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Reading Horizons

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Revitalizing Tier 2 Intervention with Graphic Novels

Linda Smetana, Ed.D., California State University East Bay, and Dana L. Grisham, Ph.D., National University

At-Risk Preschool Children: Establishing Developmental Ranges that Suggest At-Promise

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A Mixed Method Study of the Effectiveness of the Accelerated Reader Program on Middle School Students' Reading Achievement and Motivation

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The Allure of Animals

Terrell A. Young, Ed.D., Brigham Young University and Barbara A. Ward, Ph.D., Washington State University



*Dorothy J. McGinnis Reading Center and Clinic
College of Education and Human Development
Western Michigan University*



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From the Editor

Change, as we all know, is inevitable. Certainty is a concept that often remains in works of fiction but is rarely experienced in life as each day brings something new and different and many times those days can be challenging. Years ago when working on my undergraduate degree at Kent State University, I wrote an essay titled “And Then the Phone Rang” in which I talked about how a single phone call, in my case one that told me my uncle had died, can cause unexpected and often unwanted change. But as one crooner once said, that’s life.

In the 51 years of the life of *Reading Horizons*, there have been many changes. We started out as a newsletter and quickly evolved into a journal of literacy research and practice. While each editor brought his or her personality and goals to the journal, the focus has remained the same – literacy in its many forms. The time has come for *Reading Horizons* to evolve.

First, this is my last issue as the editor of *Reading Horizons*. I have accepted a position at the University of Findlay in Findlay, OH and will begin in January, 2012. My four years as the editor have been, as I would tell my students, most excellent. I have had the privilege of working with researchers around the world as I have read hundreds of manuscript submissions. The hardest part of this job sending out those ever dreaded rejection emails. I’ve received many in my professional life so each one is difficult but, in keeping with the spirit and requirements of peer-reviewed publications, quite necessary. I’ve also been honored to work with many authors as we revised and edited their scholarly work and ultimately published them in the journal. The writing has been exemplary and the reading and editing is personally and professionally fulfilling. Thank you for all I have learned through what you have researched and written.

In addition, I have worked with some of the most talented and respected professionals in the field of literacy research and practice as they are members of the Editorial Review Board for *Reading Horizons*. These people have served well in this capacity and have consistently given substantive feedback on each manuscript. Their time and commitment to this job is outstanding and I have enjoyed working with each of them. And then there are my two book reviewers, Barbara Ward and Terrell Young. I envy their job as they are constantly reading and reviewing the best



in children's and young adult literature. What a job! In another life, I fancy myself as a librarian or owning a local book store or maybe just reading and reviewing all of those wonderful books. Thanks to Barb and Terry for their unfailing commitment to *Reading Horizons* and literature.

The second big change coming to *Reading Horizons* is that beginning with volume 52, the journal will become completely digital through a collaboration with the Waldo Library here at Western Michigan University and Digital Commons. This means that hard copies of the journal will no longer be shipped as they will be accessed through subscribing libraries and individual subscriptions. All submissions, too, will be completed through a central website which will make the process of creating an issue more streamlined. The quality of the journal will only improve as these changes are made. Information will be sent to each subscriber with instructions on how to access the journal.

With all of those announcements out of the way, let's talk about what is included in this issue of *Reading Horizons*. Linda Smetana and Dana Grisham decided to do a bit of changing in a Response to Intervention (RTI) program by introducing their students to graphic novels. Working with five elementary students, the researchers found that the students' word recognition and fluency increased when they were reading books that they found more interesting and compelling. Lea McGee and Alanna Rochelle Dail studied an Early Reading First (ERF) program as they developed a series of benchmarks in alphabetic recognition, concepts about print, phonemic awareness and alphabetic principle, and vocabulary development. The authors found that this ERF program was effective in raising the literacy performance of low SES children.

SuHua Huang chose to study the Accelerated Reader (AR) program and how effective it is at increasing middle school students' motivation and achievement in reading. Her research is fascinating as the interviews revealed how this age group manages the AR program as well as how they felt about reading the books and taking the computerized tests. Barbara Ward and Terrell Young once again introduce us to some interesting books about animals. From the non-fiction books describing gorillas signing to small kittens to fiction about lonely, blue chameleons, these books are sure to appeal to a wide audience.



One last word about change. Editing a journal is all about change as I've been privy to some of the literacy research that is going on around the world. That kind of research often brings change to our field and it's been great to be part of that change process. The research contained in the pages of this and other journals is what can ultimately affect classroom practice and help students of all ages become more skillful readers. And isn't that what this is all about? When we keep the focus on the reader, the student, the person, change can be a good, positive thing. So let's just move on forward and meet those changes with a smile on our face, a song in our heart, and a good audio book on our iPod.

It's been a pleasure.

Allison L. Baer, Ph.D.
Editor, *Reading Horizons*
Kalamazoo, MI

**There is no more crucial or basic skill
in all of education than reading.**





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Revitalizing Tier 2 Intervention with Graphic Novels

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Abstract

The authors explore the practice of incorporating graphic novels in a Tier 2 Response To Intervention (RTI) program for five elementary-aged struggling readers in an urban school. Using a formative experiment framework, the study found that graphic novels provided a vehicle for the application of word recognition and fluency strategies learned in the RTI intervention program. In addition, graphic novels were used to develop students' vocabulary and comprehension skills and resulted in increased progress for students' fluency as measured by DIBELS. Since graphic novels are not grade level specific, they are appropriate for readers across grades. As a genre, graphic novels can also provide a scaffold for students in the development of literacy skills.

Introduction and Setting

Jason sits on the floor reading his graphic novel. His eyes dart across the page looking at the pictures in the panels and the text in the speech and thought bubbles. The sounds and actions of the characters capture his attention and his posture and facial expressions reflect a deep absorption in his reading.

"I can do this," he murmurs to himself as he begins to read.

"She nur-tur-ed the dr-eam-ing by en cir-cling the wor-ld and h-old-ing her tail..."

He read a second time less hesitantly.

“Ok...she nur tured the dreaming by en circling the world and holding her tail...”

Then he read it again, more confidently.

“She nurtured the dreaming by encircling the world and holding her tail...”

He took a deep breath and continued reading.

Once.

“The lo-cust was a n-ight mare cr-ea-ture without shape or f-orm who could ex-ist only in the spir-it world...”

Twice.

“The locust was a night mare cr-ea-ture without shape or form who could exist only in the spirit world.”

A third time.

“The locust was a nightmare creature without shape or form who could exist only in the spirit world.”

After reading the page in its entirety, he closed his eyes and thought for a minute.

“I think that something terrible is going to happen. The locust is evil and the word nurture means something good. I wonder if there will be a fight between good and evil.”

Jason is a 5th grade student in a Tier 2 Response To Intervention (RTI) program at an urban school in Northern California. He does not qualify for funded remedial instruction services; however, he has made limited progress toward building fluent and grade-appropriate reading skills. Jason is not alone; there are others in his intervention instruction group who share similar difficulties. They have not made the transition to effective, fluent reading; they are unable to effectively decode multisyllabic words and often revert to decoding on an onset-rime or word family basis (Allington, 2005; National Reading Panel, 2000; Farstrup & Samuels, 1992).

Jason and those in his intervention group lack substantive prior experiences with print; their vocabulary is restricted to simple words, those Tier I words that are found in spoken vocabulary (Beck, McKeowan, & Kucan, 2002). As a result, reading

fluency is significantly below benchmark. In addition, their meaning vocabulary is limited and this limited vocabulary impacts their comprehension of text (Hart & Risley, 1995). These students do not have academic Tier 2 vocabulary, that which is often needed for the comprehension of the content of school curriculum (Beck et al., 2002).

Two other factors impact many of these students' abilities to develop age-appropriate skills. First, the students are not able to apply what they have learned into authentic contexts as they mainly read the controlled texts that accompany the published intervention program. In contrast, they revert to inefficient reading behaviors when reading authentic materials. Second, the students do not see themselves as real readers and thus do not want to read (Stanovich, 1986). As a result, they limit their reading to what they are obliged to read in the intervention program. Since the students are not reading outside of the intervention class, they lack exposure to the rich vocabulary, complex text structures, and diverse ideas gathered from wide reading as well as the opportunities to read meaningful material until fluency is reached (Kuhn & Schwanenflugel, 2006).

The school's Response to Intervention (RTI) program is a combination of the standard protocol and the problem solving approach (Fuchs & Fuchs, 2006), aligned with the requirements set forth in No Child Left Behind (NCLB, 2001) and Individuals with Disabilities Education Act (IDEA, 2004). The Tier 2 instructional program targets those students who require more systematic, specific, and intensive instruction than provided as a part of the general education classroom program. Meeting identified student needs forms the foundation for the development of the intervention. Therefore, several sources of materials compose the core of instruction. Intervention materials come from those on the district-approved list and are identified as scientifically and/or evidenced based. The intervention teacher and primary researcher is a credentialed reading specialist who also holds credentials for teaching students with learning disabilities. She is familiar with the mandates of Tier 2 instruction and has written on this topic (Smetana, 2010a).

Progress-monitoring data obtained through fluency checks using the district-mandated program Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2006), indicate that the students are developing reading skills. While students' fluency improves with the controlled texts their progress is limited, but not due to the lack of skill development. Students can easily apply the decoding strategies in isolated contexts, in the special materials, but effective application to more authentic texts in the general education classroom context eludes them.

Tier 2 intervention is considered strategic and intensive; students need to learn reading strategies to enable them to reach a level of competency where they can return to Tier 1 intervention. These particular students, as observed by the author, are learning slowly, but are not making the progress needed to return to the classroom-based Tier 1 intervention. Failure to make appropriate progress in the Tier 2 intervention program will lead to more intense intervention and a potential referral for special education services. As a result, the intervention teacher realized that while the current Tier 2 program was addressing the cognitive aspects of reading, it was not addressing the affective aspects of reading, including motivation and engagement (Blachowicz & Ogle, 2001).

