DESTINATION™ READING

A WHITE PAPER AND RESEARCH

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HOUGHTON MIFFLIN
LEARNING TECHNOLOGY

DESTINATION™

READING

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INTRODUCTION

How do children learn to read? This question has inspired educational researchers for a century and has generated a substantial body of research literature. It is a surprisingly complex question that yields no simple solutions and has sparked a passionate debate spanning four decades (Chall,1967).

In an effort to move beyond that debate, the federal government recently sponsored a careful meta-analysis of the reading research. This research-on-the-research produced two seminal studies that offer a coherent statement of what we know about the reading process along with a working synopsis of the "best practices" for teaching reading.

This white paper begins by describing the origins of the two meta-studies. Then it examines eight major topics of reading research: emergent literacy, phonemic awareness, phonics, fluency, vocabulary, comprehension,genre, and motivation. For each topic, the paper describes the central issue, documents the research, and reports the conclusion drawn in the metaanalyses.

This paper also provides illustrations of how the findings in these eight areas guided the design of Destination Reading, a comprehensive reading program for children in pre-kindergarten through third grade. To understand the pedagogical philosophy behind Destination Reading, one must understand something of this underlying research.

Recent Reviews of the Research Literature

Two influential, federally-funded reviews of the research on the learning and teaching of reading were published recently. Motivated by the perception that children were failing to learn to read in the schools of today, these reviews offer a precise statement of what the research says and what works. They have also influenced the latest federal legislation,the No Child Left Behind Act of 2001 (P.L.107-110).

Committee on the Prevention of Reading Difficulties in Young Children (PRD)

The first review was sponsored by the U.S. Department of Education and directed by the National Research Council (NRC) of the National Academy of Sciences, an organization that advises the federal government on scientific and technical matters. The NRC formed a committee of reading researchers, teacher educators, and teachers to conduct a thorough examination of the literature on the beginning reading process and to identify the factors that were related to low reading achievement.

This group, the Committee on the Prevention of Reading Difficulties (PRD),studied the rich base of research on reading acquisition, reviewing quantitative studies, reading programs, and numerous qualitative studies that used descriptive, correlation,and case study methods. The committee synthesized its findings and recommendations in the book, Preventing Reading Difficulties in Young Children (Snow, Burns, & Griffin,1998) published by the National Academy Press. The book is now in its third printing.

NATIONAL READING PANEL (NRP)

A second review was sponsored by the National Institute of Child Health and Human Development (NICHD),which,like the NRC, appointed a committee of reading researchers, teacher educators, administrators, and parents. This second group,the National Reading Panel (NRP) was charged with the task of reviewing the reading research to identify precisely which instructional strategies could be said to"work." This charge restricted the Panel's review to those research studies that were experimental or quasi-experimental in design.

The Panel published its findings in two documents: Report of the National Reading Panel (NICHD, 2000a) and Report of the National Reading Panel: Reports of the Subgroups (NICHD, 2000b). In this paper, we summarize the findings of these two research reviews and of other sources. Under each heading,we illustrate how the design of Destination Reading was influenced by the principles found in this state-of-the-art research.

RESEARCH ON EMERGENT LITERACY

Some children come to school understanding how print functions in the world. The research on this understanding, the emergent literacy skill, concludes that children who have this understanding are more likely to be successful in learning to read than their peers who do not (Purcell-Gates, 1996,2000; Purcell-Gates & Dahl,1991; Snow, et al.,1998; Teale & Sulzby, 1986). The successful children have developed this understanding by experiencing print in their lives, through reading with adults and literate older children, and by watching reading and writing used for a number of real-life purposes.

In Destination Reading: Emergent Literacy

In the first unit of Destination Reading is "Print in our World." The activities of this unit engage children in a variety of pre-reading practices that occur in the everyday world: finding print in the environment, making lists, seeing how books work, signing songs as the words appear on the screen, and making sentences using rebuses.

These activities, with their voiced narratives and instructions, explicitly direct children's attention to the print and the meaning that it conveys.

Course 1 Unit 1: Print in Our World "B-I-N-G-O"

"(Clap)-I-N-G-O, (Clap)-I-N-G-O, (Clap)-I-N-G-O, and Bingo was his name, Oh!

Course 1 Unit 1: Print in Our World "On The Street"

Click on the sign that tells us we must stop our car.

EMERGENT LITERACY INCLUDES SEVERAL COMPONENTS:

Intentionality

Printed words "say something." Or to put it more technically, print is a semiotic system that signifies meaning linguistically. Understanding this essential aspect of print is highly related to successful reading by the end of first grade (Purcell-Gates & Dahl,1991).For children who lack this understanding, the print system is quite mysterious and reading instruction is less effective (Purcell-Gates, 1995).

Form of Written Text

Words in print must convey meaning without making reference to the physical world through gesture, intonation,or shared background knowledge (Sulzby, 1985; Pappas, 1991; Purcell- Gates, 1988). Printed words lack the context clues given in speech and that makes the task of decoding printed words quite different from the task of interpreting spoken words.

Alphabetic Principles

Languages such as English establish a relationship between printed letters and particular spoken sounds. Children must learn that this alphabetic relationship exists and can be used in reading. They must learn that letters generally stand for isolable "phonemes" (speech sounds) and then learn to match particular letters to certain sounds (Purcell-Gates, 1996).

Conventions of Print

Print follows specific conventions, such as linearity, directionality, and word boundaries. Children must learn these conventions as well as print-related terms such as word and letter (Clay, 1985,1991; Purcell-Gates, 1996).

Underlying the significance of this body of research is the fact that written language is crucially different from speech in many ways besides its mode of delivery. Print uses a higher-level vocabulary with more complex syntax and its overall meaning is more decontextualized than speech (Chafe & Danielewicz,1986). Written language is not speech written down,and, consequently,learning to read means learning about this new language. All this begins with children's initial experience with print in the environment.

These prerequisite understandings about print—that it conveys meaning and is bound by certain rules—are the basis of the emergent literacy skills. Research has shown that the absence of one or more of these emergent literacy concepts explains much of the difficulty many children have with learning to read. Indeed, these skills in emergent literacy provide the foundation for the reading instruction they receive in the primary grades.

Because these prerequisites are so important, it is a critical responsibility of schools to provide all children with the experiences they need to learn these concepts quickly. This can be done by giving children experiences with print while explicitly instructing them in these concepts (Purcell-Gates,1995; Stahl & Miller,1989;Slavin,1994; Stahl, McKenna, & Pagnucco,1994; Snow, et al.,1998).

RESEARCH ON PHONEMIC AWARENESS

Phonemic awareness is the understanding that alphabetic languages such as English code speech at the level of the phoneme, the individual sound. Of all the emergent literacy skills, this is probably the most profound. The research concludes overwhelmingly that possessing this knowledge is critical to both initial reading and to continued development in reading skill (Adams, 1990; NICHD, 2000a & ,2000b).

The NRP study conducted a meta-analysis of the research on teaching phonemic awareness to children. It found that having children manipulate phonemes in words was highly effective in a variety of teaching conditions with a wide range of children. The review concluded that the training programs in phonemic awareness that were effective explicitly and systematically taught children to associate phonemes with letters.

In Destination Reading: Phonemic Awareness

Five units in Course 1 of Destination Reading teach the skill of phonemic awareness directly and systematically. Through song, rhyme, manipulative activities, and explicit instruction, children learn that letters have both names and sounds. They learn to identify these sounds in isolation and to hear them in words.

In exercises, children are asked to discriminate certain sounds, to associate those sounds with their letter representations, and to identify those sounds in words.

Course 1 Unit 4: Wild About Animals
"Find the R Sound"

Click the bubbles to hear their sound. Then drag the bubble with the sound "r" to the crab.

Course 1 Unit 4: Wild About Animals
"Find the R Words'

Click all the picture bubbles that contain words that begin with the sound "r."

The effective programs focused instruction on just one or two phoneme manipulations at a time. That is, changing "tap" to "cap" requires one phoneme to replace another to create the new word, but changing "tap" to "pat" is a more complicated transformation. (NICHD,2000). Several studies by Ehri and associates show that children acquire phonemic awareness most efficiently when the instruction is combined with the letters in print and does not rely entirely on oral instruction (Ehri,1984; Ehri & Wilce, 1987).

