boys in language and reading achievement (Fuller et al, 1994, Helwig et al, 2001, Daly, 1999, Mills & Lingard, 1997, Barrow, 1999). Discrepancies continue as boys often outperform girls on standardized tests of mathematics achievement (Helwig et al, 2001). These discrepancies beg the question: Why?

In 2000, the Organization for Economic Co-operation and Development conducted a three-year survey of the knowledge and skills of 265,000 15-year old students from 32 countries including the United States. The survey, known as the Program for International Student Assessment (PISA), in reporting results by gender, found that females do better than males in the area of reading literacy in all countries surveyed (OECD, 2003).

Commeyras (1999), in reporting results of a survey of literacy educators' attitudes toward gender issues found that gender is a powerful organizing schema that shapes how we act and think and must also have an effect on how we

read and respond to texts. Laker, et al (2003), determined that the hegemonic process of the hidden curriculum of literacy allows gender inequity to be hidden within the strata of experience, within institutions, society, culture, power and authority in all its forms, preserving the existing order. Therefore, by directly examining reading instructional processes and their impact on gender, a greater understanding of student performance will enable administrators to facilitate change in school reading practices.

Low Socio-Economic Status Groups

Learners from different ethnic groups would also benefit from high quality, research based instruction. Rothstein (2004b) relates that white and minority achievement gap exists because non-whites and urbanites are more likely to live in low-income areas and have a low SES, economic hardships and poor community environments. These non-white, low SES ethnic groups also suffer education disparities due to differences in education funding and quality of schooling as well as a lack of parental involvement. All of these potential adversities are not due solely to race or ethnic group; they are more factors of environment that minorities live in. Good literacy instruction that provides a solid foundation in reading skills will compensate for many disadvantages (Adams, 1990).

According to White (1982), low-income African American and European parents focus on a more structured literacy environment, but tend to have no differences in literacy achievement noted between races. The differences in literacy achievement are present only between incomes. In White's study, SES is only modestly related to achievement (1982).

A better understanding of demonstrated good literacy instruction and how reading instructional processes impact ethnicity, SES, and linguistic diversity will allow educators to adjust and adapt planning to meet the complex needs of students to enable growth and success of all learners, regardless of literacy variables.

Ethnicity Implications

"In 2004, equal achievement is still far around the corner and way down the block. The NAEP consistently reports that the average 8th grade minority student performs at about the level of the average 4th grade white student" (National Center for Education Statistics, 2003). In fact, Reading results reported by the NAEP indicated that overall reading scores in the United States have not improved and that the gap between the best and worst readers continues to widen (Carbo, 2003).

The importance of successfully learning to read has been well documented during the last decade (NICHHD, 2000, Stein & Johnson, 1999, Snow et al, 1998, Adams, 1990), yet

the number of students that experience reading failure remains high. It has been suggested that variables such as ethnicity (students from minority populations) and low SES may also contribute to poor reading performance.

"By fourth grade, nearly two out of three African American and Hispanic students are reading below the basic level of achievement, compared to one in three Asian fourth graders and only one in four whites" (Haycock & Jerald, 2002, p. 21). Unfortunately, the gap between races and achievement does not end at 4th grade. It continues through high school. The skills that are so vital to the learning foundation are compromised all the way through school. "The achievement gap between poor and middle-class black and white children is widely recognized as our most important educational challenge" (Rothstein, 2004, p. 17).

Fourth grade is far too late to begin addressing the achievement gap. Even second grade is approaching too late. "Once children fall well behind in reading by second grade, it's very difficult for them to catch up" (Carbo, p.22). One thing is certain, the gaps must be attended to before they become insurmountable. "The development of reading skills serves as the major foundation for all school-based learning. Without the ability to read, opportunities for academic and occupational success are limited" (Lyon, 2003, p.15)

The research as to how to address those gaps remains consistent. "The majority of children at risk for reading

failure can learn to read at average and above-average levels—but only if they are identified early and provided with systematic, explicit, and intensive instruction in phonemic awareness, phonics, reading fluency, vocabulary, and reading comprehension strategies” (Lyon, 2003, p.17). The vitally important process of decoding cannot be left to chance.

Learners with Special Needs

Reading programs and especially those dealing with students of varied learning abilities and readers that are at-risk for failure, should include direct phonics instruction to expand phonemic awareness and create readers that experience success—not failure (IRA, 1998, Lyon, 1988). However, special education students are typically instructed in alternate reading programs, or those that are different from the mainstream district program in order for those students to meet with success.

“According to the National Longitudinal Transition Study (NLTS), the educational attainment levels of students with disabilities is less than adequate, and that they drop out of school at about twice the rate of non-disabled students” (Hehir, 2002, p.34). Typically, instruction for children who are identified as special needs and at risk for reading failure must be more explicit, more comprehensive, more supportive, and more intensive than

reading instruction required by average readers (Jitendra et al, 2004).

Instructional intensity can also be increased by adding additional time to total reading instruction or through individualized or small group instruction (Jitendra et al, 2004). The consequences of poor performance in the classroom can be dire. "Students with learning disabilities fail statewide assessments at alarming rates" (Hehir, 2002, p.34). Specific instructional programs geared to the disabled learner can make all the difference.

The impact of reading instructional processes on the literacy variable of special education can be a valuable tool in the prescription of reading programs to meet individual student needs.

Second Language Learners

Phonemic awareness is the ability to recognize, manipulate, and separate words into smaller units such as syllables, intra-syllabic structures, and phonemes (Rivers & Lombardino, 1998). Phonemic awareness together with alphabetic knowledge are among the most important skills for acquiring fluent reading in an alphabetic language (such as English).

"Reading involves many complex processes, and learning to read presents extra challenges for second-language learners" (Wu, 2005, p.43). Linguistically diverse readers, that is, children who have spoken and/or partial

reading and written fluency in a language other than English need those important skills in order to learn the very difficult orthography of the English language. These phonemic awareness skills do not develop spontaneously or independently, but must be trained in the beginning reader (NICHD, 2000, Rivers & Lombardino, 1998, Adams, 1990).

Linguistically diverse learners benefit from programs which present reading in a "systematic, structured sequence" (Slavin & Cheung, 2004) because second language learners need the phonology and phonotactic structure of the foreign language in order to master it (Chiappe, Siegel, & Wade-Woolley, 2002). Slavin & Cheung (2004) also found, after a careful review of 17 studies, that the research on beginning reading programs for

English language learners finds consistent positive effects of programs that use systematic phonics with one-to-one and small group tutoring models also having positive effects.

As English language learners acquire decoding skills, they also struggle more than their native English speakers in their reading comprehension" (Wu, 2005). There is an ability for already literate linguistically diverse learners to be able to transfer the literacy acquisition skills. This ability, known as transference, is not automatic and can be impeded by the language acquisition process. "English language learners from kindergarten through high school tend to transfer phonological

awareness, or knowledge about the sounds used in language, from one language to another" (Fitzgerald & Graves, 2005, p.69).

The most important task in literacy acquisition for non-native English speakers is to acquire that literacy not at the expense of losing their second language. The cultural heritage that immigrants bring with them to school should not be forgotten. "The primary challenge facing them is to acquire the language they need to be successful in school and beyond" (Glenn, 2002, p.31).

Research-Based Instruction

Those students scoring at or below Basic level on the NAEP demonstrate little or no mastery of the knowledge and skills required for success or performance at their grade level. The national assessment is important because state benchmark tests are designed to assess whatever the states set as curriculum. There is no possibility for national comparisons from a nationally normed test. Research shows that the consequences of failing to learn to read are pervasive and enduring (NICHD, 2000, Stein & Johnson, 1999). In a longitudinal study from first through fourth grades, the years in which decoding and learning to read must be mastered, Juel (1988, as reported in Stein and Johnson, 1999, and Chard & Kameenui, 2000) found that children who did not display good reading skills in first

grade had an almost 90% chance of remaining poor readers after 3 years of schooling.

The International Reading Association (1998) has a position statement that in order for children to become good readers, four skills must be learned: phonemic awareness; phonics; the ability to read fluently with accuracy, speed, and expression; and the ability to apply reading comprehension strategies. This position indicates that in order to effectively instruct children, teachers must understand how children learn to read, why some children have difficulty learning to read, and how to identify and implement the most effective instructional processes.

Conclusions

When children learn to read and write, they construct gendered identities with regard to social situation and literacy tasks. Yet, there is a discrepancy in the performance of females and males in the area of reading literacy in all countries. There is not a preponderance of research to support the fact that a particular instructional strategy is more or less effective for girls or for boys. Nonetheless, the ability to read is critical for future social and economic success and has been recognized as the most important task of formal schooling.

The NRP (1998) extensively reviewed over 100,000 published research articles on the best way to teach

reading. The results showed that phonemic awareness plays an extremely important role and that explicit phonics instruction is necessary for building successful readers, including linguistically diverse readers. Lyon (1998) found that reading does not develop naturally and can be a problem for children who have poor decoding skills. As a result, word recognition skills must be taught directly and systematically.

Spiegel (1999), researched instructional approaches and supports the posture that clearly almost every instructional approach works for some children (Adams, 1990), but research also shows that no approach works for every child. Spiegel advocates a balanced approach, meaning a balance of phonics instruction and whole language with less direct phonics instruction.

Assessment must be an important part of the reading process to ensure student success. Gender inequities on assessment measures warrant further study. The relationships of ethnicity and low SES to literacy acquisition warrant further study, as does the relationship of special education students with alternate reading programs to literacy acquisition ability in the primary grades, before reading failure has occurred.

CHAPTER III METHODOLOGY

The Design-Methods and Procedures

This study compared mean scores for NJ Ask4 of twenty-seven sample populations to determine if significant differences in reading instructional processes and program occur. T-test would be used to compare sample means, however using multiple t-tests for testing the hypothesis that population means are equal would not be appropriate because they would increase the family-wise error. The probability of making one or more Type I errors in the series of t-tests (in this data case 6 tests are needed) is greater than α ($\alpha = .05$), or $1 - (1 - \alpha)^c$. This would increase the likelihood of errors over 6 t-tests from .05 to .47. A better test for comparing sample means was the Analysis of Variance, or ANOVA.

An ANOVA is an analysis of the variation present in the experiment. It is a test of the hypothesis that the variation in an experiment is no greater than that due to normal variation of individual's characteristics and error in their measurement.

This study explored the relationship between various reading programs and reading acquisition. In addition, it examined whether these reading programs differentially impact reading acquisition for literacy variables such as gender, SES, ethnicity, special education classification, and linguistic diversity. Data collection consisted of NJ Ask4 state benchmark literacy assessment results for all

students. Sample population data were separated into distinct categories for each of the variables with separate N values for each variable. A 3 x 2-factor analysis ANOVA was run for each of the variable comparisons.

