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The Impact Of Increased Time Allocated For Connected Reading Activities On Reading Growth For Poor Second Grade Readers

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THE IMPACT OF INCREASED TIME ALLOCATED FOR CONNECTED READING ACTIVITIES ON READING GROWTH FOR POOR SECOND GRADE READERS

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ON TIME AND READING

"Good luck on your doctoral work. The time issue is important but has largely slipped from view in reform talks . . .

No one seems to be monitoring time data anymore - odd given the long trail of evidence on its importance."

Dick Allington, S.U.N.Y. @ Albany
Excerpted from an e-mail to the author,
November 21, 1999

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DEDICATION

To Dad, whose sense of an incomplete education engendered a need to learn in his children, his grandchildren and probably for generations to come - making him the smartest man I ever knew.

And to Erika, my children and my mother for their unconditional love which has supported me through all endeavors in life, including this one.

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CHAPTER I

INTRODUCTION

Background of the Problem

The ability to comprehend the written word, i.e. literacy, is fundamental to learning. It is the framework for the American school experience. Failure to learn to read is much more likely among poor children, minority children, and among English as a second language children, according to the work Preventing Reading Difficulties in Young Children (Snow, Burns & Griffen, 1998). In effect, urban schools, with the largest concentration of poor, minority, and non-native English speaking children nationally, are failing to teach children to read. These children are in fact, at greater risk of poor reading achievement than middle class students. Failure related to socioeconomic indicators is not new. Studies dating back to Galton consistently show socioeconomic level predicts academic outcomes (1874, as cited in Snow et al., 1998). The societal implications of this failure have and will significantly contribute to widening economic disparities (Bronfenbrenner, McClelland, Wethington, Moen & Ceci, 1996).

The "acceptable" gap between the haves and the have-nots has widened to proportions of public recognition.

Currently "literate" societies have approximately 50% of the population achieving literacy, while in the United States the expectation is 100% (Snow et al., 1998).

While the 100% literacy expectation was never met, urban centers often increased the number of students who achieved minimum competency levels on standardized tests. In previous years, urban districts like Schenectady City School District, located in upstate New York, had 95% of all third grade students tested achieve minimum competency on the state-wide testing program. The concept of 95% bore little correlation to literacy as evidenced by new higher standards. This was reflected in a new state-wide testing program that resulted in over 60% of the same students, now in grade four, being diagnosed as non-readers. In fact, poor readers are generally judged on simple achievement scores (Rosenbaum, 1980). In prior testing years, the high percentage overshadowed the minimum level of competency attained in reading. The children were no less or better readers than the year before, but the expectation was higher. These difficulties in reading originate from "rising demands for literacy" and not from "declining absolute levels of literacy" (p. 20, Stedman & Kaestle, 1987).

The demands of the current and future job market require greater literacy skills; skills that are far more complex than those required of graduates of the "Industrial Age" model of public schooling. This model promoted rote

skills that supported the Henry Ford workforce concept. Technical programs already exist at the high school and community college level that lure graduate students into lucrative jobs but require at least a seventh grade reading ability for successful completion. The emerging "Bill Gates" model for the workplace requires collaboration, for which one has to be able to communicate, and have critical thinking ability. Successful employment for both today and tomorrow require problem solving and the ability to read challenging material (Murnane & Levy, 1993).

The focus of teaching reading is in the primary grades. Based on the assumption that chronological grades, sequenced by age, not development, are appropriate benchmarks for specific subject mastery, the framework of most schools is that second grade is the grade of the emergent reader. It is by the second grade that students are transitioning from decoding skills to connected text (Suling & Horton, 1997). In essence, the expectation is that decoding skills are operationalized into comprehension by second grade. The failure to achieve this early literacy stage often perpetuates an academic career of remediation. Studies have demonstrated that of children diagnosed. The disruptive nature of the intervening remediation for the "disabled reader," whether push-in or pull-out, is often at the expense, in terms of time, of other mandated curricula. Even if the intervention is not directly invasive, the other curricula often relies on reading comprehension for mastery.

This includes the area of mathematics, wherein as a result of state and national standards, emphasis has been placed on problem solving, reading, and writing ability in addition to computation skills. Therefore, under the prevailing framework of schooling, the cycle of academic failure, often punctuated by "social promotion" or grade repetition for "consistently" poor readers generally commences at the expected early literacy stage: second grade (Fletcher, Saywitz, Shankwiler, Katx, Liberman, Stuebing, Francis, Fowler & Shaywitz, 1994).

The ability to read is neither "natural" nor developmental, but learned (Grossen, 1997). At the heart of the issue is how to teach reading and how much time should be allocated to the teaching of reading. Substantial studies have been devoted to debating various instructional methodologies including emphasis on phonics and phonological processing versus emphasis on whole language. There is however, sufficient, if not ample, information about how children learn to read according to the National Reading Council (1998) in their work Preventing Reading Difficulties in Young Children. Therefore, assuming that most of what we know to teach children has already been discovered then the idea that we simply need to do better at what we are already doing is not uncommon (Chall, 1967). In fact it will take individuals with a great deal of dedication, enthusiasm and courage to take a stand against a strong concensus (Chall, 1967). The question is, Given increased reading time with

reading connected instructional strategies, can poor second grade readers significantly improve in reading ability? (Allington, 1980a).

The Statement of the Problem

Given the expectation that it is by second grade that students are transitioning from decoding skills to connected text and that the chronological grades anteceding second grade are reading dependent for mastery in all curricular areas, then the significance of achieving literacy in second grade is formidable. The concept of schooling poor second grade readers in all curriculum areas by allocating time to all subject areas, given the pre-requisite of literacy for success, may be misguided. Engaging poor second grade readers daily in full day time on task allocated to connected reading activities may be more appropriate given the reading dependent structure at schooling.

The Problem

This research proposes to determine whether or not increased time on task allocated for connected reading activities will improve growth in reading and bring children to grade level with their second grade counterparts.

Sub-Problem 1.

The first sub-problem is to determine whether or not whole group, full day time on task allocated for poor second

grade readers will demonstrate greater growth in reading achievement than their second grade counterparts.

Sub-Problem 2.

The second sub-problem is to determine whether or not whole group, full day time on task allocated for poor second poor second grade readers will bring them to the grade level of their second grade peers.

Sub-Problem 3.

The third sub-problem is to determine whether or not poor second grade readers engaged daily in whole group, full day time on task allocated to connected reading activities will demonstrate greater growth in reading achievement than poor second grade readers engaged daily in whole group conventional time on task allocated to connected reading activities.

Sub-Problem 4.

The fourth sub-problem is to determine whether or not poor second grade readers engaged daily in whole group, full day time on task allocated to connected reading activities will demonstrate similar scores in mathematics achievement as poor second grade readers engaged daily in whole group, conventional time on task allocated to connected reading activities.

The Setting

The relationship between time on task to connected reading activities and increased growth in reading will be researched by studying an experimental second grade classroom, in which students are engaged in full day connected reading activities, in comparison to control second grade classrooms, in which students are engaged in conventional time on task connected reading activities.

The experimental classroom designed to engage poor second grade readers identified for Reading Recovery, but not serviced, in full day time on task allocated to connected reading activities will be established at the alternative school in Schenectady, New York.

The Schenectady City School District is located in the Capital Region of New York State. The Capital Region commonly refers to the cities of Albany, Schenectady and Troy. The region is approximately 150 miles from New York City. The city of Schenectady, like most urban centers, has had a shrinking tax base. The largest employer in the city, General Electric, has substantially downsized its workforce over the past thirty years. Transitioning from an industrial age economy to an info-tech economy has been slower in the northeast as compared to the rest of the nation and particularly in Schenectady.

The Schenectady City School District is comprised of 8,600 students who attend eleven elementary schools, three middle schools, one high school and one alternative school.

Based on the federal free and reduced lunch rate of 63%, poverty is high. Seventeen percent of the students are identified for special education services and 3.2% are identified for English as second language services.

The Experimental Class

The experimental second grade class will be comprised of eighteen students. The students will be identified from a pool of sixty students selected for Reading Recovery in first grade, but not serviced. The students will be placed in the pilot program from October 1999 through March 2000. Students will be placed in the pilot program only with parent understanding of the program and parent consent.

The class will consist of one teacher and one teacher's aide. The students will engage in full day of instruction in connected reading activities. The classroom will have five computers to be used for technology-assisted reading instruction daily.

The Control Group

The control group will consist of students identified for Reading Recovery in first grade, during the 1998-1999 academic year, but not served and who are currently attending randomly, as a result of residence and school attendance zone, second grade classes in the sample population throughout the eleven elementary school in the district.

The Sample Population Classes

The population of second grade students will be studied as sample population class components in this research. The students receive full day instruction in all curriculum areas. The average class size is twenty. Some of the classes have teacher aides. Connected reading activities are conducted in a conventional language arts block for sixty to ninety minutes daily.

Guiding Questions

The primary focus of this study is the relationship between time on task and reading achievement between two groups. The two groups, bivariate data as utilized in this research is typical of experimental design studies (Leedy, 1997).

Data on reading achievement as measured by both the pre and post Iowa Test of Basic Skills in Reading level B, administered respectively in October 1999 and February 2000, will be collected for all second grade students. Data on reading achievement as measured by the Terra Nova Reading Test, administered in March 2000, will be collected for all second grade students.

Data on daily time on task planned for connected reading activities and time on task actually allocated for connected reading activities, as recorded on teacher monthly logs, from October 1999 through February 2000, will be collected from all second grade teachers (Appendix C).

Data on mathematics achievement as measured by the Terra Nova Mathematics Test, administered in March 2000, will be collected for every second grade student.

Data on reading achievement as measured by the technology-assisted SuccessMaker Reading Program will be collected for every second grade student.

Data on time on task allocated to technology-assisted reading instruction as measured by the technology-assisted SuccessMaker Reading Program will be collected for every second grade student.

Data on teacher preparation and certification for every second grade teacher will be collected.

Relationships between sets of data formulate the focus of the research questions posed in this study.

Given a twenty week full day time on task allocated to connected reading activities, will poor second grade readers improve growth in reading and be brought to the grade level of their second grade counterparts? What is the relationship between the experimental sample group and the population group in growth in reading achievement as measured on the Iowa Test of Basic Reading Skills level B, pre-test and post test?

How will poor second grade readers in the treatment, also known as the experimental group growth in reading compare to second grade readers in the non-treatment, sample control group? What is the relationship between the experimental sample group and the control sample group in

growth in reading achievement as measured on the Iowa Test of Basic Reading Skills pre and post test?

In addition to results on the pre and post testing of every second grade student for the pilot program, how will poor second grade readers in the treatment, i.e. the experimental group growth in reading achievement, compare to both the population group and the non-treatment sample control group on the annual district reading test? What is the relationship between the experimental group and the population group in growth in reading achievement as measured by the Terra Nova Reading Test? What is the relationship between the experimental sample group and the control sample group in growth in reading achievement as measured on the Terra Nova Reading Test?

How is full day time on task allocated for connected reading activities for poor second grade readers and growth in reading achievement compared to conventional time on task and growth in reading achievement for all second grade readers? What is the relationship between full day time on task connected reading activities, as measured by the quantification of the reward of all second grade teacher reading logs and growth in reading achievement for the experimental sample group, the population group and the sample control group?

Given that reading is essential to the mastery of all curricula, including word skills and explanatory writing in mathematics, how will growth in mathematics achievement

among poor second grade readers, engaged in daily full time connected reading activities, compare to growth in mathematics in both the population group and the sample control group as measured on the Terra Nova Mathematics Test?

Scope and De-limitations

The scope of this study is the relationship between the amount of time on task allocated for connected reading activities, within a whole group setting, and growth in reading achievement for all second grade students in the Schenectady City School District in New York over a twenty week period. This includes the effect of the difference between teacher planned time for connected reading activities and actualized time for connected reading activities on growth in reading achievement.

The scope of this study will also include the relationship between increased time allocated for connected reading activities for poor second grade readers and growth in mathematics achievement.

The scope of this study will also include the relationship between time on task allocated for technology-assisted reading instruction for second grade readers and growth in reading achievement.

The scope of this study will also include the relationship between second grade teacher preparation and growth in reading.

This study will not attempt to determine the relationship between the type of materials used for connected reading activities and growth in reading achievement.

This study will not determine the relationship between the availability and use of teacher aides and/or mentors and growth in reading achievement.

This study will not determine the relationship between classroom management and growth in reading.

This study will not determine the relationship between effectiveness of discreet instructional strategies and growth in reading achievement.

This study will not determine the relationship between class size and growth in reading achievement

This study will not determine the relationship between homework and growth in reading achievement.

This study will not determine the relationship between student mobility and growth in reading achievement.

This study will not determine the relationship between student attendance and growth in reading achievement.

This study will not determine the relationship between student activities, such as self-esteem and student learning.

This study will not determine the relationship between student socio-economic, ethnic, racial or gender background and growth in reading achievement.

Assumptions

The first assumption is that second grade students, including poor second grade readers attending the Schenectady City School District, New York are representative of the universe of urban second grade students.

The second assumption is that the connected reading activities utilized in this study are acceptable, research-based methodologies generally used by practitioners in the teaching and improvement of reading.

The third assumption is that the amount of time on task allocated daily for connected reading activities as self-reported by all second grade teachers in the study is reliable.

Ethical Consideration of the Study.

This research is experimental in design and test hypotheses are based on data collected from an experimental group and a control group in order to understand the causal relationship of the treatment (Krathwohl, 1998).

This research proposes to determine whether or not full day time on task allocated for connected reading activities for poor second grade readers, i.e. the experimental group, will improve their reading skills and bring them to the grade level of their second grade counterparts, i.e. the population control group. Second grade students in the experimental group will receive more reading instruction

than their second grade counterparts in the population control group. This treatment may benefit the experimental group; however, the lack of treatment for the population control group will do no harm.

The experimental group will not receive instruction in curricula other than reading for a twenty-week period. The experimental group, selected from the bottom 20% of second grade readers, would spend a similar amount of time in reading remediation over an extended rather than concentrated period. Therefore, participating in the experimental group does no harm.

Student participation in the experimental group is voluntary and done only with informed parental consent.

Parents may withdraw students from the program at any time.

Assurance is given that all data collected for this research will be confidential.

Assurance is given that no data identifying individuals in this study will be made public.

Assurance is given that data collected will be secured in locked files and accessible only to persons working on this study.

Definition of Terms

1. Reading Aloud: The teacher selects and reads a book or other text to the children (Fountas, Pennell, Heinemann, 1996).

2. Shared Reading - The teacher introduces and reads an enlarged text or a small text of which each child has a copy. On refrains and in multiple readings, children join in, reading in unison. Choral reading, in which the whole class or a group of children read aloud together, and echo reading, in which the teacher reads first and then the children become the echo and read it back, are examples of shared reading (Fountas et al., 1996).

3. Guided Reading: The teacher works with a small group of children who have similar reading processes. The teacher selects and introduces new books and supports children reading the whole text to themselves, making teaching points during and after the reading (Fountas et al., 1996).

4. Independent Reading: Children read on their own. Silent Reading where children read to themselves is an example of independent reading (Fountas et al., 1996).

5. Paired/Partner/Buddy Reading: A child reads to or with a friend and/or an adult (Fountas et al., 1996).

6. Shared Writing: The teacher guides children to compose messages and acts as their scribe. The message is reread many times (Fountas et al., 1996).

7. Interactive Writing: The teacher guides group writing of a large-print piece, which can be a list, a chart, pages of a book, or another form of writing. All children participate in composing and constructing various aspects of the writing. The piece of writing is read many

times by the group during the process (Fountas, et al., 1996).

8. Guided Writing/Writers Workshop: The teacher has individual conferences with writers, giving selected feedback. The teacher may work with the whole class or a small group to provide general guidance and mini-lessons on any aspect of writing (Fountas et al., 1996).

9. Independent Writing: Children write their own messages and stories, sometimes helping each other. Examples of independent writing include: journal writing in which children write about what is happening in their daily lives and topics that are being studied in the classroom, and response logs where children take time after reading to record their thoughts, feelings, and predictions (Fountas et al., 1996).

10. Phonological Awareness: The ability to manipulate sounds (Cunningham, 1995).

11. Phonics: The ability to use letter-sound knowledge to decode unfamiliar words (Cunningham, 1995).

12. Word Study: Children are focusing on words, analyzing them, sorting them, connecting them to each other, taking them apart, and building them. Word sorts in which children analyze words to look for patterns are an example of a word study activity (Heinemann, 1998).

13. Control Group: Second graders who were identified for Reading Recovery services in first grade, i.e. the

bottom 20%, but not serviced and not participating in the treatment.

14. Conventional Time on Task Allocated to Reading Connected Activities: Conventional time on task allocated for connected reading activities, generally referred to as the Language Arts block, consists of a daily amount of time instructionally committed to reading that ranges from sixty minutes to ninety minutes.

15. Experimental Group: Second graders who were identified for Reading Recovery services in first grade, i.e. the bottom 20%, but not serviced and participating in the treatment.

16. Generalist: A second grade teacher who does not hold degree(s) and/or certification(s) in reading.

17. Population: All second grade students attending the Schenectady City School District.

18. Poor Second Grade Readers: Students who were identified for Reading Recovery services in first grade, i.e. the bottom 20%, but not served.

19. Reading Recovery: Reading Recovery is an early intervention program designed to assist the lowest 20% first graders in reading and writing. Students who are identified are serviced through a thirty-minute daily tutorial by a specially trained Reading Recovery teacher during a twenty week or less time frame (Ashdown, Smith-Burke, Trika, Ticke, & Simic, 1997).

20. Sample Population Class: Components of the population as divided into classes representing second grade students engaged in whole group, conventional time on task allocated for connected reading activities.

21. Second Grade Counterparts: All second grade students attending the Schenectady City School District. The same as the population.

22. Second Grade Peers: All second grade students as represented, by national norms, as grade equivalents and grade level benchmarks on the Iowa Test of Basic Skills in Reading level B, the Terra Nova Test in Reading, and the Terra Nova Test in Mathematics.

The Need for the Study

Doing everything for everybody everyday has been the hallmark of the American school experience and it has not always served all children well.

Literacy is the cornerstone of democracy and therefore should be at the core of the American school experience.

Can we teach children to read? The simplistic answer is yes, yet schools with high concentrations of poor readers, urban schools in particular, attempting to implement comprehensive curricula in between social programs have not been successful thus far. And so schools that fail to achieve early literacy for their poorest readers tend to group and re-group students, tend to classify and label students and ultimately remand them to remediation.

We know how to teach children how to read. We know that some children need more time to learn how to read. If schools stopped everything and applied researched-based reading instruction, would poor readers achieve greater success?

This study has identified second grade as a critical point for students in achieving early literacy. The concept of "learning to read" in the primary grades and "reading to learn" in the upper grades is pervasive. It is by second grade that students are transitioning from decoding skills to connected text (Suling et al., 1997). Students who achieve early literacy tend to become better readers throughout their academic career, while poor readers tend to remain the same or get worse (Guthrie, 1980; Stanovich, 1986; Suling et al., 1997).

This study has identified time on task as fundamental to the improvement of reading. In order to learn, children need large blocks of time (Gareau & Kennedy, 1991). Yet, the amount of time spent on reading is alarmingly low (Allington, 1980; Allington, 1983; Suling et al., 1997; Morris, 1979; Guthrie, 1980; Limbrick, McNaughten & Clay, 1992; Snow, et al., 1998).

This study has identified connected reading activities as essential to reading achievement. Guided reading, silent reading, re-reading and writing are examples of activities that connect the learner. Indirect reading activities, such

as worksheets, skill sheets and seatwork do not add to achievement as opposed to engagement with the text.

This study recognizes that successful models based on research, in particular the work of Clay and Slavin have applied an element of time allocated to connected reading activities in achieving literacy in the primary grades.

Marie Clay's work became the basis for the design of Reading Recovery which is a twenty-week, one to one, intervention program for first grade students experiencing reading difficulties. The program uses connected reading activities and is delivered daily to identified students, i.e. the bottom 20% of first graders for thirty-minute blocks of time (as cited in Snow et al., 1998).

The element of connected reading activities, as designed for Reading Recovery, has been incorporated into other programmatic models.

An urban school district in Tennessee implemented a small group intervention program that "reflected" Reading Recovery which resulted in moderate results at the first grade level, and results of little or no significance at the second grade level (Gettys, 1994).

The work of R.E. Slavin became the basis for the design of Success for All, which is a whole school-restructuring program. The concept of the program is to use everything known about effective instruction for at-risk students and presenting academic deficits (Slavin, 1994). The reading component of the program consists of a ninety-minute block

with 15 to 20 students in a group. A primary component of the reading program is the use of tutors who work individually with student's twenty minutes per day. Success for All increases the amount of time allocated for connected reading activities in the primary grades (1994, as cited in Snow et al., 1998).

Building on the importance of second grade in achieving early literacy, the effectiveness of connected reading activities, and the significance of time on task in achieving growth in reading achievement, this study will contribute to the current body of research.

CHAPTER II

REVIEW OF RELATED LITERATURE

In general, society is greatly concerned with literacy. The failure of schools to teach reading is most acute in urban areas. Failure to learn to read is much more likely among poor children, minority children and among English as a second language children (Snow et al., 1998). In effect, urban schools with the largest concentration of poor, minority, and non-native English speaking children nationally, are failing to teach children to read. These children are in fact, at greater risk of poor reading achievement than middle class students. Failure related to socioeconomic indicators is not new. Studies dating back to Galton consistently show socioeconomic level to predict academic outcomes (1874 as cited in Snow et al., 1998). The societal implications of this failure have and will significantly contribute to widening economic disparities (Bronfenbrenner et al., 1996). The "acceptable" gap between the haves and the have-nots has widened to proportions of public recognition. Currently, "literate" societies have approximately 50% of the population achieving literacy, while in the United States the expectation is 100% (Snow et al., 1998).

While the 100% literacy expectation was never met, urban centers often increased the number of students who achieved minimum competency levels on standardized tests. In previous years, urban districts like Schenectady City School District, located in upstate New York, had 95% of all third grade students tested achieve minimum competency on the state-wide testing program. The concept of 95% bore little correlation to literacy as evidenced by new higher standards as reflected in a new state-wide testing program in which over 60% of the same students, now in grade four, were diagnosed as non-readers. In fact, poor readers are generally judged on simple achievement scores (Rosenbaum, 1980). In prior testing years the high percentage overshadowed the minimum level of competency attained in reading. The children were no less or better readers than the year before, but the expectation was higher. These difficulties in reading originate from "rising demands for literacy" and not from "declining absolute levels of literacy" (Stedman et al., 1987).