Until these students see themselves as readers and are motivated to read, skills developed during tiered instruction may not result in increased academic competency (Guthrie, 2001; Wigfield, 2004). When students do not read, their problems are aggravated and magnified (Guthrie & Knowles, 2001; Worthy, Patterson, Salas, Prater, & Turner, 2002). Therefore, the intervention program needs to provide opportunities for students to feel successful about the act of reading, instilling confidence, which in turn allows them to see reading as enjoyable, furthering their desire to read for pleasure (Applegate & Applegate, 2004; Baker & Wigfield, 1999; Guthrie & Anderson, 1999).

In light of the students' lack of progress, the existing Tier 2 intervention plan was evaluated (Hasbrouck & Denton, 2005), and it was determined that augmented opportunities for practice of skills learned were required. Students needed to be able to see that the reading skills they were developing had a place in their lives. The opportunity for students to make this connection, using their skills for authentic reading, is essential.

Enhancing the Content of the Tier 2 Program

The intervention teacher reviewed additional instructional materials prepared by publishers specifically for Tier 2 intervention programs and high interest books written for struggling readers. Samples of the publisher-prepared books and other materials were shared with the students. Unfortunately, student response was unenthusiastic. "Oh, more reading materials, yeah," Miranda said sarcastically as she left the learning center one afternoon.

Successful reading experiences are essential in order to promote student's growth in reading (Pressley, 2002). Graves, Juel, and Graves (1998) identify three

features of successful experiences. The first feature is that the reader understands the text. The second is that the experience is enjoyable, entertaining, thought provoking, or informative. The final feature is that the reading experience prepares the students to complete the required task that takes place after the reading. Understanding this, the intervention teacher was seeking captivating, motivating literature for the Tier 2 intervention program.

Over the past three years the intervention teacher has read graphic novels for students and adults and has incorporated graphic novels in several instructional contexts (Smetana, 2010a, 2010b; Smetana, Odelson, Burns, & Grisham, 2009) and she found herself captivated by their use of visual elements and text and the rich, descriptive language. Perhaps incorporating graphic novels into the Tier 2 program could provide students with the motivation to improve reading. The graphic novels “would provide students with engaging, different material that they can read and want to read” (Moore, Bean, Birdshaw, & Rycik, 1999, p. 4). Proponents find that graphic novels are effective as a genre because “the more you read, the better you get, the more you like it; and the more you like it the more you do it” (Trelease, 2001, p. 1; Smetana et al., 2009; Frey, 2010; Smetana, 2010b). “If educators are serious about developing students’ lifelong love of reading, they need to incorporate in the curriculum literature that is captivating and issue-based” (Bean, 2002, p. 37).

A Review of the Research

Graphic Novels

Graphic novels, based on comics, are full-length books, many containing stories previously presented in serialized form across many comic book issues. Each graphic novel tells a story with words and drawings and has an identifiable beginning, middle, and end (Eisner, 1985; Cary, 2004; McCloud & Lappan, 1999). Although the textual demands of graphic novels are less than those in traditional texts, graphic novels should not be considered easy reading as the structure of sentences and vocabulary in graphic novels is complex; readers need to make meaning from the visual clues and text presented (Smetana et al., 2009; Frey, 2010).

There is little research that links graphic novels with the building of literacy skills for students with learning disabilities. Perhaps this is because only 4% of teachers in grades K-12 incorporate graphic novels into their curriculum (McTaggart, 2008). Graphic novels appeal to struggling readers for many reasons. Struggling readers are often not able to visualize what they are reading (Hibbling

& Rankin-Erickson, 2003). When reading a novel, regardless of the vivid language and descriptive passages, many cannot put images into or visualize the material. The graphic novel presents content through the use of sequential pictures, word balloons, and captions. The graphic visual images support the text and allow the reader to focus on meaning in order to comprehend the story. Students create meaning through the interpretation of images first and then move to the text (Bylsma, 2007; Kan, 2006). In order to understand the graphic novel, readers must be “actively engaged in the process of decoding and comprehending a range of literary devices, including narrative structures, metaphor and symbolism, point of view, and the use of puns and alliteration, intertextuality, and inference” (Crawford & Weiner, 2006, p. 5). “The dramatically reduced text and authentic language make them manageable and language profitable for even beginning level readers” (Carey, 2004, p. 15).

Graphic novels also use natural language to tell stories as opposed to the stilted, artificial language of controlled readers or controlled vocabulary stories (Cary, 2004). Students are more likely to be engaged readers when they read authentic literature that is meaningful and uses rich, natural language (Goodman, 1986; Graves, 2002; Smith, 2003). When students are engaged they are more likely to read and write, participate in discussions, and make meaningful connections than nonengaged readers. Thus, students’ fluency, vocabulary, and comprehension may be increased. Graphic novels are also appealing because the books themselves are different in format from the texts and basal readers often used during classroom instruction and from the fiction books found in the school library. The structure of the graphic novel, blending art and text, and the excitement and sophistication of the stories, motivates students to read and engages their attention. When successful, these students may continue to read for pleasure (Smetana et al., 2009; Smetana, 2010b).

Struggling Readers

Struggling readers tend to avoid reading as they are below grade level in reading skills and have poor self-esteem when seeing themselves as readers (Berninger & Wolf, 2009; Lazarus & Callahan, 2000). Such readers often dislike reading and may avoid reading except when forced to read and thus, they do not become better readers. Many students do not read their assignments; rather, they wait for someone to explain the materials (personal communication, fifth grade teacher, Ms. Wolsey, May 2010).

When struggling readers read, they also often find that the word recognition and decoding demands of text, without visual images, are challenging. As a result, students spend their energy decoding rather than constructing meaning. The reduced amount of text in combination with intense visual images and attention grabbing graphics of the graphic novel may help the struggling reader infer, predict, reflect, and construct meaning in what they read. As a result, struggling readers are building skills when considering characters, emotions, plot, action, setting, symbolism, dialog, captions, commentary, and the facial expressions of the characters in the story (Cary, 2004).

McTaggart (2008) states, "it is important that we make kids want to read before we make them read what we want them to read" (p. 32). When students want to read, they have improved comprehension skills and may be more successful. Motivation for reading often begins with the perception that one is capable of successfully completing a task. This idea of self-efficacy (Bandura, 1986) begins with the belief that we influence our own choices, effort, and ability to stay with a difficult task. Bandura (1986) stresses that opportunities in the classroom to master material and build self-confidence greatly influence perceptions of self-efficacy. Guthrie (2001) adds that it is the self-perceived capabilities of the reader that impact the perception of self-efficacy. According to Gambrell and Marinak (2009), mastery experiences occur when a student believes that the effort put forth has lead to a successful encounter. Consequently, when children are efficacious, they will more likely be successful readers.

Engaged readers are those who utilize their reading strategies for comprehension and knowledge and who are motivated to learn and achieve (Guthrie, 2000). Such students also consider reading a gratifying activity and choose to read (Guthrie, 2001; Irvin, Meltszer, & Dukes, 2007; Oldfather, Dahl, & Educational Resources Information Center, 1994; Turner, 1995). Additional elements of engagement, including believing in one's skills, taking responsibility, purpose setting, and understanding the text, lead to successful literacy experiences (Cambourne, 1995; Oldfather & Wigfield, 1996). Engagement leads to sustained interaction and practice with the intent to achieve. Thus, engaged readers are motivated, strategic, knowledgeable, and socially interactive (Guthrie, McGough, Bennet & Rice, 1996; Guthrie & Cox, 1998; Guthrie & Anderson, 1999; Guthrie, 2004). Motivating instruction includes real world interactions, support, and strategies to develop student autonomy and independence (Guthrie, 2000). From an instructional perspective, motivation

and engagement in reading requires that students read interesting texts, participate in strategy instruction sequences, set reachable goals, and receive meaningful feedback (Guthrie, 2000).

Interesting texts support the motivational process needed for the persistence required for reaching skill mastery. Graphic novels, which many consider to be more interesting, may also be perceived as less threatening than conventional texts. Interesting texts, often missing in intervention programs, may provide a compelling reason for students to read. During the reading process, students make connections with the author through the words, and in the case of graphic novels, through complex visuals (Lyga, 2004; McTaggart, 2005). The illustrations in graphic novels provide the visual cues for understanding multidimensional plots. Sylvester (1995) notes that students will learn more when they attend to the materials, and they will attend more if emotionally connected to the materials. Graphic novels may provide for more relevant emotional connections through the pictures and other elements of the writer's craft. In addition, when texts are interesting, students want to share them with their peers. The resulting community of learners leads to increased motivation to read (Morrow, 1996). When students read, their skills improve and more reading leads to deeper comprehension. These successful experiences may lead to motivated and engaged readers. Harkening back to McTaggart (2005), graphic novels are engaging and bring reluctant and struggling readers into the reading process.

Strategy instruction encompasses the explicit teaching of behaviors that lead to effective reading and comprehension of text and that instruction includes modeling, scaffolding, and direct explanations of the application of the skills (Duffy et al., 1987; Paris, Wasik & Turner, 1991). However, strategy instruction without application is meaningless. It is in the application of the strategies to authentic materials that students integrate these strategies into their set of reading behaviors. The strategies thus become vehicles for the completion of important tasks, such as the task of obtaining meaning. When successful in implementing the strategies, students ultimately develop self-confidence as readers (Pressley, 1997).

Incorporating Graphic Novels into the Tier 2 Intervention Program

In Tier 2 instruction, fidelity to the instructional process and identified strategies is essential. Therefore, care must be taken when incorporating supplemental

materials that are outside of the approved program. Based on prior successes (Smetana, 2010b), it was determined that graphic novels would be incorporated into the intervention lessons and would replace some materials used for skill practice. The intervention teacher requested and gained the principal's approval for integration of graphic novels into the intervention program. The use of graphic novels took place over the spring 2010 quarter of instruction.

The incorporation of graphic novels did not begin as a research project, rather as an opportunity to incorporate some new material into the Tier 2 intervention program. However, it became a study as the intervention teacher struggled with apparent antithetical goals: first, engaging student readers; second, fidelity to the structured environment; third, thirty-minute instructional periods. In the end, the effort to achieve maximum benefit from the process of incorporating graphic novels became a formative experimental study (Reinking & Watkins, 2000).