In this study, differences between the district instructional processes for reading were examined by reviewing printed district materials, surveyed by telephone to verify accurate representation, and categorized for comparison. Instructional processes were separated into three distinct categories such as Direct Phonetic Instruction, which is systematic and explicit phonics instruction in letter-sound correspondence practiced in decodable text, Embedded Code Approach, which would be a less direct phonetic instruction or a balance of phonics instruction and whole language, and Implicit Code Approach, which would be incidental or infrequent phonics instruction.

Sampling

The fourth grade students for academic year 2002-2003 and 2003-2004 were studied as sample populations from each elementary school in this research. The NJ ASK4 has been utilized with benchmarking and equated for only the past two years; therefore, fourth grade state benchmark testing results for those years were studied. In all sample populations the students receive full day instruction in all curriculum areas. The average class size is twenty-

one. Some of the classes have shared inclusion Instructional Assistants for part of the school day. Reading activities are conducted in a traditional language arts block for ninety to one hundred twenty minutes daily.

The 27 schools used in this research study represent the mid-range of DFG, meaning they are not the poorest districts in the state, and they are not the wealthiest. The schools are from multiple counties and geographic regions of the state and have average diversity in ethnicity, limited English proficient populations, economically disadvantaged populations, and special education populations.

The data are from an existing database source (New Jersey State Department of Education). However, permission from the Seton Hall Instructional Review Board has been obtained prior to the commencement of data collection, and an Affidavit of Non-Disclosure has been secured to preserve complete anonymity of the test participants.

Instrumentation

The NJ ASK4 assesses student achievement in the knowledge and critical thinking skills defined by the New Jersey Core Curriculum Content Standards in language arts literacy, mathematics, and science. In 2003, the NJ ASK testing program replaced the Elementary School Proficiency Assessment (ESPA) previously administered to New Jersey's fourth graders with a comprehensive, multi-grade testing

program for both third and fourth graders, as required by the No Child Left Behind Act of 2001. The testing times and test formats are similar to those for ESPA (administered since 1997), including open-ended items for language arts literacy (LAL). Disaggregated data by gender, race, ethnicity, LEP, special education classification status and SES (economically disadvantaged) for the ESPA was first available for the 2001 administration results. Disaggregation of data continues to be the standard of data dissemination for the NJ Ask 4.

NJ Ask 4 was substantially revised from the ESPA test by the Educational Testing Services (ETS) company to be compliant with the No Child Left Behind (2001) legislation. The test was piloted in 2001-2002 and field-tested during that same year in all 598 school districts in the state of New Jersey. The 2002-2003 administration was the first operational assessment with benchmarking standards in place.

The Data

The data analyzed for this research included NJ Ask 4 test results by school broken down into SES (economically disadvantaged), ethnicity, special education, and LEP subgroups with gender also analyzed. The data also included a survey of reading instructional processes and programs from each district in the study through examination of the district's main reading program of

record. Instructional processes were verified through review of supporting literature, scope and sequence, and additional information supplied by individual program publishers.

Data Collection

Since gender, SES (economically disadvantaged), ethnicity, special education classification, and Limited English Proficiency data are part of information already collected on students as part of the state mandated testing program in grades 3 and 4, reported scores for each district for the years 2003 and 2004 were used. Grade 3 tests were formally benchmarked for the 2003 and 2004 administrations and were not normed prior to those dates and therefore weren't considered for this study. Prior to the 2003 administration, NJ Ask 4 was being benchmarked and normed after being substantially retooled from the earlier assessment instrument form: the Elementary School Proficiency Assessment (ESPA), dating back to 1997.

Aggregate results from the 2003 and 2004 test administration are publicly available through newspaper release after being individually mailed to each district and are available for downloading from the state department website <http://education.state.nj.us>.

The research project was part of a request made to each Superintendent and the New Jersey Department of Education, Office of Assessment and Evaluation, to review

disaggregated raw score and scaled score testing results for Language Arts Literacy and Reading Cluster scores for each school.

Data Analysis

This quantitative analysis utilized SPSS for Windows version 11.5 for the procedures related to each of the following sub-problems.

The Specific Treatment of Each Sub-Problem

The main problem is to determine whether or not a relationship between Literacy Acquisition Rate and reading instructional processes exists. The null hypothesis is that reading instructional process has no effect on literacy acquisition. Do the three defined reading instructional process categories for this study (i.e. Direct Phonetic Instruction, Embedded Code Approach, and Implicit Code Approach) differ in literacy acquisition on the NJ ASK4? A single factor ANOVA with Reading instructional processes as the independent variable and literacy acquisition as the dependent variable was utilized to test the null. If the null was rejected, post-hoc tests would be performed to determine where the difference exists between the means.

Sub-Problem 1

The first sub-problem is to determine whether the type of reading instructional processes differentially effect literacy acquisition rates for girls and boys. An ANOVA with 3 x 2-factor analysis was used to treat the main effect of gender, categorized by male or female, and the main effect of three categories of reading instructional processes. In addition, it was used to determine if there is an interaction between these two variables and Reading acquisition.

Sub-Problem 2

The second sub-problem is to determine whether the type of Reading instructional process differentially effect literacy acquisition rates for the two SES groups. A 3 x 2 factor ANOVA was used to treat the main effect of SES, categorized by yes or no, and the main effect of three categories of reading instructional process. In addition, it was used to determine if there is an interaction between these two variables and Reading acquisition.

Sub-Problem 3

The third sub-problem is to determine whether the type of Reading instructional process differentially effect literacy acquisition rates for the two ethnic groups. A 3 x 2 factor ANOVA was used to treat the main effect of ethnicity, categorized by white or non-white, and the main

effect of three categories of reading instructional processes. In addition, it was used to determine if there is an interaction between these two variables and Reading acquisition.

Sub-Problem 4

The fourth sub-problem is to determine whether the type of Reading instructional process differentially effect literacy acquisition rates for the two special education groups. A 3 x 2 factor ANOVA was used to treat the main effect of special education classification, categorized by yes or no, and the main effect of three categories of reading instructional process. In addition, it was used to determine if there is an interaction between these two variables and Reading acquisition.

Sub-Problem 5

The fifth sub-problem is to determine whether the type of Reading instructional process differentially effect literacy acquisition rates for the two linguistic diversity (categorized by NJ Ask 4 as Limited English Proficient, or LEP) groups. A 3 x 2 factor ANOVA was used to treat the main effect of LEP, categorized by yes or no, and the main effect of three categories of reading instructional process. In addition, it was used to determine if there is an interaction between these two variables and Reading acquisition.

CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

Sample Characteristics

This chapter presents both descriptive and inferential results of the study. It includes the sample characteristics along with results from the analysis conducted.

The researcher's purpose for conducting this study was to investigate the role of reading instruction processes on literacy acquisition as well as to examine whether reading instruction processes differentially effect literacy acquisition for a number of variables related to literacy acquisition. This investigation compared the means of several sample populations in the area of Language Arts Literacy total Scaled Scores and Reading cluster scores.

The participants in this study were public elementary school students from 27 schools in the mid-range of District Factor Groupings from multiple counties and multiple districts from suburban New Jersey. The 4803 participants were selected by the criteria of being enrolled in the fourth grade of the selected 27 elementary schools for 2003 school year, and a second cohort of fourth graders enrolled in the same 27 elementary schools used in the study for the 2004 school year.

Descriptive Statistics

Table 1 presents the frequency of valid cases for each cohort year in the study, as well as the total frequency of valid cases. The numbers of participants in each cohort are nearly equal with the 2004 cohort evidencing an increase of 37 students over 2003.

Table 1:

Frequency by Cohort Year

		Cohort Year			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2003	2383	49.6	49.6	49.6
	2004	2420	50.4	50.4	100.0
	Total	4803	100.0	100.0	

For the main research question, the effect of reading instructional processes on reading performance was examined by comparing means from the total Language Arts Literacy Scaled Scores from the 2003 and 2004 NJ ASK of the 27 mid-range DFG schools used in the study. A One-Way ANOVA was used for statistical treatment of the data.

Table 2 shows the coding of instructional processes and frequency of cases assigned to each Reading Instructional Process for the study by cohort year, accounting for 100 percent of the cases in the study. The number of participants in Direct Phonics and Embedded Code went down slightly in 2004 from 2003, while Implicit Code actually went up.

Table 2:

*Frequency by Reading Instructional Process***Reading Instructional Process * Cohort Year
Crosstabulation**

Count		Cohort Year		Total
		2003	2004	
Reading Instructional Process	Direct Phonics	670	650	1320
	Embedded	1038	1024	2062
	Implicit	675	746	1421
Total		2383	2420	4803

For subsidiary question one, the effect between reading instructional processes and gender on reading performance was studied by comparing means from Language Arts Literacy Reading cluster raw scores from the 2003 and 2004 NJ ASK of the 27 schools used in the study. A 3 x 2 factor ANOVA was used for statistical treatment of the data.

Table 3 presents the frequency of valid cases for each gender by cohort year, and represents the total frequency of valid cases. The percentage of girls to boys is nearly equal.

Table 3:

*Frequency by Gender***Gender * Cohort Year Crosstabulation**

Count		Cohort Year		Total
		2003	2004	
Gender	Girls	1182	1169	2351
	Boys	1197	1251	2448
Total		2379	2420	4799

For subsidiary question two, the effect between reading instructional processes and SES (coded as economic status) on reading performance was studied by comparing means from Language Arts Literacy Reading cluster raw scores from the 2003 and 2004 NJ ASK of the 27 schools used in the study. A 3 x 2 factor ANOVA was used.

Table 4 depicts the frequency of valid cases for each category of economic status analyzed in the study by cohort year, and characterized as disadvantaged and non-disadvantaged. The table also represents the total frequency of valid cases.

Table 4:

Frequency by Economic Status

Economic Status * Cohort Year Crosstabulation

Count		Cohort Year		Total
		2003	2004	
Economic Status	Disadvantaged	211	202	413
	Non-Disadvantaged	2172	2218	4390
Total		2383	2420	4803

For subsidiary question three, the effect between reading instructional processes and ethnicity on reading performance was studied by comparing means from Language Arts Literacy Reading cluster raw scores from the 2003 and 2004 NJ ASK of the 27 schools used in the study. A 3 x 2 factor ANOVA was used.

Table 5 represents the frequency of valid cases for each category of ethnic affiliation analyzed in the study by cohort year, and characterized as white and non-white. The table also represents the total frequency of valid cases.