The demands of the current and future job market require greater literacy skills; skills that are far more complex than graduates of the "Industrial Age" model of public schooling. This model promoted rote skills that supported the Henry Ford workforce concept. Technical programs already exist at the high school and community college level that graduate students into lucrative jobs but require at least a seventh grade reading ability for

successful completion. The emerging "Bill Gates" model for the workplace requires collaboration, for which one has to be able to communicate, and think critically. Successful employment for both today and tomorrow require problem solving and the ability to read challenging material (Murnane et al., 1993). There are increased demands for literacy in our technological society (Snow et al., 1998).

The focus of teaching reading is in the primary grades. The concept of learning to read in primary and reading to learn in the upper grades is pervasive. In fact it is by second grade that students are transitioning from decoding skills to connected text (Suling et al., 1997). Students who are failing at the upper grades are not "failing" science or social studies, but are in fact still failing reading. The notion of retaining a student on the basis of failing "subjects," at the elementary level, other than reading, is paradoxical. Studies show that of those children diagnosed as reading disabled in third grade, 74% remain disabled in ninth grade (Fletcher et al., 1994).

The ability to read is neither "natural" nor developmental, but learned (Grossen, 1997). At the heart of the issue is how to teach reading and how much time should be allocated to the teaching of reading. A substantial number of studies have been devoted to debating various instructional methodologies including emphasis on phonics and phonological processing versus emphasis on whole language. There is, however, sufficient if not ample,

information about how children learn to read according to the National Reading Council (Snow et al., 1998). However, assuming that most of what we know about how to teach children has already been discovered and that we simply need to do better than we are already doing is not uncommon (Chall, 1967). In fact, it will take individuals with a great deal of dedication, enthusiasm and courage to take a stand against a strong consensus (Chall, 1967). The question remains, given increased reading time with reading connected instructional strategies, can poor second grade readers significantly improve in reading ability?

Time is money, according to Ben Franklin, and both can be spent either wisely or foolishly. All too often there is little account made of how time is spent in the classroom (Guthrie, 1980).

The amount of time spent on a task and the accomplishment of the task, on the surface, seem apparent. Two important, interdependent factors are necessary for the "apparent" to be realized. First, time must be allocated to the task. Secondly, the task must have the appropriate methodology.

A lawn full of leaves will remain a lawn full of leaves unless time is allocated to the task of raking. Asking a youngster to rake the leaves may result in one hour committed to the task but a lawn still immersed in leaves. The youngster may argue that time was committed to the task but in the end the desired outcome was not accomplished.

The task was either ill defined or the tools necessary for its accomplishment were lacking.

The amount of time spent on the task of reading is alarmingly low (Allington, 1980; Allington, 1983; Borg, 1980; Guthrie, 1980; Limbrick et al., 1992; Morris, 1979; Snow et al., 1998; Suling et al., 1977). In addition, the task of reading may only be indirectly related, i.e. not connected, or not effective because the activities are not engaging the learner (Limbrick, et al., 1992, Snow et al., 1998; Suling et al., 1997).

Primary instruction in reading is the responsibility of the classroom teacher. In general, the principle that what is actually taught is learned, is true. However, the teacher must first schedule time for reading and secondly, engage the students (Guthrie, 1980). Citing the work of David Berliner, Guthrie (1980) noted that differences in time allocated and either appropriately or inappropriately used have direct consequences for reading achievement. Brenner studied time on task in 25 second grade classes. He noted a wide discrepancy between time on reading tasks among the classes. Students averaging an actual four minutes per day "decreased" in reading achievement, while those averaging 52 actual minutes per day increased in reading achievement. In addition to planning for reading time, the teacher also plans the reading instructional activities. Several factors can interfere with the desired outcome of improving reading habits. The task is "related" to reading, but not connected

(Suling et al., 1997). The task is too difficult and/or the materials may not be at an appropriate level (Allington, 1983). The teacher may not be aware of the level, or lack thereof, of individual student's engagement with the material. Stallings (1980) noted that time on task rates were low or uneven in ineffective schools. Glicking and Thompson (1985) noted that reading difficulties that arise when the curriculum is flawed is sometimes termed "curriculum casualties" (p. 210).

Effective classroom instruction in the primary grades must involve structuring time. According to Gareau and Kennedy (1991), children need large blocks of time to engage in learning activity. Effective classrooms, as well as effective schools minimize interruptions to learning. Gareau, a first grade teacher and Kennedy, a first-second grade teacher cite Nash (1979) in thinking of a child's "task-orientation" as the time that a child will pursue an activity that is meaningful in structuring their classroom practices involving time. The concept of scheduling time effectively for learning is demonstrated in practice in this article. In ineffective classrooms and schools, the daily schedule is not an accurate guide to the use of time academically (Snow et al., 1998).

Supplemental reading instruction or interventions are scheduled in addition to the regular classroom reading instruction. However, the supplemental instruction cannot compensate for ineffective classroom reading instruction

(Snow et al., 1998). In addition, many interventions are implemented in third grade, which is often too late according to the National Reading Council. While third grade may be late, it is not unexpected since many state-wide programs target either grades three or four for testing. With limited resources, urban schools, generally with a high concentration of poor readers, target "testing grades" for remediation. This "quick fix" strategy generally does not work in terms of sustained literacy gains nor can it replace a comprehensive literacy program, higher testing standards should impact this "quick fix" strategy. The National Reading Council indicates starting supplemental reading instruction in grade one for at-risk readers. However, if a school system has an effective supplemental program, such as Reading Recovery, but is not impacting enough students, then grade two should be considered (Snow et al., 1998). Further discussion of Reading Recovery will follow in this review.

Reading interventions, like classroom reading strategies, are varied. The consistent common factor in the literature is that the more time allocated increases reading achievement (Allington, 1977; Allington, 1983; Guthrie et al. 1979; McGill et al., 1990; Morris, 1979; Snow et al., 1998; Stallings, 1976; Suling et al., 1997; Wiley & Harnischfeger, 1974).

In 1977, Richard Allington asked a question that is repeatedly suggested and often quoted in subsequent

literature: "If they don't read much, how they gonna get good?" (Allington, 1977, p. 57). In this study, Allington "informally observed" supplemental reading instruction programs and noted that very little time was spent on reading. The ineffective use of instructional reading time for the learners who are most in need is common in the literature and is referred to as the "Matthew Effect" (Stanovich, 1986). In fact the literature indicates that good readers get better with time on task and poor readers either remain poor or get worse (Guthrie, 1980; Suling et al., 1997). The effect references the Gospel according to St. Matthew wherein, to paraphrase, "the rich get richer and the poor get poorer."

In 1980 Allington observed twenty-four second grade classroom reading groups. Allington notes that poor readers are seldom given the opportunity to read either individually or silently, both of which are connected reading activities. This study also indicates that poor readers are not engaged in connected reading activities that could lead to reading achievement. He concludes that additional time allocated to reading will not necessarily improve literacy, but it is "a necessary first step" (Allington, 1980, p. 875).

In 1983 Allington again noted the "sensible notion" that the more time allocated to reading the more reading ability will improve and that the "ever-increasing" gap between poor and good readers, even with equal instructional reading time, is a result of the instructional environment.

This study, in addition to recommending increased time allocation, also recommends more silent reading for poor readers (Allington, 1983). Silent reading is a direct reading strategy.

In 1990, McGill-Franzen and Allington observed and recorded the experiences of sixteen second grade students in both the regular instruction and supplemental setting, as a part of the national evaluation of federally funded Chapter I programs. The findings again pointed to indirect rather than connected reading activities for poor readers in both regular and supplemental reading instruction times. In addition, there was a lack of coherence in terms of reading instruction for poor readers who received several remedial services. The time allocated for reading instruction was devoted to low level activities where accuracy, not understanding, was the focus (McGill-Franzen et al., 1990).

Suling and Horton in their 1997 study of second graders expected to find that remedial readers would spend more time reading connected text because of the additional reading instruction. The study did not find consistent differences between the amount of time remedial readers and instructional readers spent reading during a school day (Suling et al., 1977).

The Suling & Horton (1997) study observed twelve second grade students for the whole instructional day. The researchers differentiated between indirect reading related activities and connected reading activities. This study

indicates that connected reading activities, rather than indirect ones, can improve the use of instructional reading time. This study also recommends silent reading and one-to-one instruction as effective reading connected activities. This study is a beginning in the examination of the amount of time good readers and poor readers spend on reading connected activities during a whole school day (Suling et al., 1997). As Allington (1977) had noted twenty years earlier, there is a difference between reading related activities and actual connected reading activities. Suling and Horton (1997) also noted that a review of the literature indicated that there also have been no studies, prior to theirs, that measured the total amount of time students spent reading connected text throughout the whole day. This study indicates that a whole day, second grade program, with substantial time on task reading connected activities, should be constructed and researched.

A report entitled, "Time Engaged in Reading: A Critical Factor in Reading Achievement," reported the results of a study conducted with 45 deaf children, ages five to ten (Limbrick, McNaughton, & Clay, 1992). The study utilized video cameras in classrooms to record each of the students during reading instruction and determined that the time actually spent on reading was considerably lower than the time allocated. In addition, the study included a teacher questionnaire that resulted in a discrepancy between teachers' stated reading instructional time allocation;

beliefs concerning instructional methodology and materials; and the teachers' actual classroom practices (Limbrick et al., 1992).

While this study concerned deaf children, the outcomes were the same as those studies that were concerned with hearing children. The concept of low expectations, the "Matthew Effect" results in achievement "compounded as the environment responds according to its expectations of the individual" (Stanovich, 1986, p. 384). This study expands the universality of time on task as the key factor in reading achievement. It concurs that the time children are actually engaged in reading instruction is the most powerful predictor of reading achievement (Allington, 1980, 1983; Clay, 1979). Case studies within Limbrick, et al. (1992) support that the time allocated to reading instruction be connected activities, such as: peer tutoring, sustained silent reading, journals, interactive writing via technology and frequent one to one reading parallel structure.

As in previous studies, the increased allocation of reading time is fundamental to reading achievement, but only if it serves as a platform to connected reading activities that engage the learner. Time, in and of itself, is not the critical variable, but it is rather what occurs during the additional time (Allington, 1983). Although the concept of what occurs during the allocated instructional time seems obvious, the consistent failure of this self-evident truth in urban schools permeates the literature. In its summary

of successful interventions, the NRC recommends more time for reading and writing and notes that extra time is not sufficient in itself (Snow et al., 1998).

In 1990 Taylor, Frye and Maruyanma (1990) studied the relationship between time spent on reading and reaching growth. This tightly controlled study revisited silent reading as a connected reading activity that increases student reading ability. This research revisited the findings of Leinhardt, Zismond and Colley (1981) which found that silent reading is significantly related to reading growth. This argument was subsequently refuted by Wilkenson, Wardrop & Anderson (1988). Their study utilized a large sample of one hundred ninety-five fifth and sixth grade students, in two schools. Through the correlation of daily reading logs and a correlation to a standardized reading achievement measurement, the researchers determined that the amount of time engaged in reading was significantly related to gains in reading achievement. The study also evaluated the effect of silent reading at home and found no correlation in reading achievement. Clearly, the in-school treatment, which can be controlled and observed, is significant. The problem with this study is the sample group selected. The study was conducted in two suburban schools with average to above average readers. Prior research has shown that good readers tend to get better regardless of the treatment, i.e. "Matthew Effect" (Stanovich, 1986). The authors conclude that more time

spent on reading would "likely" have an impact on poor readers as well, and recommended further research be conducted in this area.

In 1997, Taylor, Hansom, Justice-Swanson & Watts revisited the concept of additional time allocated to direct reading strategies but with poor readers. Teachers identified thirty-one students whose mean score on the Metropolitan Reading Test was at the tenth percentile. The students were placed in an "intervention only" group and an "intervention plus tutoring" group. The increased reading time utilized direct reading strategies, including independent reading, with and without partnering/coaching, choral reading and sentence writing. The results indicated significant gains for the "intervention plus tutoring" group. Less than thirty percent of the "intervention only" group met the established criteria. The "intervention only" group model was subsequently adapted to second grade classroom instruction for twenty minutes per day for one year and was successful in improving reading for poor readers (Taylor et al., 1997). This study strongly demonstrates the relationship between additional time allocated to direct reading activities and reading achievement for poor second grade readers. While the "intervention only" group received increased time in direct reading, the "intervention plus tutoring" group received an additional half-hour. It is recognized that the nature of the one-to-one tutoring could be the significant variable in

these findings. However, the increased time allocated to direct reading activities is clearly correlated to increased reading achievement.

Programs like Reading Recovery and Success for All utilize tutoring (Snow et al., 1998). However, there is a need to sustain the effects of interventions (Heibert, 1994; Shanahan & Barr, 1995).

Connected reading activities engage learners in reading. Silent reading, guided reading, re-reading and writing are examples of activities that connect the learner. Worksheets, skill sheets, "seat-work" and some teacher interruption are indirect or related activities. "Indirect reading activities" do not add to achievement as opposed to engagement with the text which does (Leinhardt et al., 1981).

Reading Recovery, a program designed by Marie Clay, was designed for children in New Zealand who were experiencing reading difficulties (Snow et al., 1998). The program requires extensive teacher training and uses connected reading activities such as re-reading and independent reading in conjunction with running records and is delivered to identified first graders in thirty minute one to one blocks of time (Clay, 1985 as cited by Snow et al., 1998). As a proprietary program, Reading Recovery is designed for first grade students only. The fundamental premise of Reading Recovery is engaged learning time in reading for students (Snow et al., 1998).

Reading Recovery has attracted controversy both in terms of cost and effectiveness. There is literature that both validates and invalidates Reading Recovery Program outcomes.

The 1998 Reading Recovery Review which included manuscript input from Jeanne S. Chall, P. David Pearson and Robert E. Slavin reported that 259,777 children in the United States, representing 81% of those "served," successfully completed the program, i.e. children reading within average class reading levels (Askew, Fountas, Lyons, Gay & Smitt, 1998). It is evident that the program is successful. However, all students who are identified for the program do not complete the program. In fact, thirty percent of the students who participate in the program are not successfully discontinued, i.e. are dropped from the program (Nicholson, 1989; Robinson, 1989). Furthermore, results show that when successful Reading Recovery students were compared with other low progress students who did not receive Reading Recovery after one year, there were few differences (Glynn, Bethune, Crooks & Ballard, 1992). The fact that all children are not served by the Reading Recovery Program and that thirty percent of the students do not successfully complete the program are valid criticisms only if all programs successfully treat all children. The concept of one hundred percent may be particular to the United States (Snow et al., 1998). It is possible that some students require different interventions, i.e.

speech/language development, special education, etc. However, the low maintenance data one year after treatment suggests a miss-match between the classroom instructional reading program time allocation and the use of reading connected activities. A school system using Reading Recovery at grade one should utilize such information for systemic reading program review, than with a model starting in second grade.

In 1996, the San Diego Public Schools published a report on the progress of the system's Reading Recovery Program (Fass-Holmes & Ciriza, 1996). The report had "mixed" results due to implementation issues. The sustained treatment effect results showed that seventy-five percent of all discontinued students (reached "grade level" in reading) in 1992 and 1993 were "moderately experienced readers" in grades 2,3,4; two-thirds of the discontinued students in 1994 were "moderately experienced readers" in grades 2 and 3; and less than half of the discontinued students in 1995 were "moderately experienced readers" in grade 2 (Fass-Holmes et al., 1996).

The San Diego City Schools' Reading Recovery results were similar to the maintenance level results reported by Glynn et al., (1992). The report had several implementation/ procedural recommendations but programmatically recommended that they, "... consider other literacy programs for low achieving students that might impact a larger number of students, be more cost effective, and serve students beyond

first grade" (Fass-Holmes et al., 1996, p. 10). This recommendation is valid and further supports the concept of a time on task, connected reading program for second graders. Reading Recovery and "other literacy programs" are not necessarily incompatible. Reading Recovery is compatible with effective classroom reading instruction that is focused on time on task and reading connected activities. Although the time on task Reading Recovery activities are successful on a one-to-one basis, the program is not designed for whole or small group instruction (Askew et al., 1998). However, the design of any time on task to reading connected activities program would incorporate Reading Recovery strategies. This would be true in any program design for a school with or without a Reading Recovery Program. Schools implementing Reading Recovery programs would plan for both short-range achievement results as well as longitudinal gains. Schools implementing Reading Recovery would be best served by designing and evaluating a second grade program that incorporates time on task reading connected activities.

An urban school district in Tennessee, that was not implementing Reading Recovery, implemented a program utilizing strategies from Reading Recovery (Gettys, 1994). The Compacted Approach to Reading was designed as a small group intervention program utilizing Marie Clay's Concepts of Print test as part of the pre-testing selection criteria. The program utilized some strategies similar to Reading Recovery, such as: building on student's strengths, direct

instruction, and development of student independence in reading. The program had "mixed" results in terms of student achievement, which was the only variable measured. The program, specifically designed to "reflect" the Reading Recovery model in a small group setting resulted in fourteen first grade students, sixty-six percent, who reach grade level at the end of the twenty-one week intervention program; and little or no significance at the second grade level (Gettys, 1994). The strength of the program design was two-fold. It planned for additional time on task and it utilized reading connected instructional activities. The study is flawed in its failure to measure the actual time on reading connected task. The reported correlation is between the intended treatment and achievement. It is evident that in designing a second grade program similar to Reading Recovery, that utilizes time on connected reading task, it is important to design a measurement that evaluates actual time on task and is compared to strategies in "traditional" second grade classrooms in addition to the correlation of both to achievement scores.

Torgensen (2000) recognizes both the strengths and weaknesses of both Reading Recovery and Success for All in his review of treatment registers. However, the author also emphasizes the importance of reading comprehension by the early elementary grades, i.e. first and second grades, or students will be "cut off from the rich knowledge sources available in print" (p. 58). Young children not reading

with comprehension consistent with their general verbal ability, by the early grades move toward a "remedial" rather than a preventive model of intervention. Torgenson notes that while there is beginning consensus concerning instructional methodology for teaching young children to read, we are far from consensus concerning how much special instruction is required. Torgensen concludes that ". . .we must examine the intensity and duration of instruction required to eliminate reading failure in children with most severe phonological disabilities and most disabling environmental background" (p. 63).

CHAPTER III

METHODOLOGY

The Data

The data for this research is the primary type. The primary data consists of student test scores from the Iowa Test of Basic Skills in Reading-level B, student test Scores from the Terra Nova Test in Reading, and student test scores from the Terra Nova Test in Mathematics. The primary data also consists of student reading levels and student time in technology-assisted reading instruction as measured by the SuccessMaker reading program. The primary data also consists of student attendance, teacher monthly reading logs, and the types of degrees and certifications held by teachers.

Criteria for the Admissibility of the Data.

The Iowa Test of Basic Skills in Reading level B, validated and normed by the Riverside Publishing Company will be used in accordance with the publisher's instructions. The Terra Nova Test in reading and in mathematics, validated and normed by the McGraw-Hill Publishing Company, will be used in accordance with the publisher's instructions. The measure of student reading

level and time on technology-assisted reading instruction are derived from the SuccessMaker software program, validated and normed by the Computer Curriculum Corporation, and maintained and updated in a central served data bank in accordance with the publisher's instructions. The student attendance data will be derived from the true school record. The teacher monthly reading logs will be derived from the true school record. The type of degrees and certifications held by teachers will be derived from the true school record.

The Research Methodology

This research is a true experimental design study which will offer a greater degree of control and provide greater insurance of both internal and external validity (Leedy, 1997). This study consists of an experimental group, a control group, and sample population groups utilizing both a pre-test/post test control group design and a post test only group design.

This research proposes to answer the question, which is the minimum requirement for internal validity, whether or not the experimental treatment made a difference in the dependent variable. It also proposes, by design, to generalize the results necessary for external validity.

Unlike qualitative studies, the subjects in the experimental group are not in their natural situation, but rather in a controlled treatment situation (Krathwohl,

1998). Subjects in the experimental group are from the bottom 20% of the population in reading and require parental consent to participate. Random access to the experiment is dependent upon two prevailing variables, which is that the subject is part of the targeted population and consent of the parent.

The treatment for the experimental group is designed as a planned cause and as a large difference from the untreated group. The substantial control of the administration of the treatment in this research can provide strong causal evidence (Krathwohl, 1998).

The control group is randomized across the population in this study. The population group will be divided into sample population groups in this study.

"The old workhorse of traditional experimentation," according to Mouly is the pre-test/post test control group design (1970, as cited in Leedy, 1997, p. 232). In this study the experimental group will be evaluated, subjected to treatment and re-evaluated. The control group will be evaluated, but not subjected to treatment and re-evaluated. The design of this study is greatly strengthened since the experimental group and the control group are matched for identical correspondences, i.e. subjects are from the same targeted 20% of the population (Leedy, 1997). This study will also pre-test and post test the sample population groups.

This study will also use a post test only control group design. The size of the population, tested in sample population groups, insures randomization to make groups compatible (Krathwohl, 1998). The testing instruments for the post test effect will be different from those used in the pre-test/post test effect and will be different from those used in the pre-test/post test control group. The post test only control group design will also include the experimental group and the control group. The post test only, utilizing different testing instruments, will insure both the internal and external validity of the study.

Translating hypothesis into design within limited resources, institutional constraints, and ethical considerations is part science and part art (Krathwohl, 1998). This research is designed to balance the numerous variables that constitute a study both scientifically and artfully in the hope of defining some small truth that may contribute to what is known about learning and teaching.

The Specific Treatment of Each Sub-Problem

Sub-Problem 1.

The first sub-problem is to determine whether or not whole group, full day time on task allocated for poor second grade readers will demonstrate greater growth in reading achievement than their second grade counterparts.

The data needed for solving sub-problem one are the following:

a. The identification numbers and/or names of every second grade student in the study sorted by class, teacher and school for the 1999-2000 school year.

b. The identification numbers and/or names of students in the study, identified for Reading Recovery in first grade, during the 1998-1999 academic year, but who did not receive services and who participated in the full day reading program during the 1999-2000 academic year by class, teacher and school.

c. The pre-test scores from the standardized Iowa Test of Basic Skills in Reading level B, administered in October 1999 for every second grade student in the study.

d. The post test scores from the standardized Iowa Test of Basic Skills in Reading level B, administered in March 2000 for every second grade student in the study.

e. The scores from the standardized Terra Nova Test in Reading administered in March 2000 for every second grade student in the study.

f. The monthly teacher logs, from October 1999 to March 2000, recording the daily amount of time allocated to connected reading activities for every second grade teacher for the 1999-2000 school year.

g. The attendance of every second grade student from October 1999 through March 2000.