Phonemic awareness is a crucial prerequisite to phonics instruction. Without this knowledge, children are forced to rely on a strategy of memorizing whole words as units in order to read. The memorizing strategy eventually fails when reading vocabulary grows so large that the memory load cannot keep up. A great deal of research by NICHD finds that the lack of phonemic awareness is the root of reading disability and dyslexia.

RESEARCH ON PHONICS

Phonics instruction teaches children the precise correspondences between letters and sounds. Children apply that knowledge to unlock, or decode, unfamiliar words in print. Systematic phonics instruction teaches these letter-sound correspondences in a sequential order that is designed to facilitate learning. *Incidental phonics instruction,* in contrast, occurs in the context of the reading that children are already doing; the teacher presents a specific phonics correspondence only when children need to know it.

Both of these techniques are explicit; with e*xplicit phonics instruction*, the teacher makes a special point to indicate the phonic elements and to model their use. In contrast, *implicit phonics instruction* relies on students inferring the letter-sound correspondences as they work with written words and text.

In Destination Reading: Developing Fluency

Destination Reading provides a large number of opportunities to read text with different types of support. In the read-aloud texts, children can click single words to hear them read or they can click the green dot to hear the entire passage. Read-alone passages do not provide this support. For many reading passages, the teacher can assign either the read-alone version to individual children, to small groups, or to an entire class.

Children also practice automatic word recognition through a variety of activities that present sight word and phonics skills. The companion print materials that children complete away from the computer or at home provide additional reading practice.

Course 1 Unit 8: E's Please

Add a silent "e" to make the word "plane."

Course 1 Unit 4: Wild About Animals "Find the R Words'

Click all the words in which "y" makes the long-e sound.

The NRP meta-analysis reviewed many research studies that compared systematic to incidental interventions in either explicit or implicit instruction. The review concluded that systematic and explicit phonics instruction helps children from all socioeconomic levels learn to read and that the amount of instruction is related to their degree of success. Systematic phonics instruction is "...significantly more effective than instruction that teaches little or no phonics" (NICHD, 2000a, pg. 9).

These benefits were documented for children in kindergarten through sixth grade and for children having difficulty learning to read. While some children may manage to infer phonics regularities on their own, by far the majority of children benefit from systematic, explicit instruction in phonics. This is even more true for children who are at risk for early reading failure (NICHD, 2000b). Finally, systematic phonics instruction leads to increases in reading comprehension for kindergartners, first graders, and children with reading disabilities.

Finally, NRP meta-analysis determined that phonics instruction is most effective when it is taught to children in kindergarten and early first grade, before they begin reading independently. There is also some research to indicate that children learn phonics concepts best when they practice those skills with texts that contain only words that use the letter-sound correspondences the children have learned. These "decodable" texts are specially written to control the types of letter/sound patterns. Juel and Roper-Schneider (1985) found that first-grade children's knowledge of phonics and their overall reading achievement were positively related to their opportunities to read from decodable texts when compared to their experiences with typical basal readers who did not use a controlled vocabulary.

RESEARCH ON FLUENCY

Fluency is the ability to read text quickly, accurately, and with appropriate expression and phrasing. Research has found that fluency is highly related to comprehension in that students who are low in fluency may have difficulty getting the meaning of what they read (Pinnell,et al.,1995). A recent study of a nationally representative sample of fourth graders found that 44% of them were disfluent, even when reading grade-level material with support (Pinnell,et al.,1995).

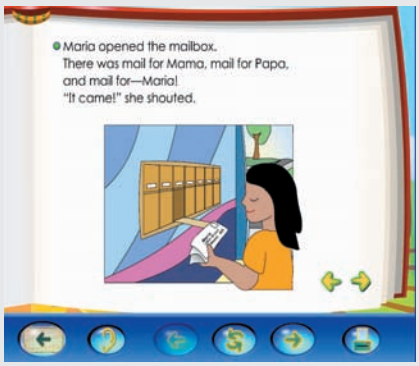
A critical element of fluency,although not the only one,is automaticity. This is the ability to recognize words quickly without sounding them out. Reading with automaticity frees the mental capacity of the reader to attend to comprehension,which is, after all,the ultimate purpose of reading. In developmental terms, children first decode words by sounding them out and then they achieve automaticity through sustained practice reading (Gough,1972; Posner & Snyder, 1975; Samuels, LaBerge, & Bremer, 1978; Stanovich,1990).

In Destination Reading: Developing Fluency

Destination Reading provides a large number of opportunities to read text with different types of support. In the read-aloud texts, children can click single words to hear them read or they can click the green dot to hear the entire passage. Read-alone passages do not provide this support. For many reading passages, the teacher can assign either the read-alone version to individual children, to small groups, or to an entire class.

Children also practice automatic word recognition through a variety of activities that present slight word and phonics skills. The companion print materials that children complete a way from the computer or at home provide additional reading practice.

Course 1 Unite 14: Stores Take Us Places



To hear this page read aloud, click the green dot. Click on any word to hear that word.

Course II Unit 24: A Trickster Tale

To hear this page read aloud, click the green dot. Click any sentence to hear it.

This is not to say that highly skilled readers can automatically recognize every word they encounter. For uncommon, low frequency words, typical to subject-specific content, even the most fluent readers will need to use advanced decoding strategies. The goal of fluency is to reach the point at which the majority of words in text are automatically processed by the reader to allow for full comprehension during reading. For the most part, research studies on effective instructional strategies for improving fluency have been correlation in design. These studies conclude that fluency is related to the amount of text exposure, implying that practice has a positive effect on fluency (Biemiller,1977–78;Taylor, et al.,1999; Arlington,1977). Not only does practice increase fluency,but fluency makes that practice more efficient. For example, Juel (1988) found that more-fluent first-grade children,with good word recognition skills, were exposed to about twice as many words in basal texts as less less-fluent children with poor recognition skills. That means that fluent children are likely to become still more fluent through practice. Stanovich (1986),finding a similar pattern of results, recalled the phrase,"The rich get richer and the poor get poorer."

The NRP meta-analysis of experimental and quasi-experimental studies on this topic also concluded that there is ample evidence supporting an instructional approach that provides students with repeated exposures to guided reading with feedback.Students should read a text many times,but under different conditions: for some readings they should read entirely alone; at other times they should read a text repeatedly with phrasing support; and for other readings they should get direct feedback and guidance (NICHD, 2000b). Although these practices have the greatest impact on fluency, they often have a positive impact on comprehension, as well.

RESEARCH ON VOCABULARY

Written text is composed of words, and words represent ideas and concepts. Understanding what those words mean— building a vocabulary—is a critical and inherent part of text comprehension.There is solid evidence that vocabulary knowledge increases as the result of different types of vocabulary instruction (NICHD, 2000a, 2000b). Effective instruction can be direct, as when new words are taught because they are needed for a specific text to be read (Dole, Sloan, & Trathen,1995; Tomeson & Aarnoutse, 1998); or it can be indirect, as when words are learned in context of reading a particular passage (Stahl, 1983; Robbins & Ehri,1994). Finally, pre-instruction of vocabulary in reading lessons can have a significant effect on comprehension (Brett, Rothlein,& Hurley, 1996; Wixson,1986).

The NRP meta-analysis of research on vocabulary learning and teaching draws a number of other conclusions. A large portion of vocabulary items should be derived from content learning materials.Direct vocabulary instruction must attend to students' full understanding of the task and components of the vocabulary learning and not focus exclusively on the words themselves. Active engagement with vocabulary learning is best. And finally, computer technology in the service of vocabulary learning is a powerful way to increase word learning (NICHD, 2000b).

RESEARCH ON TEXT COMPREHENSION

Over the past 30 years, research on reading comprehension has reflected the view that in the active process of reading, information gained from the text interacts with information that the reader already holds in memory (sometimes referred to as "prior knowledge"). (Anderson & Pearson,1984;Durkin,1993).Also,readers can employ various strategies as they monitor the interaction between what they already know and what they are reading.

These strategies are conscious procedures that help us comprehend text. They tell us how well we understand what we are reading and they can even offer us "fix-up"procedures when we fail to understand.Research on reading comprehension instruction has focused on the teaching of strategies to enhance comprehension of text.

The NRP reviewed the experimental and quasi-experimental research on this strategy instruction. Their findings conclude that five categories of instruction can improve reading comprehension in normal readers.