Table 5:

Frequency by Ethnic Affiliation

Ethnic Affiliation * Cohort Year Crosstabulation

Count		Cohort Year		Total
		2003	2004	
Ethnic Affiliation	White	1584	1604	3188
	Non-White	799	816	1615
Total		2383	2420	4803

For subsidiary question four, the effect between reading instructional processes and special education classification on reading performance was studied by comparing means from Language Arts Literacy Reading cluster raw scores from the 2003 and 2004 NJ ASK of the 27 schools used in the study by cohort year. A 3 x 2 factor ANOVA was used.

Table 6 represents the frequency of valid cases for each category of special education analyzed in the study and characterized as yes or no. The table also represents the total frequency of valid cases.

Table 6:

Frequency by Special Education Status

SPED Status * Cohort Year Crosstabulation

Count		Cohort Year		Total
		2003	2004	
SPED	Yes	358	388	746
Status	No	2025	2032	4057
Total		2383	2420	4803

For subsidiary question five, the effect between reading instructional processes and linguistic diversity (coded as Limited English Proficient) on reading performance was studied by comparing means from Language Arts Literacy Reading cluster raw scores from the 2003 and 2004 NJ ASK of the 27 schools used in the study, by cohort year. A 3 x 2 factor ANOVA was used.

Table 7 represents the frequency of valid cases for each category of linguistic diversity analyzed in the study and characterized as Limited English Proficient (LEP) yes or no. The table also represents the total frequency of valid cases.

Table 7:

Frequency by LEP

LEP * Cohort Year Crosstabulation

Count		Cohort Year		Total
		2003	2004	
LEP	Yes	72	110	182
	No	2311	2310	4621
Total		2383	2420	4803

For the 27 schools analyzed in the study, Figure 1 shows the normal curve distribution of 4th grade student test results for all participants in the study. The histogram chart illustrates the frequency distribution for each test score. The dependent variable depicted in this chart was Language Arts Literacy (Scaled Scores). Actual scaled test scores ranged from 110 to 270.

Figure 1 depicts the normal curve distribution of 4th grade student scaled test results for raw scores. The total number of participants for both cohort years 2003 and 2004 was 4803. In this table, by frequency distribution, with normal curve equivalent, the first quartile has a range of scores from 106-149. The second quartile has a range of scores from 150-193. The third quartile has a range of scores from 194-237. The fourth quartile has a range of scores from 238-279. For 2003 and 2004 Language Arts Literacy, the state has set cut-offs for proficiency with below 200 set as Below Proficient, 200-249 set as Proficient, and 250-279 set as Advanced Proficient.

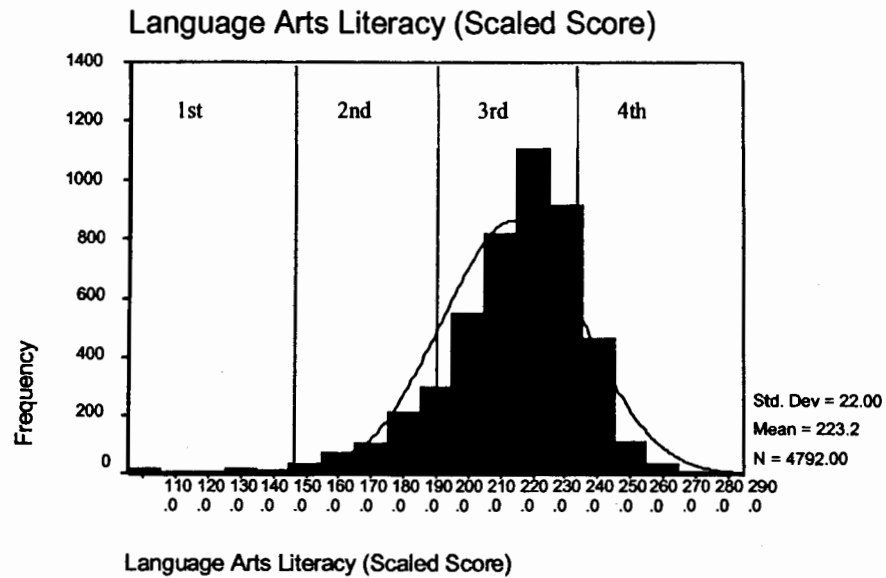


Figure 1: Interquartile Range for LAL Scaled Scores

Figure 2 also depicts the normal curve distribution of 4th grade participants tested on the dependent variable for subsidiary questions 1-5 of Reading Cluster Raw Scores. In this figure, by frequency distribution, with normal curve equivalent, the first quartile has a range of scores from 0-57. The second quartile has a range of scores from 58-115. The third quartile has a range of scores from 116-172. The fourth quartile has a range of scores from 173-230. The state department of education does not set minimum levels of proficiency with raw scores from this subtest. Levels of proficiency are only set with scaled scores.

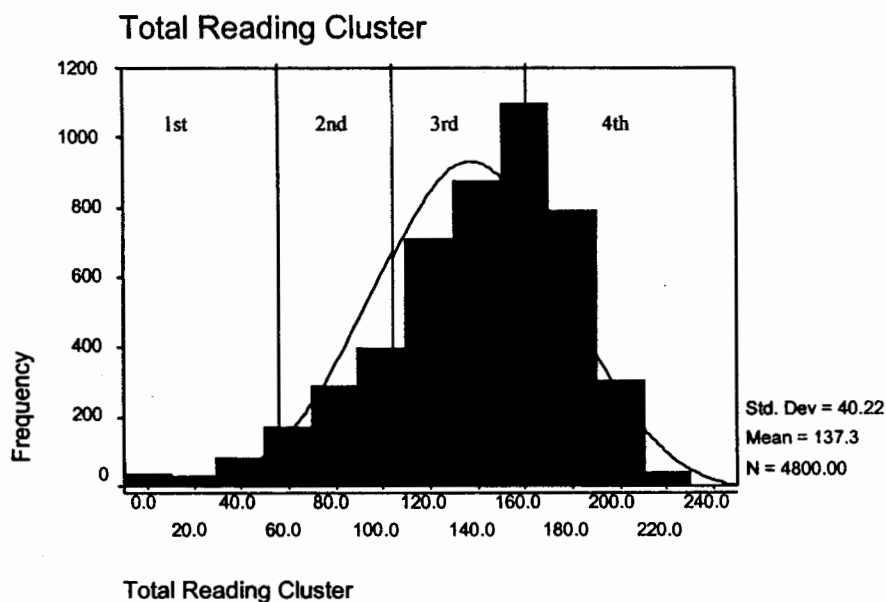


Figure 2: Interquartile Range for Reading Cluster Score

Hypotheses

For the main research question and each of the five subsidiary research questions, the following null hypotheses were tested:

Main H₀: There will be no significant difference between Reading Instructional Processes of Direct Phonics, Embedded Code, and Implicit Code on the dependent variable of Reading Cluster performance.

Sub H₀₁: There will be no significant differences between Reading Instructional Processes and Gender on the dependent variable of Reading Cluster performance.

Sub H₀₂: There will be no significant differences between Reading Instructional Processes and SES on the dependent variable of Reading Cluster performance.

Sub H₀₃: There will be no significant differences between Reading Instructional Processes and Ethnicity on the dependent variable of Reading Cluster performance.

Sub H₀₄: There will be no significant differences between Reading Instructional Processes and Special Education status on the dependent variable of Reading Cluster performance.

Sub H₀₅: There will be no significant differences between Reading Instructional Processes and Limited English Proficiency on the dependent variable of Reading Cluster performance.

Inferential Statistics

The proposed research question for investigation was as follows: How do various reading instructional processes have differential impacts on student performance in literacy acquisition?

To answer this question, the Language Arts Literacy Scaled Scores of 27 sample populations of heterogeneous children who demonstrate above average, average, and below-average language and reading abilities were examined using a One-Way ANOVA.

Analysis of variance is a statistical procedure used for comparing sample means to see if there is sufficient evidence to infer that the means of corresponding population distributions also differ (George and Mallery, 2003). The ANOVA is One-Way because the dependent variable

of Language Arts Literacy Scaled Scores is continuous and the one independent variable of Reading Instructional Processes is categorical. The One-Way ANOVA tells if there are significant differences within any of the comparisons of the three groups in the sample population for the independent variable.

Cohen (In Hinkle, Wiersma, and Jurs, 2003) defined effect size as the "degree to which a phenomenon exists" (p. 247). For purposes of this study, they "provide another measure of the magnitude of the difference expressed in standard deviation units" (p. 249), thereby indicating the practical importance of the differences in Reading Instructional Processes.

According to Witte and Witte (2001, p. 379), η^2_p is the squared curvilinear correlation coefficient which indicates the proportion of variance in the dependent variable (Language Arts Literacy total scaled scores for the main question and Reading Cluster scores for the subsidiary questions) explained by the independent variables (Reading Instructional Processes for the main question and for subsidiary questions in addition to gender, SES, ethnicity, special education, and LEP). For this study, the SPSS statistical software package generates a partial ETA squared (curvilinear correlation coefficient). The guidelines for Cohen's effect size (η^2_p) interpretation were: little, if any = $<.000-.004$, small = $.005-.054$, medium = $.055-.134$, and large = $.135$ or greater.

Table 10 shows descriptive information for the One-Way ANOVA with Language Arts Literacy Scaled Scores as the dependent variable and Reading Instructional Processes as the independent variable. The mean, standard deviation, and number of participants in each group are depicted. The participants in Embedded Code instruction had the highest average on Language Arts Literacy Scaled Scores with a mean = 223.90. Participants in the Implicit Code instruction scored lowest on Language Arts Literacy Scaled Scores with a mean = 222.12. Direct Phonics was slightly higher with a mean = 223.29.

Table 8

One-Way ANOVA (LAL Scaled Scores)

Descriptives						
Language Arts Literacy (Scaled Score)						
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Direct Phonics	1317	223.29	21.200	.584	222.14	224.43
Embedded	2058	223.90	22.122	.488	222.94	224.85
Implicit	1417	222.12	22.532	.599	220.94	223.29
Total	4792	223.20	22.004	.318	222.58	223.83

In table 11, the ANOVA results are depicted. The analysis indicated that $F(2, 4791) = 2.769$, and $p = .063$, which is not significant at $p > .050$. There was therefore little, if any effect as evidenced by the η^2_p .