Since students in this study participate in a Tier 2 intervention program, they had already been identified as struggling learners; therefore, each lesson needed to provide skill development and reading practice. Increased motivation to read was an equally important objective. In each of the thirty-minute intervention periods, the students participated in a lesson that incorporated strategies for decoding, sight word acquisition, fluency, vocabulary, and/or comprehension. The intervention sessions included direct instruction, guided reading, and independent practice. Not all components of literacy instruction were found in each lesson. Before incorporating the graphic novels into the instructional program, the intervention teacher reviewed several books on teaching with comics, graphic novels, and other visual media (Behler, 2006; Cary, 2004; Frey & Fisher, 2008; Thompson, 2008). These texts became resource material for the lessons.

Beginning the Process

Graphic novels were incorporated into the intervention program to develop specific skills that complement and extend the Tier 2 instruction. The guidelines for implementing effective secondary intervention (Vaughn & Denton, 2008) provided the framework for the graphic novels study. It was essential that the graphic novels support, not compete with, the prescribed Tier 2 intervention program. Thus, the graphic novels instruction was created to focus on the development of skills that would lead students to be stronger readers (see Table 1).

Table 1. *Incorporation of Graphic Novels into Instruction (weeks one and two)*

Direct Instruction	Publisher Material (additional materials for group and independent practice)	Graphic Novel (replaced publisher material)
Decoding including multisyllabic words	Stories from REWARDS (Archer, Gleason, & Vachon, 2006) that accompanied the specific reading selection	Read chapters from <i>Bone</i> (Smith, 2005, 2006, 2007, 2008, 2009); articulated strategies; examined syllable patterns in words; used word building strategies to create new words
Phrase reading	Great Leaps (Campbell, nd) phrases that were read in isolation (e.g., they can have, until he came)	Read speech bubbles and think bubbles; focus on prosody and expression
Sight words	1000 Instant Words: The Most Common Words for Reading and Spelling (Fry, 2000)	Identified words from sight word list that demonstrated to students the number of sight words in authentic text
Comprehension	100 - 200 word passages followed by publisher comprehension questions and incorporated who, what, when, where, why, how questions	Students responded to questions following reading of selected pages of text
Fluency	Leveled passages from Six Minute Solution (Adams & Brown, 2003); Great Leaps (Campbell, nd); Read Naturally (Innot, C. & Innot, T. 1991)	Oral reading based on characters and speed
Vocabulary	Worksheets that included context clues, graphic organizers, synonyms/antonyms/homonyms, word sorts, roots and affixes	Context to determine meaning of vocabulary, listed synonyms/antonyms/homonyms, Generated new words for identified words

The skills and strategies taught using graphic novels were the same as the strategies incorporated in the selections of the published series' text. The intervention teacher also mapped specific skills to each graphic novel to match mandated skills to be taught or practiced. There was no pacing guide for the graphic novels.

After two weeks, the intervention teacher noticed that the students still seemed to be reading without interest, enthusiasm, or motivation. One day after reading an exciting session where *Fone Bone* (Smith, 2005), is cornered by giant rats, one of the students exclaimed, "I thought that these books would be different. They are, but we read them just like the other books and papers." Upon further conversation with the student, the intervention teacher found that the students thought the books were great and interesting, but they remained associated with the Tier 2 teacher-led instruction. The students did not recognize that graphic novels are different as they thought that the graphic novels were just another text to read.

Phase 2

As a result of these conversations, the third week brought about a change in the use of graphic novels in the intervention program. A number of studies (Crawford, 2004; Kerr & Culhane, 2000; McTaggart, 2005; Schwarz, 2002) found that graphic novels are motivating and are perceived by students as different from other presented literature. However, because of the mechanical manner in which the graphic novels were taught and used in the preceding lessons, the somewhat subversive attributes of the graphic novel (Kerr & Culhane, 2000; Ezarik, 2003; Thompson, 2008) appeared to be buried in the context of instruction.

In a formative experiment, the researcher is actively engaged with the participants that may result in change (Jiménez, 1997). Jacob (1992) highlights that formative experiments may be initiated to improve instruction by incorporating qualitative methods of investigation and interventions in learning situations. Thus a change in instruction or intervention may take place as a result of the evidence and data collected during the target time period. The intervention teacher changed the organization of the Tier 2 intervention sessions when the evidence indicated that the students were making minimal progress. Although it was important that the skill component of the Tier 2 intervention be continued, it was also important that the students had opportunities to really read the graphic novels and not see the novels as connected to the intervention lessons. Therefore, the intervention teacher determined that the graphic novel needed to be disassociated from the

formal instructional component of the intervention lesson. Graphic novel instruction would be less structured than in weeks one and two, and would support the instructional strategies presented in the prior day's mandated lesson (see Table 2). Graphic novels were the first part of the lesson; direction instruction was the second part of the lesson. Monday's direct instruction strategies were practiced in Tuesday's graphic novel session and each graphic novel session would begin with a mini-review of material from the previous day.

Table 2. *Incorporation of Graphic Novels into Instruction (weeks three and four)*

Direct Instruction (second part of the lesson)	Graphic Novels (first part of the lesson, reviewed strategies from prior instruction)
Decoding including multi-syllabic words	Read chapters from the <i>Bone</i> series (Smith, 2005, 2006, 2007, 2008, 2009); students articulated strategy used in word identification process
Phrase reading	Read speech bubbles and think bubbles; focused on prosody and expression and speakers roles
Sight words	Identified words from sight word list; linked to words in authentic text
Comprehension	Teacher and student generated questions following reading of selected pages of text; Students participated in retellings; predictions, understanding characters attributes, dispositions, and motives for actions
Fluency	Oral reading based on characters, speed, intonation; taking the parts of the characters
Vocabulary	Use of visual clues and context to determine meaning of vocabulary; Generated new words for identified words

During the second two weeks, the students came to the intervention program asking about the graphic novels. What were they going to read today? They discussed the events of the prior day's reading and made predictions about the events that might take place in the selection for that day. Collin and Jason particularly enjoyed syllabifying and stretching out the pronunciation of the long words that they had learned. However, ending the graphic novel reading in order to have time for the targeted intervention instruction became problematic. The students did not want to stop reading and return to more traditional instruction. Based on these observations, another change in the organization of the Tier 2 instruction was needed.

Phase 3

In this phase (weeks five through eight) of the formative experiment, the content for the intervention sessions was constructed on a weekly rather than a daily basis. On two days, Monday and Tuesday, the students read graphic novels supported by instructional strategy activities (see Appendix A). The instruction for the graphic novels followed the model of guided reading (Fountas & Pinnell, 2001) and incorporated the use of literature circles (Daniels, 2002) and reader response (Rosenblatt & Progressive Education Association, 1938). Since the students had the full period (30 minutes) for reading, they were able to engage in deeper discussions. The lessons began with a mini-review of new strategies. Lessons integrated these strategies, but students moved through the text reading on their own or with a partner. Decoding of multisyllabic words was embedded into the oral reading of the graphic novel. Phrase reading was authentic as the students read the speech and think bubbles with expression and sight words were read as they arose in the text. Comprehension was developed through interaction with the content. Students completed retellings, examined character actions in light of the elements of the story, and made and confirmed or rejected predictions. The gutters on the pages also provided natural stopping points for discussion. Fluency was developed ‘just in time’ as the students read and reread more. Students read the material with the intonation and prosody appropriate for the specific character, carrying out paired and partner readings, choral, and radio reading of the text. Vocabulary instruction was supported by the visual nature of the text and the detailed images helped students gain meaning from unfamiliar words. Students created their own text and dialog, incorporating new vocabulary to accompany wordless panels.

On three days, Wednesday, Thursday and Friday, the Tier 2 instruction proceeded without graphic novels (see Appendix B). Instruction included: decoding using the REWARDS Program (Archer, Gleason, & Vachon, 2006), phrase reading using the Great Leaps program (Campbell, nd), passage reading using the REWARDS Program (Archer, Gleason, & Vachon, 2006), and sight words taken from a list that contains the most common 1000 words for reading, writing, and spelling (Fry, 2000). Students’ comprehension was practiced through answering multilevel questions after reading a selection. Fluency was charted through timed readings and vocabulary was linked to the passages used for comprehension through context and word usage. By disassociating the graphic novels from teacher-led intervention, the intervention teacher hypothesized that students would be more energized by

reading graphic novels. The graphic novels would provide students with opportunities to apply the strategies that they were learning, and student reading would be more natural. Additional instruction was embedded into the reading of the graphic novels. Although graphic novel days did not contain the structure of the remainder of the week's lessons, the instruction using the graphic novels incorporated peer interaction and discussion, embedded skills instruction, support for extending instruction, and a focus on comprehension and critical thinking skills (Vaughn & Denton, 2008).

Findings

Every two weeks the intervention teacher used the district mandated DIBELS (Good & Kaminski, 2006) progress-monitoring grade level passages to conduct fluency checks on the students in the Tier 2 intervention program. At the beginning of the year, Jason and his Tier 2 intervention peers were reading between 75 and 83 words per minute as measured on the DIBELS (Good & Kaminski, 2006) passages and their reading was hesitant, lacking prosody and expression.

According to Hasbrouck and Tindal (2006) students scoring below the 50th percentile should be making a gain of between .7 and .8 in the number of words per minute each week. The students in the Tier 2 program were meeting the Hasbrouck and Tindal goals, but their progress was not sufficient to meet the demands of the general education classroom. As presented by Allington (2005), one of the goals of intervention is to accelerate the acquisition of effective reading skills and behaviors. The data below presents the fluency rates of the five students for the first eight weeks of the incorporation of graphic novels in the intervention program. Table 3 presents the fifth grade Oral Reading Fluency Norms (Hasbrouck & Tindal, 2006) for the spring (third) period of the school year and Table 4 presents the fifth grade Benchmark Goals (DIBELS) for the end of the year.