Comprehension Monitoring: When reading, students regularly check that they are understanding.

Cooperative Learning: Peers can work together when they read a text, as they answer questions about a text or as they discuss the use of the reading strategies themselves.

Graphic and Semantic Organizers: When students use story maps, flow charts, diagrams, or other graphic devices to describe the underlying semantic organization of a text, they develop a richer understanding of it. These devices seem to improve the memory of the text by structuring student recall.

Question Answering: The straightforward task of answering questions about a text improves comprehension skills.

Summarization: This strategy teaches students to write coherent summaries of what they have read.

Finally, the Panel concluded that these teaching strategies are most effective when they are combined in a flexible and multiple strategy program in which teachers and students interact over texts (NICHD, 2000b).

In Destination Reading: Building Comprehension

Throughout Destination Reading, children are challenged to draw meaning from print and to use the meaning in activities. Comprehension begins with tasks in the emergent literacy unit and continues, unit by unit, all the way to the readings in chapter books at the end. In each setting, children are asked to connect the text to their own experiences, to formulate questions from the text, to monitor their comprehension while reading, to use graphic and semantic organizers, and to answer questions after reading.

Comprehension strategies that are specific to different genres are explicitly taught when those genres are encountered. This instruction includes defining the genre, looking at the organization of the text, studying the specific language and textual features of the genre, and reviewing relevant concepts and vocabulary. For example, the genre of informational text is defined for the students to emphasize its purpose as providing facts to someone who needs to know them. The instruction explains the structural features of the text, such as headings, that help those readers locate what they need to know.

Course 1 Unit 7: Reading with Friends

Some things happen at the beginning, and others at the end of the story. Sort them.

Course II Unit 8: Kids Then and Now

Some things happen at the beginning, and others at the end of the story. Sort them.

RESEARCH ON TEXT VARIETY GENRES

There is a growing belief that reading instruction should diversify the text genres that children are exposed to in the primary grades. Research on this idea is just beginning, but it promises to influence early reading curriculum in the years ahead. The National Science Foundation and the Office of Education in Washington, DC, have recently funded two large experimental studies in this area (Duke,2000c;Purcell-Gates & Duke,2000).

In one recent study, Duke (2000b) compared the amount of time children in first grade were exposed to informational text versus narrative stories, and found that children read informational text for less than four minutes per day, while they read narrative stories for over two hours. Furthermore, first-grade children from homes of poverty read informational text for less than a minute per day,and most of that experience came from worksheets (Duke,2000a). Other researchers have asserted similar disparities between story texts and expository ones in the early grades (Pappas, 1986,1987).

Expository text plays an increasing role in learning as children advance through the grades, and the notorious "fourth-grade slump"in reading achievement is a consequence of children moving abruptly from narrative to expository texts.Again,this suggests to many educators that a variety of textual genres should be introduced earlier to children.

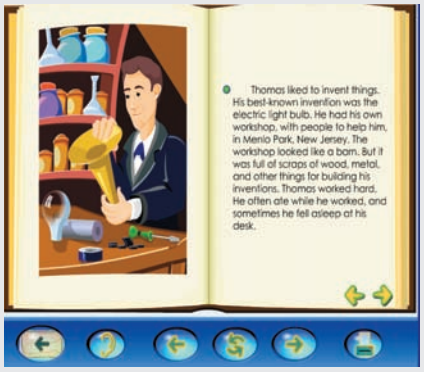
In Destination Reading: Text Genres

The 41 units in Course 1 and Course II include 92 different texts drawn from an impressive variety of genres. The fictional pieces include stories, myths, tall tales, folk tales, mysteries, diaries, and historical fiction. Non-fiction texts include information books, procedures, and articles from newspapers, magazines, and the encyclopedia. Other texts include songs, poems, and plays.

Course I Unit 4: Wild About Animals

From the information book, "Baboon."

Course II Unit 14: An Inventors Life



From the biography of Thomas Edison.

RESEARCH ON MOTIVATION AND ENGAGEMENT IN READING

Motivation for and engagement in reading is strongly associated with reading achievement (Campbell,Voelkl,& Donohue, 1997; Cipielewski & Stanovich,1992; Guthrie & Wigfield, 2000). In addition to providing the "want to read" aspect to reading development, motivation and engagement also are involved in the cognitive processing that is central to reading comprehension. Engaged readers have been shown to actively ask questions of the text and to seek answers to those questions as they read (Almasi, McKeown,& Beck (1996). Engaged readers, in their drive to get information,are also highly strategic when they read. They decide when and how to apply comprehension strategies (Pressley et al.,1992). Guthrie and Wigfield (2000, p. 404) concluded from their review of the research on motivation and engagement in reading that engaged readers deploy these strategies "within a community of literacy (that is,peers in the classroom)...in order to fulfill their personal goals, desires, and intentions."

Several instructional processes have been shown through both empirical and theoretical arguments to affect engagement and achievement. These include:learning and knowledge goals (Roeser, Midgley, & Urdan,1996) and personal experiences of the learners (Brophy, 1998;Csikszentmihalyi,1991); choice of activities with teacher support (Cordova & Lepper, 1996; Turner, 1995); interesting texts for enjoyment (McLoyd, 1979;Schraw, Bruning, & Svoboda,1995); praise and rewards (Baker, 1999; Chapman & Tunmer, 1997); and strategy instruction (Guthrie, et al.,1996).

FINAL REMARKS

It is common knowledge that children learn in different ways and at different rates. They come to school with vastly different backgrounds, experiences, and interests. Because these many differences have a significant bearing on learning, any program of reading instruction must attend to individuals, by leveraging their capabilities and addressing their specific inabilities. Well-considered research is critical to accomplishing this effectively and efficiently, but even with thorough research behind the best reading program, teaching children to read will remain a challenge.

Technology can play a part by giving teachers new tools that address the variety and complexity of this educational challenge.These tools can keep track of many students at once,facilitate individualization,provide opportunities for practice, and offer a novel approach to presenting concepts and skills. In the hands of knowledgeable and sensitive teachers, these technology tools can enhance the classroom experience.

Learning to read is a child 's first great achievement in formal schooling. It is an achievement critical to success in all disciplines in school and in all walks of life thereafter. Teachers must have at their disposal a combination of skills, content, and technology, backed by research and supported by the community, if they are to tackle this challenge successfully.

ABOUT THE AUTHORS

Victoria Purcell-Gates is professor of education at the Michigan State University and a renowned authority on literacy acquisition and development in the context of families, communities, and schools. She is the winner of the Grawemeyer Award (1996) and the author of over a hundred scholarly articles and presentations, as well as several books, including the moving account of one boy's efforts to learn to read, Other People's Words (Purcell-Gates,1995).

Dr. Purcell-Gates has worked closely with the design team of Destination Reading throughout the development process.

Joseph M. Walters was the former director of assessment for the Destination Series. Joining the team in 2000, following 20 years in educational research and development at Project Zero, Harvard Graduate School of Education,and at TERC in Cambridge, MA. He is an authority on intelligence, creativity, and assessment and the author of numerous scholarly papers and several commercial software products.

Dr. Walters works closely with the Destination Reading team on student assessment and product evaluation.

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DESTINATION™

READING

THE IMPACT OF DESTINATION READING® ON KINDERGARTEN AND FIRST GRADE READING SKILLS

A Scientific Study Conducted by
WestEd Regional Education Laboratory

Researchers:
Bo De Long-Cotty, Ph.D.
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This study evaluates the effectiveness of Destination Reading, a research-based program for grades K–3, first released in 2002 and is now being used nationwide in over 800 schools. Destination Reading offers continuing professional development and onsite support from education consultants to help teachers improve student learning through Destination Reading. It also provides standards-based assessment materials and online and print educator support resources.

WestEd Regional Education Laboratory contracted with Houghton Mifflin Learning Technology to design and execute a student impact study of the effectiveness of Destination Reading in kindergarten and first grade classrooms. This study will examine whether students who work with Destination Reading show a measurable improvement in their reading skills when compared to similar students without that exposure.

METHODOLOGY

The quantitative Destination Reading evaluation followed a standard pre-test/post-test model, using both Control and Treatment groups for kindergarten and first grade. Students were tested prior to the intervention to establish baseline information about their reading skills, and again following the intervention to determine if those skills had improved. Partly because of the relatively brief intervention period, it was not advisable to use the same test form for both the pre- and post-tests in either kindergarten or first grade. In this regard, the study deviated from the usual pre-test/post-test format.