All data for the first sub-problem and all sub-problems are located in the Office of Testing, Schenectady City School District, New York.

All data for the first sub-problem and all sub-problems will be requested from the Research Committee, Schenectady City School District, 108 Education Drive, Schenectady, New York, 12308. Appendix B displays the letter requesting the data.

The student population group, i.e. counterparts, consists of all second grade students. The population group will be sorted by class sets. Every class set will be assigned an alpha code, as follows:
A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W. Every student within every class set will be assigned a numeric code as follows:
1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20, etc.

A sample population data chart will be developed for every class set, as depicted in Appendix D. Every chart will contain the following information categories for every student within the set:

1. Raw pre score Iowa Test of Basic Skills in Reading level B.

2. Raw post score Iowa Test of Reading level B.

3. The gain in raw score from the pre-test of the Iowa Test of Basic Skills in Reading level B, to the post test of the Iowa Test of Basic Skills in Reading level B.

4. The average daily time on task allocated to connected reading activities in minutes.

5. The raw score and reading level for the Terra Nova Test in Reading.

6. The raw score and level of the Terra Nova test in Mathematics.

7. The technology-assisted SuccessMaker reading level in March 2000.

8. The mean of the raw scores of the class set of the pre-test of the Iowa Test of Basic Skills in Reading level B.

9. The mean of the raw scores of the class set of the post test of the Iowa Test of Basic Skills in Reading.

10. The mean of the gains of the class set from the pre-test of the Iowa Test of Basic Skills in Reading level B, to the post test of the Iowa Test of Basic Skills in Reading level B.

11. The mean of the raw scores of the class set of the Terra Nova test in Reading; the mean of the class set of the raw scores of the Terra Nova test in Mathematics; the standard deviation of the mean of the raw scores of the class set of the pre-test of the Iowa Test of Basic Skills in Reading level B.

12. The standard deviation of the mean of the raw scores of the class set of the post test of the Iowa Test of Basic Skills in Reading level B.

13. The standard deviation of the mean of the gains of the class set from the pre-test of the Iowa Test of Basic Skills in Reading level B, to the post test of the Iowa Test of Basic Skills in Reading level B.

14. The standard deviation of the mean of the raw scores of the class set of the Terra Nova test in Reading.

15. The standard deviation of the mean of the class set of the raw scores of the Terra Nova test in Mathematics.

The teacher population consists of all second grade teachers. The population of teachers will be sorted by class. Every teacher will be assigned an alpha code respectively corresponding to the class set of students the teacher instructed during the 1999-2000 academic year.

The data charts for every class set will contain information categories for the teacher alpha code and teacher degree(s) and certifications.

The raw scores from the pre-test of the Iowa Test of Basic Skills in Reading level B, will be recorded by numeric code on the corresponding alpha population chart. The raw scores from the post test of the Iowa Test of Basic Skills in Reading level B, will be recorded by numeric code on the corresponding alpha population chart. The raw scores and levels from the Terra Nova test in Reading will be recorded by numeric code on the corresponding alpha chart.

The gains for every student will be calculated by subtracting the pre-test score of the Iowa Test of Basic

Skills in Reading level B, from the post test score of the Iowa Test of Basic Skills in Reading level B.

The gain for every student will be recorded by numeric code on the corresponding alpha population chart.

The mean will be calculated by adding all observations and then dividing by the number of observations (Witte & Witte, 1997). The mean of the raw scores of the pre-test and the post test of the Iowa Test of Basic Skills in Reading level B, and the Terra Nova Test in Reading will be calculated for every sample population group by utilizing the formula:

$$X = \underline{\Sigma X}$$

The mean of the raw scores of the pre and post test of the Iowa Test of Basic Skills in Reading level B, will be recorded for every class on the corresponding alpha sample population chart.

The mean of the gains will be calculated for every sample population set.

The mean of the gains for every class will be recorded on the corresponding alpha sample population chart.

The standard deviation measures how the observations are spread around the mean (Krathwohl, 1998). The standard deviations of the means of the raw scores of the pre-test and the post test of the Iowa Test of Basic Skills in Reading level B; and the Terra Nova Test in Reading will be

calculated for every sample population group by utilizing the formula:

$$SD = \sqrt{\frac{\Sigma (X - M)^2}{N}}$$

The standard deviations of the means of the raw scores for every class will be recorded on the corresponding alpha sample population chart.

The sum of the amount of time, in minutes, on task allocated for connected reading activities will be calculated by adding the number of minutes recorded daily in the monthly teacher logs from October 1999 to March 2000, by every teacher in the sample population group. The total number of minutes will be divided by the number of days during which the daily number of minutes were recorded from October 1999 to March 2000. This sum will represent the total number of minutes allocated for all connected reading activities by teacher, as expressed:

$$\text{Average Daily Time by Teacher} = \frac{\text{Total Number of Minutes}}{\text{Total Number of Days}}$$

The average daily time allocated for all connected reading activities for every student will be calculated by multiplying the number of days the student was absent by the average daily time, then subtracting that sum of missed minutes allocated for all connected reading activities from the sum of total minutes allocated for all connected reading activities, and dividing by the total

number of days during which the daily number of minutes were recorded from October 1999, to March 2000, as expressed:

$$\text{Average Daily Time by Student} = \frac{(\text{Average daily minutes by teacher})\ (\text{Number of days absent by student})}{\text{Total Number of Days}}$$

The daily time on task for every student will be recorded by numeric code to the corresponding alpha sample population chart.

The standard deviation of the mean of the average daily time on task allocated for all connected reading activities will be calculated for every sample population group.

The standard deviation of the mean of the average daily time on task allocated for all connected reading activities will be recorded to the corresponding alpha sample population chart.

The experimental group of students will consist of eighteen second grade students who were identified for Reading Recovery I first grade, i.e. the bottom two percent, but were not served and participated in a whole group full day time on task allocated to connected reading activities for a twenty-week period. The experimental class will be assigned the alpha code X. Every student within the experimental class set will be assigned a number code, as follows: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18.

The data chart for the experimental class will contain the exact same data as will be contained in the sample

population data chart as previously described and depicted in Appendix D.

The data for the experimental class will be calculated utilizing the exact methodology as previously described for the sample population data.

The data for the experimental class will be recorded on the experimental class data chart exactly as the previously described data for the sample population group was recorded on the sample population chart.

Calculating the correlation between time on task to connected reading activities and gain in reading for the experimental class and the sample population group. The linear relationship between pairs of quantitative variables expressed by a number between -1 and 1 is the Pearson correlation coefficient (Witte et al., 1997). The relationship between time on task allocated to connected reading activities will be the independent variable expressed as X and gains in reading will be the dependent variable expressed as Y. Using the data contained in the sample population data chart and the experimental class data chart, the Pearson correlation will be determined for every sample class population and the experimental class utilizing the formula:

$$r = \frac{n\Sigma XY - (\Sigma X)\ (\Sigma Y)}{[\ n\Sigma X< -(\Sigma X)<]\ \ [\ n\Sigma X< -(\Sigma X)<]}$$

A regression analysis will be calculated for gains in reading growth on the pre and post Iowa Test of Basic Skills in Reading level B and time on task allocated for connected reading activities for all sample population classes and the experimental class. The regression analysis will estimate the scores of the criterion variable on the basis of knowledge of scores on another variable, the predictor variable (Hinkle, Wiersma & Surs, 1998). This analysis will determine the significance of time on task as a predictor variable for gains in reading.

A paired t-test will be calculated for the mean reading scores of class AA to WW and class ZZ on the post-Iowa Test of Basic Skills in Reading level B. The paired T-Test is a simple design involving the comparison of a control with an experimental group (Krathwohl, 1998).

A line graph demonstrating the relationship between gains in reading growth on the pre and post Iowa Test of Basic Skills in Reading level B, and time on task for the sample population classes and the experimental class will be graphically represented.

All calculations and related representations will be processed through SPSS.

A table representing the Terra Nova Reading Grade Equivalent Scale Score, national percentile and national stanine for class AA to ZZ will be represented for the purpose of comparing the total population of the study with national samples.

An independent t-test will be calculated for the scale score for the Terra Nova Test of Reading for classes AA to WW inclusively and experimental class ZZ; and the national norm grade equivalent scale score for the Terra Nova Test of Reading for classes AA to WW inclusively and experimental Class ZZ.

The independent t-test will determine whether the mean of a single variable for subjects in one group differs from that in another group (SPSS, 1999).

All calculations and related representations will be processed through SPSS.

Sub-Problem 2.

The second sub-problem is to determine whether or not whole group, full day time on task allocated for poor second grade readers will bring them to the grade level of their second grade counterparts and their second grade peers.

The data needed for solving sub-problem two are: (a) all of the data required for solving problem one; (b) the national norms for the Iowa Test of Basic Skills in Reading level B; (c) the national norms for the Terra Nova Test in Reading.

Sub-Problem 3.

The third sub-problem is to determine whether or not poor second grade readers engaged in whole group, full day time on task allocated to connected reading activities will

demonstrate greater growth in reading achievement than poor second grade readers engaged in whole group, daily conventional time on task allocated to connected reading activities.

The data needed to solve sub-problem three is (a) all of the data required for sub-problem one; (b) the identification numbers and/or names of students identified for Reading Recovery in first grade, during the 1998-1999 academic year, but who did not receive services and their current class, teacher, and school for the 1999-2000 academic year.

A regression analysis for gains in reading on the pre and post Iowa Test of Basic Skills in Reading level B, and time on task for every student in the control group and for every student in the experimental group.

An independent t-test will be calculated for gains in reading on the pre and post Iowa Test of Basic Skills in Reading level B for every student in the experimental group and the control group, and time on task for every student in the experimental group and the control group.

A table representing the Terra Nova Reading mean scale Score, national percentile and national stanine for the Experimental Group and the Control Group will be represented for the purpose of comparing both groups in this study with the national sample.

The control group of students consists of all poor second grade readers who were identified for Reading Recovery in the first grade during the 1998-1999 academic year but were not served and who were randomly, as a result of place of residence, enrolled in the sample population second grade classes who were engaged in conventional daily time on task allocated to connected reading activities during the 1999-2000 academic year. The control group will be assigned the alpha code Y. Every student within the control group will be assigned a numeric code, as follows: 1,2,3,4 and so on through the finite set.

The control group data chart will contain the exact same data as contained in the sample population group data charts and the experimental class data chart, except for coded teacher information since this subset exists randomly throughout the population as previously described and depicted in Appendix-D.

The data for the control group will be calculated utilizing the exact same methodology as previously described for the sample population data and the experimental class data.

An independent t-test will be calculated for the mean math score on the Terra Nova Test of Mathematics for the experimental class and the control groups; and time on task for the experimental class and the control group.

A table will be constructed for the Terra Nova Math grade equivalent, scale score, national percentile and

national stanine for classes AA to ZZ for the purpose of comparing the sample populations in this study to the national sample.

A table will be constructed for the Terra Nova Math grade equivalent, scale score, national percentile and national stanine for the experimental class and the control group for the purpose of comparing both groups in this study to the national sample.

Sub-Problem 4.

The fourth sub-problem is to determine whether or not poor second grade readers engaged in whole group, full day time on task allocated to connected reading activities will demonstrate similar growth in mathematics achievement to poor second grade readers engaged in whole group, conventional time on task allocated for connected reading activities.

The data needed to solve sub-problem four are: (a) all of the data required for sub-problem one; (b) all of the data required for sub-problem three; (c) the Terra Nova Test in Mathematics, administered in March 2000, for every second grade student for the 1999-2000 academic year.

The raw mathematics data will be calculated utilizing the exact methodology as previously describe for the sample population data.

The mathematics data will be recorded on the experimental class data chart, the control group data chart, and the sample population data chart.

CHAPTER IV

THE ANALYSIS OF THE DATA

The Specific Data for the Sub-Problems

Specific Data: Sub-Problem 1:

The first sub-problem is to determine whether or not whole group, full day time on task allocated for poor second grade readers will demonstrate greater growth in reading achievement than their second grade counterparts.

This research studied twenty-four second grade classes comparing the relationship between time on task allocated for connected reading activities and growth in reading achievement. Class ZZ is the experimental/treatment group. Classes AA through WW are the sample population/non-treatment groups. The control population represented as YY are students identified as poor readers, not part of the experimental class, and whose scores are extrapolated from classes AA through WW for the purpose of comparison. Time on task was recorded daily by the twenty-four classroom teachers. The students were pre and post tested on the Iowa Test of Basic Skills in Reading level B.

The Summary Data Chart (see Table 1) is a compilation of all of the data contained in this study. The first column

Table I

Summary Data Sheet

Class	Teacher	Deg/Cert	N	Pre IOWA	Post IOWA	Gain	Time On Task	N	Terra Nova Reading	Terra Nova Math
AA	A	N-6	13	143	158.15	15.2	118	17	2.13	2.41
SD				17.7	16	8.63			1.44	0.95
BB	B	N-6	21	159.38	163.05	5.19	44	19	5.37	3.15
SD				13.6	15.76	11.4			3.76	0.89
CC	C	N-6	21	159.19	165.14	5.95	137	22	3.62	3.51
SD				19.75	16.94	9.23			2.24	1.97
DD	D	READING	19	154.31	104.52	10.2	84	19	3.53	2.89
SD				14.12	11.58	9I.33			2.47	0.97
EE	E	READING	12	150.33	165.92	15.6	149	13	3.25	2.29
SD				13.95	14.37	9.89			2.17	1.07
FF	F	N-6	17	147.88	160	14.82	181	16	2.58	2.18
SD				10.58	17.97	13.38			2.12	0.75
GG	G	N-6	16	152.37	166.18	13.8	83.89	17	4.55	3.26
SD				13.74	13.74	8.24			2.82	1.26
HH	H	N-6	16	160.43	167.75	7.5	149	21	3.75	2.81
SD				22.93	7.29				3.32	1.68
II	I	READING	19	150.68	158.89	9.26	69	21	2.5	2.57
SD				9.08	13.05	8.12			1.15	0.82
JJ	J	N-6	16	156.31	168.62	12.31	163	19	3.66	3.44
SD				15.67	11.92	9.68			1.67	1.29
KK	K	N-6	17	146.7	155.52	8.23	80	17	2.25	2.57
SD				10.25	13.3	8.14			1.02	0.78
LL	L		12	148.75	154.33	5.58	100	15	2.96	2.39
SD				8.34	10.91	6.22			1.78	1.11
MM	M	N-6	22	161.22	171.45	12	114	20	4.71	3.37
				16.21	17.27	8.94			2.18	1.31
NN	N	N-6	21	157.85	163.71	5.85	161	19	3.51	3.18
SD				11.58	14.47	9.56			1.4	0.78
OO	O	N-6	7	149	150.71	1.85	137	8	4.41	3
SD				11.48	16.1	7.75				

Table I

Summary Data Sheet (continued)

Class	Teacher	Deg/Cert	N	Pre IOWA	Post IOWA	Gain	Time On Task	N	Terra Nova Reading	Terra Nova Math
PP	P	N-6	11	148.63	158.63	10	110	15	3	2.98
SD				9.4	10.85	10.2			1.21	1.17
QQ	Q	N-6	13	153.38	159.84	6	144	19	2.77	2.59
SD				10.37	15.15	6.57			1.9	0.96
RR	R	N-6	14	148.57	162.35	13.9	119	16	2.78	2.68
SD				10.41	9.19	8.46			0.89	0.58
SS	S	READING	6	179	171.5	1.5	170	8	5.67	3.51
SD				13.89	9.25	15.17			3.72	1.06
TT	T	N-6	18	152.44	162.11	9.66	178	18	2.93	2.19
SD				17.7	15.63	13.39			1.84	0.99
UU	U	N-6	18	153	163.94	10.9	173	20	2.81	2.92
SD				13.18	15.03	6.44			2.34	1.54
VV	V	N-6	13	153.46	153	-0.46	35	17	2.67	2.24
SD				12.39	14.61	0.71			1.95	0.94
WW	W	N-6	18	156.55	164.61	8.05	186	16	3.33	3.18
SD				13.63	12.68	9.68			1.68	1.02
YY	Y		17	139.94	150.18	10.23	114.75	18	1.67	2.04
				12.55	8.79	9.32			0.7	0.61
ZZ	Z	READING	15	134.86	156.06	21.2	303	18	1.95	2.38
SD				8.57	10.39	11.22			0.65	0.76

identifies all sample population classes from AA through WW; the control sample population YY data; and the experimental class ZZ data table. The second column identifies all sample population class teachers from A through W and the experimental class teacher Z. The third column identifies the type of teacher certification/degree, as either generalist or reading specialist, for all teachers A through Z; exclusive of the control population YY since the control data is extrapolated from the sample population and has no teacher. The fourth column identifies the number of students who were both pre and post tested on The Iowa Test of Basic Skills in Reading level B in the sample population classes from AA through WW; the number of students in the control population YY, and the number of students in the experimental class ZZ. The fifth column identifies the mean reading score and the standard deviation on the pre Iowa Test of Basic Skills in Reading level B for all sample population classes AA through WW; for the control population YY; and the experimental class ZZ. The sixth column identifies the mean reading score and the standard deviation on the post Iowa Test of Basic Skills in Reading level B for all sample population classes AA through WW; the control population YY; and the experimental class ZZ. The seventh column identifies the mean gain and the standard deviation from the pre-test to the post test of the Iowa Tests of Basic Skills in Reading level B for all sample population classes AA through WW; the control population YY; and the

experimental class ZZ. The eighth column identifies the average time on task allocated per week for connected reading activities for all sample population classes AA through WW; the control population YY; and the experimental class ZZ. The ninth column identifies the number of students who were tested on both the Terra Nova Test in Reading and the Terra Nova Test in Mathematics for all the sample population classes AA through WW; the control population YY; and the experimental class ZZ. The tenth column identifies the mean score and the standard deviation for the Terra Nova Test in Reading for all sample population classes AA through WW; the control population YY; and the experimental class ZZ. The eleventh column identifies the mean score and the standard deviation for the Terra Nova Test in Mathematics for all the sample population classes AA through WW; the control population; and the experimental class ZZ. The twelfth column identifies the average time on task allocated per week for connected reading activities for all sample population classes AA through WW; the control population YY; and the experimental class ZZ.

In comparison to the twenty-three sample population classes, the experimental class ZZ demonstrates the highest gain in reading with a mean of 21.2, and the highest average daily time on task allocated for connected reading activities with an average of 303 minutes daily.

The relationship between time on task and gains in reading growth between the sample population classes AA to WW and experimental class ZZ is statistically significant.

Eighteen of the twenty-three sample classes, which represents 78% of the total, demonstrate a significance level of .05 or higher ($p > .05$). Sample population classes JJ (Figure 10); MM (Figure 13); PP (Figure 16) and TT (Figure 20) are statistically significant at the .05 level. Fourteen of the twenty-three sample population classes, which represents 61% of the total, are significant at the .01 level ($p > .01$). The classes at the statistically significant level of .01 are: BB (Figure 2); CC (Figure 3); DD (Figure 4); EE (Figure 5); FF (Figure 6); GG (Figure 7); HH (Figure 8); II (Figure 9); JJ (Figure 10); KK (Figure 11); LL (Figure 12); MM (Figure 13); NN (Figure 14); OO (Figure 15); PP (Figure 16); QQ (Figure 17); RR (Figure 18); SS (Figure 19); TT (Figure 20); UU (Figure 21); VV (Figure 23); WW (Figure 23).

Individual data tables, Table 2 through Table 26 contain the individual student data for all the sample classes consecutively from chart 2, class AA through chart 24, class WW; the sample population group YY, chart 25; and the experimental class ZZ, chart 26, that are compiled on the Summary Data Chart (Table 1).