Table 3. *5th-Grade Fluency Targets, Spring Assessment*

Percentile	Spring WCPM	Average Weekly Improvement
50	139	0.9
25	109	0.8
10	83	0.7

Note. WCPM = Words Correct Per Minute; Average weekly improvement is the average words per week growth you can expect from a student.

Table 4. *DIBELS 5th-Grade End of the Year Benchmark Goals*

Status	Scores
Low risk	124 and above
Some risk	103 - 123
At risk	0 - 102

Note. Oral Reading Fluency Score, Months 7 - 10

As shown in Table 5, students' scores increased over 25 wpm through the course of the Intervention lessons. Students' rates of fluency increased so as to move them from at or below the 10th percentile to just below or at the 25th percentile when compared to their grade level peers. While the students continue to remain at risk, most moved from the "at risk" to "some risk" categories (DIBELS). The results are startling based on students' past records of progress.

Table 5. *Students' Oral Reading Fluency Rates*

	Prior to the incorporation of Graphic Novels	Graphic Novels after Instruction	Graphic Novels before Instruction	Graphic Novels for two days; Intervention for three days	Graphic Novels for two days; Intervention for three days
	Week 0	Week 2	Week 4	Week 6	Week 8
Miranda	75	78	84	90	101
Adrien	82	85	89	97	109
Tameka	78	81	84	93	105
Jason	72	74	77	86	97
Collin	83	85	90	98	115

Changes in Student Behaviors

While the incorporation of graphic novels did not begin as a research project, rather as an opportunity to incorporate some new material into the Tier 2 intervention program, as the program progressed, the intervention teacher and classroom teachers noticed significant positive changes in students' literacy behaviors. During the first two weeks the students were reading more; they were decoding words and sharing a bit of what they had read. They spoke of the "cool" different books that they got to read.

It was not until the third week of the study, however, that the real change in reading behaviors became apparent. The first change noted was that the students were returning to their classroom retelling the selection of the graphic novel they had read. During the self-selected reading period in the general education classroom, Collin, for example, sat in the middle of a beanbag chair. He mouthed the words as he moved his eyes across the page. His normally active body remained still and his gaze intense. At the end of the period, he thrust his hand in the air in order to be the first one to share his thoughts and feelings about the graphic novel. Another exciting change was that students requested that they be able to share their graphic novels with their peers in their general education classroom. Tameka and Adrien often returned to their class reciting lines from the graphic novel previously read. One morning Miranda burst into the school office and demanded to see the school principal. When the principal exited her office, Miranda screamed, "Look at me, I'm reading a real book and I like it!" All of the students requested permission to take their books home to read and share with their families. For the first time, these students were seeing themselves as readers.

An examination of student work found that the students were incorporating the vocabulary from the graphic novels into their classroom writing. Students integrated words such as *invincible*, *vindicating*, *perplexing*, and *foreshadowing* into their writing. Some students were sketching out their essays and then adding text to the visuals and these visuals represented their ideas that were then translated into written language. The students were transferring what they had learned to new texts and settings, thus applying their skills to authentic contexts. Teachers reported that students were also completing a larger percentage of their classroom reading assignments. They were able to more rapidly decode multisyllabic words and they recognized the reason for an authors' choice of words.

In addition, we observed that students took risks that they had not taken in the past as they incorporated developmental spellings of more complex words into their work instead of choosing simple words that they could spell. Jason created a list of new words from his graphic novel reading and placed a check next to the word when he used it in his general education classroom writing. Intervention students spoke of character motives and behaviors. We observed that they were making connections from the strategies employed in reading graphic novels to the general education classroom reading materials. They articulated their new skills to their classroom teachers, the school secretary, and the lunch supervisors.

The intervention teacher observed that, at lunchtime, students brought graphic novels to the eating area and read them and formed their own lunchtime literature group that included others from the general education classroom. As the intervention teacher walked onto the playground at lunchtime, she found her intervention students engaged in conversation about the graphic novel they were reading. Their faces were animated and their bodies were moving, mimicking the characters in the story. She was greeted with a recitation of the text and an additional comment, "See, we can read and we are reading. Look at us teaching the other kids about graphic novels."

In the general education classroom, the students formed a second set of literature study groups. They would read aloud or share their books with others in their class. While watching the students, the intervention teacher observed fingers pointing out and voices discussing the elements of the visual art. Intervention students were becoming experts on the visual arts and mentored their general education peers. Soon the terms panel, bubble, gutter, frame, thinking bubble, mood, contrast, shadow, light, darkness, and intentions were part of the literature conversations.

Conclusions and Implications

Tier 2 intervention programs are designed to provide intensive targeted instruction to students who are not successful in Tier 1 (classroom based) intervention programs. In order to meet the needs of the students and teachers in this urban elementary school, the intervention instructional periods were 30 minutes in length. This limited time required that sessions create instruction that raised the students' level of skill, engagement, and motivation. Authentic reading experiences that incorporated motivating and engaging texts provided the motivation for students to apply their skills.

The five students included in this formative research study were 5th graders with a record of academic failure. They were not succeeding in aspects of the general education classroom instruction and over time had fallen further behind their peers. In order to close their achievement gap, acceleration of learning was necessary. The graphic novels provided opportunities for students to feel successful about the act of reading, instilling confidence that enabled them to see reading as enjoyable and furthering their desire to read for pleasure. Data indicated that students' reading fluency as measured by the district mandated program, DIBELS (Good & Kaminski, 2006), was greater than that expected in an intervention program. In a period of two weeks, the gains, as measured by number of words read in a minute, doubled.

While DIBELS data only represents one aspect of reading achievement, fluency, these findings are positive.

Both the intervention teacher and the classroom teachers saw that intervention student behaviors were changing. The graphic novels provided opportunities for students to feel successful about the act of reading by increasing their self-efficacy, which encouraged them to see reading as enjoyable and furthered their desire to read for fun. Allington (2005) identified the needs of struggling readers as reading a great deal, accessing appropriate texts, and developing fluency to become proficient readers. The incorporation of the graphic novels into the Tier 2 intervention program provided readers with engaging appropriate texts and opportunities for self-determined reading, thus leading these students to read more and develop better fluency. Students ultimately considered reading to be more enjoyable, furthering their desire to read for pleasure and they completed the follow-up activities with success.

The intervention teacher applied strategies to increase student learning, utilizing evidenced-based instruction and data-based decision making in the instructional process to meet students' needs. Her reflections on the level of success of the instruction led to changes in the content and the reorganization of the Tier 2 instruction. She also recognized that while the Tier 2 intervention program addressed the students' needs with respect to the cognitive domain of reading, it was not addressing students' affective needs as the intervention students lacked engagement in the reading process.

Intervention Programs

Most RTI research has taken place with primary (K-2) students. This study adds to our knowledge of effective intervention practices for older struggling readers and highlights the importance of motivation and engagement in empowering struggling readers. More investigation of RTI with older readers is necessary to further identify those elements within the content of the instruction that lead to the development of reading fluency, comprehension, and enjoyment.

In the quest to build skills for reading fluency and comprehension, the content of Tier 2 RTI programs may be too clinical, ignoring the use of authentic materials and the influence of student perceptions of their self-efficacy. Therefore, as educators, we need to reexamine the content of RTI programs within the context of student learning including the interests of the students, their culture and language. We need to identify what engages and motivates students, especially those with poor

academic skills and perceptions of failure. The results of the study may call for the development of the content for Tier 2 RTI programs that incorporate targeted skill development with the use of authentic text, visual media and forms of literacy that are appealing to students. Thus the RTI process may more effectively develop both the cognitive and the affective domains of learning.



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Appendix A

Graphic Novels Monday, Tuesday

Monday: *Bone: Crown of Horns*, Chapter 2: Mim (5 pages in length)

This chapter is a short story of four or five pages taking place in Thorn's dream. The Red Dragon asks Thorn to look into a light and try to see beyond it. The Red Dragon then tells the story of the Queen of Dragons, Mim, wherein she was subject to demonic possession by the Lord of the Locust. This caused a battle that generated the valley that forms the story's setting. Readers see Mim for the first time, though this story had been mentioned in the earlier collection *Rock Jaw: Master of the Eastern Border* by its titular character, the mountain lion Roque Ja, though he had scorned to believe it historical.

Mini-Review

Strategies for reading and gaining meaning:

Scan the page

Look at the pictures

Make some predictions based on the content of the previous chapters

Share with your partner your thoughts — create a sketch — 1 minute sketch

Learning new words — vocabulary

Teacher identifies new words in the text. The students complete the chart below after reading.

New Word	Clues from the Dialogue	Clues from the Illustrations	Clues from the Text	Inferred Meaning
Ensued				
Dictionary confirmation				
Recede				
Dictionary confirmation				
Valiant				
Dictionary confirmation				

Classroom discussion/comprehension:

Authors use of contrasts: light and dark, bright and dull, balance and not balanced

Text bubbles in white and in yellow; author's change in the color of the text bubbles

Authors use of story within a story; why did the author tell us this story?

Characters

Inferring characters feelings, noting character traits

Describe the characters to your partner

Fluency

Oral reading with expression; note how the illustrations set the tone for the tone and prosody of the oral reading

Author's use of punctuation — ellipses...(slow down in transition to next frame)

Author's use of different shapes of text bubbles — wiggly — use a scary voice

New word identification practices

None for this chapter

Students select words to the class word wall, use pictures/words in description

Bone: Crown of Horns, Chapter 3: Gaps (read first eight pages of chapter)

Gran'ma Ben, Thorn, and the Bones clamber up a tower, where Thorn may see where all the perilous "ghost circles" are that are surrounding the city. Thorn

perceives Rock Jaw in the hills, and then has sudden visions of the valley exploding, and of the Lord of the Locusts. These visions shock her. While the others tend to Thorn, Phoney and Smiley attempt to open the well where the treasure is hidden, thinking to take the treasure. Thorn's visions tell her that the Lord of the Locusts no longer needs her or Briar, because he is possessing his original host, Mim. Phoney and Smiley return to the city's gate with their hay cart (having Smiley's Rat Creature Bartleby and the treasure hidden in the hay), when the farmer who had formerly lost the cart sees it and knocks it over. Bartleby is exposed, whereupon people try to kill him. Bartleby, Phoney, and Smiley narrowly escape. They climb the ladder as Fone and Thorn are coming down, which results in a struggle. As they fight, Thorn disappears. Fone goes after her.