Test A was administered during the last full week of January 2004,and Test B was administered during the last two weeks of the 2004 school year,typically at the end of May. Three versions of the standardized,Gates-MacGinitie Reading Tests (GMRT), 4th Edition,from Riverside Publishing were used.

To estimate the impacts of the intervention with confidence, other, possibly confounding differences between the Treatment and Control groups were examined, including:

- Gender
- Ethnicity
- English language development (ELD) level
- Socioeconomic status (SES)
- School environment (urban,suburban, rural)

For first grade, test performance among Treatment and Control groups was also compared to national norms.

SAMPLE SELECTION

The kindergarten and first grade Treatment samples in this study were selected from a sample of schools where Destination Reading was optimally implemented (see table).

CRITERIA ESTABLISHED, OPERATIONALIZING OPTIMAL IMPLEMENTATION OF DESTINATION READING (DR) IN THE CLASSROOM			
Exposure to DR	**DR Presence**	**Teacher Practices**	**School/District Commitment**
• Three or more 30-minute sessions per week • Additional student access to DR if needed or wanted	• Consistent and plentiful Educational Consultant (EC) support	• Increasing use of best practices as identified during professional development • Spirit of partnership and teaming	• Strong site-based leadership • Reliable technology • Strong district involvement

Within those specifications,Treatment and Control classrooms were sought that were matched for gender, ethnicity, English language development (ELD) level, socioeconomic status (SES),and school environment (urban,suburban, rural).

Part of the Destination Reading product package includes hands-on teacher professional development to train on the program, and continuing support from an Educational Consultant (EC). In line with the desire to test in classrooms with optimal implementation,the Treatment schools selected to participate in the study already had established relationships with an EC. A contact person was also identified for each school. This person served as the liaison between the teachers and the evaluators and was the person to whom all materials and communications were sent for dissemination.

The original study samples comprised 157 kindergartners (91 Treatment and 86 Control) and 212 first graders (111 Treatment and 101 Control) from eight schools. Due to school or classroom attrition,test administration errors, and absenteeism,the final number of participants whose scores were analyzed was reduced, particularly in first grade. The table below shows the number of schools, classrooms, and students who participated in the full study by Treatment and Control groups. All of the participating classrooms were in Florida, where there is a concentration of Destination Educational Consultants.

NUMBER OF CLASSROOMS, SCHOOLS, AND STUDENTS IN THE DESTINATION READING STUDY						
	No. of Classrooms	**No. of Schools**	**No. of Students**	**No. of Classrooms**	**No. of Schools**	**No. of Students**
	Treatment			**Control**		
Kindergarten	3	1	71	3	2	69
First Grade	3	2	81	4	2	100

RESULTS

Sample Equivalency

As described in the Sample Selection section, all efforts were made to recruit Treatment and Control samples for both kindergarten and first grade that were matched along several important variables:gender, ethnicity, English language development (ELD) level,socioeconomic status (SES), and school environment (urban,suburban,rural). This is standard practice, done to ensure that compositional differences between the groups are not responsible for post-intervention differences in student performance. However,even with these efforts, it is not unusual to discover baseline differences between Treatment and Control samples. Therefore,after the study sample was selected, the composition of the Treatment and Control groups were analyzed for statistical equivalence.

The two groups were equivalent on all variables except ELD status for kindergartners and SES and school environment for first graders. In kindergarten, the Control group had significantly higher ratings of English proficiency, and in first grade, the Control group had more high-SES members, and more urban school settings ($p<.001$ for each).

Least squares regression techniques were employed to control for the differences in ELD, SES, and school environment to create a statistically level playing field for comparing student performance gains across the Treatment and Control groups. Without such controls, claims of the effectiveness of the Destination Reading Program for improving reading performance are likely to be incorrectly attributed to pre-existing differences in the Treatment and Control groups.Controlling for socio-demographic variables also reduces error variance, thus enhancing statistical power and making it more likely that true program impacts will be detected.

Within groups, differences in the performance of individual classrooms were also examined to determine whether individual teachers had classrooms that were significantly different from the other classes in their sample. No significant differences between classrooms within either the Treatment or Control groups were found. In other words, any performance differences that arose between the Treatment and Control groups could not easily be attributed to differences in teacher practice or skill, or to other variables like using different curricula,etc.

TEST A ANALYSIS

Test A was administered at the start of the study in January, before the intervention began. The Test A analysis checked for equivalence between groups, established baseline skill levels, and made statistical corrections as needed to ensure that the Treatment and Control groups were equivalent.

KINDERGARTEN

The kindergarten Treatment and Control groups took selected subtests of the Pre-Reading (PR) version of the GMRT for Test A. As the table below shows,the difference in total test scores between the two groups was statistically significant, with the

Treatment group performing almost 14 percentage points higher. Looking at the sub-test skills,we learn that the Treatment group also significantly outperformed the Control group for letters and sound correspondence by over 15 percentage points. Although the Treatment group also outperformed the Control group for oral language, that difference was not statistically significant. In other words, these data show that the Treatment group went into the intervention with a pre-existing, higher level of reading skill in letters and sound correspondence than the Control group.

Because of these significant pre-existing differences, it would have been very difficult to draw conclusions about whether any post-intervention (Test B) differences were associated with interim learning gains or were an artifact of pre-intervention differences in skill level. To help account for this potential confound,least squares regression techniques were once again employed to control for the pre-intervention differences in test performance. As a result,Treatment/Control group differences in post-intervention scores on Test B were more likely to be attributable to participation in the intervention.

The table below presents these data and shows both the gross differences between the scores (comparisons using the raw, non-adjusted scores) and the adjusted differences. These adjusted differences represent the Treatment and Control group differences after controlling for differences in socio-demographic variables and baseline, raw test scores.

AVERAGE PERCENTAGE CORRECT IN KINDERGARTEN TREATMENT AND CONTROL FOR TEST A (VERSION PR)

Subtest	Treatment Group % Correct	Control Group % Correct	Gross Difference [1]	Adjusted Difference [2]
Oral Language	70.21%	50.81%	19.4%**	7.84%
Letters & Sound Correspondence	91.32%	68.70%	21.82%**	15.41%**
First Grade	82.32%	58.54%	23.79%**	14.20%**

** Statistically significant at the p<.001 level

1 Gross difference represents the outcome using non-adjusted, raw scores.

2 Adjusted difference represents the Treatment and Control group difference after adjusting for differences in socio-demographic variables and baseline test scores.

Riverside Publishing does not compute national norms for their Pre-Reading test, and a comparison of these test scores to the general population was not possible.

FIRST GRADE

The first grade Treatment and Control groups took the Beginning Reading (BR) version of the GMRT for Test A. Like the kindergarten sample, the difference in total score between the two groups was statistically significant, with the Treatment group performing a full 9 percentage points higher than the Control group. Looking at the subtest skills,we learn that the Treatment students significantly outperformed the Control students for all subtests taken:initial consonants, final consonants, and vowels (see table below).

AVERAGE PERCENTAGE CORRECT IN FIRST GRADE TREATMENT AND CONTROL FOR TEST A (VERSION BR)

Subtest	Treatment Group % Correct	Control Group % Correct	Gross Difference	Adjusted Difference
Initial Consonants	92.27%	84.47%	6.43%**	5.01%*
Final Consonants	86.09%	76.09%	10.15%**	8.08%**
Vowels	80.58%	67.40%	11.37%**	9.81%**
Total Score	86.31%	75.73%	10.58%**	9.14%***

* Statistically significant at the p<.05 level

** Statistically significant at the p<.01 level

*** Statistically significant at the p<.001 level

1 Gross difference represents the outcome using non-adjusted, raw scores.

2 Adjusted difference represents the Treatment and Control group difference after adjusting for differences in socio-demographic variables and baseline test scores.

As revealed by the results of Test A,there was again a need to control for differences in baseline performance levels between the two groups. In that way, any differences in Test B (post-intervention) scores could not be attributed to those pre-intervention differences. Test A was again controlled for differences by using least squares regression techniques. National norms for the winter of first grade for the Beginning Reading version of the test were available for the total test, but not for individual subtests. Since a selected set of Test A subtests was administered to the first grade sample, we were not able to compare the groups' averages to a national sample.