Table 9

One-Way ANOVA Results for Instructional Processes

ANOVA

Language Arts Literacy (Scaled Score)					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2679.292	2	1339.646	2.769	.063
Within Groups	2317001.550	4789	483.817		
Total	2319680.841	4791			

To examine subsidiary question one, literacy acquisition was analyzed using a 3 (Reading Instructional Process: Direct Phonics vs. Embedded Code vs. Implicit Code) x 2 (Gender: Girls vs. Boys) factor ANOVA. Table 12 examines Descriptive Statistics for each of the categories.

In examining the mean total points for gender according to Reading Instructional Process, it was observed that girls scored higher than boys overall. Specifically, the female participants in Embedded Code instruction had the highest average on Total Reading Cluster with mean = 145.17. Girls participating in the Direct Phonics instruction scored lowest on Total Reading Cluster with a mean=141.85. Implicit Code was slightly higher for girls with a mean = 142.01.

In this study, boys scored highest with Direct Phonics with a mean = 133.80, followed by Implicit Code with a mean = 130.85 for boys. The lowest scores were with Embedded Code with a mean = 130.76.

Table 10

Instructional Processes vs. Gender

Descriptive Statistics

Dependent Variable: Total Reading Cluster

Reading Instructional Process	Gender	Mean	Std. Deviation	N
Direct Phonics	Girls	141.85	37.477	643
	Boys	133.80	40.466	674
	Total	137.73	39.228	1317
Embedded	Girls	145.17	37.986	1025
	Boys	130.76	41.068	1035
	Total	137.93	40.206	2060
Implicit	Girls	142.01	40.103	682
	Boys	130.85	41.325	737
	Total	136.22	41.108	1419
Total	Girls	143.34	38.493	2350
	Boys	131.63	40.986	2446
	Total	137.37	40.209	4796

Table 13 depicts the results of the 3 x 2 factor ANOVA analysis of data. The results revealed that the main effect of Instructional Process with $F(2, 4790) = .694$ and $p = .50$ was not statistically significant because $p > .050$. Therefore, there was little, if any, effect with $\eta^2_p = .000$. The main effect of Gender with $F(1, 4790) = 91.55$ and $p = .000$ was statistically significant because $p < .050$. There was considered to be a small effect with $\eta^2_p = .02$. The interaction effect with $F(2, 4790) = 2.62$ and $p = .073$ was not statistically significant because $p > .050$. Therefore, there was little, if any, effect with $\eta^2_p = .001$.

Table 11

ANOVA Results for Subsidiary Question 1 (Gender)

Tests of Between-Subjects Effects

Dependent Variable: Total Reading Cluster

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	175082.552 ^a	5	35016.510	22.136	.000	.023
Intercept	87099006.684	1	87099006.684	55059.326	.000	.920
INSTPROC	2196.408	2	1098.204	.694	.500	.000
GENDER	144829.193	1	144829.193	91.553	.000	.019
INSTPROC * GENDER	8272.126	2	4136.063	2.615	.073	.001
Error	7577358.373	4790	1581.912			
Total	98252275.000	4796				
Corrected Total	7752440.925	4795				

a. R Squared = .023 (Adjusted R Squared = .022)

To examine subsidiary question two, literacy acquisition was analyzed using a 3 (Reading Instructional Process: Direct Phonics vs. Embedded Code vs. Implicit Code) x 2 (Economic Status: Disadvantaged vs. Non-Disadvantaged) factor ANOVA. Table 14 examines Descriptive Statistics for each of the categories.

In examining the mean total points for Economic Status according to Reading Instructional Process, it was observed that Non-Disadvantaged students scored higher than Disadvantaged students overall. Specifically, the Non-Disadvantaged participants in Implicit Code instruction had the highest average on Total Reading Cluster with a mean = 141.37. Non-Disadvantaged students in the Embedded Code instruction scored lowest on Total Reading Cluster with a mean = 139.74. Direct Phonics was slightly higher for Non-Disadvantaged students with a mean = 140.25.

In this study, Disadvantaged students scored highest with Embedded Code with a mean = 113.17, followed by Direct Phonics with a mean = 103.86 for Disadvantaged students. The lowest scores were with Implicit Code with a mean = 99.66.

Table 12

Instructional Processes vs. SES-Economic Status

Descriptive Statistics

Dependent Variable: Total Reading Cluster

Reading Instructional Process	Economic Status	Mean	Std. Deviation	N
Direct Phonics	Disadvantaged	103.86	39.663	92
	Non-Disadvantaged	140.25	38.005	1226
	Total	137.71	39.220	1318
Embedded	Disadvantaged	113.17	44.353	142
	Non-Disadvantaged	139.74	39.285	1919
	Total	137.91	40.211	2061
Implicit	Disadvantaged	99.66	41.516	178
	Non-Disadvantaged	141.37	38.362	1243
	Total	136.15	41.143	1421
Total	Disadvantaged	105.25	42.439	412
	Non-Disadvantaged	140.34	38.667	4388
	Total	137.33	40.220	4800

Table 15 depicts the results of the 3 x 2 factor ANOVA analysis of data. The results revealed that the main effect of Instructional Process with $F(2, 4794) = 3.44$ and $p = .032$ was statistically significant because $p < .050$. There was little, if any, effect with $\eta^2_p = .001$. The main effect of Economic Disadvantage with $F(1, 4794) = 280.91$ and $p = .000$ was statistically significant because $p < .050$. There was considered to be a medium effect with $\eta^2_p = .06$.

The interaction effect of Instructional Processes vs. Economic Disadvantage with $F(2, 4794) = 5.45$ and $p = .004$ was statistically significant because $p < .050$. There was little, if any, effect with $\eta^2_p = .002$.

Table 13

ANOVA Results for Subsidiary Question 2 (SES)

Tests of Between-Subjects Effects

Dependent Variable: Total Reading Cluster

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	480376.919 ^a	5	96075.384	63.243	.000	.062
Intercept	21219014.786	1	21219014.786	13967.629	.000	.744
INSTPROC	10449.611	2	5224.805	3.439	.032	.001
ECONDIS	426749.368	1	426749.368	280.912	.000	.055
INSTPROC * ECONDIS	16567.610	2	8283.805	5.453	.004	.002
Error	7282836.394	4794	1519.157			
Total	98290600.000	4800				
Corrected Total	7763213.313	4799				

a. R Squared = .062 (Adjusted R Squared = .061)

To examine subsidiary question three, literacy acquisition was analyzed using a 3 (Reading Instructional Process: Direct Phonics vs. Embedded Code vs. Implicit Code) x 2 (Ethnic Affiliation: White vs. Non-White) factor ANOVA. Table 16 examines Descriptive Statistics for each of the categories.

In examining the mean total points for Ethnic Affiliation according to Reading Instructional Process, it was observed that White students scored higher than Non-White students overall. Specifically, the White participants in Implicit Code instruction had the highest average on Total Reading Cluster with a mean = 142.63.

White students in the Embedded Code instruction scored lowest on Total Reading Cluster with a mean = 140.12. Direct Phonics was slightly higher for Non-White students with a mean = 140.41.

In this study, Non-White students scored highest with Embedded Code with a mean = 132.16, followed by Direct Phonics with a mean = 131.08 for Non-White students. The lowest scores were with Implicit Code with a mean = 128.63.

Table 14

Instructional Processes vs. Ethnicity

Descriptive Statistics

Dependent Variable: Total Reading Cluster

Reading Instructional Process	Ethnic Affiliation	Mean	Std. Deviation	N
Direct Phonics	White	140.41	36.960	937
	Non-White	131.08	43.639	381
	Total	137.71	39.220	1318
Embedded	White	140.12	38.253	1487
	Non-White	132.16	44.410	574
	Total	137.91	40.211	2061
Implicit	White	142.63	35.588	763
	Non-White	128.63	45.656	658
	Total	136.15	41.143	1421
Total	White	140.81	37.253	3187
	Non-White	130.46	44.744	1613
	Total	137.33	40.220	4800

Table 17 depicts the results of the 3 x 2 factor ANOVA analysis of data. The results revealed that the main effect of Instructional Process with $F(2, 4794) = .070$ and $p = .933$ was not statistically significant because $p > .050$. Therefore, there was little, if any, effect with $\eta^2_p =$

.000. The main effect of Ethnic Affiliation with $F(1,4794)=68.73$ and $p = .000$ was statistically significant because $p < .050$. There was considered to be a small effect with $\eta^2_p = .01$. The interaction effect of Instructional Processes vs. Ethnicity with $F(2,4794)=2.30$ and $p = .10$ was not statistically significant because $p > .050$. There was little, if any, effect with $\eta^2_p = .001$.

Table 15

ANOVA Results for Subsidiary Question 3 (Ethnicity)

Tests of Between-Subjects Effects

Dependent Variable: Total Reading Cluster

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	121910.103 ^a	5	24382.021	15.297	.000	.016
Intercept	74328380.375	1	74328380.375	46632.131	.000	.907
INSTPROC	222.159	2	111.080	.070	.933	.000
ETHNIC	109546.479	1	109546.479	68.727	.000	.014
INSTPROC * ETHNIC	7334.557	2	3667.279	2.301	.100	.001
Error	7641303.210	4794	1593.931			
Total	98290600.000	4800				
Corrected Total	7763213.313	4799				

a. R Squared = .016 (Adjusted R Squared = .015)

To examine subsidiary question four, literacy acquisition was analyzed using a 3 (Reading Instructional Process: Direct Phonics vs. Embedded Code vs. Implicit Code) x 2 (Special Education: Yes vs. No) factor ANOVA. Table 18 examines Descriptive Statistics for each of the categories.

In examining the mean total points for Special Education according to Reading Instructional Process, it was observed that Non-Special Education students scored

higher than Special Education students overall.

Specifically, the Non-Special Education participants in Embedded Code instruction had the highest average on Total Reading Cluster with a mean = 145.61. Non-Special Education students in the Implicit Code instruction scored lowest on Total Reading Cluster with a mean = 142.92. Direct Phonics was higher for Non-Special Education students with a mean = 144.18.

In this study, Special Education students scored highest with Direct Phonics with a mean = 101.98, followed by Embedded Code with a mean = 98.62 for Special Education students. The lowest scores were with Implicit Code with a mean = 95.98.