From <http://en.wikipedia.org/w/index.php?title=Special:RecentChanges&feed=atom>

Language

Phrase 'sitting ducks' – How does the phrase describe the characters' situation?

"Your Highness! I've just had a troubling thought. Your sister COULD be trying to use the ghost circles to create FEAR. Fear weakens the SPIRIT, which is our only counterbalance against the great emptiness of the house of mist. If the balance ever tipped too FAR..." (the dialog from one of the dream masters).

Discussion prompt....

Compare the visual elements of the first four pages in the chapter with the visuals of the prior chapter. What do you see?

As we read students create the links between the facial expressions and the character's voice and tone (Gran'ma Ben's open mouth, Briar's eyes, facial expression and body language of the dream masters). This may be completed in graphic or linguistic forms.

Creating text

Create text for one of the wordless panels on pages 59, 60, 64, or 65

Create a panel to follow the panel on page 65

Fluency – using author's cues to improve fluency

Authors use of multiple types of text bubbles and punctuation

Bold print, artistic letters

Punctuation including ..., ? and !

Smooth and jagged speech bubbles

Decoding and word identification

Select a word

Generate as many words as you can based on the word chosen, for example: explain—students can generate explanation, explaining, explained, explanatory

Appendix B

Direct Instruction and Practice

Lesson Outline for Wednesday, Thursday, and Friday

	Decoding	Fluency	Sight Words	Vocabulary	Comprehension
Wed.	REWARDS (Archer, Gleason, & Vachon, 2006) - Sections A-E Word Warm Ups (individual)	Great Leaps Phrases Six Minute Solution (Adams, G. & Brown, S. 2003). readings Read Naturally (Ihnot, C. & Ihnot, T., 1991).	1000 Instant Words: The Most Common Words for Reading and Spelling (Fry, 2000) words (untimed) read in groups of 25	Vocabulary found in Read Naturally (Ihnot, C. & Ihnot, T., 1991). selection	Students respond to questions that accompany the specific Read Naturally (Ihnot, C. & Ihnot, T., 1991). selection
Thurs.	REWARDS Sections F-H Word Warm Ups (individual)	Great Leaps Phrases (Campbell, nd) Six Minute Solution Read Naturally	1000 Instant Words: The Most Common Words for Reading and Spelling (untimed) in groups of 25	Vocabulary from REWARDS section Vocabulary from Read Naturally selection	Students respond to questions that accompany the REWARDS selection
Fri.	REWARDS I-J (Passage reading for accuracy)	REWARDS J (third time)	1000 Instant Words: The Most Common Words for Reading and Spelling sight words (untimed) read in groups of 25 (timed)	Creating new words; roots and affixes from REWARDS Students add new words to meaning word wall	REWARDS J (comprehension questions that relate to reading selection) Great Leaps Stories (not read for time); students retell

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At-Risk Preschool Children: Establishing Developmental Ranges that Suggest At-Promise

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Abstract

The Early Reading First (ERF) program provided grants to transform preschools into centers of education excellence with the ultimate goal of preventing later reading difficulties (No Child Left Behind Act of 2001). The intent of ERF grants was to provide preschoolers with the necessary cognitive, early language, and literacy skills for success in kindergarten (United States Department of Education, 2007). Programs that received ERF funds were required to monitor children's progress in specific literacy and language skills (i.e., automatic recognition of alphabet letters, knowledge of the conventions of print, understanding of phonemes and letters, and use of increasingly complex vocabulary) and to identify children who may be "at risk." However, ERF failed to provide guidelines for monitoring progress or definitions of at risk. In this article, we explore an alternative approach to identifying children as at risk in preschool using data from the third year of Project EXEL, a 2002 ERF project. Our study developed a set of benchmarks for end-of-year preschool accomplishments in the areas of alphabet recognition, concepts about print, phonemic awareness and alphabetic principle, and vocabulary development. We also explored how these benchmarks might be used with monitoring assessments to identify preschoolers who may not be making satisfactory progress toward expected end-of-the-year performance.

Introduction

This article is structured in the following manner. We first discuss definitions of reading difficulties and procedures used to identify children with reading difficulties. Second, we relate these definitions and procedures to identifying preschool children who are at risk. Third, we describe the set of benchmarks that we developed for end-of-the-year preschool literacy accomplishments. We conceived of these benchmarks as a range of performance and believed that children who achieve within these ranges have a high likelihood of obtaining expected levels of accomplishment in kindergarten. Fourth, we apply these benchmarks to data from 2005-2006, the third year of Project EXEL. These data demonstrate that Project EXEL produced superior literacy and language outcomes and increased the percentage of children who reached developmental benchmarks compared to a control group of children in similar preschool classrooms. Next, we share children's progress monitoring scores to demonstrate the difficulties of identifying children who are at risk early in preschool programs. It is important to consider that Project EXEL did not include a response to intervention approach in its overall plan. Instead, the project director and other key stakeholders believed that many children who might be identified as at risk merely have not had an opportunity to receive high quality, scaffolded instruction, and would excel given the chance.

Definitions of Reading Difficulties and Methods of Identification

McEneaney, Lose, and Schwartz (2006) describe three ways of defining and identifying reading difficulties: categorical, discrepancy, and transactional approaches. The categorical view of reading difficulties, which emerged from early clinical studies by medical professionals (Hinshelwood, 1917), posits that reading disabilities are related to brain dysfunctions. This position leads to the conclusion that readers with disabilities are deficit in some core brain function involved in reading. Later models, which have posited deficits in cognitive processing, have defined the causes of reading disabilities as breakdowns in critical processes involved in reading such as being able to recode or transform graphemes into phonological units (Castles & Coltheart, 1993). However, research provided challenges for this definition of reading disability as some have found no evidence of a qualitative or categorical difference between children identified with dyslexia and other poor readers (Snow, Burns, & Griffin, 1998). Therefore, a more compelling model of reading disabilities emerged called the discrepancy view of reading difficulties.

The discrepancy, also called the dimensional approach (Snow et al., 1998), acknowledges that reading abilities, like other human abilities, range on a continuum (e.g., low, average, high) and are based on a norm-referenced assessment, where children's performance is compared to other children in an appropriate comparison population called the norm population. Readers whose abilities are at the low end of the continuum, compared to a norm group, are considered to be different or discrepant from normal readers. Because discrepancy is based on a cutoff point along a statistical distribution of skill in reading, the identification of disabled readers is arbitrary.

A third view of reading difficulties is called the transactional view and is based on theory and research in sociocultural theories of literacy (Jimenez, 2000) and situated cognition (Anderson, 2003). Reading disabilities are considered to be not solely rooted in the individual child, but rather result from the interaction of the child, the teacher, and the context. According to this perspective, any child may experience difficulties when his/her abilities cannot be appropriated into instruction which results in failure to learn. Based on this view, criterion-referenced assessments are employed. In contrast to norm-referenced assessments, children's performance is measured against a standard which identifies the level of achievement children should have acquired at specific points in their education.

Defining Preschoolers as At Risk for Failure in Reading

Because it is clear that some children who struggle to learn to read in first grade continue to be poor readers through the elementary grades (Juel, 1988), researchers have investigated why some children seem prepared to begin reading successfully while others struggle. Thus, researchers have sought to identify early predictors (in preschool and kindergarten) of reading achievement – “some measurable characteristic of a child or the child's home, school, or community that has been associated with poor progress in learning to read” (Scarborough as cited in Snow et al., 1998, p. 100). Researchers identified group factors (e.g., SES, minority status, home language other than English) and community factors (e.g., schools serving high numbers of families living in poverty) related to later reading failure. More recently, individual factors such as knowledge of foundational reading concepts, the nature of preschool and kindergarten experiences (National Early Literacy Panel, 2008), and home teaching practices (Britto, Brooks-Gunn, & Griffin, 2006) have also been identified.

Most children served by ERF grants are minorities, from low SES backgrounds, and may have English as their second language. Thus, the population of

children served is by definition at risk by virtue of group risk factors. However, the regulations of ERF require that grantees use individual factors (achievement in foundational literacy concepts) to further identify children as at risk.

The typical approach to identifying children as at risk in preschool is similar to the dimensional or discrepancy view of reading difficulties in which children on the low end of a continuum of performance on a variety of literacy assessments are identified as at risk. For example, children who score in the bottom quartile or quintile (lowest 20%) on an alphabet recognition test are considered at risk. This approach is problematic for at least two reasons. First, research has shown that low SES preschoolers, the children primarily served by ERF grants, score lower than middle class preschoolers on nearly every measure of language and literacy (Lonigan, Burgess, Anthony, & Barker, 1998). For example, at the beginning of preschool all low SES children in ERF projects are expected to know few, if any, alphabet letters so all children may cluster at the low end of the continuum, making it difficult to know which children will move out of the lower end of the continuum after receiving instruction and which children will struggle to do so. The second problem with the dimensional approach to identifying children at risk is that a certain percentage of children are always considered at risk. If the lowest scoring 20% of the children can recognize 40 letters at the end of preschool, these children would be considered at risk. Yet knowing 40 alphabet letters at kindergarten entry may not be a risk factor.

An alternative method of identifying children at risk is to use the criterion referenced approach in which standards of expected achievement are specified. This approach also approximates the transactional view, in which all children are expected to vary at entry, but with personalized instruction most acquire foundational skills; those that do not are considered at risk. In this approach to identifying children as at risk, expected levels of performance that are likely to predict successful entry and progress through kindergarten are identified, and children receive research-based instruction aimed at helping them reach these expected levels of performance. Our benchmarks are based on this approach as we have examined research to determine preschool literacy developmental ranges in alphabet recognition, phonemic awareness, and concepts about print. We assume that scoring within one standard deviation of the mean on a standardized vocabulary assessment is an indication of reaching an expected level of achievement in vocabulary development.