TEST B ANALYSIS

Test B was administered during the last two weeks of each school year, usually at the end of May. In a typical pre-test/post-test design,the items in the two tests would either be identical or would have been designed to be used as alternate forms of one

another.No alternate forms of either the kindergarten or first grade tests were available, and the brief intervention period made it inadvisable to use the same instruments for both pre- and post-testing. Instead,each grade received portions of two different tests. For kindergarten,Test A was comprised of portions of the Pre-Reading version of the Gates-MacGinitie Reading Tests, and Test B was comprised of portions of the Beginning Reading version. For first grade, the same portions of Beginning Reading were used as the Test A version, and portions of Level 1 Reading were used as Test B. It is important to note that Tests A and B cannot be directly compared in the kind of item-by-item gains analysis that is typical of pre-/post post-design methodology.

However, it is still possible to look at the normal developmental progression of reading concepts and skills, and assess student capabilities within that progression. For both grades,Test A was used to reveal baseline differences between the Treatment and Control samples along socio-demographic variables and in pre-intervention reading skills. Those differences were then statistically controlled for in the analysis of Test B.Because of this,Test B results for the Treatment and Control groups can be compared with confidence, and significance testing can be applied. For more details, see Sample Equivalency, above.

KINDERGARTEN

Portions of the Beginning Reading (BR) version of the GMRT were administered as Test B in May. The data,statistically adjusted to take into account differences in pre-test performance results, showed significant differences between the Treatment and Control groups' performances. As the table below reveals, the Treatment group significantly outperformed the Control group on the total test score and on all three of the individual subtests. In fact, the kindergarten Treatment group's adjusted total score was over 18 percentage points higher than the adjusted total score of the Control group.

AVERAGE PERCENTAGE CORRECT IN FIRST GRADE TREATMENT AND CONTROL FOR TEST A (VERSION BR)

Subtest	Treatment Group % Correct	Control Group % Correct	Gross Difference	Adjusted Difference
Initial Consonants	86.21%	54.42%	31.79%**	15.75%**
Final Consonants	77.90%	46.41%	31.49%**	15.20%**
Vowels	66.21%	34.81%	31.40%**	20.69%**
Total Score	76.77%	43.35%	33.42%**	18.26%**

** Statistically significant at the p<.001 level

1 Gross difference represents the outcome using non-adjusted, raw scores.

2 Adjusted difference represents the Treatment and Control group difference after adjusting for differences in socio-demographic variables and baseline test scores.

The subtests were further analyzed, item-by-item. Looking at the items in each individual subtest, the Treatment group scored higher than the Control group on all items, and significantly outperformed the Control group on the following subtests:

53% (8 of 15) of the Initial Consonant items;$p < .05$

33% (5 of 15) of the Final Consonant items;$p < .05$

67% (10 of 15) of the Vowel items;$p < .05$

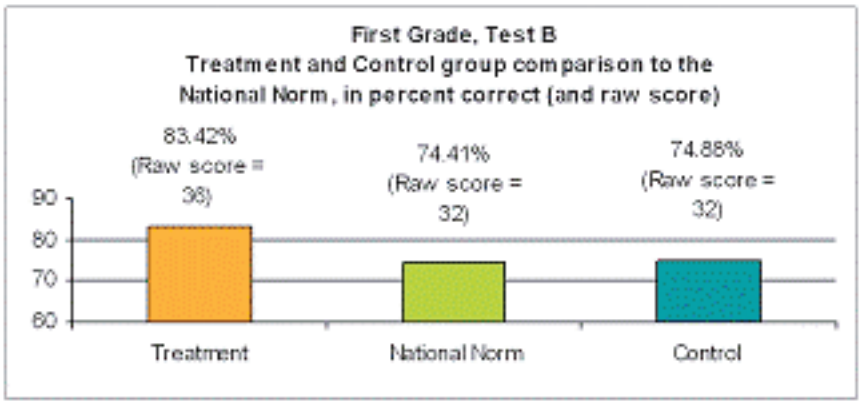
Recall that the baseline differences between these two groups were equalized prior to administering Test B, so the fact that the Treatment group performed better than the Control group on Test A was not a variable in this outcome. National norms for the spring of kindergarten for the Beginning Reading version of the test were not available for individual subtests.

These findings indicate that, by the end of the school year, the kindergartners who used Destination Reading as a supplement to their regular reading programs showed significantly higher levels of reading skill in understanding initial and final consonants and vowels. Other factors that may also have contributed to this outcome are addressed in the Discussion section of this report.

FIRST GRADE

For first grade, the Decoding subtest of the Level 1 GMRT was used for Test B. As was the case with the kindergarten samples, demographic and performance differences between the Treatment and Control groups were statistically controlled for in the analysis.

Since national norms are available for this particular subtest, Treatment and Control group comparisons to a national sample were also made. The figure below shows the comparison of the two groups' scores to the national norm for spring administration of the Decoding subtest, Level 1 GMRT Reading test. The scores used in the national norm comparison for the Treatment group were raw scores, not the adjusted scores used for the rest of the performance analysis. Since the two groups are being compared to the national average, and not to each other, and since the national average reflects scores from students with a wide variety of demographic and ability profiles, there was no statistical need to adjust the Treatment group's Test A scores for this part of the analysis.



** Treatment versus National Norm is statistically significant, $p<.01$

Comparison versus National Norm is not statistically significant, $p=.958$

The Treatment groups' average score was significantly higher than that of the national sample (83.42%,raw score = 36 vs. 74.41%, raw score = 32,respectively;p<.01). The Control group performed at the national average (74.88%,raw score = 32; p=.958). In other words, the Destination Reading Treatment group demonstrated a significantly higher skill level in decoding than did the average U.S. first grade student taking the same subtest at the same time of year.

In addition to looking at national norms, average grade level equivalences (GE) for the two groups were also examined. The GE for the Treatment group was 2.7—more than a half-year ahead of the 1.9–2.0 grade level expected at the end of the year. The average grade level equivalency for the Control classrooms was 2.1,in keeping with what would be expected at the end of first grade.

The post-intervention differences in performance between the Treatment and Control groups were also compared, but the results were less positive. The table below demonstrates that, after statistically accounting for demographic and pre-existing student performance differences between the Treatment and Control groups, there is no statistically significant difference in the scores of the two groups. In actuality, the Treatment group performed very slightly below (-0.62%) the Control group; however, that difference was not statistically significant.

The following section examines these findings and discusses some possible explanations.

AVERAGE PERCENTAGE CORRECT IN FIRST GRADE
TREATMENT AND CONTROL FOR TEST B (GMRT LEVEL DECODING SUBTEST)

Decoding	Treatment Group % Correct	Control Group % Correct	Gross Difference	Adjusted Difference
Total Score	83.42%	74.88%	8.53%**	-0.62

** Statistically significant at the p<.001 level

1 Gross difference represents the outcome using non-adjusted, raw scores.

2 Adjusted difference represents the Treatment and Control group difference after adjusting for differences in socio-demographic variables and baseline test scores.

DISCUSSION

The Student Impact study yielded some very positive findings regarding the impact of Destination Reading on kindergartners and first graders. Reading comprehension and skills increased significantly for Destination Reading kindergarten students, as compared to a Control group of students using only their regular reading programs. Because of the care taken to control for socio-demographic differences between the Treatment and Control groups and for differences in pre-intervention performance levels, the findings that the Treatment group did better than the Control group can be considered robust and reliable. Recall that the general demographic of the kindergarten Destination

Reading sample was Latino students, about half of whom had limited or very limited English proficiency. The fact that Destination Reading was so successful with ELD students is an additional powerful finding.

The results of the first grade study showed that the Treatment students who used Destination Reading as a supplement to their regular reading program significantly outperformed the national sample of first graders taking the same test at the same time of year. Further, the Treatment students ended their school year with a grade-level equivalency rating of 2.7—more than half a year ahead of the expected 1.9 or 2.0 rating. When comparing the Treatment and Control Test B, post-intervention scores, however, there was no significant difference between the Treatment and Control performances.