Figure 1 through Figure 23 represents the Pearson Correlation between gains in reading growth on the pre and

Table 2

Sample Population Class AA Data Chart

Class	AA					
Teacher	A					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
A1Y	119	141	22	118	1.4	1.8
A2	160	182	22	118	4.6	2.9
A3	160	168	8	118		
A4WL	121	148	27	118		
A5	148	158	10	118	2.4	3.3
A6	132	156	24	118	2.2	1.9
A7	127	150	23	118	1.1	2.7
A8	134	153	19	118	1.7	1.6
A9	146	153	7	118	1.7	3.5
A10	166	182	16	118	3.3	2.5
A11	142	137	-5	118	1.8	1.2
A12	127	141	14	118	0.9	1.9
A13	177	187	10	118	6.3	4.9
A14	139					
A15		134			0.5	1.7
A16		149			2.3	1.7
A17		139			1	2
A18		156			1.3	1.5
A19		148			0.9	2.1
Total	1859	2056	197	1534	36.2	40.9
N	13	13	13	13	17	17
Mean	143	158.15	15.2	118	2.13	2.41
SD	17.7	16	8.63		1.44	0.95

Table 3

Sample Population Class BB Data Chart

Class	BB					
Teacher	B					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
B1	134	134	0	44	2.2	0.7
B2WL	162	173	11	44	2.6	3.2
B3		144				
B4		153				
B5	168	173	5	44	3	2.9
B6	152	150	-2	44		
B7	162	168	6	44	3.1	2.9
B8	168				3.7	3.3
B9	168	166	-2	44	4.8	2.9
B10	170	177	7	44	12+	3.5
B11	162	160	-2	44	2.4	3.3
B12	158	158	0	44	1.6	2.5
B13	159	166	7	44	3.2	2.5
B14	157	160	3	44	3.4	2.6
B15	187	173	-14	44	12+	3.7
B16	166	194	28	44	5.3	3.6
B17	157	164	7	44	3.4	2.4
B18		156			3.3	4
B19	127	157	30	44		
B20	160	156	-4	44		
B21	137	123	-14	44		
B22	150	187	27	44	12+	3.8
B23	177	177	0	44		
B24	164	173	9	44	2.8	2.6
B25	170	177	7	44	12+	4.3
B26		187			9.2	5.1
Total	3347	3466	109	924	102	59.8
N	21	21	21	21	19	19
Mean	159.38	163.05	5.19	44	5.37	3.15
SD	13.6	15.76	11.4		3.76	0.89

Table 4

Sample Population Class CC Data Chart

Class	CC					
Teacher	C					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
C1	132	139	7	137	2.2	2.9
C2	160	173	13	137	3.3	4.3
C3	142	152	10	137	2.2	2
C4	168	187	19	137	3	4
C5	177	187	10	137	5.5	5.4
C6	194	170	-24	137	3.2	3.2
C7	187	194	7	137	5.9	3.6
C8	149	159	10	137	2	1
C9	141	144	3	137	2.2	2.3
C10	149	166	17	137	3.3	3.9
C11	187	173	-14	137	3.8	2.9
C12	152	159	7	137	2.4	2.9
C13	156	166	10	137	3.8	3.9
C14	194				6.3	4.5
C15	170	177	7	137	4.4	2.8
C16	158	164	6	137	3.6	3.1
C17	149	152	3	137	1.7	3
C18	141	150	9	137	2.4	2.1
C19	134	142	8	137	1.7	1.9
C20	148	158	10	137	2.1	3
C21	146	153	7	137	2.6	3.2
C22	203	203	0	137	12+	11.4
Total	3343	3468	125	2877	79.6	77.3
N	21	21	21	21	22	22
Mean	159.19	165.14	5.95	137	3.62	3.51
SD	19.75	16.94	9.23		2.24	1.97

Table 5

Sample Population Class DD Data Chart

Class	D					
Teacher	DD					
Deg/Cert	Reading					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
D1	166	160	-6	84	4.6	3.2
D2	164	168	4	84	3	3.3
D3	159	173	14	84	3.2	3
D4	159	170	11	84	3.1	2.3
D5	160	182	22	84	4	3.1
D6	159	164	5	84	2.6	2.3
D7	134	144	10	84	1.4	2.4
D8	132	149	17	84	1.1	0.9
D9	182	177	-5	84	8	3.3
D10	127	158	31	84	2	5.8
D11	137	149	12	84	2.1	2.7
D12	150	158	8	84	1.9	2.5
D13	159	173	14	84	3.7	2.9
D14	150	168	18	84	2.9	2.4
D15	177	187	10	84	12+	4.6
D16	164	170	6	84	3.6	2.7
D17	153	146	-7	84	2	2.8
D18	146	164	18	84	3.2	2.6
D19	154	166	12	84	2.7	2.2
Total	2937	3126	194	1596	67.1	55
N	19	19	19	19	19	19
Mean	154.31	104.52	10.2	84	3.53	2.89
SD	14.12	11.58	9.33		2.47	0.97

Table 6

Sample Population Class EE Data Chart

Class	EE					
Teacher	E					
Deg/Cert	Reading					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
E1	129	154	25	149	2.1	0.8
E2WL	121	141	20	149	1.2	0.9
E3	146	158	12	149	2.5	2.2
E4	150	177	27	149	4.9	2.4
E5					1.5	2.7
E6		156				
E7	162	170	8	149	4.2	2.1
E8	142	164	22	149	3.2	3
E9	164	194	30	149	9.8	3.7
E10	173	177	4	149	3	2.7
E11	154	168	14	149	3.1	3.6
E12	152	153	1	149		
E13	159	182	23	149	3.5	3.3
E14	152	153	1	149	1.8	2.4
E15					1.5	0
Total	1804	1991	180	1788	42.3	29.8
N	12	12	12	12	13	13
Mean	150.33	165.92	15.6	149	3.25	2.29
SD	13.95	14.37	9.89		2.17	1.07

Table 7

Sample Population Class FF Data Chart

Class	F					
Teacher	FF					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
F1	146	142	-4	181	1.6	1.7
F2	134	166	32	181	1.8	1.4
F3	156	187	31	181	4.6	3
F4	156	166	10	181	2.1	2.5
F5	156	177	21	181	3.6	2.3
F6	142	162	20	181	2	3
F7	144	166	22	181	2.6	2.8
F8	146	137	-9	181	0.9	1
F9	149	150	1	181		
F10	148	146	-2	181	1.9	2.1
F11	150	156	6	181	1.9	2
F12	129	159	30	181	1	1.4
F13	150	168	18	181	2.9	2.1
F14Y	129	153	24	181	1.7	1.8
F15	148	125	23	181	0.2	1.1
F16	158	157	-1	181		
F17	173	203	30	181	9.8	3.2
F18					2.7	3.6
Total	2514	2720	252	3077	41.3	35
N	17	17	17	17	16	16
Mean	147.88	160	14.82	181	2.58	2.18
SD	10.58	17.97	13.38		2.12	0.75

Table 8

Sample Population Class GG Data Chart

Class	GG					
Teacher	G					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
G1	153	146	-7	83.89	3.3	2.2
G2		149		83.89	3.3	2.2
G3	154	177	23	83.89	2.5	2.4
G4	123	150	27	83.89		
G5	152	164	12	83.89	2.3	3.5
G6	170	187	17	83.89	8	2.6
G7	168	177	9	83.89	8.1	6.5
G8	139	153	14	83.89	2.2	2.1
G9Y	134	142	8	83.89	1.4	1.8
G10	162	182	20	83.89	4.5	3.3
G11	137	157	20	83.89	2	2.4
G12	173	182	9	83.89	8.1	5.4
G13	144	170	26	83.89	4.5	3.9
G14	154	164	10	83.89	3	2.3
G15	160	168	8	83.89	5.3	3.6
G16	166	182	16	83.89	4.7	3.5
G17	149	158	9	83.89	2.2	2.9
G18				83.89	12	4.9
Total	2438	2659	221	1342.24	77.4	55.5
N	16	16	16	16	17	17
Mean	152.37	166.18	13.8	83.89	4.55	3.26
SD	13.74	13.74	8.24		2.82	1.26

Table 9

Sample Population Class HH Data Chart

Class	HH						
Teacher	H						
Deg/Cert	N-6						
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math	Time On Task
H1	137	142	5	149	0.5	2	149
H2	182	194	14	149	12	5.8	149
H3	157	157	0	149	2.7	2	149
H4	194	203	9	149	5.4	5.8	149
H5	203	203	0	149	12	5.2	149
H6	146	152	7	149	1.5	1.6	149
H7	137	156	19	149	2.5	2.5	149
H8	142				1.5	1.7	149
H9	144	157	13	149	2.3	0.9	149
H10	139	139	0	149	1.3	0.8	149
H11Y	142	144	2	149	1.1	1.7	149
H12	203	203	0	149	4.7	4.9	149
H13	162	177	15	149	2.8	2.8	149
H14	148	159	11	149	2.6	1	149
H15	154	148	-6	149	1.8	1.5	149
H16	142	156	14	149	2.7	2.1	149
H17	177	194	17	149	9.2	4.2	149
H18					1.8	2.7	149
H19					2.9	4.1	149
H20					1.3	0.8	149
H21					6.3	5.1	149
Total	2567	1684	120	2384	78.9	59.2	3129
N	16	16	16	16	21	21	21
Mean	160.43	167.75	7.5	149	3.75	2.81	149
SD	22.93	23	7.29		3.32	1.68	

Table 10

Sample Population Class II Data Chart

Class	II					
Teacher	I					
Deg/Cert	Reading					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
I1Y	132	152	20	69	1.4	2.8
I2	149	150	1	69	1.4	1.6
I3				69		
I4	141	142	1	69	0.7	1.9
I5	170	177	7	69	3.9	2.9
I6	153	170	17	69	2.8	3.2
I7	146	139	13	69	0.8	1.2
I8	156	159	3	69	3	2.6
I9	142	154	12	69	2.5	2.2
I10				69		
I11	162	166	4	69	2.6	2.3
I12	150	146	-4	69	1.6	1.4
I13	148	154	6	69	2.1	2.9
I14	162	187	25	69	2.3	3
I15WL	137	150	13	69	2.8	2.5
I16	158			69	2.8	3.5
I17	150	148	-2	69	1.6	1.6
I18	149	148	-1	69	1.2	1.4
I19	152	168	16	69	3.1	3.4
I20	158	177	19	69	5.3	3.6
I21	146			69	4	4.4
I22	146	159	13	69	2.5	2.6
I23	160	173	13	69	4.2	3.1
Total	2863	3019	176	1311	52.6	54.1
N	19	19	19	19	21	21
Mean	150.68	158.89	9.26	69	2.5	2.57
SD	9.08	13.05	8.12		1.15	0.82

Table 11

Sample Population Class JJ Data Chart

Class	JJ					
Teacher	J					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
J1	173	194	21	163	4.9	6.5
J2	168	182	14	163	4	6.1
J3	203	182	-21	163	8.1	5.5
J4	159	173	14	163	3.4	3.7
J5	148	166	18	163	3	3.1
J6	146	158	12	163	3.1	2.5
J7	153	170	17	163	4.9	3.7
J8		153		163	2	3.3
J9	144	158	14	163	1.6	2.5
J10	156	160	4	163	3.6	3.3
J11	139	162	23	163	2.3	2.1
J12	149	158	9	163	4.4	2
J13	139	148	9	163	2.2	1.9
J14	166	182	16	163	7	4.3
J15	142	158	16	163	2.6	2.7
J16	162	177	15	163	3	3.2
J17	154	170	16	163	2.7	2.7
J18				163	2	2.6
J19					4.9	3.7
Total	2501	1698	197	2608	69.7	65.4
N	16	16	16	16	19	19
Mean	156.31	168.62	12.31	163	3.66	3.44
SD	15.67	11.92	9.68		1.67	1.29

Table 12

Sample Population Class KK Data Chart

Class	KK					
Teacher	K					
Deg/Cert						
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
K1	144	153	9	80	2.1	2.2
K2	170	187	17	80	5.5	4.8
K3	150	153	3	80	1.4	2.6
K4WL	149	153	4	80	1.5	2.7
K5	149	159	10	80	3.3	3
K6	152	152	0	80	2	2
K7	158	173	5	80	2.7	3
K8	137	154	17	80	2.4	2
K9	132	123	-9	80	0.7	1.5
K10	132	144	12	80	1.4	2
K11	139	154	15	80	2	1.8
K12	134	157	23	80	2.7	2.6
K13	146	160	14	80	2.2	3
K14	137	144	7	80	2.1	3.6
K15	158	168	10	80	2.5	2.4
K16	153	146	-7	80		
K17	156			80		
K18	154	164	10	80	2.3	2.1
Total	2494	2644	140	1360	38.3	44
N	17	17	17	17	17	17
Mean	146.7	155.52	8.23	80	2.25	2.57
SD	10.25	13.3	8.14		1.02	0.78

Table 13

Sample Population Class LL Data Chart

Class	LL					
Teacher	L					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
L1	137	129	-8	100	0.1	1
L2Y		144		100	1	1.6
L3	153	164	11	100	3.7	3
L4	159	166	7	100	4.9	4.8
L5	157	168	11	100	4	3.4
L6	149			100	5.5	3
L7	153			100		
L8	141			100	2.5	1.9
L9Y	146	149	3	100	1.7	2.5
L10	132	146	14	100	3.6	2.7
L11	129			100	1.5	0.4
L12	157	160	3	100	5.5	2.9
L13	144	159	15	100	2.6	2.3
L14	149	153	4	100		
L15	144	144	0	100	1.1	2.1
L16Y	148	150	2	100	1.2	0.8
L17	159	164	5	100	5.5	3.5
L18	139			100		
Total	1785	1852	67	1200	44.4	35.9
N	12	12	12	12	15	15
Mean	148.75	154.33	5.58	100	2.96	2.39
SD	8.34	10.91	6.22		1.78	1.11

Table 14

Sample Population Class MM Data Chart

Class	MM					
Teacher	M					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
M1	160	177	17	114	4.3	2
M2	149	170	21	114	4.9	4.7
M3WL	152	159	7	114	3.6	2.1
M4	153	158	5	114	2.4	2.4
M5		170		114	3.5	3.5
M6	146	153	7	114	1.5	0.9
M7	170	160	10	114	6.1	6.1
M8	164	194	30	114	3.8	3.9
M9	139	132	-7	114		
M10	166	182	16	114	3.1	2.8
M11	153	158	5	114	1.7	2.4
M12	177	182	5	114	9.2	4.5
M13	187	203	16	114	4.9	4
M14				114	5.7	5.1
M15	146	164	18	114	2.5	2.2
M16	168	177	9	114	5.3	3
M17	158	182	24	114	9.8	3.2
M18	182	194	12	114	5.5	2.9
M19	187	177	10	114	6.3	3.3
M20	170	194	24	114		
M21	194	187	-7	114	6.9	5.9
M22	139	152	13	114		
M23	146	164	18	114	3.2	2.6
M24	141	153	12	114		
Total	3547	3772	265	2508	94.2	67.5
N	22	22	22	22	20	20
Mean	161.22	171.45	12	114	4.71	3.37
SD	16.21	17.27	8.94		2.18	1.31

Table 15

Sample Population Class NN Data Chart

Class	NN					
Teacher	N					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
N1		177		161	3.6	3.4
N2	162	166	4	161	2.8	3.5
N3	154	160	6	161	2.3	2.8
N4	152	157	5	161	4	3
N5WL	150	144	-6	161	0.7	2.1
N6	157	159	2	161	3.8	3.2
N7	162	182	20	161	3.6	3.6
N8	168	157	-11	161	2.9	3.2
N9	142	162	20	161	3.6	2.7
N10	129	142	13	161		
N11	170	182	12	161	5.2	5.4
N12	166	160	-6	161	3	1.4
N13	170	177	7	161	3	4
N14	142	132	-10	161		
N15	141	148	7	161		
N16	160	182	22	161	2.8	3.3
N17	162	177	15	161	4.6	3.3
N18	156	157	1	161	3.5	2.7
N19	158	168	10	161	2.9	2.8
N20	173	187	14	161	8.1	3.2
N21	173	177	4	161	2.8	2.9
N22	168	162	-6	161	3.6	4
Total	3315	3438	123	3381	66.8	60.5
N	21	21	21	21	19	19
Mean	157.85	163.71	5.85	161	3.51	3.18
SD	11.58	14.47	9.56		1.4	0.78

Table 16

Sample Population Class OO Data Chart

Class	OO					
Teacher	O					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
O1	144	132	-11	137		
O2		159			3	2.8
O3	168	177	9	137	6.3	4.7
O4	137	149	12	137		
O5	144	141	-3	137		
O6	149	156	7	137	9.2	2.4
O7		160			2.7	2.7
O8	137	132	-5	137	1.8	2.1
O9		164			2.2	1.8
O10		141				
O11	164	168	4	137	3.8	3
O12		166			6.3	4.5
Total	1043	949	13	959	35.3	24
N	7	7	7	7	8	8
Mean	149	150.71	1.85	137	4.41	3
SD	11.48	16.1	7.75		2.42	0.99

Table 17

Sample Population Class PP Data Chart

Class	PP					
Teacher	P					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
P1	142	156	14	110	1.5	2.7
P2	141	164	23	110	1.8	2.5
P3	164				2.4	2.4
P4	153	144	-9	110	2.1	2.4
P5		159			2.1	2.3
P6		166			2.6	3.7
P7	141	160	19	110	3.4	2.4
P8	137	162	25	110	2.8	3.1
P9	0	154			2.1	2.8
P10	149	156	7	110	4.1	2.7
P11	158	170	12	110	5.5	4
P12	144	142	-2	110	2.3	1.7
P13	142	150	8	110	2.8	2.3
P14	160	159	-1	110	4	3
P15	168	182	14	110	5.5	6.7
P16	142					
Total	1635	1745	110	1210	45	44.7
N	11	11	11	11	15	15
Mean	148.63	158.63	10	110	3	2.98
SD	9.4	10.85	10.2		1.21	1.17

Table 18

Sample Population Class QQ Data Chart

Class	QQ					
Teacher	Q					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
Q1		156	8	144	2.4	1.9
Q2	148	159	11	144	2.5	2.1
Q3	160	173	13	144	3.4	3.6
Q4	164	173	9	144	3.6	3.5
Q5		125			0.6	1.1
Q6	164	170	6	144	3	2.7
Q7		170			3.2	2.9
Q8	162				2.3	2.9
Q9	156	170	14	144	4.1	3.9
Q10	142	153	11	144	1.1	1.9
Q11	157	158	1	144	2.2	3.2
Q12	142	125	-17	144	1.9	1.2
Q13	149	144	-5	144	1.7	1.6
Q14		146			2.9	3.4
Q15	157	164	7	144	3.7	2.5
Q16	148	153	5	144	1.9	1.9
Q17	173	187	14	144	9.8	4.3
Q18		137			1.3	1.1
Q19	134	149	15	144	1.2	3.6
Total	1994	2078	92	2016	52.8	49.3
N	13	13	13	13	19	19
Mean	153.38	159.84	6	144	2.77	2.59
SD	10.37	15.15	6.57		1.9	0.96

Table 19

Sample Population Class RR Data Chart

Class	RR					
Teacher	R					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
R1	158	182	25	119	4.1	3.2
R2		141			1.6	1.8
R3		164			2.6	2.4
R4	152	166	14	119	3.7	2.7
R5	127	162	35	119		
R6	146	166	20	119	2.1	2.1
R7	152	168	16	119	2.9	2.3
R8	132	146	14	119		
R9	137	144	7	119	1.6	2.1
R10	166	168	2	119	4.1	3
R11	150	160	10	119	2.1	2.3
R12	146	160	14	119	3.5	2.9
R13	148	159	11	119	2.5	3.9
R14	162	164	2	119	4.3	3.8
R15	150	158	8	119	2.4	2.3
R16	154	170	16	119	3.2	2.6
R17		152		119	1.7	3.1
R18		160		119	2.1	2.4
Total	2080	2273	194	1666	44.5	42.9
N	14	14	14	14	16	16
Mean	148.57	162.35	13.9	119	2.78	2.68
SD	10.41	9.19	8.46		0.89	0.58

Table 20

Sample Population Class SS Data Chart

Class	SS					
Teacher	S					
Deg/Cert	Reading					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
S1	156	173	17	170	5	3.8
S2	168	182	14	170	12	4.9
S3	194	173	-21	170	12	3.9
S4	177	159	-18	170	3.9	3.1
S5	152	160	8	170	2.9	2.5
S6					2.9	2.1
S7	173	182	9	170	4.1	5.2
S8						
S9		164			2.6	2.6
S10	142					
Total	1020	1029	9	1020	45.4	28.1
N	6	6	6	6	8	8
Mean	179	171.5	1.5	170	5.67	3.51
SD	13.89	9.25	15.17		3.72	1.06

Table 21

Sample Population Class TT Data Chart

Class	TT					
Teacher	T					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
T1	109	164	55	178	2	2.6
T2	144	164	20	178	2.4	1.5
T3	159	166	7	178	2.9	1.7
T4	153	158	5	178	3	1.1
T5	134	150	16	178	2	2.7
T6	166	166		178	3	1.8
T7	194	203	9	178	9.8	3.9
T8	160	168	8	178	2.5	2.3
T9	154	170	16	178	3	2.6
T10						
T11	146	144	-2	178	1.4	0.6
T12	170	182	12	178	4.6	4.9
T13WL	159	166	7	178	1.8	2.1
T14	156	158	2	178	2.9	1.9
T15	158	166	8	178	3.3	2.4
T16	132	123	-9	178	1.5	0.8
T17	164	162	-2	178	3.4	2.2
T18	152	154	2	178	2.1	2.6
T19	134	154	20	178	1.3	1.8
Total	2744	2918	174	3204	52.9	39.5
N	18	18	18	18	18	18
Mean	152.44	162.11	9.66	178	2.93	2.19
SD	17.7	15.63	13.39		1.84	0.99

Table 22

Sample Population UU Data Chart

Class	UU					
Teacher	U					
Deg/Cert	N-6					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
U1	129	146	17	173	1.7	3
U2	142	159	17	173	2	2.1
U3	173	182	9	173	4.9	3.2
U4	144	160	16	173		
U5					1.4	1.9
U6	187	203	16	173	12	7.4
U7	149	170	21	173	2.5	3.3
U8	164	177	13	173	2.1	4
U9	157	162	5	173	2.3	2.3
U10	149	160	11	173	2.2	2.9
U11	153	166	13	173	4	5.3
U12	149	168	19	173	3.1	2.7
U13	149	156	7	173	3.1	1.9
U14	159	173	14	173	2.8	5.2
U15	162	168	6	173	3.2	3
U16Y		149		173	1.1	1.6
U17	132	132	0	173	0.4	0.8
U18		141		173	1.4	1.7
U19	152	159	7	173	2.2	2.7
U20	148	144	-4	173	0.9	0.8
U21	156	166	10	173	2.9	2.6
Total	2754	2951	197	3114	56.21	58.4
N	18	18	18	18	20	20
Mean	153	163.94	10.9	173	2.81	2.92
SD	13.18	15.03	6.44		2.34	1.54

Table 23

Sample Population Class VV Data Table

Class	VV					
Teacher	V					
Deg/Cert	N-6					
Student	Pre IOWA	Post IOWA	Gain	Avg Daily Time On Task	Terra Nova Reading	Terra Nova Math
V1	170				2.4	3.6
V2	158	144	-14	35	3	3.2
V3	142	149	7	35	2.5	0.2
V4	142	141	-1	35	1.5	1.4
V5	153	158	5	35	1.6	0.3
V6		158			1.8	2
V7		132			1.7	3
	141	154	13	35	2.5	2.6
V9	173	177	4	35	2.8	2.2
V10	166	170	4	35	3.4	3.5
V11WL	141	139	-2	35	1.8	2
V12WL	PV NO	134				1.7
V13	170	182	12	35	4.3	2.9
V14	148	144	-4	35	1.6	2.2
V15	150				2.4	1.7
V16	144	137	-7	35	1.2	2
V17	144	137	-7	35	1.1	2.7
V18	173	157	-16	35	9.8	2.7
	1995	1989	-6	455	45.4	38.2
	13	13	13	13	17	17
Mean	153.46	153	-0.46	35	2.67	2.24
SD	12.39	14.61	0.71			0.94

Table 24

Sample Population Class WW Data Table

Class	WW					
Teacher	WW					
Deg/Cert	N-6					
Student	Pre IOWA	Post IOWA	Gain	Avg Daily Time On Task	Terra Nova Reading	Terra Nova Math
W1	144	149	5	186		
W2	166	182	16	186	6.7	3.4
W3	168	173	5	186	3.4	5.6
W4	162	153	-9	186		
W5	152	149	-3	186	1.5	1.9
W6	194	187	-7	186	5.9	3.5
W7		158			2.4	2.9
W8	166	170	4	186	5.1	3.8
W9	129	158	29	186		
W10	152	164	12	186	2.4	1.9
W11WL	160	170	10	186	6.3	4.7
W12WL		156			1.6	2.8
W13	168	194	26	186	4.1	2.8
W14	156	158	2	186	2.3	2.7
W15	149	157	8	186		
W16	157	159	2	186	2.8	3.7
W17	148	160	12	186	2.7	4.1
W18	149	166	17	186		
W19		168			2.4	2.2
W20	139	148	9	186	1.9	3.3
W21		157			1.8	1.7
W22	159	166	7	186		
Total	2818	1989	145	3348	53.3	51
N	18	13	18	18	16	16
Mean	156.55	153	8.05	186	3.33	3.18
SD	13.63	14.61	9.68		1.68	1.02