Identification of Benchmark Levels of Literacy Achievement in Preschool

To identify standards of performance and set developmental ranges in literacy foundations at the preschool level, we turned to descriptive studies of what preschoolers know and can do and instructional research or training studies of what preschoolers can learn to do. We summarized many of these studies previously (McGee, 2005) to determine the level of knowledge typical of middle class preschool children or children who received effective research-based instruction. We reasoned that such levels of knowledge might enable children entering kindergarten to perform at least at the average of their class and to benefit from classroom literacy instruction. For example, Byrne and Fielding-Barnsley (1991) found that a small sample of middle SES preschoolers know a mean of 12.6 letters out of 26. Treiman, Tincoff, Rodriguez, Mouzaki, and Francis (1998) examined the knowledge of individual letter names and letter-sound correspondences among 600 preschoolers in two samples. One sample of children recognized 54% of the letters and six letter-sounds, and a second sample recognized 74% of the letters and nine letter sounds. Justice and Ezell (2002) found that low SES preschoolers know a mean of 6.0-6.8 letters out of a set of 20 letters, but with instruction learned a mean of 7.8 to 10.9. Justice, Chow, Capellini, Flanigan, and Colton (2003) demonstrated that children knew 16 of 26 letters. Roberts (2003) found that young ELL children only knew a range of 2.3 to 2.8 letters out of a set of 16, but after instruction learned a range of 6.7 to 11.1 letters. Roberts and Neal (2004) found that at the end of a 16-week instructional program for ELL preschoolers, 58% of the children knew 13 or more letters and the mean number of letters learned was 11 out of 16 letters taught. Taken together, these studies suggested that the mean number of letters that middle class children know range from 50-75% of the alphabet, and low income children can learn a similar range of letters with appropriate instruction. Thus, a developmental range of expected knowledge for alphabet recognition would be 50-75% of the total 52 letters at the end of preschool.

Research on children's concepts about print shows a similar pattern with middle income children knowing more concepts, but low SES children capable of learning within that range. For example, Byrne and Field-Barnsley (1991) demonstrated that middle class children know a mean of 5.4 concepts about print from a set of 24. Justice and Ezell (2002) and Justice et al. (2003) demonstrated that low SES children knew a mean of 5.0 to 9.1 concepts out of 20, but can learn a range of 7.6 to 11.2 concepts. In a later study, Justice, Bowles, and Skibbe (2006) showed that

middle class children knew a mean of 10 out of 17 concepts while low SES children knew 4 out of 17 concepts. Roberts and Neal (2004) demonstrated that ELL children could learn a range of 8.6 to 12.0 concepts about print out of 23 with targeted instruction. The range of concepts about print that middle class children knew and lower SES and ELL children learned seemed wide with a low of approximately 25% to a high of approximately 60%. However, most studies used a wide range of concepts about print based on Clay (1993), and some of these concepts are intended for children as old as first grade. Thus, we decided that a developmental range from 60-70% of a smaller number of concepts about print (16) more appropriate for the preschool population would work well.

In deciding the range of phonological awareness appropriate for preschoolers, we considered not only the level of awareness, but also the type of assessment used. Justice (2006) argued that, "There is little evidence indicating what level of phonological awareness a child must achieve to be a good reader or on what type of tasks he or she should be able to perform adequately if not masterfully" (p. 291). However, she also indicated that children must demonstrate some threshold level of performance and suggested that level would be with a unit smaller than a syllable. Therefore, being able to segment an onset (a single phoneme in a single consonant word) from a rime is likely the threshold that matters in phonemic awareness. For older children in kindergarten, being able to detect a phoneme is the level of phonemic awareness that matters for reading and spelling (Gillon, 2004). Although few studies examine preschoolers' initial ability to segment a phoneme from a spoken word, several demonstrate that a significant percentage of preschoolers can learn to segment phonemes with instruction. Byrne and colleagues (Byrne & Fielding-Barnsley, 1991; Byrne, Fielding-Barnsley, & Ashley, 2000) revealed that children could learn to segment 67% of phonemes taught in both initial and final positions. In fact, 95% of the children segmented most phonemes in both the initial and final positions. Hindson, Byrne, Fielding-Barnsley, Newman, Hine, & Shankweiler (2005) also demonstrated that preschoolers identified as at risk could reach similar levels of phoneme segmentation (approximately 50%) with instruction. While other tasks (e.g., rhyme detection or production) have been used to demonstrate children's phonological awareness, our project decided to use isolation or segmentation of the beginning phoneme of a word as the expected level of achievement that would suggest success in kindergarten. Thus, the expected range for phonemic awareness was set at isolating or segmenting beginning phonemes in 50-70% of spoken words at preschool exit.

Finally, we examined research which measured children's knowledge of letter-sound relationships. Byrne and Fielding-Barnsley (1991) found that middle class children knew a range of five to six letter sounds. Treiman et al. (1998) found that middle class children knew a range of 5.6 to 8.3 letter sounds. Bloodgood (1999) showed that middle income preschoolers knew a mean of 8.26 out of 12 letter sounds but learned 10 to 11 by the end of the year. Taken together, the research shows that most children in preschool know from five to eight letter sounds, but can learn more. Our project used a set of 10 letter sounds, and determined that the range of knowing 60% to 80% of first letter sounds was a reasonable expected outcome.

The research examining mean performance in alphabet recognition, concepts about print, phonemic awareness, and letter-sound knowledge suggested that a range of values rather than a single benchmark would likely capture most children who are making adequate progress. The developmental ranges were established within the mean level of performance of middle class children and included the range of mean performance of lower SES children who had received instruction. Basing estimates on the mean level of performance suggests that children who reach these levels of achievement should have average or better achievement levels at kindergarten entry.

Methods

Participants

The participants for this study were 268 four-year-old children enrolled in treatment and control classrooms during year three of Project EXEL, a three-year 2002 ERF grant. The treatment group consisted of 128 children who were available for testing in both fall and spring from eight classrooms: two Head Start classrooms, two state-funded preschool classrooms, and four Title I-funded preschools in two southern communities of the United States with a total of 92% of the children identified as low SES. The control group consisted of 140 children from three Head Start classrooms, two state-funded preschools, and four Title I funded preschools located in the same communities with 94% of the control children identified as low SES. The control classrooms were purposefully selected by administrators at the agencies involved in the treatment group. These classrooms were in the same agency or school district as the project classrooms. Since treatment and control classrooms were from the same funding category (Head Start, state-funded, Title I funded), these classrooms used the same early childhood curriculum. Because two of the control classrooms had a mixture of three- and four-year olds, nine control classrooms were selected.

Measures

Two sets of measures were used in this study. Vocabulary data were obtained by the results of the Expressive-One Word Picture Vocabulary Test (EOWPVT; Garner, 1990). The EOWPVT is a standardized expressive vocabulary assessment with a reliability of .96 where children are shown a picture and asked to name it. Foundational literacy data was obtained by the results of Early Literacy Knowledge Assessment (ELKA; McGee & Morrow, 2005). ELKA was developed for Project EXEL and was modified to provide a range of assessments appropriate for capturing literacy development in four- and five-year-olds (McGee & Morrow, 2005). We selected assessments with face validity—those that had been used in previous research of children's literacy development (Bloodgood, 1999; Lonigan et al., 1998), were included as important predictors of reading and writing (Snow et al., 1998), and were clearly related to the list of required literacy skills presented in the Early Reading First call for proposals.

ELKA consists of a wider range of assessments than were selected for monitoring purposes. Eight subtests were administered to four-year-olds in the fall and spring, and three additional assessments were administered in spring only. The fall and spring assessments included upper and lower case alphabet recognition, writing the alphabet letters, matching pictures by alliteration, matching pictures by rhyming, segmenting phonemes from spoken words, blending segmented words, and concepts about print. In addition, the spring assessments included segmenting ending phonemes, matching a letter to sounds, and inventing spellings. The internal consistency of the entire ELKA battery based on assessments of 278 children was .925.

A comparison of the items in ELKA subtests with items included in other screening tools demonstrated ELKA's face validity. For example, *Get Ready to Read!*, a screening tool developed by Lonigan and Whitehurst (Whitehurst, 2001) has been shown to have high validity (.69 correlation coefficient with Developmental Skills Checklist, .66 correlation coefficient with letter knowledge, .58 correlation coefficient with Peabody Picture Vocabulary Test) and reliability (split-half .80). This 20 item screening tool included items related to six of the subtests included in the ELKA: concepts about print, alphabet recognition, beginning letter-sound associations, beginning phoneme segmentation, rhyme, and blending.

The first three subtests of ELKA assessed children's alphabet knowledge. Upper and lower case alphabet recognition are assessed using an adaptation of Clay's alphabet recognition task (1993) in which three alphabet letters are presented on a test booklet page rather than presented all together on one sheet. All 52 alphabet letters in upper and lower case are presented. Clay reported a .95 reliability

for first graders when assessing alphabet recognition. The third alphabet assessment required children to write 15 letters presented orally by the examiner. Bloodgood (1999) reported a reliability of .97 for several alphabet letter knowledge assessments including upper and lower case recognition and alphabet writing when used with three- to five-year-olds.

The fourth subtest of the ELKA assessed concepts about print (16 items) using, among other items, a modification of Clay's Concepts about Print Test (CAP) items 1-9 and 11 (Clay 1993). The 16 items included in ELKA have children identify book orientation concepts (front, back, top, bottom, print versus pictures as read, turning pages in order), directionality concepts (left to right, return sweep), and letter and word concepts (point to an alphabet letter, point to a word, locate a word with a W, find a short word, find a long word, and find a word with four letters). Neuman (1999) used a similar concept about print assessment based on the same items from Clay with preschoolers. Clay (1993) reported a reliability of .95 for the entire assessment for first graders.