That is not the end of the story,however, for either the kindergarten or the first grade samples. Many factors are at play in classroom learning situations, particularly when a new program is introduced. It is important to examine those factors carefully to view the results in context and build a reasonable interpretation of the research findings. In the case of the Destination Reading evaluation, for example, several of those classroom factors revolve around the conditions under which students' regular reading programs were delivered and under which Destination Reading was implemented.

The four most salient factors in relation to the student impact study are listed below, in the form of questions whose answers will help build an understanding of the classroom contexts for both Treatment and Control results:

- What were the regular reading programs in the classrooms? Were there qualitative content differences between them,particularly for the Treatment vs. Control classrooms?
- How much time did the classes spend on their regular reading programs, and how much time did the Treatment classrooms spend on Destination Reading?
- What about differences in the Treatment and Control teachers? Were they different in the number of years they had been teaching, or in teaching experiences?
- Were the criteria for implementing Destination Reading that were prescribed, generally ascribed to by the Treatment teachers?

The answers to these questions provide information that is vital for accurately interpreting the study results.

NON–DESTINATION READING PROGRAMS AND CURRICULA

Variability in the regular reading curricula offered in the Treatment and Control classrooms could easily be a factor in the reading performance of the participating students, regardless of whether they used Destination Reading or not.

There is some crossover between the reading programs used in the Treatment and Control groups, for both kindergarten and first grades. Houghton Mifflin's whole language program was used in all four sample groups, and Harcourt Trophies was used by both treatment groups. However, there was wider use of both primary (Waterford) and supplementary (Reader Rabbit, Reading Blaster,etc.) reading software and computer-based reading programs in the Control groups, particularly in first grade. Content-wise, all of the reading programs focus on basically the same pre-reading to early reading concept and skill development,using a mixture of approaches. With the exception of Destination Reading, the supplementary reading products (which are all computer-based) focus primarily on phonics.

It is beyond the scope of this project to carefully analyze and control for differences between the regular and supplementary reading programs used by the four sample groups. It is not possible from the analysis done for this study to describe the relationship between the regular reading programs and student performance on the pre- and post-intervention tests. However, the analysis of the sample groups (see Sample Equivalency section above) showed that there were no significant differences between the performances of individual classrooms within each group. In other words,there were no outlines, performance-wise, within the classrooms that comprised the Treatment groups, or within the classrooms that comprised the Control groups.

This could be an indication that the variety of products used was not a central factor in the results (that is,even though the classrooms used different regular reading programs, their scores were not significantly different). If this is the case,then the introduction of Destination Reading might be considered a very important variable in how students achieved on the post-intervention test. This seems particularly likely since the pedagogical underpinnings and content of Destination Reading are qualitatively different from the other,mostly phonics-based,supplements used in the Control classrooms. This distinction could certainly feature prominently in speculation as to why the kindergarten Treatment group outperformed the Control group. The fact that the first grade Treatment and Control groups had similar per formances on Test B must still be explained.

READING TIME

The amount of classroom time spent on reading is another important factor that could account, at least in par t, for differences in the reading skills of the study participants. The table below gives the average minutes per week and day spent on the regular reading programs in both the Treatment and Control teachers' classrooms. All of the participating teachers spent time on reading, five days a week.

TIME SPENT ON REGULAR READING PROGRAMS IN KINDERGARTEN AND FIRST GRADE TREATMENT AND CONTROL CLASSROOMS				
	Avg. Minutes per Week	**Avg. Minutes per Day**	**Avg. Minutes per Week**	**Avg. Minutes per Day**
	Treatment		Control	
Kindergarten	450	90	475	95
First Grade	450	90	525	105

For both kindergarten and first grade, the Control classrooms actually spent more time on their regular reading programs than did the Destination Reading classrooms. To interpret these data however,additional minutes spent on supplemental reading time must be factored in as well.

Kindergarten Treatment teachers spent an additional average of 150 minutes per week on Destination Reading,and first grade Treatment teachers used Destination Reading an average of 45 additional minutes per week. The time per week spent by Control teachers from either grade on their supplemental reading curricula or programs varied tremendously by student and can only be roughly estimated at from 45–90 minutes per week.

Whatever the exact amount of total reading time spent by kindergarten Control teachers (regular reading program,plus supplemental reading), the kindergarten Treatment group still spent far more total time in reading when Destination Reading time is was included.Obviously,this could be part of the reason why the kindergarten Destination Reading students performed so much better than the Control students;they spent more weekly time reading. Both intuition and research tell us that it isn't just the number of minutes spent on a task that determines how successful a student will be. What matters even more is the nature and quality of the task on which the student is spending time. Given the qualitative differences between Destination Reading and the other supplementary products used by the teachers, it is reasonable to think that Destination Reading may, in fact, have made the difference. Again, further study would be needed to determine for certain whether any extra reading time would make the same difference, or whether Destination Reading had a unique contribution.

The story is similar for the first grade sample. Even if we use the bottom-end estimate of 45 additional minutes per week in supplemental reading time for the Control group, they would still outstrip the Treatment group in total time spent on reading.If the Control group had scored significantly higher than the Treatment group on the post-intervention test,it would have been easier to suppose (like in the case of the kindergarten sample) that gross time on reading may be a primary contributor in gaining reading skill. However, since the Treatment and Control groups were not significantly different, that supposition may not hold up.

TEACHER EXPERIENCE

Teaching experience—the number of years teachers have been in the classroom and the years they have taught at their current grade levels—should be carefully examined before drawing conclusions about whether or not Destination Reading had an effect on reading skills in the Treatment group. The number of years participating teachers spent teaching, and teaching at grade level,is shown in the table below.

CLASSROOM EXPERIENCE OF KINDERGARTEN AND FIRST GRADE TREATMENT AND CONTROL TEACHERS

	Avg. Total Years Teaching	Avg. Total Years at Grade Level	Avg. Total Time Teaching	Avg. Total Years at Grade Level
	Treatment		Control	
Kindergarten	8.3	8.3	8.75	8.75
First Grade	12.5	8.0	8.0	7.3

For the kindergarten groups, the Treatment and Control teachers had fairly equal numbers of average years in the classroom in general,and in kindergarten in particular, (between 8.3 and 8.75 years,respectively). The first grade group,once again,is less straight forward. The Treatment and Control teachers had similar backgrounds at grade level (on average, between 7.3 and 8.0 and 7.3 years), but the Treatment group had more average years of overall teaching experience—12.5 years. This number represents the 17-year career of one teacher, and the 14.5-year career of another. The remaining teacher had 6 years' total experience.

Once again,further research would have to be done to thoroughly examine the relationship between the total number of years these teachers had been in the field and student test scores, but it is likely that, since the majority of the teachers had been in the field and in their respective grades for around 8 years, they can all be considered veteran teachers who would have solid experience in teaching kindergartners and first graders to read.

An additional factor must be noted here as well. The Implementation Study also looked at the presence of teacher aides or parent volunteers in the classroom. Ostensibly, these helpers could contribute to a better learning environment, and possibly be another contributing factor to higher student performance. None of the kindergarten or first grade Treatment teachers had extra adults in their classrooms. One kindergarten Control teacher had an aide one day a week during reading time, for about 30 minutes. The results of the analysis done to control for sample variations have already shown that within the Treatment or Control groups,there was no significant difference between the test scores of the classrooms. Given this,it can be assumed that the presence of one aide in the kindergarten Control classroom did not result in marked differences in test scores within that group.

CONCLUSION

As demonstrated throughout this report, the student impact study revealed some very positive findings regarding the impact of Destination Reading on the kindergartners and first graders who participated in the study. The data unequivocally demonstrate that reading comprehension and skills were significantly higher for Kindergarten students who used Destination Reading as a supplement to their regular reading programs, as compared to a Control group of matched students using only their regular reading programs. Specifically, kindergartners showed significantly higher ability in understanding letter-sound correspondences for initial consonants and consonant clusters, final consonants and consonant clusters, and vowels. Efforts taken to control for pre-intervention performance level and socio-demographic differences between the Treatment and Control groups make these findings quite powerful. An equally intriguing finding was that Destination Reading appears to be very effective with students of limited English proficiency.

For the first grade study,the results showed that Treatment students who used Destination Reading as a supplement to their regular reading program significantly outperformed the national sample of first graders taking the same test at the same time of year in general word decoding. These Destination Reading students also ended their school year with a higher than average grade-level equivalency rating of 2.7—over half a year ahead of the expected 1.9 or 2.0 rating.