Table 25

Sample Population YY Group Chart

Class	Reading Recovery Not Served					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
A1Y	119	141	22	118	1.4	1.8
A4WL	121	148	27	118		
B2WL	162	173	11	44	2.6	3.2
D11WL	137	149	12	84	2.1	2.7
F14Y	129	153	24	181	1.7	1.8
E2WL	121	141	20	149	1.2	0.9
G9Y	134	142	8	83.89	1.4	1.8
H11Y	142	144	2	149	1.1	1.7
I1Y	132	152	20	69	1.4	2.8
I15WL	137	150	13	69	2.8	2.5
K4WL	149	153	4	80	1.5	2.7
L2Y		144			1	1.6
L9Y	146	149	3	100	1.7	2.5
L16Y	148	150	2	100	1.2	0.8
M3WL	152	159	7	114	3.6	2.1
O5WL	150	144	-6	161	0.7	2.1
U13WL	159	166	7	178	1.8	2.1
V16Y		149			1.1	1.6
W11WL	141	139	-2	35	1.8	2
W12WL		134				
Total	2379	2553	174	1950.89	30.1	38.4
N	17	17	17	17	18	18
Mean	139.94	150.18	10.23	114.75	1.67	2.04
SD	12.55	8.79	9.32		0.7	0.61

Table 26

Sample Population ZZ Data Sheet

Class	ZZ					
Teacher	Z					
Deg/Cert	Reading					
Student	Pre-IOWA	Post-IOWA	Gain	Time On Task	Terra Nova Reading	Terra Nova Math
Z1	137	134	-3	303	1.4	2.1
Z2	119	146	27	303	1.5	2.2
Z3	132	149	17	303	1.7	3
Z4	123	154	31	303	1.7	1.7
Z5	119	152	33	303	1.4	2.4
Z6	142	153	11	303	1.8	2.8
Z7	134					
Z8	132	153	21	303	1.3	2.1
Z9	149	166	17	303	1.8	2.6
Z10	139	168	29	303	2.5	4.5
Z11	137	164	27	303	1.8	2.3
Z12	132	156	24	303	2	2.3
Z13	139	166	27	303	2.5	3.5
Z14	137	177	40	303	4.1	1.8
Z15		166			2.2	1.8
Z16	144	146	2	303	2.1	1.3
Z17	142	157	15	303	1.5	1.7
Total	2023	2341	318	4545	31.3	38.1
N	15	15	15	15	16	16
Mean	134.87	156.07	21.3	303	1.96	2.38
SD	8.57	10.4	11.2		0.66	0.76

		aa/zz reading gains	aa/zz time on task
aa/zz reading gains	Pearson Correlation	1.000	.287
	Sig. (2-tailed)	.	.139
	N	28	28
aa/zz time on task	Pearson Correlation	.287	1.000
	Sig. (2-tailed)	.139	.
	N	28	28

Figure 1. Pearson Correlation AA/ZZ Reading Gains & Time On Task.

		bb/zz reading gains	bb/zz time on task
bb/zz reading gains	Pearson Correlation	1.000	.572**
	Sig. (2-tailed)	.	.000
	N	36	36
bb/zz time on task	Pearson Correlation	.572**	1.000
	Sig. (2-tailed)	.000	.
	N	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 2. Pearson Correlation BB/ZZ Reading Gains & Time On Task.

		cc/zz reading gains	cc/zz time on task
cc/zz reading gains	Pearson Correlation	1.000	.598**
	Sig. (2-tailed)	.	.000
	N	36	36
cc/zz time on task	Pearson Correlation	.598**	1.000
	Sig. (2-tailed)	.000	.
	N	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 3. Pearson Correlation CC/ZZ Reading Gains & Time On Task.

		dd/zz reading gains	dd/zz time on task
dd/zz reading gains	Pearson Correlation	1.000	.472**
	Sig. (2-tailed)	.	.005
	N	34	34
dd/zz time on task	Pearson Correlation	.472**	1.000
	Sig. (2-tailed)	.005	.
	N	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4. Pearson Correlation DD/ZZ Reading Gains & Time On Task.

		ee/zz reading gains	ee/zz time on task
ee/zz reading gains	Pearson Correlation	1.000	.254
	Sig. (2-tailed)	.	.200
	N	27	27
ee/zz time on task	Pearson Correlation	.254	1.000
	Sig. (2-tailed)	.200	.
	N	27	27

Figure 5. Pearson Correlation EE/ZZ Reading Gains & Time On Task.

		ff/zz reading gains	ff/zz time on task
ff/zz reading gains	Pearson Correlation	1.000	.251
	Sig. (2-tailed)	.	.166
	N	32	32
ff/zz time on task	Pearson Correlation	.251	1.000
	Sig. (2-tailed)	.166	.
	N	32	32

Figure 6. Pearson Correlation FF/ZZ Reading Gains & Time On Task.

		gg/zz reading gains	gg/zz time on task
gg/zz reading gains	Pearson Correlation	1.000	.354
	Sig. (2-tailed)	.	.051
	N	31	31
gg/zz time on task	Pearson Correlation	.354	1.000
	Sig. (2-tailed)	.051	.
	N	31	31

Figure 7. Pearson Correlation GG/ZZ Reading Gains & Time On Task.

		hh/zz reading gains	hh/zz time on task
hh/zz reading gains	Pearson Correlation	1.000	.590**
	Sig. (2-tailed)	.	.000
	N	31	31
hh/zz time on task	Pearson Correlation	.590**	1.000
	Sig. (2-tailed)	.000	.
	N	31	31

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 8. Pearson Correlation HH/ZZ Reading Gains & Time On Task.

		ii/zz reading gains	ii/zz time on task
ii/zz reading gains	Pearson Correlation	1.000	.525**
	Sig. (2-tailed)	.	.001
	N	34	34
ii/zz time on task	Pearson Correlation	.525**	1.000
	Sig. (2-tailed)	.001	.
	N	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 9. Pearson Correlation II/ZZ Reading Gains & Time On Task.

		jj/zz reading gains	jj/zz time on task
jj/zz reading gains	Pearson Correlation	1.000	.392*
	Sig. (2-tailed)	.	.029
	N	31	31
jj/zz time on task	Pearson Correlation	.392*	1.000
	Sig. (2-tailed)	.029	.
	N	31	31

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 10. Pearson Correlation JJ/ZZ Reading Gains & Time On Task.

		kk/zz reading gains	kk/zz time on task
kk/zz reading gains	Pearson Correlation	1.000	.555**
	Sig. (2-tailed)	.	.001
	N	32	32
kk/zz time on task	Pearson Correlation	.555**	1.000
	Sig. (2-tailed)	.001	.
	N	32	32

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 11. Pearson Correlation KK/ZZ Reading Gains & Time On Task.

		ll/zz reading gains	ll/zz time on task
ll/zz reading gains	Pearson Correlation	1.000	.641**
	Sig. (2-tailed)	.	.000
	N	27	27
ll/zz time on task	Pearson Correlation	.641**	1.000
	Sig. (2-tailed)	.000	.
	N	27	27

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 12. Pearson Correlation LL/ZZ Reading Gains & Time On Task.

		mm/zz reading gains	mm/zz time on task
mm/zz reading gains	Pearson Correlation	1.000	.413*
	Sig. (2-tailed)	.	.011
	N	37	37
mm/zz time on task	Pearson Correlation	.413*	1.000
	Sig. (2-tailed)	.011	.
	N	37	37

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 13. Pearson Correlation MM/ZZ Reading Gains & Time On Task.

		nn/zz reading gains	nn/zz time on task
nn/zz reading gains	Pearson Correlation	1.000	.593**
	Sig. (2-tailed)	.	.000
	N	36	36
nn/zz time on task	Pearson Correlation	.593**	1.000
	Sig. (2-tailed)	.000	.
	N	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 14. Pearson Correlation NN/ZZ Reading Gains & Time On Task.

		oo/zz reading gains	oo/zz time on task
oo/zz reading gains	Pearson Correlation	1.000	.662**
	Sig. (2-tailed)	.	.001
	N	22	22
oo/zz time on task	Pearson Correlation	.662**	1.000
	Sig. (2-tailed)	.001	.
	N	22	22

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 15. Pearson Correlation OO/ZZ Reading Gains & Time On Task.

		pp/zz reading gains	pp/zz time on task
pp/zz reading gains	Pearson Correlation	1.000	.409*
	Sig. (2-tailed)	.	.038
	N	26	26
pp/zz time on task	Pearson Correlation	.409*	1.000
	Sig. (2-tailed)	.038	.
	N	26	26

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 16. Pearson Correlation PP/ZZ Reading Gains & Time On Task.

		qq/zz reading gains	qq/zz time on task
qq/zz reading gains	Pearson Correlation	1.000	.592**
	Sig. (2-tailed)	.	.001
	N	29	29
qq/zz time on task	Pearson Correlation	.592**	1.000
	Sig. (2-tailed)	.001	.
	N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 17. Pearson Correlation QQ/ZZ Reading Gains & Time On Task.

		rr/zz reading gains	rr/zz time on task
rr/zz reading gains	Pearson Correlation	1.000	.345
	Sig. (2-tailed)	.	.066
	N	29	29
rr/zz time on task	Pearson Correlation	.345	1.000
	Sig. (2-tailed)	.066	.
	N	29	29

Figure 18. Pearson Correlation RR/ZZ Reading Gains & Time On Task.

		ss/zz reading gains	ss/zz time on task
ss/zz reading gains	Pearson Correlation	1.000	.582**
	Sig. (2-tailed)	.	.006
	N	21	21
ss/zz time on task	Pearson Correlation	.582**	1.000
	Sig. (2-tailed)	.006	.
	N	21	21

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 19. Pearson Correlation SS/ZZ Reading Gains & Time On Task.

		tt/zz reading gains	tt/zz time on task
tt/zz reading gains	Pearson Correlation	1.000	.400*
	Sig. (2-tailed)	.	.023
	N	32	32
tt/zz time on task	Pearson Correlation	.400*	1.000
	Sig. (2-tailed)	.023	.
	N	32	32

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 20. Pearson Correlation TT/ZZ Reading Gains & Time On Task.

		uu/zz reading gains	uu/zz time on task
uu/zz reading gains	Pearson Correlation	1.000	.497**
	Sig. (2-tailed)	.	.003
	N	33	33
uu/zz time on task	Pearson Correlation	.497**	1.000
	Sig. (2-tailed)	.003	.
	N	33	33

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 21. Pearson Correlation UU/ZZ Reading Gains & Time on Task.

		vv/zz reading gains	vv/zz time on task
vv/zz reading gains	Pearson Correlation	1.000	.730**
	Sig. (2-tailed)	.	.000
	N	28	28
vv/zz time on task	Pearson Correlation	.730**	1.000
	Sig. (2-tailed)	.000	.
	N	28	28

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 22. Pearson Correlation VV/ZZ Reading Gains & Time on Task.

		ww/zz reading gains	ww/zz time on task
ww/zz reading gains	Pearson Correlation	1.000	.534**
	Sig. (2-tailed)	.	.001
	N	33	33
ww/zz time on task	Pearson Correlation	.534**	1.000
	Sig. (2-tailed)	.001	.
	N	33	33

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 23. Pearson Correlation WW/ZZ Reading Gains & Time on Task.

post-Iowa Test of Basic Skills in Reading level B, identified as variable 1; and time on task allocated for connected reading activities, identified as variable 2 for all sample population/non-treatment classes AA through WW inclusively and the experimental class ZZ. The correlation was calculated utilizing the total N, i.e. individual reading gains and time on task, for each sample population class and the experimental class.

The Pearson correlation was calculated using SPSS.

Figure 24 represents a regression analysis for gains in reading growth on the pre and post Iowa Test of Basic Skills in Reading level B, identified as variable 1 (dependent); and time on task allocated for connected reading activities, identified as variable 2 (predictor) for all sample population/non-treatment classes AA through WW inclusively and the experimental class ZZ.

The regression analysis model summary indicates an adjusted R square of .217, which is statistically significant. The R square, R -.217, indicates that a single variable, time on task allocated for connected reading activities, explains 22% of the variance, in reading growth between the experimental class ZZ and the total sample population.

The regression analysis model's coefficients indicate a .000 significance level for time on task allocated for connected reading activities.

This model indicates that time on task allocated for

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	aa-ww/zz time on task[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: aa-ww/zz reading gains

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.217[a]	.047	.045	10.4143

a. Predictors: (Constant), aa-ww/zz time on task

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.217	1.375		3.066	.002
	aa-ww/zz time on task	4.138E-02	.010	.217	4.292	.000

a. Dependent Variable: aa-ww/zz reading gains

Figure 24. Class AA-WW/ZZ Reading Gains Time on Task Regression Model.

connected reading activities is a statistically significant predictor of growth in reading.

The regression analysis was calculated using SSPS.

Figure 25 represents a paired t-test for the mean reading scores of classes AA-WW and class ZZ on the pre-Iowa Test of Basic Skills in Reading level B; and the mean reading scores of classes AA-WW and class ZZ on the post-Iowa Test of Basic Skills in Reading level B.

The paired sample indicates a mean pre-test score of 153.21 for the total twenty-four class population. The experimental class ZZ pre-test score was 134.86 as indicated on the Summary Data Chart (Table 1). The mean post test score for the total twenty-four class population was 161.91. The mean post test score for the experimental class was 156.06.

The paired t-test model indicates a .000 significance level. The mean growth in reading for the twenty-four total population classes was 8.7. The mean growth for the experimental class ZZ was 21.1. The experimental class ZZ demonstrated significantly greater growth in reading than their counterparts.

Figure 26, graphically represents the relationship between gains in reading growth on the pre and post Iowa Test of Basic Skills in Reading level B, identified as variable 1 (x axis); and time on task allocated for connected reading activities identified as variable 2 (y axis) for all sample population/non-treatment classes AA

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pre-iowa:aa-ww/zz(mean)	153.2121	24	8.0948	1.6523
	post iowa:aa-ww/zz(mean)	161.9179	24	5.5537	1.1336

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	pre-iowa:aa-ww/zz(mean) & post iowa:aa-ww/zz(mean)	24	.691	.000

Paired Samples Test

		Paired Differences					t
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	pre-iowa:aa-ww/zz(mean) - post iowa:aa-ww/zz(mean)	-8.7058	5.8543	1.1950	-11.1779	-6.2338	-7.285

Paired Samples Test

		df	Sig. (2-tailed)
Pair 1	pre-iowa:aa-ww/zz(mean) - post iowa:aa-ww/zz(mean)	23	.000

Figure 25. Class AA-WW/ZZ Pre and post Iowa Paired T-Test.

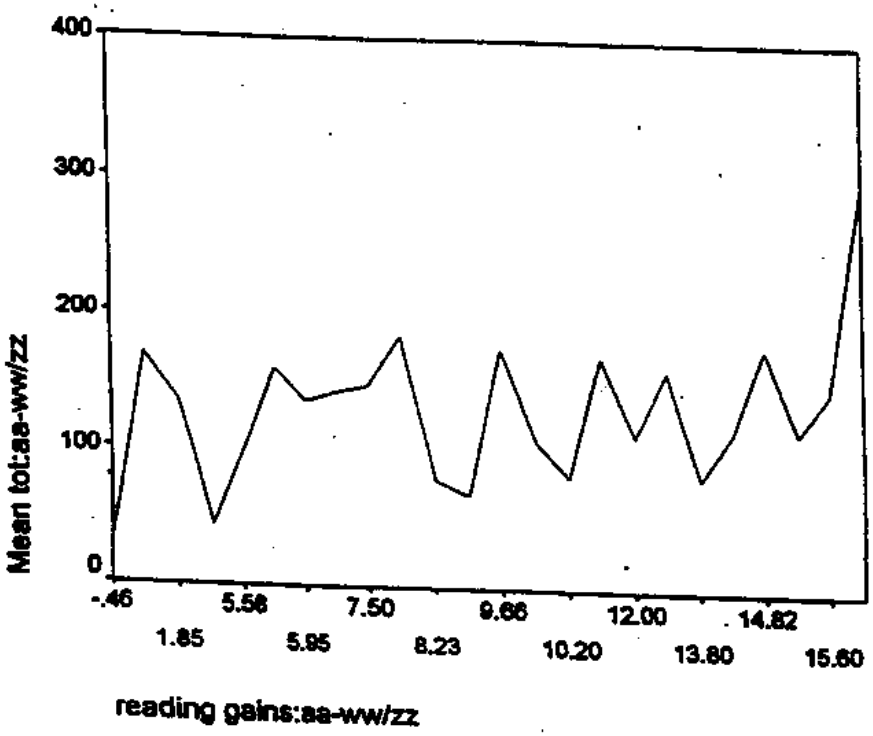

Figure 26. Class AA-WW/ZZ Reading Gain and Time on Task Graph.

through WW inclusively and the experimental class ZZ.

The line graph was created using SPSS.

The line graph visually represents significantly greater growth in reading for the experimental class ZZ in comparison to the total population.

Specific Data: Sub-Problem 2

The second sub-problem is to determine whether or not whole group, full day time on task allocated for connected reading activities for poor second grade readers will bring them to the grade level of their second grade peers.

Summary Data Chart

Table 1

Class and Group Charts

Table 2 through Table 26.

Terra Nova Reading Grade Equivalent, scale score, national percentile and national stanine for classes AA-ZZ

Table 27 represents the Terra Nova Reading test grade equivalent, scale score, national percentile and national stanine for all sample population classes AA to WW inclusively and the experimental class ZZ.

The mean scale reading score for the total population is 617.62 that ranks at the 60^{th} percentile nationally. The experimental class ZZ has a mean scale reading score of 583 that ranks in the 25^{th} percentile nationally.

The experimental class did not progress to the level of

Table 27

Terra Nova Reading Grade Equivalent, Scale Score, National Percentile and National Stanine for Classes AA-ZZ

Class	Grade Equivalent	Scale Score	National Percentile	National Stanine
AA	2.13	588	29	4
BB	5.37	651	87	7
CC	3.62	626	69	6
DD	3.53	624	67	6
EE	3.25	618	61	6
FF	2.58	601	42	5
GG	4.55	641	81	7
HH	3.75	630	72	6
II	2.50	599	40	4
JJ	3.66	627	70	6
KK	2.25	592	33	4
LL	2.96	612	54	5
MM	4.71	644	83	7
NN	3.51	624	67	6
OO	4.91	640	80	7
PP	3.00	613	55	5
QQ	2.77	607	49	5
RR	2.78	607	49	5
SS	5.67	654	89	7
TT	2.93	611	53	5
UU	2.81	608	50	5
VV	2.67	603	44	5
WW	3.33	620	63	6
ZZ	1.95	583	25	4
N=24		Mean Scale 617.62	Mean % 60	Mode Stanine 5

reading of their second grade peers as evidenced by mean scale reading score and national percentile ranking.

Figure 27, independent t-test, represents an independent t-test model for the scale reading score for the Terra Nova Test of Reading for classes AA to WW inclusively and experimental class ZZ; and the national norm grade equivalent scale score for the Terra Nova Test of Reading for classes AA to WW inclusively and experimental class ZZ.

The independent t-test model indicates a mean reading scale score of 619.13 for the total sample population. The total sample population mean is higher than the national norm scale reading score mean of 603.

The model indicates a mean reading scale score of 583 for the experimental class ZZ. The mean reading scale score for the experimental class ZZ is lower than the national norm scale reading score of 603.

The equality of means t-test indicates a mean difference of 36-1304 between the mean reading scale score of the total population, AA to WW inclusively, and the mean scale reading score of the experimental class ZZ. The mean difference is significant at the .0000 level.

The experimental class ZZ did not progress either to the reading level of their second grade peers in the sample population or to the reading grade equivalent by national percentile rank.

Group Statistics

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
aaww scale reading score(tn)	aaww	23	619.1304	18.2316	3.8016
	zz	1	583.0000	.	.
scale reading score national norm(tn)	aaww	23	603.0000	.0000	.0000
	zz	1	603.0000	.	.

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
aaww scale reading score(tn)	Equal variances assumed		
	Equal variances not assumed		
scale reading score national norm(tn)	Equal variances assumed		
	Equal variances not assumed		

Figure 27. Class AA-WW/ZZ Scale Reading Score (TN) and National Norm Grade Equivalent Scale Score Independent T-Test.

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
aaww scale reading score(tn)	Equal variances assumed	18.6237	-2.4928	74.7537
	Equal variances not assumed	.	.	.
scale reading score national norm(tn)	Equal variances assumed	.0000	.0000	.0000
	Equal variances not assumed	.	.	.

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
aaww scale reading score(tn)	Equal variances assumed	1.940	22	.065	36.1304
	Equal variances not assumed	.	.	.	36.1304
scale reading score national norm(tn)	Equal variances assumed	.	22	.	.0000
	Equal variances not assumed	.	.	.	.0000

Figure 27 (continued). Class AA-WW/ZZ Scale Reading Score (TN) and National Norm Grade Equivalent Scale Score Independent T-Test Independent Samples Test.

The stanine model for the total sample population is five. The 5^{th} stanine represents the 41 to 59 national percentile and is average. The 5^{th} stanine represents 20% of the students. Students in the 5^{th} stanine scored higher than 40% of all students (Appendix F; Table 3).

The stanine for the experimental class ZZ is 4. The 4^{th} stanine represents the 23 to 40 national percentile and is slightly below average. The 4^{th} stanine represents 17% of the students. Students in the 4^{th} stanine scored higher than 23% of all students (Appendix F, Table 3).

In addition to the experimental class ZZ, sample population classes AA, II, and KK are in the 4^{th} stanine.

Although class ZZ did not progress to the level of reading of their second grade peers the 4^{th} stanine is slightly below average and represents higher achievement than stanines labeled as well below average (stanine 3), low level (stanine 2) and lowest level (stanine 1)(Appendix F; Table 3). Experimental class ZZ did achieve the same stanine as three of the sample population classes.

Specific Data: Sub-Problem 3

The third sub-problem is to determine whether or not poor second grade readers engaged daily in whole group, full day time on task allocated for connected reading activities will demonstrate greater growth in reading achievement than poor second grade readers engaged daily in whole group

conventional time on task allocated for connected reading activities.