The ELKA included several assessments of phonemic awareness. Rhyme and Beginning Phoneme assessments were administered fall and spring. These assessments had 10 items each and were directly modeled from MacLean, Bryant, and Bradley (1987) and used by Lonigan and his colleagues (1998). Children were shown three pictures and asked to choose two pictures that rhymed or began with the same sound. Lonigan (1998) reported that the internal consistency of these measures was .63 for rhyme and .44 for beginning phoneme. Bloodgood (1999) reported reliability of .69 for two similar measures of rhyme and beginning phoneme together. A third phonemic awareness subtest was isolating (segmenting) the beginning sound of ten words. The child provided the initial phoneme of words pronounced by the examiner. A final phonemic assessment administered fall and spring was blending (saying a word after the tester says the word isolated into syllables or phonemes) adapted from Lonigan et al. (1998) and Stahl and Murray (1994). Lonigan (1998) reported .96 internal consistency for the blending assessment for four-year-olds. This measure included a total of 10 items of blending compound words, blending syllables into a word, blending onsets and rimes into words, and blending phonemes into words.

One of the spring-only phonemic awareness subtests was the Sound-Letter Association assessment, in which children matched an alphabet letter to beginning phoneme as shown in one of three picture alternatives (Stuart, 1995). This subtest included 10 items. A second spring-only measure of phonemic awareness was children's ability to segment ending phonemes (10 items). The final spring-only measure assessed children's ability to invent spellings. The assessment used the procedure

outlined in Stahl and Murray (1994) using a scoring rubric in which children gained points for attempting to write with letters or spelling increasingly complex patterns. Children were asked to spell five words for a total possible 30 points.

Procedures

General Procedures

During the fall and spring of their preschool year, children were individually administered the battery of assessments by trained assessors. All assessments were completed within a three-week period, beginning approximately two to three weeks after the start of the school year and three to four weeks prior to the end of school. Before working with the children, each assessor received a standard training to administer each measure which included demonstrations and practice scoring with the first author or an evaluation expert, and practice with one or more children. The first author or the evaluation expert observed the administration of 10% of all assessments, scoring the assessments independently from the assessor. The evaluator and assessors were 100% in agreement on the scoring.

Instruction in the Treatment and Control Classrooms

The treatment classrooms used the High Scope approach to early childhood (Hohman & Weikart, 2002) except for the two Head Start classrooms, which were using Creative Curriculum (Dodge, Colker, & Heroman, 2002). High Scope and Creative Curriculum have similar approaches to preschool programming as both are based on Jean Piaget's ideas where children are expected to learn by actively exploring materials and carrying out projects (Piaget & Inhelder, 1972). Adults support children's initiatives and provide whole and small group instruction daily based on the children's needs and interests. High Scope's and Creative Curriculum's key experiences address children's emotional, intellectual, social, and physical skills and abilities. Classrooms are arranged in centers and children are expected to plan what activities they do in centers, carry out those plans, and later review what they accomplished. Therefore, project classrooms included centers stocked with appropriate preschool materials. Each classroom had a book and writing center, paper and pencil props integrated within several centers, and a computer center.

Project EXEL did not use a specific early literacy curriculum although Scholastic's "Building Language for Literacy" (Newman, Snow, & Canizares, 2000) curriculum was purchased, and, while teachers used the themes and literature selections from this curriculum to guide their instruction, they did not follow the lesson

plans. The project required that teachers use six key instructional activities either daily or at least three times a week. First, teachers were required to use interactive techniques to read aloud at least two books daily (McGee & Schickedanz, 2007). Second, they were required to engage children in shared writing activities several times a week in order to teach targeted concepts about print. The books selected for reading aloud had to be theme related, and teachers were required to emphasize theme vocabulary during reading and in follow-up small group activities. Teachers were required to teach alphabet letter recognition (using at least three letters per week) and later phonemic awareness and letter-sound associations (teaching two phonemes or letter-sound associations per week) in small group lessons using a scope and sequence developed for the project. During the later part of the year, teachers were required to use two more sophisticated instructional techniques: fingerpoint reading of songs and poems presented on the pocket chart and small group writing lessons in which children were encouraged to invent spellings. The project teachers reported they spent a range of 45 minutes to 1 hour 45 minutes on literacy instruction with a mean of 1.1 hours. Teachers were provided with professional development by outside consultants for five to six days per year of the project and they observed the outside consultants demonstrate instructional activities in their classrooms. A reading coach supported the teachers in implementing the new instructional strategies they were expected to use in the project. All teachers received one to two hours of coaching in his or her classroom twice monthly.

Each control classroom was observed fall and spring for approximately 1.5 hours during the time the teacher specified as their literacy instructional time. The first author conducted these observations over the three years of the project. Based on these observations, it was noted that the control classrooms were using the High Scope approach to early childhood and the Head Start control classrooms were also using Creative Curriculum. Because these classrooms were a part of the same agencies and school systems as the treatment classrooms, they too had center-based classrooms with more than adequate preschool materials. All control classrooms had additional literacy curricula they were expected to follow. The Title I classrooms were using the Open Court PreK literacy curriculum (Bereiter, et al., 2003), Head Start Classrooms were using the Alpha Time Letter People Curriculum (Let's Begin with Letter People, 1996), and the two state-funded preschools were not using an additional literacy curriculum. The Open Court PreK Literacy curriculum is a comprehensive approach to literacy development in which teachers provide explicit and systematic instruction in oral language, book and print awareness,

phonological awareness, and the alphabetic principle. Teachers read aloud books focusing on vocabulary and children respond to the books as a way to build comprehension. In whole groups children learn about letters and sounds, with follow-up activities in small groups. The curriculum includes 160 lessons arranged by theme and sequenced by skills. Alpha Time Letter People is an add-on curriculum that teaches names of the upper and lower case letters at the same time as the sounds associated with the letters. Teachers use large inflatable dolls called letter people and songs and stories to introduce children to the letter shapes, names, and sounds. Observations during the second and third year of the project revealed all control teachers were using their curriculum as evident in the instructional activities and materials. During the third-year observation in the spring, control teachers reported they spent a range of one to two hours in literacy instruction and activities, with a mean of 1.4 hours. Professional development was provided to control teachers as directed by their centers. Teachers in the control group reported receiving two to three days of professional development on their literacy curriculum.

Results

Statistical Analyses

Table 1 presents the mean scores of pre- and posttests from EOWPVT and ELKA subtests for Project EXEL treatment children and the control children. Data analysis was conducted only on children with complete fall and spring data sets. A multivariate analysis of covariance (MANCOVA) was performed to determine the project effect on 10 dependent variables, eight ELKA subtests scores given at both pre- and posttests and ELKA total scores, and the standard score of the EOWPVT, using pretest scores as the covariates. The assumption of homogeneity of slopes was supported for all dependent variables. Significant differences were found between the treatment and control groups on the dependent measures, Wilkes' lambda = .80, $F(9,248) = 6.79$, $p < .000$. Analyses of covariances (ANCOVA) on each dependent variable were conducted as follow-up tests to the MANCOVA. Using the Bonferroni method, each ANCOVA was tested at the .005 level. ANCOVAs were significant for the following tests scores: standard score of the EOWPVT $F(1, 256) = 17.73$, $p < .000$; rhyming words, $F(1, 256) = 13.29$, $p < .000$; lower case letters, $F(1, 256) = 10.07$, $p = .002$; isolating beginning phonemes, $F(1, 256) = 31.35$, $p < .000$; concepts about print, $F(1, 256) = 12.14$, $p = .001$; and the total ELKA, $F(1, 256) = 18.76$, $p < .000$. The treatment group produced significantly superior performance on these tests.

Table 1. *Mean Posttest Scores (and Standard Deviations) of Treatment and Control Children on EOWPVT and ELKA Assessments*

Group		Mean	Std. Deviation	N
EOWPVT	Treatment	95.1858	15.37600	128
	Control	86.3929	11.87022	140
Upper Case Recognition	treat	22.8828	4.93361	128
	cont	20.6500	7.95665	140
Rhyme	treat	4.6797	3.42049	128
	cont	3.0857	2.97347	140
Lower Case	treat recognition	20.6797	5.70803	128
	cont	17.6929	7.92582	140
Segment Phoneme	begin treat	7.2656	3.76366	128
	cont	4.1357	4.31362	140
Concept/Print	treat	10.1797	3.90323	128
	cont	8.2286	3.14481	140
Write ABC	treat	11.9063	3.96726	128
	cont	10.9071	4.87380	140
Blend Word Sound	treat syllable	4.7188	3.00115	128
	cont	3.7786	2.91132	140
Letter Sound	treat	6.8047	3.73968	128
	cont	5.1286	3.82315	140
Segment End Phoneme	treat	3.1615	3.82323	130
	cont	1.5315	2.79790	143
Invented Spelling	treat	10.8923	7.00193	130
	cont	9.2448	6.90705	143

A multivariate analysis of variance (MANOVA) was conducted to determine project effects on four additional dependent variables that were only administered in the spring, three additional ELKA subtests scores (i.e., isolated ending phoneme, matching letter-sounds, and invented spelling), and ELKA total spring scores (i.e., sum of all ELKA subtest scores). Significant differences were found among groups on the dependent measures, Wilkes' lambda = .92, $F(4, 268) = 5.67$, $p < .000$. Analyses of variances (ANOVAs) on each dependent variable were conducted as follow-up tests to the MANOVA. Using the Bonferroni method, each ANOVA was tested at the .01 level. ANOVAs were significant for: isolated ending phoneme, $F(1, 271) = 16.36$, $p < .000$. The treatment group produced significantly superior performance on this test in comparison with the control group.

Analysis of the Percentage of Children Reaching Age-Appropriate Developmental Ranges

The EOWPVT and five subtests of the ELKA were used as monitoring assessments in order to determine children’s progress in reaching age-appropriate development ranges in vocabulary development, alphabet recognition (the upper and lower alphabet recognition assessments were combined), concepts about print, phonemic awareness, and letter-sound knowledge. Table 2 presents the percentage of children whose scores at posttest were within the ranges of age-appropriate developmental levels in the project (treatment) classrooms and in the control classrooms. This table shows that a higher percentage of project children would be entering kindergarten having already reached challenging age-appropriate ranges of achievement for all areas of language and literacy development. For both treatment and control groups a high percentage of children (91% and 83%) reached expected age ranges in alphabet recognition and a low percentage of children (48% and 30%) reached expected levels on the concepts about print assessment. The difference between the percentage of children who reached expected levels of achievement was largest for segmenting beginning phonemes where 76% of project children reached age-appropriate levels and only 43% of the control children did so.