When comparing the performance of the first grade Treatment group to a matched group of Control students,however,the study did not result in significant differences between the Treatment and Control performances. The explanation for these results is complex and warrants further research,but some possible, partial explanations can be put forward.

The Destination Reading student impact study was designed to test the effectiveness of Destination Reading under optimal implementation circumstances. Because the first grade Destination Reading sample did not receive optimal implementation, several factors could be related to this group's performance:

- A decrease in the amount of class time spent on the regular reading program
- Less than optimal implementation (fewer and shorter Destination Reading sessions,lack of integration of Destination Reading into the regular reading program)
- The relatively short length of the intervention
- The program itself

It is also possible that some combination of these factors could account for the performance of the first grade Treatment group. A profile of the various contributions of these possible confounds could only be drawn through additional, very tightly controlled research.

Another interesting point worth further thought and research is the puzzling finding that the first grade Destination Reading students almost exclusively worked one-on-one with

their computers—a criterion for optimal implementation promoted by Houghton Mifflin Learning Technology. The kindergarten Destination Reading students (who showed the most learning), however,worked on their computers almost exclusively in groups of two or three. This finding could be due to developmental differences in how kindergartners and first graders learn best. If there is a relationship between how computer use is set up and how well students learn, though, it could be very important to look more closely at this phenomenon in light of their criteria.

DESTINATION™
READING

EVALUATION OF DESTINATION READING®

Research conducted by
Goodman Research Group, Inc

Findings summarized by Joseph M. Walters, Ed.D

INTRODUCTION

This report summarizes some of the findings of the evaluation of Destinations early reading software, Destination Reading, conducted by Goodman Research Group, Inc. (GRG),during the 2002–2003 school year.

KEY FINDINGS

Student Achievement

In the first and second grade, the reading scores of students using Destination Reading increased significantly during the school year, as measured by a reliable pre-test and post-test. Reading scores for third grade students also increased, but by a smaller margin.

Teacher Response

Use of the software was associated with teachers' increased use of computers to teach reading and their increased comfort using computers in and out of the classroom. Teachers also adapted the software to meet specific demands of the classroom. Teachers also reported that the program helped them in their reading instruction.

Goodman Research Group

The research for this evaluation was conducted by an independent research firm,the Goodman Research Group, Inc. (GRG),in Cambridge,Massachusetts. The Goodman group was responsible for classroom observations,test administration,and design and interpretation of survey instruments. The project was directed by Russell Faux, Ed.D., who maintained the integrity and efficiency of the project, developed the data collection instruments,and supervised the data collection and analysis.

EVALUATION PROCESS

Research Questions

The central purpose of the evaluation of Destination Reading was to determine the effectiveness of the software in teaching children to read. The evaluation pursued two key questions:

- Is student use of Destination Reading associated with improved achievement in reading as measured by the Gates-MacGinitie Reading Test (GMRT)?
- Is the software training and teachers' subsequent use of Destination Reading associated with positive changes in their reading instruction, attitudes, and practices?

Other subsidiary questions included:

- How did the teachers use the software?
- How easily could the software be incorporated into the curriculum?
- How did students respond to the software?

RESEARCH METHOD

Population Studied

Eleven schools from three counties participated, covering 20 classrooms with 318 children in first, second, and third grade.

	Classes	Male	Female	ESL	SPED
Bartow County	7	64	43	5	1
Clark County	8	64	66	69	0
Washoe County	5	39	42	14	11
Total	**20**	**167**	**151**	**88**	**12**

Selected Measurement of Reading Ability

The study used a pre- and post-test design,and the measurement reading ability for both tests was the Gates-MacGinitie Reading Test (GMRT) Form S. This is a valid instrument of early reading achievement that is easy to administer and to score.

In the primary grades,the GMRT consists of two or three subtests.All three grades have“Word Decoding”and “Comprehension” subtests and the second grade test also includes a “Word Knowledge” subtest. The Word Decoding questions examine the student’s ability to recognize individual words,Comprehension measures the child’s understanding of word and phrases, and Word Knowledge asks children to make inferences based on pictures.

The process of administering, shipping, scoring, and entering the results of the tests was consistent for all classrooms. GRG sent the participating teachers the appropriate GMRT Form S test. The tests were administered to the entire class by the classroom teacher and were immediately sent back to GRG. Each test was hand scored by two graduate student assistants trained by GRG and working independently, and discrepancies were reconciled.

Procedure

Most of the pre-test administration occurred in early December 2002. All surveys and test forms were returned to GRG for scoring.

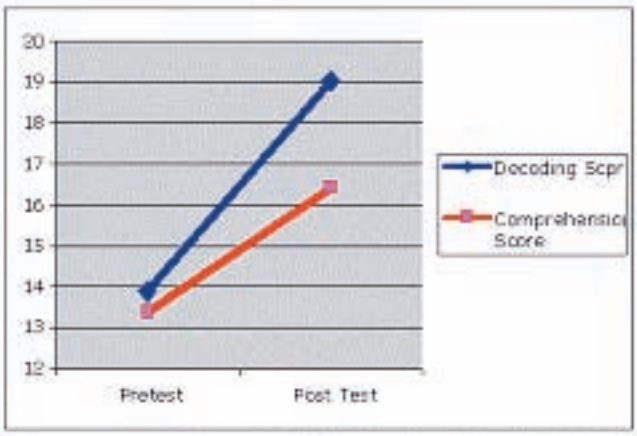
In late February 2003,GRG conducted a midterm survey (response rate of 51%) on teachers' evaluation of Destination Reading and their use of the software in the classroom. In April and May, GRG researchers conducted site visits in 10 of 12 participating schools. In May 2003,the teachers again administered the Gates-MacGinitie Reading Test and again completed a post-test survey (95% response rate). Finally,all teachers reconciled pre-test and post-test student rosters and provided details of student gender, ethnicity, native language, and individualized education plan.

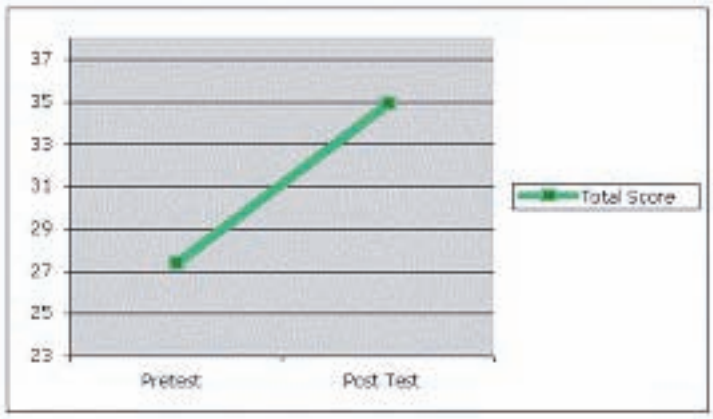
STUDENT RESULTS

The student outcomes were based on the overall scores and the subtest scores of the GMRT pre-test and post-test. For first grade and third grade students, the subtests included Word Decoding and Comprehension; for second grade students, the subtests included Word Decoding, Comprehension,and Word Knowledge.