Table 16

Instructional Processes vs. Special Ed

Descriptive Statistics

Dependent Variable: Total Reading Cluster

Reading Instructional Process	SPED Status	Mean	Std. Deviation	N
Direct Phonics	Yes	101.98	44.409	202
	No	144.18	34.471	1116
	Total	137.71	39.220	1318
Embedded	Yes	98.62	44.420	338
	No	145.61	34.436	1723
	Total	137.91	40.211	2061
Implicit	Yes	95.98	45.323	205
	No	142.92	36.267	1216
	Total	136.15	41.143	1421
Total	Yes	98.81	44.663	745
	No	144.41	35.014	4055
	Total	137.33	40.220	4800

Table 19 depicts the results of the 3 x 2 factor ANOVA analysis of data. The results revealed that the main effect of Instructional Process with $F(2, 4794) = 1.88$ and $p = .153$ was not statistically significant because $p > .050$. Therefore, there was little, if any, effect with $\eta^2_p = .001$. The main effect of Special Education Status with $F(1, 4794) = 913.63$ and $p = .000$ was statistically significant because $p < .050$. There was considered to be a large effect with $\eta^2_p = .16$.

The interaction effect of Instructional Processes vs. Special Education with $F(2, 4794) = 1420.22$ and $p = .348$ was not statistically significant because $p > .050$. There was little, if any, effect with $\eta^2_p = .000$. Looking at the R^2 , 17% of the variance in Special Education status is explained by Instructional Processes.

Table 17

ANOVA Results for Subsidiary Question 4 (SPED)

Tests of Between-Subjects Effects

Dependent Variable: Total Reading Cluster

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1317858.534 ^a	5	263571.707	196.042	.000	.170
Intercept	35255369.292	1	35255369.292	26222.643	.000	.845
INSTPROC	5046.147	2	2523.073	1.877	.153	.001
SE	1228338.646	1	1228338.646	913.628	.000	.160
INSTPROC * SE	2840.441	2	1420.220	1.056	.348	.000
Error	6445354.778	4794	1344.463			
Total	98290600.000	4800				
Corrected Total	7763213.313	4799				

a. R Squared = .170 (Adjusted R Squared = .169)

To examine subsidiary question five, literacy acquisition was analyzed using a 3 (Reading Instructional Process: Direct Phonics vs. Embedded Code vs. Implicit Code) x 2 (Limited English Proficiency: Yes vs. No) factor ANOVA. Table 20 examines Descriptive Statistics for each of the categories.

In examining the mean total points for Limited English Proficiency according to Reading Instructional Process, it was observed that Non-Limited English Proficient students scored higher than Limited English Proficient students overall. Specifically, the Non-Limited English Proficient participants in Embedded Code instruction had the highest average on Total Reading Cluster with a mean = 139.16. Non-Limited English Proficient students in the Implicit Code instruction scored lowest on Total Reading Cluster with a mean = 138.27. Direct Phonics was higher for Non-Limited English Proficient students with a mean = 138.70.

In this study, Limited English Proficient students scored highest with Direct Phonics with a mean = 118.36, followed by Embedded Code with a mean = 101.18 for Limited English Proficient students. The lowest scores were with Implicit Code with a mean = 77.90.

Table 18

Instructional Processes vs. LEP

Descriptive Statistics

Dependent Variable: Total Reading Cluster

Reading Instructional Process	LEP	Mean	Std. Deviation	N
Direct Phonics	Yes	118.36	40.040	64
	No	138.70	38.937	1254
	Total	137.71	39.220	1318
Embedded	Yes	101.18	46.594	68
	No	139.16	39.388	1993
	Total	137.91	40.211	2061
Implicit	Yes	77.90	33.717	50
	No	138.27	39.819	1371
	Total	136.15	41.143	1421
Total	Yes	100.82	43.856	182
	No	138.77	39.388	4618
	Total	137.33	40.220	4800

Table 21 depicts the results of the 3 x 2 factor ANOVA analysis of data. The results revealed that the main effect of Instructional Process with $F(2, 4794) = 14.47$ and $p = .000$ was statistically significant because $p < .050$. There was considered to be a small effect with $\eta^2_p = .01$. The main effect of Limited English Proficiency with $F(1, 4794) = 172.80$ and $p = .000$ was statistically significant because $p < .050$. There was considered to be a small effect with $\eta^2_p = .04$.

The interaction effect with $F(2, 4794) = 13.85$ and $p = .000$ was statistically significant because $p < .050$. There was considered to be a small effect with $\eta^2_p = .01$.

Table 19

ANOVA Results for Subsidiary Question 5 (LEP)

Tests of Between-Subjects Effects

Dependent Variable: Total Reading Cluster

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	298736.630 ^a	5	59747.326	38.372	.000	.038
Intercept	9724543.020	1	9724543.020	6245.509	.000	.566
INSTPROC	45066.635	2	22533.318	14.472	.000	.006
LEP	269055.486	1	269055.486	172.799	.000	.035
INSTPROC * LEP	43141.011	2	21570.506	13.853	.000	.006
Error	7464476.682	4794	1557.046			
Total	98290600.000	4800				
Corrected Total	7763213.313	4799				

a. R Squared = .038 (Adjusted R Squared = .037)

Tests of Hypotheses

The data presented in this section were used to test the hypotheses of the study. The following hypotheses concerning literacy acquisition were supported statistically:

Main H₀: There is no significant difference between Reading Instructional Processes of Direct Phonics, Embedded Code, and Implicit Code on the dependent variable of Reading Cluster performance.

Sub H₀₁: There are significant differences in the main effect of Gender on the dependent variable of Reading Cluster performance with a small main effect. There are no significant differences in the main effect of Reading Instructional Processes or the interaction effect of Reading Instructional Processes vs. Gender.

Sub H₀₂: There are significant differences in the main effect of Reading Instructional Processes on the dependent variable of Reading Cluster performance with little, if any, effect size. There are significant differences in the main effect of SES on the dependent variable of Reading Cluster performance with a medium effect size. There are significant differences in the interaction effect of Reading Instructional Processes vs. Economically Disadvantaged with little, if any effect size.

Sub H₀₃: There are no significant differences in the main effect of Reading Instructional Processes on the dependent variable of Reading Cluster performance. There are statistically significant differences in the main effect of Ethnicity on the dependent variable of Reading Cluster performance with a small effect size. There are no significant differences in the interaction effect of Reading Instructional Processes vs. Ethnicity.

Sub H₀₄: There are no significant differences in the main effect of Reading Instructional Processes on the dependent variable of Reading Cluster performance. There are significant differences in the main effect of Special Education status on the dependent variable of Reading Cluster performance with a large effect size. There are no significant differences in the interaction effect of Reading Instructional Processes vs. Special Education.

Sub H₀₅: There are significant differences in the main effect of Reading Instructional Processes on the dependent

variable of Reading Cluster performance with a small effect size. There are significant differences in the main effect of Limited English Proficiency on the dependent variable of Reading Cluster performance with a small effect size.

There are significant differences in the interaction effect of Reading Instructional Processes vs. Limited English Proficiency with a small effect size.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary, conclusions, and recommendations based on findings of this study. Analyses of variance methods were used to address the primary hypothesis. This chapter also includes a restatement of the purpose, hypothesis, methodology, and the findings of the study. A discussion based upon the findings of the study is also presented. Following the discussions are implications for policy, practice, and recommendations based upon the findings of the study.

Summary of the Study

The purpose of this study was to determine if there was a difference in reading instruction processes on literacy acquisition as well as to examine whether reading instructional processes differentially effect literacy acquisition for a number of variables related to literacy acquisition. This investigation compared the means of 27 sample populations from mid-range DFG schools. The outcome measure was the performance of the 2003 and 2004 4th grade cohort groups on the New Jersey Assessment of Skills and Knowledge Level 4 (NJ ASK4) Language Arts Literacy sub-tests. Membership in the cohorts did not overlap with the few exceptions of retention in 4th grade.

As noted by Graves and colleagues (2000), Juel and Minden-Cupp (2000), Kuhn and Stahl (2000), and Snow and colleagues (1998), reading and literacy have been established as being critical to success in today's society. Librera (2004) further notes that a literacy foundation is important to understanding every subject that is offered in school. It has also been established by Snow and colleagues (1998) and NICHD (2000), and supported by NAEP 4th grade language arts performance (1992, 1996, and 2002), that United States children are in academic danger because they do not have the necessary reading skills to adequately meet the demands of an increasingly competitive society.

Given this need to address the declining literacy skills, it makes sense that an examination of reading instructional processes for effectiveness would be a step toward beginning to identify potential solutions to the problem. To determine the efficacy of various instructional processes, the individual reading performance of over 4,800 students was examined over a two-year testing period.

Using a master database, schools were coded according to reported reading programs of record with supporting publisher documentation as to the level of phonetic instruction employed by the main instructional process. Data coding designations of Direct Phonics for systematic and explicit phonics instruction in letter-sound correspondence practiced in decodable text, Embedded Code for a less direct phonetic instruction or a balance of phonics instruction and whole language, and Implicit Code for incidental or infrequent phonics instruction (Foorman et al., 1998) were used to identify Reading instructional processes.

All of the 27 schools in the study were assigned a letter name and coded in the master database. Code names ranged from School A through School Z for the first 26 schools, with School AA being assigned to the 27th school. Based upon a careful study of reported reading programs of record as well as publisher provided information, the coding of Instructional Processes for Schools A, B, C, D, E, Q, R, and S were assigned the Direct Phonics designation (N=1317). Schools J, L, M, N, O, P, T, U, V, W, X, Y, Z, and AA were assigned the Embedded Code designation (N=2058). Finally, schools F, G, H, I, and K were assigned the Implicit Code designation (N=1417).

The master database also contained coding for students' gender as girls or boys, economic status as disadvantaged or non-disadvantaged, ethnicity as white or non-white, special education classification status as yes or no, and Limited English Proficiency Status as yes or no. All 4,803 students who took the NJ ASK4 test in 2003 and 2004 from 27 schools in mid-range DFG districts served as the population for the study.

The primary investigation employed Analysis of Variance (ANOVA) using the Language Arts Literacy Total scores on the NJ ASK4, a test matched to the state requirements but not standardized, as a dependent variable for the main hypothesis, and employed the Reading Cluster raw scores, a sub-test within the Language Arts Literacy portion of the NJ ASK4, for the five subsidiary hypotheses.

For the main hypothesis, a One-Way ANOVA was used to analyze the effects of the categorical independent variable of reading instructional processes on the continuous dependent variable of Language Arts Literacy Total scores. For the subsidiary hypotheses, a 3 x 2 factorial design was used to analyze the effects of the two independent variables of reading instructional processes (having 3 categories of Direct Phonics, Embedded Code, and Implicit Code) and the changing variables of gender, economic status, ethnicity, special education status, and Limited English Proficiency status (each having 2 categories by design).

Hypotheses

The following null hypotheses were tested:

Main H₀: There will be no significant difference between Reading Instructional Processes of Direct Phonics, Embedded Code, and Implicit Code on the dependent variable of Language Arts Literacy total score performance.