Summary Data Chart

Table 1

Control Sample YY Data Chart

Table 25

Experimental Class ZZ Data Chart

Table 26

Pearson Correlation Model.

Figure 28 represents the Pearson correlation between gains in reading on the pre and post Iowa Test of Basic Skills in Reading level B, identified as variable 1; and time on task allocated for connected reading activities, identified as variable 2 for every student in the control sample YY group and for every student in the experimental ZZ class. The Pearson correlation was calculated using SSPS.

The relationship between time on task and gains in reading growth has a significance level of .006. The correlation is statistically significant at the $p < 0.01$ level. This model indicates a highly statistical relationship between time on task and gains in reading achievement.

Figure 29 represents a regression model for gains in reading on the pre and post Iowa Test of Basic Skills in Reading level B, identified as variable 1; and time on task allocated for connected reading activities, identified as

Correlations

		class zz/yy reading gains	class zz/yy tot
class zz/yy reading gains	Pearson Correlation	1.000	.472**
	Sig. (2-tailed)	.	.006
	N	32	32
class zz/yy tot	Pearson Correlation	.472**	1.000
	Sig. (2-tailed)	.006	.
	N	32	32

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 28. Class YY/ZZ Reading Gains & Time on Task Correlation.

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	class zz/yy tot[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: class zz/yy reading gains

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.472[a]	.223	.197	10.5850

a. Predictors: (Constant), class zz/yy tot

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.678	4.098		1.141	.263
	class zz/yy tot	5.367E-02	.018	.472	2.934	.006

a. Dependent Variable: class zz/yy reading gains

Figure 29. Class ZZ/YY Reading Gains & Time on Task Regression Model.

variable 2 for every student in the control sample YY group and for every student in the experimental ZZ class.

The regression analysis was calculated using SSPS.

The regression analysis model summary indicates an adjusted R square of .223, which is statistically significant. The R square, R = .223, indicates that a single variable, time on task allocated for connected reading activities explains 22% of the variance in reading growth between the experimental class ZZ and the control group YY.

The regression analysis model's coefficients indicate a .006 significance level for time on task allocated for connected reading activities.

This model indicates that time on task allocated for connected reading activities is a statistically significant predictor of growth in reading.

Figure 30 represents an independent t-test model for gains in reading on the pre and post Iowa Test of Basic Skills in Reading level B, for every student in the experimental class ZZ and control group YY; and time on task allocated for connected reading activities for every student in the experimental class ZZ and control group YY.

The independent t-test model indicates a mean reading gain of 21.2 for the experimental class ZZ and a mean reading gain of 10.23 for the control group YY. The experimental class had a mean gain of 10.96 greater than the

Group Statistics

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
reading gains zz/yy	zz	15	21.2000	11.6202	3.0003
	yy	17	10.2353	9.6061	2.3303
time on task zz/yy	zz	15	303.0000	.0000	.0000
	yy	17	107.8171	44.1388	10.7052

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
reading gains zz/yy	Equal variances assumed	.338	.565
	Equal variances not assumed		
time on task zz/yy	Equal variances assumed	33.497	.000
	Equal variances not assumed		

Figure 30. Class ZZ/YY Reading Gains & Time on Task Independent T-Test.

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
reading gains zz/yy	Equal variances assumed	2.921	30	.007	10.9647
	Equal variances not assumed	2.886	27.295	.008	10.9647
time on task zz/yy	Equal variances assumed	17.093	30	.000	195.1629
	Equal variances not assumed	18.232	16.000	.000	195.1629

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
reading gains zz/yy	Equal variances assumed	3.7531	3.2998	18.6297
	Equal variances not assumed	3.7990	3.1738	18.7556
time on task zz/yy	Equal variances assumed	11.4189	171.9624	218.5035
	Equal variances not assumed	10.7052	172.4889	217.8770

Figure 30 (continued). Class ZZ/YY Reading Gains & Time on Task Independent T-Test Samples Test.

control group YY. Time on task allocated for connected reading activities for experimental ZZ is 303 minutes per day and for the YY control group 107.81 minutes per day. The experimental class ZZ had an additional 195.19 minutes daily allocated for time on task for connected reading activities compared to the control group YY. The Levene's Test for equality of variances indicates that equal variances are not assumed for the time on task variable. The t-test for equality of means indicates that equal variances are not assumed and is significant at the .000 level. The test indicates that additional time on task allocated for connected reading activities contributed to the statistically significant higher reading gain for experimental class ZZ as compared to control group YY.

Terra Nova Reading Mean Scale Score, national percentile and national stanine for control group YY and experimental group ZZ. Table 28 reports the Terra Nova Reading Test mean scale score, the national percentile and the national stanine for control group YY and the experimental class ZZ.

The control group students are in the 17 national percentile and in the third stanine that is labeled as well below average. The experimental class ZZ is in the 25th national percentile and in the fourth stanine, which is labeled as slightly below average. Both control group YY and experimental class ZZ students were identified as the bottom 20% of readers in the population. After the

Table 28

Terra Nova Reading Mean Scale Score, National Percentile and National Stanine for Control Group YY and Experimental Class ZZ

Class	Mean Scale Score	National Percentile	National Stanine
YY	573	17	3
ZZ	583	25	4

treatment, i.e. full day time on task allocated for connected reading activities the experimental class moved significantly to the 25 national percentile while the control group remained in the lower 20%, i.e. the 17th national percentile (Appendix F; Table 3).

Specific Data: Sub-Problem 4

The fourth sub-problems to determine whether or not poor second grade readers engaged daily in whole group, full day time on task allocated to connected reading activities will demonstrate similar scores in mathematics achievement as poor second grade readers engaged daily in whole group conventional time on task allocated to connected reaching activities.

Summary Data Table

Table 1

Control Sample YY Group Data Table

Table 25

Experimental Class ZZ Data Table

Table 26

Independent T-Test Model

Figure 31 represents an independent t-test for the mean math score on the Terra Nova Test of Mathematics for the experimental class ZZ and the control group YY; and time on task allocated for connected reading activities for experimental class ZZ and control group YY. The independent

Group Statistics

	class	N	Mean	Std. Deviation	Std. Error Mean
math score	zz	15	2.4200	.8002	.2066
	yy	16	2.0938	.6496	.1621
time on task(reading)	zz	15	303.0000	.0000	.0000
	yy	16	107.1806	45.5057	11.3764

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
math score	Equal variances assumed	.283	.599
	Equal variances not assumed		
time on task(reading)	Equal variances assumed	36.643	.000
	Equal variances not assumed		

Figure 31. Class ZZ/YY Math Score & Time on Task (Reading) T-Test.

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
reading gains zz/yy	Equal variances assumed	2.921	30	.007	10.9647
	Equal variances not assumed	2.886	27.295	.008	10.9647
time on task zz/yy	Equal variances assumed	17.093	30	.000	195.1829
	Equal variances not assumed	16.232	16.000	.000	195.1829

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
reading gains zz/yy	Equal variances assumed	3.7531	3.2998	18.6297
	Equal variances not assumed	3.7990	3.1738	18.7556
time on task zz/yy	Equal variances assumed	11.4189	171.8624	218.5035
	Equal variances not assumed	10.7052	172.4889	217.8770

Figure 31 (continued). Class ZZ/YY Math Score and Time on Task (Reading) Independent T-Test Samples Test.

t-test indicates a mean math score of 2.42 for experimental class ZZ and a mean score of 2.09 for control group YY. The experimental class ZZ scored .33 higher in math than the control group YY, which is not statistically significant.

The test indicates that experimental class ZZ spent 303 minutes daily allocated for connected reading activities and control group YY spent 107.18 minutes daily allocated for connected reading activities. The experimental class ZZ spent 195.81 more minutes daily allocated for connected reading activities as compared to control group YY.

The t-test for equality of means indicates no significance for math scores. The test does indicate a significance level of .000 whether equal variances are assumed or not for time on task allocated for connected reading activities. The statistical significance indicates that time on task to connected reading activities is a variance that contributed to the math score.

Terra Nova Math grade equivalent, scale score, national percentile and national stanine for classes AA to ZZ. Table 29 represents the Terra Nova Test of Mathematics grade equivalent, scale score, national percentile and national stanine for sample population classes AA to WW, inclusively, and experimental class ZZ.

The experimental class ZZ has a scale score of 556 and is in the 34^{th} national percentile, which is in the fourth stanine. The sample population has a mean scale score of 72.08 and is in the 51th national percentile, which is in

Table 29

Terra Nova Math Grade Equivalent, Scale Score, National Percentile and National Stanine for Classes AA-ZZ

Class	Grade Equivalent	Scale Score	National Percentile	National Stanine
AA	2.41	557	34	4
BB	3.15	585	64	6
CC	3.51	597	75	6
DD	2.89	574	53	5
EE	2.29	552	29	4
FF	2.18	549	26	4
GG	3.26	587	66	6
HH	2.81	572	51	5
II	2.57	563	41	5
JJ	3.44	594	73	6
KK	2.57	563	41	5
LL	2.39	556	34	4
MM	3.37	593	71	6
NN	3.18	585	64	6
OO	3.00	579	58	5
PP	2.98	578	56	5
QQ	2.59	563	41	5
RR	2.68	567	45	5
SS	3.51	597	75	6
TT	2.19	549	26	4
UU	2.92	578	56	5
VV	2.24	551	29	4
WW	3.18	585	64	6
ZZ	2.38	556	34	4
N=24		Mean Scale 572.08	Mean % 51	Mode Stanine 5

the fifth stanine. The experimental class ZZ did not achieve the math score level of their second grade peers as evidenced by scale score and national percentile rank.

Terra Nova Math grade equivalent, scale score, national percentile and national stanine for class ZZ and control group YY. Table 30 represents the Terra Nova Test of Mathematics grade equivalent, scale score, national percentile and national stanine for the experimental class ZZ and control group YY. The experimental class ZZ has a scale score of 556 and is in the 34 national percentile, which is the 4^{th} stanine. The control group YY has a scale score of 542 and is in the 20th percentile, which is in the 3^{rd} stanine. The experimental class ZZ achieved a national percentile rank 14 points higher when compared to the control group YY. The experimental class ZZ is in the 4th stanine which is labeled slightly below average and which is higher when compared to the control group YY which is in the 3rd stanine and labeled as well below average (Appendix F; Table 3).

Terra Nova Math Scale Score, national percentile and national stanine for the lower 20% of the sample population EE/FF/TT/VV and class ZZ.

Table 31 represents the Terra Nova Test of Mathematics scale score, national percentile and national stanine for the lower 20% of the sample population classes EE, FF, TT, VV and the experimental class ZZ. The experimental class has a scale score of 556 and is in 34^{th} percentile. Sample

Table 30

Terra Nova Math Grade Equivalent Scale Score, National Percentile and National Stanine for Classes AA-ZZ and Control Group YY

Class	Grade Equivalent	Scale Score	National Percentile	National Stanine
YY	2.38	542	20	3
ZZ	2.04	556	34	4

Table 31

Terra Nova Math Scale Score, National Percentile and National Stanine for the Lower 20% of the Sample Population EE/FF/TT/VV and Class ZZ

Class	Grade Equivalent	Scale Score	National Percentile
EE	552	29	4
FF	549	26	4
TT	549	26	4
VV	551	29	4
ZZ	556	34	4

population class EE has a scale score of 552 and is in the 29th percentile. Class VV has a scale score of 551 and is in the 29th percentile. Class FF has a scale score of 549 and is in the 26th percentile. Class TT has a scale score of 549 and is in the 26th percentile. The experimental class ZZ has the highest national percentile rank of the classes scoring in the lower 20% of the population. Sample population classes EE, FF, TT, VV, ZZ and experimental class ZZ are all in the 4th national stanine. The 4th stanine is labeled slightly below average (Appendix F; Table 3).

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Review of the Study

The purpose of this research was to determine whether or not full day time on task allocated for connected reading activities would significantly increase reading achievement for poor second grade readers.

This research was a true experimental design study consisting of an experimental group, a control group and sample population groups. The study utilized both a pre-test/post test control group design and a post test only design. This research proposed to address the minimum requirement for internal validity which is whether or not the experimental treatment made a difference in the dependent variable (Leedy, 1997).

The population for this study was 392 urban, second grade students who were enrolled in twenty-three second grade classrooms. The students who were in the experimental group and the control group were identified as readers in the lowest 20% of the population. Students who were formally assessed and met the criteria for Reading Recovery in first grade, but were not served in the program, were identified for the experimental and control groups. The

experimental group became the twenty-fourth class in the study and received full day time on task allocated for connected reading activities. The control group students remained in the twenty-three population classes. The amount of time on task allocated for connected reading activities varied for the control group students.

The teachers of the twenty-three population classes and the experimental class recorded a daily log of the amount of time allocated to specifically identified connected reading activities. Time on task, was the independent variable, that would be studied in relationship to the dependent variable, which was gains in reading achievement.

The study, i.e. experimental design implementation, began in October 1999, at which time the Iowa Test of Basic Skills in Reading level B, was administered to the twenty-four classes as the pre-test. The experimental design concluded in March 2000, at which time the Iowa Test of Basic Skills in Reading level B, was administered to the twenty-four classes as the post test. In addition, the Terra Nova Reading Test was administered in March 2000, to the twenty-four classes as a post test only.

As a sub-problem, an additional purpose of this research was to determine whether or not the experimental class will demonstrate similar growth in mathematics achievement as the control group and the sample population. The Terra Nova Mathematics Test was administered to all twenty-four classes in March 2000, as a post test only.

Conclusions

The first sub-problem was to determine whether or not poor second grade readers engaged in whole group, full day time on task allocated for connected reading activities will demonstrate greater growth in reading activities than their second grade counterparts.

This experimental class ZZ engaged in whole group, full day time on task allocated for connected reading activities from October 1999 to March 2000, inclusively. During that same period, the amount of time allocated for connected reading activities varied for the students in the twenty-three sample population classes. The experimental class ZZ engaged in time on task allocated for connected reading activities for 303 minutes daily. Time on task allocated for connected reading activities ranged from 35 minutes daily to 186 minutes daily for the twenty-three sample population classes.

The experimental class ZZ by every measure, significantly demonstrated greater growth in reading than each of the twenty-three sample population classes.

The experimental class ZZ had the highest reading gain of all twenty-four classes with a mean of 21.2 (Table 1). The mean reading gain for the population was 8.7. The experimental class more than doubled in reading growth as compared to the sample population. The statistical comparison of gains from the pre and post Iowa Test of Reading level B, between the experimental class ZZ and the

sample population demonstrated significantly greater growth for the experimental class ZZ (Figure 25). The experimental class ZZ clearly demonstrated significantly greater growth in reading as compared to the twenty-three sample population classes.

The significantly higher growth in reading seems to be due to increased time on task. A regression analysis indicates that time on task, the independent variable, accounted for 22% of the variance in reading growth between the experimental class ZZ and the twenty-three sample population classes (Figure 24). Twenty-two percent is significantly high for the effect of a single variable. The coefficients indicate a .000 significance level for time on task (Figure 24). The .000 is significant beyond the .05 level and the .01 level, which are the generally acceptable thresholds for behavioral research.

The relationship between reading gains and time on task were statistically significant at the .05 level for eighteen of the twenty-three sample population classes when compared with the experimental class ZZ, which represents 78% of the total. Fourteen of the eighteen sample population classes, which represents 61% of the population, were significant at the .001 level.

The relationship between time on task and gains in reading were correlated for the experimental class ZZ and separately for each of the twenty-three sample population classes.

Based on the aforementioned Pearson correlation model(s) and the regression analysis, the significantly higher gains in reading, seem to have a very strong relationship to time on task. The treatment, i.e. increasing time on task, for the experimental class ZZ appears to have strongly influenced the result of greater reading gains for the experimental class as compared to the sample population.

The findings of this study are consistent with previous research on time on task for reading and connected reading activities. The significant factors by which this study furthers the research in this field are the utilization of a true experimental design; full day, whole group time on task to connected reading activities as the treatment, i.e. intervention, and a large sample size.

"If they don't read much, how are they gonna get good?" was a question asked by Richard Allington that is repeatedly suggested and often quoted in reading research (Allington, 1997, p. 57).

The research is clear that the amount of time spent on the task of reading is alarmingly low (Allington, 1980; Allington, 1983; Borg, 1980; Guthrie, 1980; Limerick, et al., 1992; Morris, 1979; Snow, et al., 1998; Suling et al., 1997).

Reading instruction is the primary responsibility of the classroom teacher. In the absence of a policy it is he or she who frames daily the time allocation for each

"subject" including reading. Citing the work of David Berliner, John Guthrie (1980) noted that the differences in time allocated and either appropriately or inappropriately used has direct consequences for reading achievement. Furthermore, children need large blocks of time to engage in a learning activity (Gareau et al., 1991). In ineffective classrooms and schools the daily schedule is not an accurate guide to the use of time academically (Snow et al., 1998).

In this study the time on task allocated for connected reading activities for the twenty-three sample populations varied greatly. The daily time on task ranged from 35 minutes daily to 186 minutes daily. Sample Population Class VV had 35 minutes allocated daily for connected reading activities and had a mean of -.46 in reading gain as compared to the experimental class ZZ which had 303 minutes allocated daily for connected reading activities and a mean of 21.2 in reading gain (Table 1).

The findings of this study indicates that the experimental class achieved significantly higher gains in reading which are significantly correlated to increased time on task is consistent with previous research, i.e. more time allocated increases reading achievement (Allington, 1977; Allington, 1990; McGill-Franzen et al., 1990; Morris, 1979; Snow et al., 1998; Stallings, 1976; Suling et al., 1997; Wiley et al., 1974).

Time, in and of itself, is not the critical variable, but it is rather what occurs during the additional time.

Additional time allocated to reading will not necessarily improve literacy, but it is a necessary first step (Allington, 1983). In its summary of successful interventions, the NCR recommends more time for reading and writing and notes that extra time is not sufficient in itself (Snow et al., 1998).

The concept of increased time on task, especially for poor readers, can lead to improved literacy only if the learner is engaged. The "ever increasing" gap between poor and good readers, even with equal reading time, is a result of the instructional environment (Allington, 1983). In observing 24 second grade reading groups, Allington (1980) noted that poor readers are seldom given the opportunity to read either individually or silently, both of which are connected reading activities. This study further indicates that poor readers who are not engaged in connected reading activities that could lead to reading achievement.

In 1990, McGill-Franzen and Allington observed 16 second grade students in both regular and supplemental settings and pointed to indirect rather than connected reading activities as a weakness.

This study attempted to record daily the time on task allocated for connected reading activities. Connected reading activities are those which engage the learner in reading. The learner cannot construct meaning if he/she is engaged in low level activities where "accuracy, not understanding, was the focus." (McGill-Franzen et al., 1990,

p. 177). Silent reading, guided reading, re-reading and writing are examples that connect the learner. Worksheets, skill sheets, "seat work" are indirect or related activities. Indirect reading activities do not add to achievement as opposed to engagement with the text which does (Leinhardt et al., 1981). The daily log for this study required the daily recording of time, in minutes, allocated for specifically identified connected reading activities (Appendix C). Case studies support that time allocated to reading instruction be connected activities such as peer tutoring, sustained silent reading, journals, interactive writing (Limbrick, 1992).

This study attempted to measure not only the amount of time on task but the specific time on task allocated to connected reading activities that increase reading ability. The engagement of poor readers, in particular, with text for the experimental class contributed significantly when correlated with increased time on task, to achieving greater reading gains as compared to the twenty-three sample population classes.

This study concurs that the time children are actually engaged in reading instruction is the most powerful predictor of reading achievement (Allington, 1983; Clay, 1979).

This study utilized a whole group setting for the treatment. The experimental class had 17 students. The N was 15 since two of the students were not present for either

the pre or post test (Table 1). The number of students tested in the experimental class was consistent with the average number in the sample population classes, which was 16 (Table 1). This study also utilized a full day of instruction allocated for connected reading activities as the treatment for the experimental class.

The significant studies in this field have primarily focused on interventions for poor readers, whether within the classroom or "pull-out" (Askew, et al., 1998; Fletcher et al., 1994; Gettys 1994; Glynn et al., 1992; McGill-Franzen et al., 1990; Nickolson, 1989; Robinson, 1989; Taylor, et al., 1997;). The work of Marie Clay, i.e. Reading Recovery, focuses on connected reading activities but is a one-to-one program (Snow et al., 1998). Whereas the work of Slavin et al. (1992), i.e. Success for All, does involve whole group instruction but also utilizes re-grouping strategies and individualized tutoring.

Suling and Horton in their 1997 study of second graders anticipated finding that remedial readers would spend more time reading connected text because of the additional reading instruction. The study observed 12 second graders for the full instructional day, differentiated between connected and indirect reading activities, and did not find remedial readers and instructional readers spent reading during a school day. Suling and Horton also noted that a review of the literature indicated that there had been no studies prior to theirs that measured the total amount of

time students spent reading connected text throughout the whole day.

This present study may be the first to research the impact of full day, whole group time on task allocated for connected reading activities for poor readers.

Torgensen (2000) emphasized the importance of reading comprehension by the early elementary grades before students move toward a "remedial" rather than a "preventive" model of intervention. In his review of studies designed to improve the reading skills of young children Torgenson concludes, "we must examine the intensity and duration of instruction required to eliminate reading failure in children with the most severe phonological disabilities and most disabling environmental backgrounds" (p. 63).

This research has studied the impact of time on task allocated for connected reading activities. The duration, i.e. full day, has yielded significant results. The intervention in this study was full day in treatment duration, and treatment was conducted from October 1999 through March 2000. Future studies might investigate reading gains with a similar intervention over a longer period of time.

The second sub-problem was to determine whether or not whole group, full day time on task allocated for connected reading activities for poor second grade readers will bring them to the grade level of their second grade peers. The Terra Nova Reading Test was administered in March 2000, as a

post test only. The experimental class had a mean scale reading score of 583, which ranks in the 25th percentile nationally and the sample mean population classes had a total mean score of 617.62, which ranks in the 60th percentile nationally (Table 28). The mean difference between the experimental class ZZ and the sample population classes AA to WW, inclusively was 36.1304 (Figure 27).

The experimental class did not progress either to the reading level of their second grade peers, i.e. the sample population, or to the reading grade equivalent by national percentile rank.

The experimental class did not progress to the reading level of their second grade peers. Although the experimental group had significant growth in reading, the duration of the intervention was not sufficient to bring them to the reading level of their peers.