FIRST GRADE

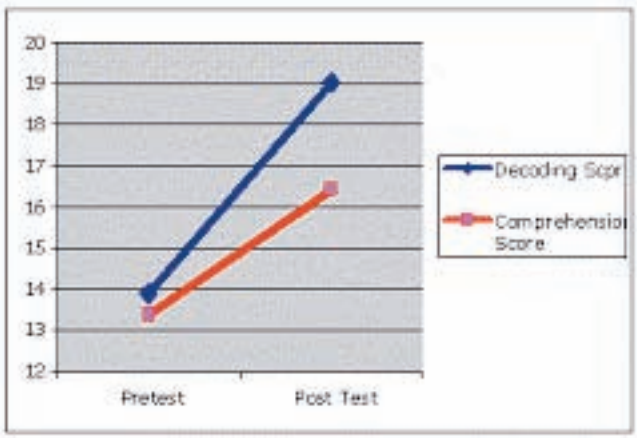
Analysis of change in first graders' GMRT scores from pre- to post-test showed that the mean subtest and overall scores increased significantly for these students (N=95,p<.001). The gains on the subtests for Word Decoding and Comprehension also increased significantly as well (p<.001)

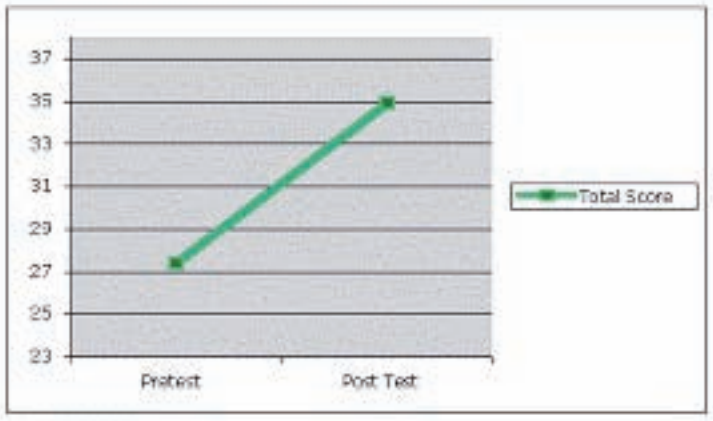




SECOND GRADE

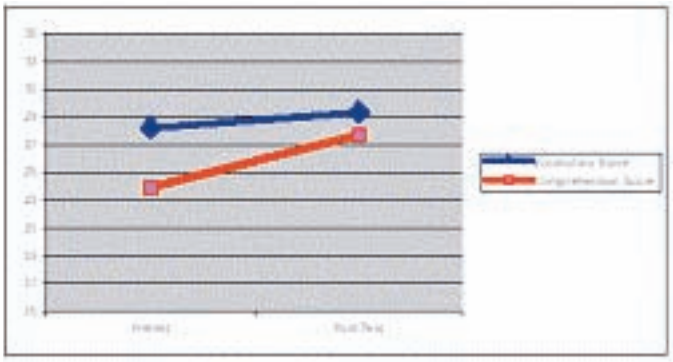
Analysis of change in second grade GMRT scores found a similar pattern. Gains were significant in both the overall score and scores on the three subtests for Word Decoding, Comprehension,and Word Knowledge (N=183,p<.001).

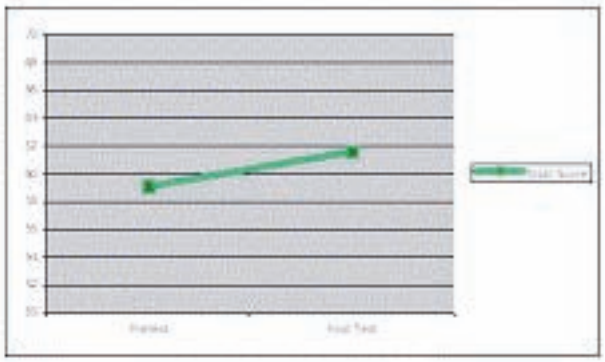




Third Grade

Analysis of change in third graders' GMRT scores from pre- to post-test showed that test scores increased, but the change was not statistically significant. (N=40,n.s.).





TEACHER RESULTS

This section presents the results for teachers who participated in the software training and used Destination Reading, and it compares their results to the results of teachers who did not use it.

Classroom Observations and Research Questions

In April and May 2003,researchers visited the participating schools in Georgia and Nevada. The purpose of the site visits was to see firsthand what choices teachers were making in the implementation of Destination Reading (DR). In addition to brief, on-the-spot interviews with the teachers and administrators, researchers also observed students using the software, noting their movements and responses.

The next table summarizes the many observations and interviews. The summary is organized around the research questions of interest to the evaluation.

Summary of the Observational Data

Question	Bartow	Clark	Washoe
How are teachers using the product?	Teachers tend to use DR in classroom learning centers.	Teachers use DR in whole class, centers, and in labs.	Teachers use DR in whole class, centers, and in labs.
What is the level of integration into the regular curriculum?	Teachers look for activities that are easily linked to the curriculum, especially for purposes of review. Slower students often use the software for review or remediation.	Teachers tend to pick and choose, seeing DR as complementing regular instruction, sometimes introducing new concepts, sometimes as reinforcement.	Teachers tend to pick and choose, seeing DR as complementing regular instruction, sometimes introducing new concepts, sometimes as reinforcement.

Question	Bartow	Clark	Washoe
What is the extend of the teacher's involvement when students are using Destination Reading?	Very little. The students are generally left to their own devices.	Considerable during whole class instruction, through the students have more independence when using DR in centers or in the lab.	Considerable during whole class instruction, though the students have more independence when using DR in centers or in the lab.
What becomes possible using Destination Reading that would not otherwise be possible?	DR allows the slower students to go over concepts in a new way.	DR appears to support a heightened level of sustained engagement.	DR allows a greater focus on individual skills while varying the presentation of material.

TEACHER RESPONSES

After these observations, researchers also conducted brief, informal interviews with the teachers. Overall they found that teachers were appreciative of the flexibility of the software and were eager to try different ways of using it.

Some teachers emphasized the responses of the students to using the software:

- Kids really, really enjoy it, so the best part about it is they are motivated to learn. Last year [the school] had CCC and the kids hated computer time, but now they love it.
- I'd never have gotten them to sit for that long! I can't believe the difference in these kids!
- It all ends up connecting in the end, and the kids really liked going back and forth [between the regular curriculum and Destination Reading].
- They love typing creative things. I'm really pleased with the product, and now we're moving into 2nd grade. It's really added a lot to the classroom, and my kids are doing much better this year. We make the curriculum connections very easily.
- The kids love it! They really look forward to it.When you have a high ESL population,[Destination Reading] helps because they can hear the English over and over again. Also, my teaching has improved. I select a lesson in [Destination Reading] to correspond with our spelling and phonics work in the classroom.

Some teachers also reported that using the software facilitated their instruction:

- The teacher materials are excellent. The activity sheets are fun and there's good support. The kids really enjoy it.

- This helps me make it interesting.
- It explains concepts, like suffixes, better than I ever could.
- The program is great. It's especially good for after lunch; it calms them down and helps to focus them. There have been no problems integrating it with the curriculum. For example, we did an animal report and used this to help us look at sources.
- We use it in writing centers,following the timeline. We can pick and choose in class,though in the labs we go sequentially.If the kids get ahead in the lab, then the program introduces an idea.If the class gets ahead, then the program reinforces the concept.
- The program and the curriculum are really intertwined.
- The year-end test works perfectly with Destination.
- The program works like an extension of the ideas in the [state curriculum] frameworks.
- With this program,I can focus on one specific skill. Also, usually I can't show an activity to the whole class. This is so great, nice to be able to focus. Feels individual,not as general.

Still other teachers attributed motivational and learning benefits to using the software:

- The kids really have a better grasp of the word families.
- Kids with weaknesses have definitely benefited from it.
- Much better than CCC,which is what [we] were using before.
- This is perfect for LEP kids—they learn language right along with everyone else.
- Next year, I am going to start off following it more closely. You can pick and choose fine, but I think it will work better if I let the kids follow the program and design more interdisciplinary lessons that go back and forth between the curriculum and the program.
- This works best with kids who need more auditory reinforcement. I think our ESL kids especially benefit from this.

CONCLUSIONS AND RECOMMENDATIONS

This evaluation found that participating teachers used Destination Reading as a supplement to their regular reading instruction and that when they did, their students' reading scores increased. It found that these teachers used a variety of instructional methods with Destination Reading, including whole class instruction,small group work in learning centers, and individual student work in computer labs.These techniques were most effective and students' reading score gain was highest in first and second grade.

In the study, teachers reported that Destination Reading had positive effects on their students' reading, particularly their students' engagement in reading. The computer software appealed to teachers because it complemented their reading instruction,it allowed them flexibility, and the students liked it. Finally, the use of Destination Reading during the school year was associated with teachers' increased use of computers to teach reading and their increased comfort using computers in and out of the classroom.

These findings support the conclusion that the Destination software and its companion professional development can be effective in teaching children to read and in promoting teachers' attitudes and practices regarding the use of technology in reading instruction.

There is also reason to believe that these effects can be increased. With experience over a year or two,teachers will become more practiced at using the software in their classrooms. Also,the professional development program can be designed to emphasize those teaching techniques that address specific reading achievement goals. Both effects—extensive experience and focused professional development—can produce increased gains in student reading scores.