Sub H₀₁: There will be no significant differences between Reading Instructional Processes and Gender on the dependent variable of Reading Cluster performance.

Sub H₀₂: There will be no significant differences between Reading Instructional Processes and SES on the dependent variable of Reading Cluster performance.

Sub H₀₃: There will be no significant differences between Reading Instructional Processes and Ethnicity on the dependent variable of Reading Cluster performance.

Sub H₀₄: There will be no significant differences between Reading Instructional Processes and Special Education status on the dependent variable of Reading Cluster performance.

Sub H₀₅: There will be no significant differences between Reading Instructional Processes and Limited English Proficiency on the dependent variable of Reading Cluster performance.

Findings

For the main hypothesis, the reading instructional process variable was coded at three levels of Direct Phonics, Embedded Code, and Implicit Code. An analysis of the variance for significant differences within any of the comparisons of the three groups in the sample population for the independent variable of reading instructional processes revealed that participants in Embedded Code instruction had the highest average on Language Arts Literacy Scaled Scores with a mean = 223.90. Participants in the Implicit Code instruction scored lowest on Language Arts Literacy with a Figure 3.

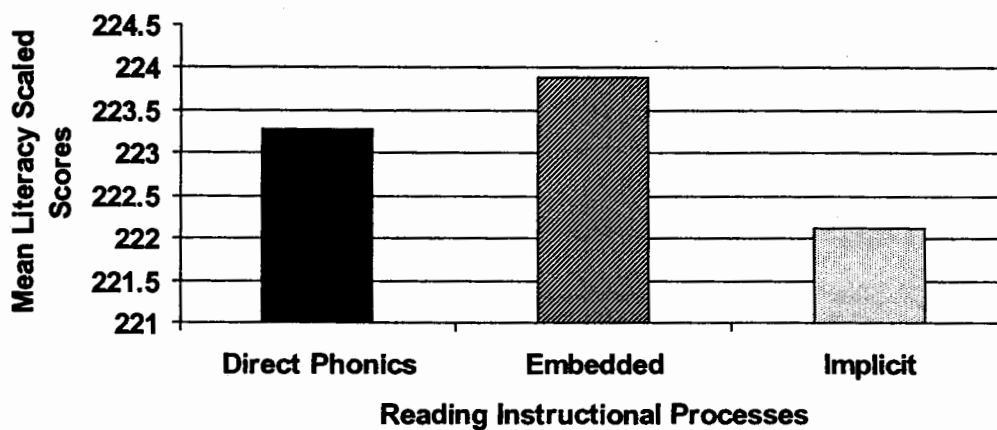


Figure 3: Mean Scores for Instructional Processes

Following the execution of the One-Way ANOVA and securing a not statistically significant effect between groups ($p = .063$ at $p > .05$), the outcome of no significant difference between Reading Instructional Processes of Direct Phonics, Embedded Code, and Implicit Code on the dependent variable of Reading Cluster performance was observed. The null hypothesis for the main question was therefore retained.

In answering the main hypothesis: "How do various reading instructional processes have differential impacts on student performance in literacy acquisition?", these results would tend to confirm the research by Spiegel (1999) and Adams (1990) that almost every instructional approach works for some children and no one approach works for every child. The results confirm further research done by Spiegel that a balanced approach of phonics instruction and whole language with less direct phonics instruction is needed for reading success because of the highest mean score in Embedded Code, but the not statistically significant effect gives these opinions little power. Research by Snow and colleagues (1998), which stated that explicit phonics instruction is necessary for building successful readers, would be refuted by this non-statistically significant result.

For subsidiary hypothesis one, the reading instructional process independent variable was coded at three levels of Direct Phonics, Embedded Code, and Implicit Code, while the independent variable of gender was coded at two levels of girls and boys. A 3 x 2 factorial design was used to analyze the effects of the two independent variables of reading instructional processes (having three categories of Direct Phonics, Embedded Code, and Implicit Code) and the independent variable of gender (having two categories of girls and boys). An examination of mean scores revealed that girls scored higher than boys overall.

Specifically, the female participants in Embedded Code instruction had the highest average on Reading Cluster raw scores with a mean = 145.17. Female participants in the Direct Phonics instruction scored lowest on Reading Cluster with a mean = 141.85. Implicit Code was slightly higher for girls with a mean = 142.01.

Male participants in this study scored highest using Direct Phonics with a mean = 133.80, followed by Implicit Code with a mean = 130.85, with lowest scores using Embedded Code with a mean = 130.76, as depicted in Figure 4.

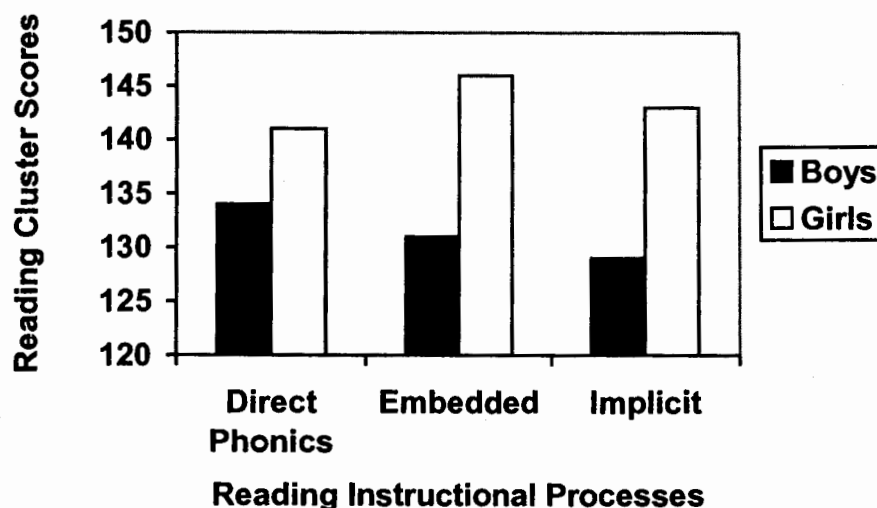


Figure 4: Mean Scores for Instructional Processes by Gender

Following the execution of the 3 x 2 factor ANOVA, and securing a not statistically significant main effect of reading instructional process ($p = .50$ at $p > .050$) with little, if any effect ($\eta^2_p = .000$), the outcome of no statistical differences between instructional processes was observed. The main effect of gender was statistically significant ($p = .000$ at $p < .050$) with a small effect ($\eta^2_p = .02$). The interaction effect of Instructional Processes vs. Gender was not statistically significant ($p = .073$ at $p > .050$) with little, if any effect ($\eta^2_p = .001$). The null hypothesis for subsidiary question was retained with the statistical significance of gender noted.

In answering the subsidiary hypothesis one: "What is the effect, if any, between reading instructional processes and gender on reading performance?", the research

outcome contains significant differences in the main effect of Gender on the dependent variable of Reading Cluster performance. The small effect size and particularly the significant differences in mean scores for girls over boys is confirmed in the literature. Barrow (1999), Daly (1999), Fuller and colleagues (1994), Helwig and colleagues (2001), Mills and Lingard (1997), and the OECD (2003) all confirm the ANOVA mean score result that girls often outperform boys in language and reading achievement.

The non-significant differences in the main effect of Reading Instructional Processes and the interaction effect of Reading Instructional Processes vs. Gender do not support the study assumption that the direct examination of reading instructional processes and their impact on gender will result in a greater understanding of student performance.

Again, an examination of the gender significance and mean scores reveals that the approach that is strongest for girls is Embedded Code but is also the weakest for boys. This opposite is exactly true that the weakest approach for girls, which is Direct Phonics, is strongest for boys, while the strongest approach for girls (Embedded Code) is also the weakest for boys.

A conclusion of these mean scores differences is that girls learn differently than boys and outperform boys regardless of the instructional method.

For subsidiary hypothesis two, the reading instructional process independent variable was coded at three levels of Direct Phonics, Embedded Code, and Implicit Code, while the independent variable of economic status was coded at two levels of non-disadvantaged and disadvantaged. A 3 x 2 factorial design was used to analyze the effects of the two independent variables of reading instructional processes (having three categories of Direct Phonics, Embedded Code, and Implicit Code) and the independent variable of economic status (having two categories of non-disadvantaged and disadvantaged). An examination of mean scores revealed that non-disadvantaged participants scored higher than disadvantaged participants overall.

Specifically, the Non-Disadvantaged participants in Implicit Code instruction had the highest average on Total Reading Cluster with a mean = 141.37. Non-Disadvantaged students in the Embedded Code instruction scored lowest on Total Reading Cluster with a mean = 139.74. Direct Phonics was slightly higher for Non-Disadvantaged students with a mean = 140.25.

In this study, Disadvantaged students scored highest with Embedded Code with a mean = 113.17, followed by Direct Phonics with a mean = 103.86 for Disadvantaged students. The lowest scores were with Implicit Code with a mean = 99.66, as depicted in Figure 5.

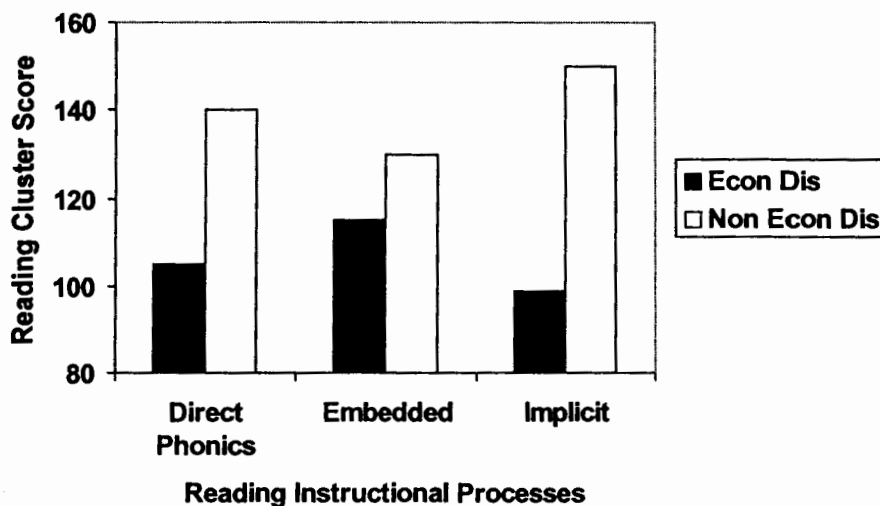


Figure 5: Mean Scores for Instructional Processes by SES

Following the execution of the 3 x 2 factor ANOVA, and securing a statistically significant main effect of reading instructional process ($p = .032$ at $p < .050$) with little, if any, effect ($\eta^2_p = .001$), the outcome of significant differences between instructional processes was observed. The main effect of Economic Status was statistically significant ($p = .000$ at $p < .050$) with a medium effect ($\eta^2_p = .06$). The interaction effect of Instructional Processes vs. Economic Status was statistically significant ($p = .004$ at $p < .050$) with little, if any, effect ($\eta^2_p = .002$). The null hypothesis for subsidiary question two was therefore rejected.