The experimental class was identified for the treatment group because as readers they were in the bottom 20% of the population. This meant that 80% of the population were better readers. The experimental class ranked in the 25th national percentile on the Terra Nova Reading Test (Table 28). This meant that 75% of the national population were better readers.

The experimental class ranked in the 4th stanine, as well as sample population classes AA, II and KK (Table 27). The experimental class ZZ is labeled slightly below average in stanine 4, as well as the three sample population classes

(Appendix F; Table 3). This represents a higher achievement level than the experimental groups baseline lower 20% and is labeled as higher than well below average (stanine 3), low level (stanine 2) and lowest level (stanine 3) (Appendix F; Table 3). It is recognized that percentiles are a more precise indicator than stanines, however, the progress of the experimental class warrants a discussion of ranges.

Although the experimental class did not progress to the grade level of their second grade peers, the treatment of full day time on task allocated for connected reading activities significantly improved gains in reading in both the national percentile rank and the national stanine that is consistent with the literature.

The third sub-problem was to determine whether or not poor second grade readers engaged daily in whole group, full day time on task allocated for connected reading activities will demonstrate greater growth in reading achievement than poor second grade readers engaged daily in whole group, conventional time on task allocated for connected reading activities.

The experimental class ZZ engaged in connected reading activities for an average of 303 minutes daily (Table 1). Students in the control group YY were enrolled across the twenty-three sample population classes and had a mean average time on task allocated for connected reading activities of 114.75 minutes daily. The students in the experimental class ZZ and the control group YY were

identified in the lowest 20% of readers in the population prior to the implementation of the experimental design. The treatment was increased time in this design the full instructional day, allocated for connected reading activities.

The relationship between time on task and reading gains was very strong. The correlation between the two variables had a significance level of .006 for time on task that was the independent variable (Figure 28). The significance level is higher than the .05 or .01 threshold generally acceptable for behavioral research.

Time on task allocated for connected reading activities is significantly related to growth in reading and is also a significant predictor of growth in reading. The regression analysis reported an adjusted R-square of .223 which indicates that time on task allocated for connected reading activities explains 22% of variance in reading growth (Figure 29). The coefficients for the model reported a .006 significance level that is statistically significant.

The experimental class had a mean reading gain of 21.2 and the control group had a mean reading gain of 10.23 (Table 1). The experimental class had a mean of 10.96 greater than the mean gain of the control group (Figure 31). The t-test for equality of means indicates that equal variances are not assumed and is significant at the .000 level (Figure 31). The t-test indicates that additional time on task allocated for connected reading activities

contributed to the statistically significant higher reading gain for the experimental class as compared to the control group.

Time on task allocated for connected reading activities, as an independent variable, was statistically significant in its relationship to reading gains as well as a predictor of reading gains which was valid.

Poor second grade readers engaged daily in whole group, full day time on task allocated for connected reading activities demonstrated significantly greater growth in reading than poor second grade readers engaged daily in whole group, conventional time on task allocated for connected reading activities.

The Terra Nova Reading Test was administered in Ma[illegible] 2000 as a post test only. Nationally the experimental class ranked in the 25% and the fourth stanine (Table 28). The control group was in the 17% national percentile and the third stanine (Table 28).

The students in both the experimental class and the control group were identified in the lowest 20% of readers in the population prior to the implementation of the experimental design. After the treatment of full day time on task allocated for connected reading activities the experimental class ranked 5 percentage points higher nationally than their baseline. The control group engaged in conventional time on task allocated for connected reading activities ranked 3 percentage points less nationally than

their baseline. The gap between the experimental class and the control group in national percentile rank after the treatment was 8 percentage points. The difference is strongly identified by the stanine ranks which labels the experimental class as slightly below average (stanine 4) and the control group as well below average (stanine 3) (Appendix F; Table 3).

The progress of the experimental class who engaged in full day time on task for connected reading activities as compared with the "conventional" progress, or "regression" of the control group is in alignment with prior research in the field.

Poor readers in the control group spent substantially less time engaged in connected reading activities than did poor readers in the experimental class. Readers in the sample population classes, i.e. the upper 80% of readers, did not demonstrate the significant reading gains as compared to the experimental class, but did rank in the 60^{th} national percentile as a group.

The ineffective use of instructional reading time for the readers who are most in need is common in the literature and is referred to as the "Matthew Effect" (Stanovich, 1986). In fact the literature indicates that good readers get better with time on task and poor readers either remain poor or get worse (Guthrie, 1980; Suling et al., 1997;).

It is not surprising that the upper 80% of readers in this study on whole, "got better" and that the lowest 20%

without treatment, i.e. increased time on task for connected reading activities, "got worse." This effect references the gospel according to St. Matthew wherein, to paraphrase "the rich get richer and the poor get poorer."

Planning for the use of instructional time is the primary responsibility of the experimental class who worked toward the singular goal of engaging students in connected activities for the entire school day. The teachers of the twenty-four sample population classes planned the instructional day around the conventional goals of schooling. Time in the conventional classrooms was divided among subjects, of which reading was one, like math, science and social studies. The poor readers in the experimental group were enrolled across the sample population classes and as such engaged in connected reading activities inconsistently and for far less time, but were exposed to the other subjects.

In planning instruction the teacher is confronted with a range of abilities and a range of "mandated" subject matter. Therefore, several factors can interfere with the desired outcome of improving comprehension for poor readers. For example, the task may be "related" to reading, but not connected to it (Suling et al., 1997). The task may be too difficult and/or the materials may not be at an appropriate level (Allington, 1983). As Stallings (1980) noted, time on task rates were low or uneven in ineffective schools. Glicking and Thompson (1985) noted that reading difficulties

that arise when the curriculum is flawed may be termed "curriculum casualties" (p. 207).

This study did not attempt to diagnose the instructional planning and delivery for the twenty-four sample population classes, but recognizes the research which indicates a range of possibilities for the lack of progress for poor readers in the control group. The treatment, in both increased time on task and connected reading activities that engage the learner, for the experimental class, which significantly gained in reading, is consistent with and builds upon the research in this field.

The fourth sub-problem was to determine whether or not poor second grade readers engaged daily in whole group, full day time on task allocated for connected reading activities would demonstrate similar scores in mathematics achievement as poor second grade readers engaged daily in whole group, conventional time on task allocated for connected reading activities.

The Terra Nova Mathematics Test was administered to the experimental class, the control group, and the sample population in March 2000 as a post test only.

The experimental class ranked in the 34^{th} national percentile, which is in the 4^{th} stanine and the control group ranked in the 20^{th} national percentile, which is in the third stanine (Table 31). The mathematical achievement the experimental class in the 4^{th} stanine, is labeled as slightly below average and the mathematical achievement of

the control group in the third stanine, is labeled as well below average (Appendix F; Table 3). An analysis indicates that time on task for connected reading activities is a statistically significant variance in math achievement (Figure 31). The lowest 20% of readers in the sample population were consistent in both reading and mathematics achievement. The treatment variable, time on task for connected reading activities, substantiates the reading gains for the experimental class. However, in the absence of baseline mathematics data only inferential observations are warranted. It is possible, but not likely, that the poor readers in the experimental group had greater mathematical ability prior to the treatment as compared to the poor readers in the control group. It is likely that new mathematics assessments rely more on reading comprehension.

The sample population classes' mean scale score was in the 51^{st} national percentile which is in the 5^{th} national stanine of (Table 30). The stanine of 5 in mathematics achievement for the sample population classes is consistent with the reading achievement stanine (Table 28).

The sample population classes in the lower 20% of mathematics achievement, i.e. classes EE, FF, TT, VV, were all in the 4^{th} stanine, as was the experimental class ZZ (Table 32). The experimental class ZZ ranked in 34^{th} national percentile which was higher than the four sample population classes in the same stanine (Table 32).

The four classes, i.e. EE, FF, TT, VV, who share the 4^{th} stanine with the experimental class ZZ in mathematics achievement are not consistent with the three classes, i.e. AA, II, KK, who share the 4^{th} stanine with the experimental class ZZ in reading achievement.

The absence of data leaves both the results and inconsistency unexplained. The differences in the sample population classes in the 4^{th} national stanine in mathematics may be a result of mathematics instruction.

The experimental class engaged in daily full time connected reading activities and did not engage in formal mathematics instruction. Guided by the principle "primum non nocere" this study researched the post test only mathematics achievement for poor readers who were deprived of formal mathematics instruction. This study evidenced that the poor readers in the experimental class achieved significantly higher than poor readers in the control group. This study also evidenced that the experimental group achieved at the upper range of the lower 20% of the sample population in mathematics.

Future Studies

This study investigated the impact of full day time on task allocated for connected reading activities for poor second grade readers with significant results. This study is by no means exhaustive. Future studies could explore the

relationship between time on task and connected reading activities with other variables.

Future studies could explore the duration of treatment utilized in this study. The duration of treatment in this study was from October 1999 through March 2000. What would be the effect of extending duration of the treatment?

The relationship between time on task and reading and mathematics achievement warrant further study. What is the relationship between the cognitive skills, i.e. reasoning, required to succeed in mathematics?

Technology, specifically computers, have become educational tools. Can the results of this research be duplicated or extended through the use of technology?

Parent involvement is often a factor in student achievement. Within the framework of the two variables studied in this research, what is the relationship between parent involvement and student achievement?

Teacher practice is influenced by preparation and professional development. What is the relationship between those factors and the variables studied in this research?

Recommendations

The ability to comprehend the written word, i.e. literacy, is fundamental to learning. The American school experience is print-driven. Therefore, the lack of will to teach children to construct meaning from text is at the core of the failure of the American school system. There can be

no successful call for reform in the absence of addressing this fundamental issue.

Poor children, minority children, English as a second language children who mostly reside in urban centers are the primary victims of this failure.

Within the current parameters of most schooling there are several recommendations from this study that are consistent with prior findings, which include:

(a) Larger blocks of time should be committed to reading instruction for poor readers;

(b) Poor readers should be active learners engaged in connected reading activities;

(c) Practitioner preparation and professional development should emphasize research-based reading instruction and methodology.

Extending or removing the current parameters of schooling, there are several recommendations from this study which include:

(a) The concept of remediation should be eliminated from the educational lexicon. For many students remediation begins at an early age and is commuted to a life sentence. Most interventions have failed learners. This study recognizes that some programs, not "remediation," based in particular on the work of Clay and the work of Slavin et al., can be effective when appropriately implemented.

(b) The concept of "subjects," i.e. discrete content areas mastered incrementally at specific chronologically age appropriate grade levels, should be eliminated from the educational lexicon, at least for the primary grades. The concept of a poor reader "failing" a text driven content area remains a consistent failure to read rather than an indication of a lack of "subject" mastery. The assumption that literacy is fundamental to success in the American school system underscores a lack of effectiveness when the instructional day is structured with substantial time allocated to reading-dependent "subjects" when reading comprehension has not been mastered.

(c) The concept of "integrating" reading skills into content areas should be eliminated from the educational lexicon, especially in the primary grades. The notion that while teaching a specific subject reading skills can be incorporated is not effective. It is effective conversely, i.e. teaching reading skills utilizing any content. The converse concept is effective because it shifts the focus of the practitioner. It is not the content, but rather the comprehension skills that are the goals.

(d) Remediation, content/text-driven curriculum subjects/integrating, instead of focusing on reading

skills should be replaced with whole group activities that engage learners in connected reading activities for the full instructional day. This may include the concepts of ungraded primary school initiatives, whole school reform initiatives, technology-based initiatives, and/or initiatives yet to be explored.

Beyond the parameters of most schooling there are several recommendations that are national in scope, which include:

(a) A national agenda and commitment, based on research, to teach every child to read. The Rand Reading Study Group, chaired by Catherine Snow (2001), has drafted "Reading for Understanding: Towards an R & D Program in Reading Comprehension" which may begin a national journey towards literacy for all children. The work, still in progress, as of the date of this dissertation, builds on some of the findings of the National Reading Council report Preventing Reading Difficulties in Young Children (Snow et al., 1998), as did this study.

(b) A national call to action for establishing an American school system that celebrates literacy for all of its children and subsequently for all of its citizenry. The concept of fixing what is because it fundamentally functions is inaccurate. It is not

re-structuring, but rather a new design that is warranted.

This study researched a program that risked ideas, not learners. In order to become a literate nation, which is the essence of democracy, there must be risk. A national agenda must promote an atmosphere for practitioners to risk, not casually, but on sound premises.

The current atmosphere is not conducive to risk which is fundamental to change. The current atmosphere is one in which educators are frozen by acts of terrorism, some of which may be well intended, and may subsequently hold children hostage. The high stakes testing; the growing "two week" teacher certification models; the corporate model and personal "take over" of major urban school systems; charters; vouchers, etc. have mounted a formidable quick fix approach to schooling - urban schools, in particular.

Any national call to action should have as its goal an atmosphere that encourages risk. As a nation stood on the threshold of a new century, one hundred years ago, Theodore Roosevelt noted:

> It is not the critic who counts, not the man who points where the strong man stumbled . . . the credit belongs to the man in the arena whose face is marred by dust and sweat and blood, who strives valiantly, who errs . . . who knows great enthusiasms . . . and spends himself in a worthy cause. The man who knows the triumph or high achievement and who knows at worst, if

> he fails, fails while daring greatly, so that his place will never be with those cold and timid souls who never new victory or defeat (speech, Sorbonne, Paris, 1910).

This study recommends that educators take bold, reflective risks and stand on the shoulders of giants to make literacy a reality for all of its citizens in a democratic society and for all of its children ... one child at a time.

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Appendix A

Approval of Project Letter

SETON HALL UNIVERSITY
1 8 5 6

May 22, 2000

Mr. John Falco
17 Rosa Road
Schenectady, NY 12308

Dear Mr. Falco:

The Institutional Review Board For Human Subject Research at Seton Hall University reviewed your proposal entitled "The relationship between whole group, full day time on task allocated for connected reading activities and whole group, conventional time on task allocated for connected reading activities and growth in reading for poor second grade readers." Your project has been approved as amended by the revisions submitted to the Chair of the IRB. Enclosed please find the signed Request for Approval form for your records.

The Institutional Review Board approval of the project is valid for a one-year period from the date of this letter. Any changes to the research protocol must again be reviewed and approved by the committee prior to implementation. Thank you for your cooperation. Best wishes for the success of your research.

Sincerely,

Robert C. Hallissey

Robert C. Hallissey, Ph.D.
Acting Chair
Institutional Review Board

/mlm

cc: Dr. John Collins

Office of Grants and Research Services
Presidents Hall
Tel: 973.275.2974 • Fax: 973.275.2978
400 South Orange Avenue • South Orange, New Jersey 07079-2641

Appendix B

Letter Requesting information from Schenectady City Schools

Research Committee
Schenectady City School District
108 Education Drive
Schenectady, New York 12303

Dear Research Committee:

I am currently completing a doctoral dissertation at Seton Hall University, New Jersey. The title of this study is:

The relationship between whole group, full day time on task allocated for connected reading activities and whole group conventional time on task allocated for connected reading activities and growth in reading for poor second grade readers.

I am particularly interested in the district's Project Lift-off program in which second grade students participated in a full day reading for approximately twenty weeks during the 1999-2000 academic year. A comparison of test information regarding students who participated in the program and those who did not would, as well as a comparison of daily instructional time logs for second grade teachers, would greatly contribute to this field of research.

I am requesting access to the following information:

- The identification numbers and/or names of students identified for Reading Recovery in first grade, during the 1998-1999 school year but did not receive services and their current second class, teacher and school for the 1999-2000 academic year.

- The identification numbers and/or names of students participating in the Project Lift-off class for the 1999-2000 academic year.

- The identification numbers and/or names of students by class, teacher and school for every second grade student for the 1999-2000 academic year.

- The pre and post Iowa Test of Basic Skills in Reading level B, administered respectively in October, 1999 and March 2000, scores for all current second graders.

- The March 2000 Terra Nova test scores in reading and in mathematics for every second grade student for the 1999-2000 academic year.

- The SuccessMaker reading level for every second grade student in the 1999-2000 academic year, who was identified for Reading Recovery in first grade, during the 1998-1999 academic year, but did not receive services, for October 1999 and for March 2000.

- The amount of time every second grader student in the 1999-2000 academic year who was identified for Reading Recovery in first grade during the 1998-1999 academic year, but did not receive services from October, 1999 through March 2000.

- The attendance for every second grade student by class, teacher and school from October, 1999 through March 2000.

- The monthly teacher logs from October 1999 to March 2000 recording the daily amount of time spent on reading for every second grade teacher for the 1999-2000 school year.

- The types of educational degrees(s) and certification(s) by teacher for every second grade teacher.

All information accessed will be kept strictly confidential and accessed only by persons involved in this study. All information will be secured in a file cabinet accessible only by me. This information will be used for the purpose of analysis and will subsequently be destroyed at the conclusion of this study. No identifying information will be used in this study.

This study has been reviewed and approved by the Institutional Review Board for Human Subjects Research, Seton Hall University, New Jersey. The institutional Review Board believes that the research procedures described herein adequately safeguard the subjects' privacy, welfare, civil liberties and rights. The chairperson of the Institutional Review Board may be contacted through the Office of Grants and Research Services at (201) 378-9809.

Your assistance in this study is greatly appreciated. I look forward to your response.

Thank you for your cooperation.

Very truly yours,

John Falco

Appendix C

Sample monthly teacher logs recording daily time on task to connected reading activities

Second Grade
Attendance: _____ «DATE»

Reading	Planned Time (In Minutes)	Actual Time (In Minutes)
Teacher reads aloud		
Shared reading (e.g., choral and echo)		
Phonological Awareness/Phonics		
Guided reading		
Word Study		
Independent reading		
Paired/partner/buddy reading		

Writing		
Shared writing		
Interactive writing		
Guided writing/writer's workshop		
Independent writing (e.g., journals and response logs)		

Appendix D

Sample population data chart

Sample Population Data Chart

Class: _____ Teacher: _____

Degrees/Certifications:

Student	Pre-Iowa	Post-Iowa	Gain	Average Daily Time-on-Task Minutes	Terra Nova Reading	Terra Nova Math
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
Mean						
Standard Deviation						

Appendix E

Planned and actual time on task for reading and student gains in reading data chart

Planned and Actual Time on Task
For Reading and Student Gains in Reading Data Chart

Teacher by Alpha Code	Class by Alpha Code	Planned Time On Task	Actual Time On Task	+/- Difference	Gains in Reading (Iowa)

Appendix F

Table 3, Terra Nova Complete Battery, Form A, Level 12

Table 13, Raw Score to Scale Score Survey Form A, Survey, Form A, Level 12

Table 24, Raw Score to Scale Score, Multiple Assessments, Form A, Level 12

Table 63, Scale Score to Normal Curve Equivalent, End of Grade 2:2.6 to 2.9

Table 3

Raw Score to Scale Score with SEM for Raw Score and Pattern (IRT) Scoring Methods

Complete Battery, Form A, Level 12

Raw Score	Reading			Vocabulary			[illegible]			Language Mechanics			Mathematics			Mathematics Computation			Science			Social Studies			[illegible]			[illegible]			Raw Score
	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	
0	423	135	128	434	100	82	424	126	113	445	117	105	347	125	105	360	119	103	361	132	119	395	132	120	405	124	96	462	96	67	0
1	423	135	128	434	100	82	424	126	113	445	117	105	347	125	105	360	119	103	361	132	119	395	132	120	405	124	96	462	96	67	1
2	423	135	128	434	100	82	424	126	113	445	117	105	347	125	105	360	119	103	361	132	119	395	132	120	405	124	96	462	96	67	2
3	423	135	128	434	100	82	424	126	113	445	117	105	347	125	105	360	119	103	361	132	119	395	132	120	405	124	96	462	96	67	3
4	423	135	128	475	59	41	424	126	113	466	96	84	347	125	105	419	60	44	372	120	108	395	132	120	405	124	96	462	96	67	4
5	423	135	128	500	34	24	424	126	113	521	42	29	347	125	105	444	35	26	434	58	47	466	62	49	455	74	49	507	51	30	5
6	423	135	128	515	27	20	424	126	113	537	25	20	347	125	105	460	28	22	457	35	30	491	36	29	484	45	34	528	35	23	6
7	469	88	82	528	24	19	458	92	79	548	20	16	347	125	105	473	24	20	472	26	23	505	25	21	503	33	27	544	29	22	7
8	516	42	35	540	23	19	499	52	38	557	17	14	347	125	105	485	22	18	483	22	19	515	20	18	517	28	24	557	25	21	8
9	530	27	22	551	22	18	517	34	26	564	16	14	368	104	84	495	20	17	492	19	17	523	17	15	529	24	22	569	22	19	9
10	540	20	16	562	20	18	528	25	21	571	15	13	408	65	45	505	18	17	500	18	16	530	16	14	541	22	20	578	19	18	10
11	547	16	14	573	19	17	538	21	17	578	15	13	428	45	31	514	17	16	508	17	16	536	14	13	551	21	19	587	17	16	11
12	552	14	12	583	19	17	545	18	16	586	15	13	441	34	25	523	16	14	516	17	15	542	14	13	561	20	19	595	16	15	12
13	557	13	11	593	19	17	552	16	14	593	15	14	452	28	22	531	15	13	523	17	15	548	13	12	571	20	18	603	15	14	13
14	562	12	10	604	19	18	558	15	13	602	16	15	461	25	19	539	14	13	530	17	15	553	13	12	581	19	18	611	15	14	14
15	566	11	10	615	19	18	564	14	13	611	17	16	469	22	18	548	14	13	538	17	16	559	13	12	591	19	18	618	15	14	15
16	570	11	9	627	19	18	570	14	12	623	19	17	476	20	17	557	15	14	546	17	16	564	13	12	603	20	19	627	15	15	16
17	574	10	9	641	20	19	575	14	12	636	20	18	482	19	16	567	15	14	554	18	17	571	14	13	616	22	21	637	17	16	17
18	578	10	9	657	24	22	581	14	12	652	22	20	488	18	15	579	16	15	563	19	17	577	15	14	633	27	25	650	20	19	18
19	582	10	9	685	39	35	587	14	12	676	31	28	494	17	15	595	21	19	573	20	19	585	16	15	664	43	39	671	28	27	19
20	585	10	9	705	54	49	593	14	13	695	42	38	499	16	14	630	56	48	585	22	21	594	18	16	700	71	66	699	47	45	20
21	590	10	9				599	15	13				504	15	14				600	26	24	606	21	19							21
22	594	11	10				607	16	14				509	15	14				619	31	29	621	24	23							22
23	599	11	10				615	18	16				513	14	13				648	42	39	641	30	28							23
24	604	12	11				626	20	18				518	14	13				703	69	65	675	43	40							24
25	609	12	11				639	24	22				522	13	12				743	92	88	720	81	72							25
26	616	13	13				658	29	27				527	13	12																26
27	623	14	13				688	38	37				531	13	12																27
28	632	15	14				706	47	45				535	12	12																28
29	642	17	16										539	12	12																29
30	655	20	19										543	12	11																30
31	676	27	26										548	12	11																31
32	722	59	58										552	12	11																32
33													556	12	11																33
34													561	12	11																34
35													565	12	12																35
36													570	13	12																36
37													575	13	12																37
38													581	13	13																38
39													587	14	13																39
40													593	15	14																40
41													601	16	15																41
42													609	17	16																42
43													619	19	18																43
44													631	21	20																44
45													647	25	24																45
46													674	35	34																46
47													720	69	67																47