In answering the subsidiary hypothesis two: "What is the effect, if any, between reading instructional processes and SES on reading performance?", these results would confirm the literature that low SES or economically disadvantaged groups suffer education disparities over non-disadvantaged groups as evidenced by Adams (1990) and White (1982). Adams (1990) found that good literacy instruction that provides a solid foundation in reading skills could compensate for those disadvantages. Adams did not differentiate between instructional processes, and only stipulated that the instruction should be of good quality.

Research by Rothstein (2004b) was also confirmed by these study results in that an achievement gap exists between poor or disadvantaged children and those that are not disadvantaged. Rothstein found that even students who were low SES and also non-white, which is a group that were not studied in this research, were determined to have lower achievement related to the low SES environment rather than the ethnic affiliation.

For subsidiary hypothesis three, the reading instructional process independent variable was coded at three levels of Direct Phonics, Embedded Code, and Implicit Code, while the independent variable of ethnic affiliation was coded at two levels of white and non-white. A 3 x 2 factorial design was used to analyze the effects of the two independent variables of reading instructional processes (having three categories of Direct Phonics, Embedded Code,

and Implicit Code) and the independent variable of ethnic affiliation (having two categories of non-whites and whites). An examination of mean scores revealed that whites scored higher than non-whites overall.

Specifically, the white participants in Implicit Code instruction had the highest average on Total Reading Cluster with a mean = 142.63. White students in the Embedded Code instruction scored lowest on Total Reading Cluster with a mean = 140.12. Direct Phonics was slightly higher for White students with a mean = 140.41.

In this study, Non-White students scored highest with Embedded Code with a mean = 132.16, followed by Direct Phonics with a mean = 131.08 for Non-White students. The lowest scores were with Implicit Code with a mean = 128.63, as depicted in Figure 6.

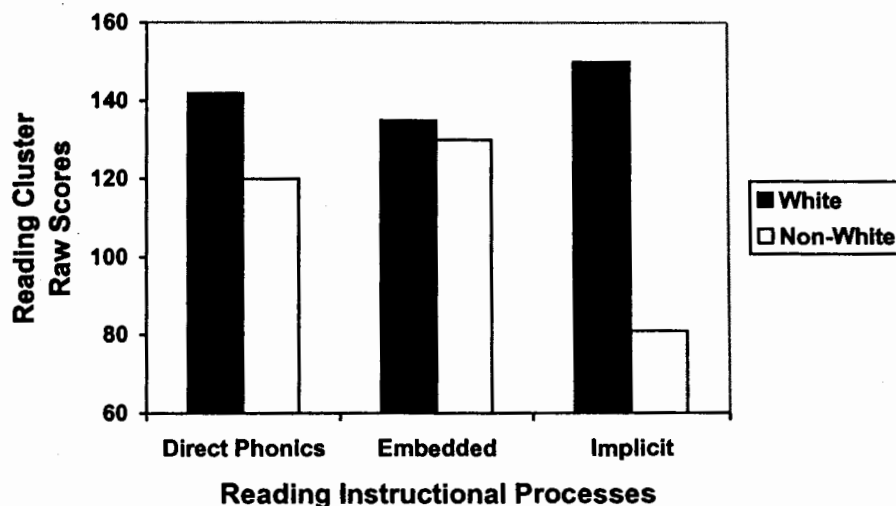


Figure 6: Mean Scores by Instructional Processes by Ethnicity

Though the mean scores varied, the instructional approaches that worked best and least were identical for both groups. It can be concluded that ethnic affiliation does not impact instructional process for these participants.

Following the execution of the 3 x 2 factor ANOVA, and securing a not statistically significant result ($p = .933$ at $p > .050$) with little if any effect ($\eta^2_p = .000$), the outcome of no significant differences between instructional processes was observed. The main effect of Ethnic Affiliation was statistically significant ($p = .000$ at $p < .050$) with a small effect ($\eta^2_p = .01$). The interaction effect of Instructional Processes vs. Ethnic Affiliation was not statistically significant ($p = .10$ at $p > .050$) with little, if any, effect ($\eta^2_p = .001$). The null hypothesis for subsidiary question three was retained with statistical significance of Ethnic Affiliation noted.

In answering subsidiary hypothesis three: "What is the effect, if any, between reading instructional processes and ethnicity on reading performance?", these results would confirm the research by Carbo (2003), Haycock and Jerald (2002), and Rothstein (2004), that by fourth grade the achievement of non-white students is below that of white students. The results tended to refute research by Lyon (2003) that systematic, explicit, and intensive instruction

in phonemic awareness and phonics, among other reading skills are what is needed to bridge the achievement gap. In this study, non-white participants had the highest mean scores in Embedded Code as an instructional process, which is a balanced approach to phonics and whole language, rather than Direct Phonics.

For subsidiary question four, literacy acquisition was analyzed using a 3 (Reading Instructional Process: Direct Phonics vs. Embedded Code vs. Implicit Code) x 2 (Special Education: Yes vs. No) factor ANOVA. In examining the mean total points for Special Education according to Reading Instructional Process, it was observed that Non-Special Education students scored higher than Special Education students overall.

Specifically, the Non-Special Education participants in Embedded Code instruction had the highest average on Total Reading Cluster with a mean = 145.61. Non-Special Education students in the Implicit Code instruction scored lowest on Total Reading Cluster with a mean = 142.92. Direct Phonics was higher for Non-Special Education students with a mean = 144.18.

In this study, Special Education students scored highest with Direct Phonics with a mean = 101.98, followed by Embedded Code with a mean = 98.62 for Special Education students. The lowest scores were with Implicit Code with a mean = 95.98, as depicted in Figure 7.

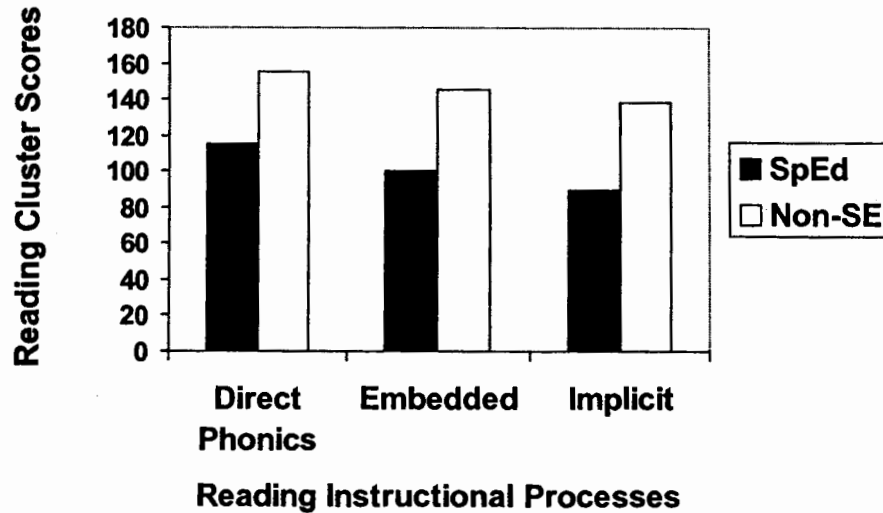


Figure 7: Mean Scores for Instructional Processes by Special Education

Following the execution of the 3 x 2 factor ANOVA, and securing a not statistically significant result ($p = .153$ at $p > .050$) with little if any effect ($\eta^2_p = .001$), the outcome of no significant differences between instructional processes was observed. The main effect of Special Education Classification was statistically significant ($p = .000$ at $p < .050$) with a large effect ($\eta^2_p = .16$). The interaction effect of Instructional Processes vs. Special Education Classification was not statistically significant ($p = .346$ at $p > .050$) with little, if any, effect ($\eta^2_p = .000$). Looking at the R^2 , 17% of the variance in Special Education status is explained by Instructional Processes. The null hypothesis for subsidiary question four was

partially retained with statistical significance of Special Education with large effect size particularly noted.

In answering subsidiary hypothesis four: "What is the effect, if any, between reading instructional processes and special education classification on reading performance?", these results would confirm what Jitendra and colleagues (2004) indicated that the instruction for special needs students must be more explicit, more comprehensive, more supportive, and more intensive than the reading instruction required by average readers. Indeed, since Direct Phonics was the instructional process with the highest mean score as compared to the other two processes, and since 17% of the variance in special education status can be explained by instructional processes, the results of this study go a long way toward making the argument that special needs children benefit most from systematic, explicit instruction in phonics.

In the examination of mean scores between just the Direct Phonics instructional process (which was highest for Special Education participants), the mean difference between non-Special Education students and Special Education students was 42.20 points. This would confirm the National Longitudinal Transition Study (NLTS), as cited in Hehir (2002), that educational attainment of students with disabilities compared to non-disabled students is less than adequate. Hehir also found that instructional

programs geared to the disabled learner would make all the difference in literacy achievement.

For subsidiary question five, literacy acquisition was analyzed using a 3 (Reading Instructional Process: Direct Phonics vs. Embedded Code vs. Implicit Code) x 2 (Limited English Proficiency: Yes vs. No) factor ANOVA. In examining the mean total points for Limited English Proficiency according to Reading Instructional Process, it was observed that Non-Limited English Proficient students scored higher than Limited English Proficient students overall.

Specifically, the Non-Limited English Proficient participants in Embedded Code instruction had the highest average on Total Reading Cluster with a mean = 139.16. Non-Limited English Proficient students in the Implicit Code instruction scored lowest on Total Reading Cluster with a mean = 138.27. Direct Phonics was higher for Non-Limited English Proficient students with a mean = 138.70.

In this study, Limited English Proficient students scored highest with Direct Phonics with a mean = 118.36, followed by Embedded Code with a mean = 101.18 for Limited English Proficient students. The lowest scores were with Implicit Code with a mean = 77.90, as depicted in Figure 8.

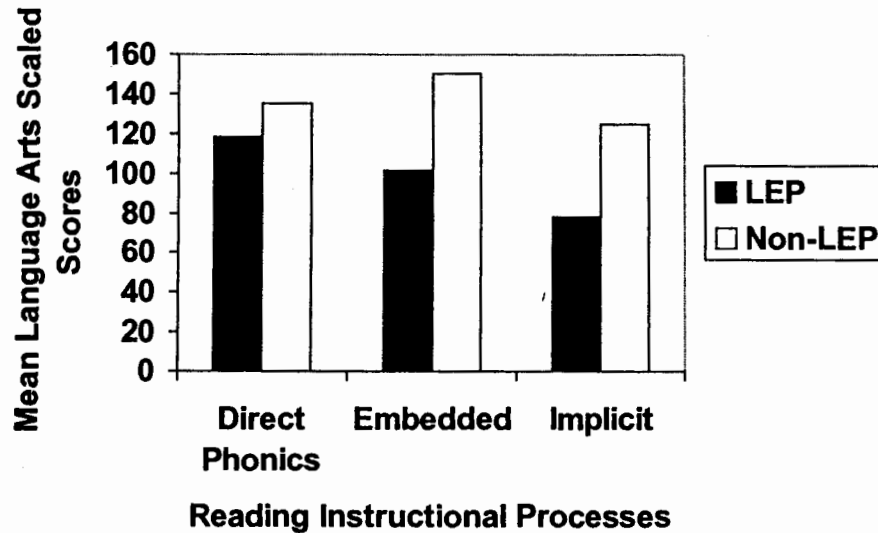


Figure 8: Mean Scores for Instructional Processes by LEP

Following the execution of the 3 x 2 factor ANOVA, and securing a statistically significant result ($p = .000$ at $p < .050$) with a small effect ($\eta^2_p = .01$), the outcome of significant differences between instructional processes was observed. The main effect of Limited English Proficiency was statistically significant ($p = .000$ at $p < .050$) with a small effect ($\eta^2_p = .04$).

The interaction effect of Instructional Processes vs. Limited English Proficiency was not statistically significant ($p = .000$ at $p < .050$) with a small effect ($\eta^2_p = .01$). Looking at the R^2 , 17% of the variance in Special Education status is explained by Instructional Processes. The null hypothesis for subsidiary question five was rejected.

In answering subsidiary hypothesis five: "What is the effect, if any, between reading instructional processes and linguistic diversity on reading performance?", these results would confirm research by Adams (1990), Chiapps, Siegel, and Wade-Woolley (2002), NICHD (2000), Rivers and Lombardino (1998), and Slavin and Cheung (2004), that acquiring fluent reading in an alphabetic language such as English requires the ability to recognize, manipulate, and separate words into smaller units such as syllables, intra-syllabic structures, and phonemes and must be trained in the beginning reader. The designation of Direct Phonics as the highest mean score attained by Limited English Proficient participants confirms Wu (2005) in that linguistically diverse readers face extra challenges and require important skills in order to learn the difficult orthography of English.

Glenn (2002) and Slavin and Cheung (2004) are confirmed by these statistically significant main effect and interaction effect results that research on beginning reading programs for English language learners. These programs find consistent positive effects of programs that use systematic phonics to acquire the language they need to be successful in school and beyond.

Policy Recommendations

With regard to the need for developing policies that underscore the importance of reading, New Jersey

Commissioner of Education William Librera said it best:

"Success in achieving literacy goals requires all of us to be partners in creating it—teachers, administrators, parents, colleges and the Department of Education.

Literacy leads to success from elementary school through college, in the workplace, and in life's pursuits. It is well worth the investment" (p. 46, 2004).

Instruction truly is a team effort. In the current state of accountability that school boards, school superintendents, school administrators, and school teachers find themselves in, pointing fingers and shifting the blame simply will not do when it comes to achieving goals. Federal mandates stemming from the No Child Left Behind Legislation (NCLB) (P.L. 107-110, 2002) require that schools instruct all students to read and holds schools accountable for their results in ways that are historically unparalleled.

The NCLB Act is supposed to help identify and close the achievement gap between the general school population and four designated groups (Economically Disadvantaged, Ethnic groups, Special Education, and Limited English Proficient). NCLB's stiff requirements pose many challenges for school boards, school administrators, and teachers (Sorrentino & Zirkel, 2004).

School administrators, curriculum coordinators, and teachers should use the results of this study to determine the appropriate reading instructional processes for all

subgroups within the school to ensure that all students succeed and no child is left behind. With the exception of Limited English Proficient students and Special Education students, it does not make a difference which reading instructional process is used in the school as long as the instruction and materials are of good quality.

"We need to move away from seeing children as being at-risk, to seeing children as being "at-promise" (Boykin, 1996, as cited in Slavin, 1998). Educational leaders are charged with the task of seeing past the subgroups and the potential for assessment identification and subsequent academic failure that carries future economic penalties. They need to see that these are the children that are entrusted to them and for children to succeed, there must be an underlying assumption that they can succeed and that educators will do anything in their power to ensure it. Often that power carries potential risks. There cannot and there will not be progress without a certain amount of risk.

"The goal must be to establish not just islands and archipelagoes of improvement, but entire continents of change" (Hargreaves, Earl, & Ryan, 1996, as cited in Hargreaves & Fink, p. 31, 2000). No Child Left Behind is not intended to paralyze districts into inaction with the fear of penalties and negative publicity. It can and it must be viewed as yet another opportunity for real reform.

Practice Recommendations

"Effective schooling anticipates all the ways children might fail and then plans how each will be prevented or quickly and effectively dealt with" (Boykin, 1996 as cited in Slavin, 1998, p. 8). This is over-determining success or being over-prepared to ensure the success of every child. It is an effective platform from which to implement curriculum that addresses the needs of all children.

Based on the findings of this study, Direct Phonics is a viable reading instructional approach that will effectively meet the needs of specific subgroups within the population that have been identified in the research to be at-risk for reading failure. Special Education students and Limited English Proficient students, in particular, benefit from Direct Phonics instruction as evidenced by this study.

With the assessment of students' skills and environmental risk factors at the earliest level, and the establishment of curriculum that accounts for instructional processes that benefit all groups in the student population, the chances of student success increase. Additionally, quality teacher training in a variety of reading instructional approaches, and the development of teacher capacity to identify children as poor readers and to begin interventions to prevent reading failure should also result in an increased opportunity for success for students. The implementation of appropriate instructional

methods and necessary interventions, with a sensitivity to developmental stages in beginning readers will be a major impetus toward every child learning to read by the year 2014 (as mandated by NCLB).

Additionally, applied research in the variability of readers is recommended for teacher development. Specifically, reader differences in such capabilities as fluency in word recognition, oral language ability, and domain knowledge, along with variables that contribute to successful comprehension of text would be beneficial. Activities noted in the proposed reading research agenda for the next 10-15 years as drafted by the RAND Reading Study Group (Snow, 2002) is recommended.

Limitations and Delimitations

The following limitations of this study should be noted:

1. Since this study examined only three processes of reading instruction, and the relationship between gender, SES, ethnicity, special education classification, and linguistic diversity, a potential limitation of this study is the ability to generalize results to specific reading programs.
2. Since this study had instrumentation constraints, this study cannot control for the impact of: (a) individualized instruction and reading achievement, (b) intelligence and reading achievement, and (c) homework and reading achievement.

The following delimitation of this study should be noted: This study utilized individual student achievement data in 27 suburban elementary schools from the mid-range District Factor Grouping (DFG) of 21 counties in New Jersey.

Therefore, the results of this study may not be generalizable to other regions of the state, other states and regions outside of New Jersey.

Future Research Recommendations

With 17% of the variance in Special Education accounted for by Instructional Processes, more research should be done on specific instructional strategies for Special Education students. The large effect of the Special Education independent variable should be combined with other variables in a regression type analysis to create the optimum model for reading instructional processes.

Further suggestions for study of the Special Education variable effect would include a longitudinal study of students from early elementary school such as 1st grade through 8th grade. Specific variables of gender, socioeconomic status, ethnic affiliation, special education classification, and Limited English Proficiency should be studied to determine if statistical differences exist between groups depending on reading instructional processes.

Since Limited English Proficient main effect, the Instructional Processes main effect for LEP, and the interaction effect of Instructional Processes vs. LEP were all statistically significant, further research should also be considered for this variable. The mean scores indicated that Direct Phonics

Further study of the Limited English Proficiency variable would include a longitudinal study of students as they progress as zero-level of English proficiency through the English proficient level, a span of about three years or more. Additional focus could be given to language origin of the Limited English Proficient students, whether coming from an alphabetic language or a language deemed to have a more difficult orthography. The English language, because of its irregularities within the spoken and written language, has a more difficult orthography than a predictable and more phonetically regular language.

Another future study might center on Economic Status. The statistically significant result warrants further study in the area of instructional processes. One direction for study might be to analyze background for students to determine if parents reading to children on a regular basis had an impact on reading instructional process. The non-disadvantaged students had the highest mean scores for Implicit Code instruction and were the only group in the entire study to have that result. Since a studied consequence of economically disadvantaged students is the

perceived lack of time spent at home on leisure or pleasure reading and being read to, perhaps the opposite might be true for non-disadvantaged students in that the more a child is read to and with on a regular basis, the more likely the child is to do well in a whole language approach to instruction with very little Direct Phonics being taught.

Success in achieving literacy goals requires all of us to be partners in creating it—teachers, administrators, parents, colleges and the Department of Education. Literacy leads to success from elementary school through college, in the workplace, and in life's pursuits. It is well worth the investment. (Librera, 2004, p. 46).

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APPENDIX A-

Confidentiality Agreement/
Affidavit of Nondisclosure

Affidavit of Nondisclosure

Confidential Assessment Information

I, Doreen O. Ryan affirm that when given access to assessment data provided by the New Jersey Department of Education, Office of Evaluation and Assessment, I shall not:

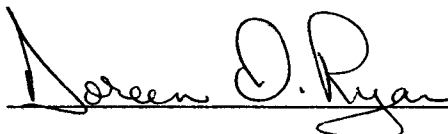
1. use any personally identifiable information furnished, acquired, retrieved, or assembled by me or others for any purpose other than statistical operations associated with the following activity:

THE IMPACT OF READING INSTRUCTIONAL PROCESSES ON LITERACY ACQUISITION;

2. make any release or publication whereby an individual could be identified or the data furnished by or related to any particular person can be identified; or
3. permit individual information or data to be examined by anyone other than those authorized by the following organization or agency:

Seton Hall University (Dr. John W. Collins, JR., Mentor, and
Dissertation Committee Members)

I fully understand and shall comply with all laws applying to the appropriate use and release of the requested data.

Signature: 

Name: Doreen O. Ryan

Title: Assistant Principal/Graduate Research Student

Organization: Wayside Elementary School/Seton Hall University

Date: March 8, 2005