Table 13

Raw Score to Scale Score with SEM for Raw Score and Pattern (IRT) Scoring Methods

Survey, Form A, Level 12

Raw Score	READING			VOCABULARY			LANGUAGE			LANGUAGE MECHANICS			MATHEMATICS			MATHEMATICS COMPUTATION			SCIENCE			SOCIAL STUDIES			SPELLING			[illegible]			Raw Score
	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	SS	RS SEM	IRT SEM	
0	423	139	132	434	100	82	424	127	115	445	117	105	347	146	122	360	119	103	361	141	129	395	138	131	405	124	96	462	96	67	0
1	423	139	132	434	100	82	424	127	115	445	117	105	347	146	122	360	119	103	361	141	129	395	138	131	405	124	96	462	96	67	1
2	423	139	132	434	100	82	424	127	115	445	117	105	347	146	122	360	119	103	361	141	129	395	138	131	405	124	96	462	96	67	2
3	423	139	132	434	100	82	424	127	115	445	117	105	347	146	122	360	119	103	361	141	129	395	138	131	405	124	96	462	96	67	3
4	423	139	132	475	59	41	424	127	115	466	96	84	347	146	122	419	60	44	443	59	47	468	65	58	405	124	96	462	96	67	4
5	423	139	132	500	34	24	490	61	49	521	42	29	380	113	89	444	35	26	468	34	29	497	36	30	455	74	49	507	51	30	5
6	508	55	47	515	27	20	515	36	29	537	25	20	431	62	41	480	28	22	483	26	22	512	24	21	484	45	34	528	35	25	6
7	530	32	26	528	24	19	530	26	22	548	20	16	454	41	30	473	24	20	495	22	20	522	20	17	503	33	27	544	29	22	7
8	542	22	18	540	23	19	541	21	18	557	17	14	470	32	25	485	22	18	506	21	18	531	17	15	517	28	24	557	25	21	8
9	550	17	15	551	22	18	550	18	16	564	16	14	484	28	23	495	20	17	516	20	18	538	16	14	529	24	22	569	22	19	9
10	557	15	13	562	20	18	558	17	15	571	15	13	495	24	21	505	18	17	526	20	18	545	15	14	541	22	20	578	19	18	10
11	563	13	12	573	19	17	566	16	15	578	15	13	505	22	20	514	17	16	536	20	18	552	15	13	551	21	19	587	17	16	11
12	569	13	11	583	19	17	574	16	15	586	15	13	514	20	19	523	16	14	546	20	19	559	15	14	561	20	19	595	16	15	12
13	574	12	11	593	19	17	582	16	15	593	15	14	523	18	17	531	15	13	556	21	19	567	16	14	571	20	18	603	15	14	13
14	579	12	11	604	19	18	590	17	15	602	16	15	530	17	16	539	14	13	568	22	20	576	17	15	581	19	18	611	15	14	14
15	584	12	11	615	19	18	599	18	16	611	17	16	538	16	15	548	14	13	581	24	22	585	19	17	591	19	18	618	15	14	15
16	589	12	11	627	19	18	610	20	18	623	19	17	545	16	15	557	15	14	597	27	25	598	22	20	603	20	19	627	15	15	16
17	595	13	11	641	20	19	624	23	21	636	20	18	552	15	15	567	15	14	617	32	30	614	26	24	616	22	21	637	17	16	17
18	601	13	12	657	24	22	644	29	27	652	22	20	559	15	15	579	16	15	647	43	40	637	31	29	633	27	25	650	20	19	18
19	609	14	13	685	39	35	675	39	37	676	31	28	567	16	15	595	21	19	703	69	66	671	43	40	664	43	39	671	28	27	19
20	617	15	14	705	54	49	706	55	53	695	42	38	575	16	15	630	56	48	743	92	88	720	84	74	700	71	66	699	47	45	20
21	627	16	16										584	17	16																21
22	638	17	16										595	19	18																22
23	652	20	19										608	21	21																23
24	673	27	26										625	26	25																24
25	722	61	60										653	36	35																25
26													720	90	86																26

Table 24

Raw Score to Scale Score with SEM for Raw Score and Pattern (IRT) Scoring Methods

Multiple Assessments, Form A, Level 12

Raw Score	READING			LANGUAGE			MATHEMATICS			SCIENCE			SOCIAL STUDIES			Raw Score
	SS	SEM	SEM	SS	SEM	SEM	SS	SEM	SEM	SS	SEM	SEM	SS	SEM	SEM	
0	423	116	70	424	93	68	347	128	103	361	118	79	395	109	74	0
1	423	116	70	424	93	68	347	128	103	361	118	79	395	109	74	1
2	423	116	70	424	93	68	347	128	103	361	118	79	395	109	74	2
3	423	116	70	424	93	68	347	128	103	361	118	79	395	109	74	3
4	423	116	70	424	93	68	347	128	103	361	118	79	411	93	61	4
5	423	116	70	453	64	43	347	128	103	407	72	51	451	53	37	5
6	434	105	62	477	39	30	405	70	48	434	46	37	471	35	28	6
7	475	64	41	492	29	24	430	45	33	452	34	29	485	27	23	7
8	497	43	31	502	24	20	446	34	27	465	28	24	495	22	19	8
9	511	32	26	510	20	18	458	29	23	475	24	21	503	19	17	9
10	522	25	21	516	18	17	468	25	21	483	21	19	510	17	15	10
11	530	21	18	522	17	15	477	23	19	491	20	17	516	16	14	11
12	537	18	16	527	16	15	484	21	18	498	18	16	521	14	13	12
13	543	16	14	532	15	14	491	19	17	504	18	16	526	14	13	13
14	548	15	13	536	14	13	497	18	17	510	17	15	531	13	12	14
15	553	14	12	540	14	13	503	17	16	516	17	15	535	13	12	15
16	558	13	11	544	13	12	509	17	15	522	17	15	539	12	11	16
17	562	12	11	548	13	12	514	16	15	528	17	15	544	12	11	17
18	566	12	10	552	13	12	519	15	14	533	17	15	548	12	11	18
19	570	11	10	556	13	12	524	15	14	539	17	15	552	12	11	19
20	574	11	10	559	12	12	528	14	14	545	17	15	556	12	11	20
21	578	11	10	563	13	12	533	14	13	551	17	16	560	12	11	21
22	582	11	10	567	13	12	537	14	13	558	18	16	565	12	11	22
23	587	11	10	571	13	12	541	14	13	564	18	17	569	13	12	23
24	591	12	11	575	13	12	545	13	13	572	19	17	574	13	12	24
25	596	12	11	580	13	12	550	13	12	579	20	18	579	14	13	25
26	602	13	12	585	14	13	554	13	12	588	21	19	585	14	13	26
27	608	14	13	590	14	13	558	13	12	598	23	21	591	15	14	27
28	615	15	14	595	15	13	562	13	12	610	25	23	598	17	15	28
29	623	16	15	602	16	14	567	14	12	624	28	26	606	18	17	29
30	632	16	15	609	17	15	571	14	13	643	35	32	616	19	19	30
31	643	18	17	617	18	17	575	14	13	672	46	42	627	22	21	31
32	657	21	20	627	20	19	580	14	13	725	72	67	641	24	23	32
33	679	29	28	640	24	22	585	15	14	743	82	77	660	29	28	33
34	722	60	58	658	29	28	590	15	14				692	43	41	34
35				687	39	38	596	16	15				720	64	59	35
36				706	49	47	602	17	15							36
37							608	17	16							37
38							615	19	17							38
39							624	20	19							39
40							634	23	21							40
41							646	26	25							41
42							664	33	31							42
43							697	50	47							43
44							720	67	63							44

Table 63

Scale Score to Normal Curve Equivalent

End of Grade 2: 2.6 to 2.9 (March, April, May, June)

NCE	READING	VOCABULARY	READING COMPOSITE	LANGUAGE	LANGUAGE MECHANICS	LANGUAGE COMPOSITE	MATHEMATICS	MATHEMATICS COMPUTATION	MATHEMATICS COMPOSITE	TOTAL SCORE*	SCIENCE	SOCIAL STUDIES	SPELLING	WORD ANALYSIS	NCE
99	710	700	688	702	688	681	675	634	640	680	708	714	680	693	99
98	706-709	699	685-687	701	685-687	679-680	671-674	633	638-639	678-679	705-707	713	679	692	98
97	701-705	697-698	683-684	700	684	678	668-670	632	636-637	677	703-704	711-712	678	691	97
96	695-700	694-696	682	699	682-683	677	665-667		635	675-676	701-702	709-710	677	690	96
95	689-694	691-693	680-681	698	681	676	662-664		633-634	674	699-700	707-708			95
94	687-688	687-690	678-679	696-697	677-680	675	660-661	631	631-632	672-673	696-698	703-706	675-676	689	94
93	685-686	683-686	676-677	695	674-676	674	658-659		630	671	693-695	699-702	673-674	688	93
92	684	680-682	674-675	694	672-673	673	656-657	629-630	628-629	669-670	691-692	694-698	668-672	686-687	92
91	683	677-679	672-673	692-693	669-671	671-672	654-655	626-628	626-627	667-668	688-690	689-693	663-667	684-685	91
90	682	675-676	671	691	667-668	670	652-653	624-625	624-625	665-666	686-687	685-688	658-662	682-683	90
89	681	672-674	669-670	689-690	666	669	649-651	621-623	623	664	685	682-684	654-657	681	89
88	679-680	670-671	667-668	687-688	664-665	667-668	647-648	619-620	621-622	662-663	683-684	680-681	651-653	679-680	88
87	678	666-669	666	686	663	666	644-646	616-618	619-620	661	681-682	678-679	648-650	678	87
86	676-677	664-665	664-665	684-685	660-662	664-665	641-643	613-615	617-618	659-660	679-680	676-677	645-647	677	86
85	674-675	662-663	662-663	682-683	658-659	663	639-640	611-612	615-616	657-658	677-678	674-675	643-644	676	85
84	673	660-661	661	680-681	657	662	636-638	608-610	614	656	676	673	640-642	675	84
83	671-672	657-659	659-660	678-679	655-656	660-661	634-635	606-607	612-613	654-655	674-675	671-672	637-639	674	83
82	668-670	655-656	657-658	676-677	653-654	658-659	632-633	605	610-611	652-653	672-673	669-670	635-636	672-673	82
81	665-667	652-654	655-656	673-675	652	657	630-631	602-604	609	650-651	669-671	667-668	632-634	671	81
80	663-664	650-651	653-654	671-672	650-651	655-656	628-629	597-601	607-608	649	667-668	665-666	630-631	669-670	80
79	661-662	648-649	651-652	669-670	648-649	654	626-627	593-596	605-606	647-648	664-666	663-664	627-629	668	79
78	659-660	646-647	650	667-668	647	652-653	624-625	591-592	603-604	645-646	661-663	662	625-626	667	78
77	656-658	643-645	647-649	664-666	644-646	650-651	621-623	588-590	601-602	643-644	658-660	659-661	622-624	664-666	77
76	654-655	641-642	646	662-663	643	649	619-620	585-587	599-600	641-642	656-657	657-658	620-621	663	76
75	653	639-640	644-645	660-661	641-642	647-648	618	584-585	598	640	652-655	655-656	618-619	661-662	75
74	651-652	637-638	642-643	659	640	646	616-617	582-583	596-597	638-639	650-651	653-654	616-617	659-660	74
73	648-650	634-636	640-641	656-658	637-639	643-645	613-615	580-581	594-595	636-637	647-649	650-652	613-615	656-658	73
72	647	633	638-639	654-655	636	642	612	578-579	592-593	634-635	645-646	648-649	611-612	654-655	72
71	645-646	631-632	636-637	652-653	634-635	640-641	610-611	576-577	591	633	642-644	646-647	609-610	652-653	71
70	643-644	628-630	634-635	650-651	633	638-639	608-609	574-575	589-590	631-632	639-641	644-645	606-608	649-651	70
69	642	626-627	633	648-649	631-632	637	606-607	572-573	587-588	630	638	643	604-605	647-648	69
68	639-641	624-625	630-632	645-647	629-630	634-636	603-605	570-571	585-586	627-629	634-637	640-642	601-603	645-646	68
67	638	622-623	628-629	643-644	628	633	602	568-569	583-584	626	632-633	638-639	600	643-644	67
66	636-637	620-621	626-627	641-642	626-627	631-632	600-601	566-567	582	624-625	630-631	637	597-599	641-642	66
65	634-635	618-619	625	639-640	625	629-630	598-599	564-565	580-581	622-623	627-629	635-636	595-596	640	65
64	632-633	615-617	622-624	637-638	622-624	627-628	595-597	562-563	578-579	620-621	624-626	633-634	593-594	637-639	64
63	631	613-614	621	635-636	621	626	594	561	577	618-619	623	631-632	591-592	636	63
62	628-630	611-612	618-620	633-634	619-620	624-625	592-593	559-560	575-576	616-617	620-622	629-630	588-590	634-635	62
61	627	609-610	617	631-632	618	623	591	557-558	574	615	618-619	628	587	633	61
60	625-626	607-608	615-616	629-630	616-617	621-622	588-590	555-556	571-573	612-614	615-617	625-627	584-586	630-632	60
59	623-624	605-606	613-614	627-628	615	619-620	587	554	570	611	613-614	624	582-583	629	59
58	621-622	602-604	612	625-626	613-614	618	585-586	552-553	568-569	609-610	610-612	622-623	580-581	627-628	58
57	619-620	600-601	609-611	623-624	611-612	616-617	583-584	550-551	566-567	607-608	608-609	619-621	577-579	624-626	57
56	618	598-599	608	621-622	609-610	614-615	582	549	565	606	606-607	618	575-576	623	56
55	616-617	596-597	606-607	619-620	608	613	580-581	547-548	563-564	604-605	604-605	616-617	572-574	621-622	55
54	615	594-595	605	618	607	612	579	546	562	603	602-603	615	570-571	620	54
53	613-614	592-593	603-604	615-617	604-606	610-611	576-578	544-545	560-561	601-602	599-601	612-614	567-569	617-619	53
52	611-612	589-591	601-602	613-614	603	608-609	574-575	542-543	558-559	599-600	597-598	610-611	565-566	616	52
51	610	588	600	612	602	607	573	541	557	598	595-596	608-609	563-564	614-615	51
50	607-609	585-587	598-599	609-611	599-601	605-606	571-572	539-540	555-556	596-597	592-594	606-607	560-562	612-613	50

*TOTAL SCORE consists of Reading, Language, and Mathematics.

Table 63, cont.

Scale Score to Normal Curve Equivalent

End of Grade 2: 2.6 to 2.9 (March, April, May, June)

NCE	READING	VOCABULARY	READING COMPOSITE	LANGUAGE	LANGUAGE MECHANICS	LANGUAGE COMPOSITE	MATHEMATICS	MATHEMATICS COMPUTATION	MATHEMATICS COMPOSITE	TOTAL SCORE*	SCIENCE	SOCIAL STUDIES	SPELLING	WORD ANALYSIS	NCE
49	606	584	596-597	608	598	604	569-570	537-538	554	595	591	605	557-559	610-611	49
48	605	581-583	595	606-607	597	603	568	536	552-553	593-594	588-590	603-604	554-556	608-609	48
47	602-604	579-580	593-594	604-605	595-596	600-602	565-567	534-535	550-551	591-592	586-587	600-602	551-553	606-607	47
46	601	577-578	591-592	602-603	593-594	599	564	532-533	549	589-590	584-585	599	549-550	605	46
45	599-600	575-576	590	600-601	592	598	562-563	531	548	588	582-583	597-598	545-548	603-604	45
44	598	573-574	588-589	599	591	597	561	529-530	546-547	586-587	580-581	596	543-544	601-602	44
43	596-597	571-572	586-587	597-598	589-590	595-596	559-560	527-528	544-545	584-585	577-579	593-595	540-542	599-600	43
42	594-595	569-570	583-585	595-596	588	593-594	557-558	525-526	542-543	582-583	575-576	592	537-539	597-598	42
41	593	567-568	582	593-594	587	592	556	524	541	581	573-574	590-591	534-536	596	41
40	590-592	564-566	579-581	591-592	585-586	590-591	554-555	521-523	539-540	579-580	571-572	588-589	531-533	593-595	40
39	589	563	578	589-590	583-584	589	553	520	538	578	569-570	587	528-530	592	39
38	587-588	560-562	575-577	588	582	587-588	551-552	518-519	536-537	576-577	567-568	585-586	525-527	590-591	38
37	586	558-559	574	586-587	581	586	550	516-517	535	575	565-566	583-584	522-524	588-589	37
36	583-585	556-557	571-573	584-585	579-580	584-585	547-549	513-515	532-534	573-574	563-564	581-582	519-521	586-587	36
35	582	554-555	569-570	582-583	578	582-583	546	512	531	571-572	561-562	580	516-518	584-585	35
34	580-581	551-553	567-568	580-581	577	581	544-545	509-511	529-530	570	558-560	578-579	513-515	582-583	34
33	578-579	549-550	565-566	579	575-576	579-580	543	508	527-528	568-569	557	576-577	510-512	581	33
32	576-577	546-548	563-564	576-578	573-574	577-578	540-542	505-507	525-526	566-567	554-556	574-575	507-509	578-580	32
31	574-575	544-545	561-562	575	572	576	539	503-504	523-524	564-565	552-553	573	503-506	577	31
30	572-573	541-543	558-560	572-574	570-571	574-575	536-538	500-502	521-522	562-563	550-551	571-572	500-502	574-576	30
29	570-571	539-540	557	571	569	573	535	498-499	520	561	548-549	569-570	496-499	572-573	29
28	569	537-538	555-556	569-570	568	571-572	533-534	496-497	518-519	559-560	546-547	568	493-495	570-571	28
27	566-568	534-536	552-554	566-568	565-567	569-570	530-532	493-495	515-517	557-558	543-545	566-567	489-492	567-569	27
26	564-565	532-533	550-551	565	564	567-568	529	491-492	514	555-556	541-542	564-565	486-488	565-566	26
25	562-563	529-531	547-549	563-564	562-563	566	527-528	488-490	512-513	554	539-540	562-563	482-485	562-564	25
24	561	527-528	545-546	561-562	561	564-565	525-526	485-487	510-511	553	538	561	478-481	560-561	24
23	558-560	524-526	542-544	558-560	558-560	562-563	522-524	482-484	507-509	550-552	535-537	558-560	473-477	557-559	23
22	556-557	522-523	539-541	556-557	557	560-561	520-521	480-481	505-506	549	533-534	556-557	469-472	554-556	22
21	554-555	520-521	537-538	554-555	555-556	558-559	518-519	477-479	503-504	547-548	530-532	554-555	464-468	551-553	21
20	552-553	517-519	535-536	552-553	553-554	556-557	516-517	475-476	501-502	546	528-529	552-553	460-463	548-550	20
19	550-551	515-516	533-534	550-551	552	555	514-515	472-474	499-500	544-545	526-527	550-551	455-459	545-547	19
18	548-549	512-514	530-532	548-549	550-551	553-554	511-513	470-471	497-498	542-543	524-525	548-549	450-454	543-544	18
17	547	509-511	529	546-547	549	552	509-510	468-469	494-496	541	522-523	547	445-449	540-542	17
16	544-546	505-508	526-528	543-545	547-548	550-551	506-508	465-467	491-493	539-540	520-521	544-546	440-444	536-539	16
15	542-543	503-504	524-525	541-542	545-546	548-549	504-505	463-464	489-490	537-538	518-519	542-543	435-439	534-535	15
14	540-541	500-502	522-523	538-540	543-544	545-547	500-503	460-462	485-488	534-536	515-517	539-541	431-434	530-533	14
13	538-539	498-499	520-521	536-537	541-542	543-544	497-499	458-459	482-484	532-533	513-514	537-538	426-430	527-529	13
12	536-537	495-497	518-519	534-535	539-540	541-542	494-496	456-457	479-481	530-531	511-512	535-536	425-427	524-526	12
11	535	492-494	516-517	531-533	538	539-540	491-493	453-455	476-478	527-529	509-510	532-534	423-424	521-523	11
10	533-534	490-491	514-515	529-530	536-537	537-538	488-490	451-452	474-475	525-526	507-508	530-531	421-422	518-520	10
9	530-532	487-489	511-513	526-528	534-535	534-536	485-487	447-450	471-473	522-524	504-506	527-529	419-420	515-517	9
8	528-529	485-486	509-510	524-525	532-533	532-533	482-484	443-446	468-470	520-521	502-503	525-526	417-418	512-514	8
7	525-527	482-484	507-508	522-523	530-531	529-531	479-481	440-442	465-467	518-519	500-501	522-524	416	509-511	7
6	522-524	478-481	504-506	519-521	527-529	526-528	475-478	436-439	462-464	516-517	498-499	518-521	414-415	506-508	6
5	518-521	474-477	502-503	516-518	525-526	522-525	471-474	432-435	459-461	514-515	496-497	514-517	413	504-505	5
4	515-517	471-473	499-501	513-515	522-524	517-521	468-470	429-431	456-458	512-513	494-495	511-513		502-503	4
3	511-514	467-470	497-498	510-512	519-521	513-516	464-467	425-428	453-455	510-511	492-493	507-510	412	500-501	3
2	507-510	464-466	495-496	508-509	516-518	510-512	461-463	421-424	450-452	509	490-491	503-506	411	498-499	2
1	1-506	1-463	1-494	1-507	1-515	1-509	1-460	1-420	1-449	1-508	1-489	1-502	1-410	1-497	1

*TOTAL SCORE consists of Reading, Language, and Mathematics.