Table 2. *Percentage of Children Who Scored within Age-Appropriate Developmental Ranges*

Measure	Treatment	Control
EOWPVT	74.0%	54.8%
Alphabet recognition	90.8%	82.9%
Concepts about print	48.1%	30.1%
Isolate beginning phoneme	76.3%	43.2%
Letter-sound association	65.6%	45.9%

These same assessments were used as progress monitoring in the treatment classrooms throughout the school year. They were administered by teachers in October, January, and March as well as by assessment personnel at pre- and post-test. At early pretesting most children in project classrooms scored at floor levels for both alphabet and phonemic awareness. For example, only 8% of the treatment children knew more than 20 upper case alphabet letters and 54% of the children knew fewer than three letters. Only 2% of the children could segment a single phoneme. As expected, most of the project children exhibited very little knowledge of the foundational concepts about literacy, thus, making it impossible to determine who might really be at risk. Because of the large number of children who had so little knowledge of the alphabet, we decided to monitor the number of children who

were not making progress in learning upper case alphabet letters on a sliding scale. Our intent was to identify children who were not making progress in learning upper case alphabet letter names. In October, 35% of the children had not yet learned 10 upper case alphabet letters; in January, 23% of the children had not yet learned 15 upper case letters; and in March, 14% of the children had not yet learned 20 of the upper case letters. However, by the end of the year only 6% of the children knew less than 20 upper case letters, and only 3% could identify fewer than 10 letters.

The results of monitoring were even more striking for phonemic awareness. At pretest 94% of the children could not segment the beginning phonemes of any words, in October that percentage was reduced to 68%, in January it reduced slightly to 52%, and in March was reduced to 34%. By the end of the project only 24% of the children had not reached the developmental range of expected progress; they segmented the beginning phonemes on fewer than five words.

Discussion

This study provides evidence of the effectiveness of this Early Reading First project in raising the level of performance for low SES children and closing the gap with middle class children. Project EXEL, using six key instructional activities as a guide for literacy instruction as well as providing targeted professional development, proved more powerful than control classrooms using commercial literacy curricula with fewer hours of professional development. Children in the project classrooms outperformed control children in alphabet recognition (lower case), phonemic awareness (rhyme, isolating beginning sounds, isolating ending sounds), concepts about print, and expressive vocabulary. The means of the project children on most ELKA assessments were similar to or higher than means found in middle class samples of research reviewed in this article, as the mean number of upper case alphabet letters that children recognized was 22 (even the control children recognized a mean of 20 upper case letters). Project children recognized a mean of 20 lower case letters and even control children recognized a mean of nearly 18 letters. Previous research with a large sample of children (Trieman et al., 1998) showed they knew 13 or more upper case letters and 10 or more lower case letters. Therefore, both project and control classrooms were very successful in helping children learn to recognize alphabet letters. However, project classrooms were more successful in teaching a wider range of literacy skills than the control classrooms. Project EXEL teachers were able to raise children's standard scores on the One Word Expressive Picture Vocabulary Test by 2/3 of a standard deviation. The mean number of concepts about print (10.2) was approximately 65% of the items, higher than found

in previous research with other at risk children (Justice & Ezell, 2002). Project EXEL teachers provided children with opportunities to learn a range of phonemic awareness skills including isolating beginning and ending phonemes and identifying rhyme. In contrast to the study by Lonigan and his colleagues (1998) who found that 66% of a sample of middle class children could not identify which picture of three did not have the same beginning sound, our study found a stronger effect: only 24% could not segment beginning phonemes at expected levels.

The second purpose of the study was to set ranges of expected achievement in language and literacy and to determine if the project classrooms were more successful in helping children reach these levels. We examined previous research and used the range of mean performances in these studies to establish our developmental ranges. Unknown to us at the time, Invernizzi, Sullivan, Meier, and Swank (2004) were also establishing developmental ranges on scores for their assessment, the Phonological Awareness Literacy Screening test for PreK (PALS, PreK). They also piloted changes in a Beginning Sound assessment, which was like our Isolating Beginning Phoneme assessment. The method they used to establish developmental ranges was to examine the range of preschool scores for children who later were successful in kindergarten and first grade. While the PALS PreK tasks are not identical to our ELKA assessment, they are very similar. Table 3 compares the developmental ranges we used in this study compared to the developmental ranges established for PALS PreK. This table shows that for every assessment, the ranges in both assessments are similar and overlapping. These similarities provide strong evidence of growing consensus about what the important outcomes in language and literacy ought to be at the end of preschool.

Table 3. *ELKA Developmental Ranges Compared to PALS PreK Developmental Ranges*

Measure	ELKA	PALS PreK
Alphabet recognition		
Upper Case	26-39/52	12-21/26
Lower Case		9-17/26
Concepts about print*	10-11/16	7-9/10
Isolate beginning phoneme**	5-7/10	5-8/10
Letter-sounds	6-8/10	4-8/10

* PALS PreK calls this task Print and Word Awareness. **PALS PreK calls this task Beginning Sound.

The results of this study also demonstrate that fewer children were considered to be at risk at the end of the year in ERF classrooms than in the control classrooms.

Considering that 92% of the treatment classrooms' children were considered at risk at the beginning of their preschool year due to low SES, it is remarkable that many ended the year having made successful progress toward expected goals. More than 90% of the children knew an appropriate number of alphabet letters (50% or more); in fact 50% of the project children knew 40 or more alphabet letters. More than 75% of the project children could segment beginning phonemes on five or more words, and more than 65% could associate five or more letters with sounds. It is noted that all of the benchmarks established for this study were ambitious and required children to reach levels of achievement usually not expected in intervention projects for at-risk children.

One area proved to be particularly difficult for most children to reach: concepts about print. In the treatment classrooms only 48% reached benchmark ranges and in the control classrooms only 30% of the children reached those ranges. More investigation of the nature of concepts about print that could be considered age-appropriate is warranted. The project set ambitious benchmark ranges compared to those found in previous research, and lower ranges may be more appropriate.

Although this study intended to identify benchmarks that would help identify children at risk throughout the project, the monitoring assessments in August, October, and January provided little if any guidance in identifying which children were not making adequate progress toward developmental benchmarks. In August, nearly all the children's results suggested they were at risk, and even by October, while fewer children seemed to be at risk, depending on the task, 30-60% of the children scored at risk. It was not until March, when much of the school year was complete, that teachers began to see clear patterns of the fewer number of children who truly seemed not to be making progress emerge. While early and frequent monitoring is often suggested, we argue that without clear evidence that this is needed, teachers' time early on might well be spent teaching. This is especially the case when our results demonstrate that large percentages of children entered kindergarten with the promise of success.

There are several limitations to this study. The control and treatment children were not randomly selected; although they shared many common characteristics, it could be that the treatment classroom teachers were more skillful in the craft of teaching as they were selected to join the project. The treatment teachers received more hours of professional development than the control teachers and were assisted by a reading coach. Thus, it is not possible to isolate the factors which made Project EXEL's results superior to the control classrooms. Finally, the children were not followed into kindergarten. It is not possible to determine whether the children who

had reached age-appropriated ranges performed as expected in kindergarten, and whether children who had not reached those levels experienced difficulties.

Nonetheless, the results of this study suggest it is possible to close the gap between middle class and lower SES children at kindergarten entry. Many more children in Project EXEL headed to kindergarten with high levels of literacy knowledge reflective of the mean levels of performance of middle class children than control children who also attended preschools intended to serve at-risk populations. More research is needed to demonstrate whether this gap continues to shrink through effective kindergarten instruction that capitalizes on the promise of success that a high percentage of children bring at school entry.



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A Mixed Method Study of the Effectiveness of the Accelerated Reader Program on Middle School Students' Reading Achievement and Motivation

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Abstract

The mixed-method explanatory research design was employed to investigate the effectiveness of the Accelerated Reader (AR) program on middle school students' reading achievement and motivation. A total of 211 sixth to eighth-grade students provided quantitative data by completing an AR Survey. Thirty of the 211 students were randomly selected to participate in semi-structured interviews and classroom observations over the course of a semester and the selected students' AR pretest and posttest scores were collected to provide quantitative data. Constant analyses using the content comparative method led to the identification of important themes related to the review of students using the AR program. The results showed that Accelerated Reader neither improved students' reading scores nor promoted intrinsic reading motivation for middle school students, but did increase the amount of time they read.

Introduction

Over the past decade, the rapid infiltration of technology has significantly affected U.S. schools and the daily lives of both teachers and students of all ages (Leu, 2002; Valmont & Wepner, 2000). Literacy instruction is also changing in profound ways as many of these new technologies have enhanced and extended current literacy practice (Larson, 2008). This affects what and how students learn (Valmont & Wepner, 2000), and also changes teaching approaches from developing traditional

literacy capacities to helping students learn to use new technologies to improve their literacy skills (Valmont, 2003). More specifically, many computer-based reading programs have been adopted by school districts in the United States (Thompson, Madhuri, & Taylor, 2008) and, in particular, Accelerated Reader (AR) has been implemented in more than 65,000 schools worldwide (Topping & Paul, 1999). The AR program is a computerized information system that provides students and teachers with immediate diagnostic feedback on student reading practice through short quizzes (Renaissance Learning, 2002). Accelerated Reader is not the only computerized reading program on the market, however it is the most popular reading software in the Pre-K-12 settings (School Renaissance Institute, 2001).

Despite the fact that a number of research studies report some educational and motivational benefits for using AR (Goodman, 1999; McGlinn & Parrish, 2002; Paul, VanderZee, Rue, & Swanson, 1996), there is little research and only a few peer-reviewed journal articles that document these effects (Pavonetti, Brimmer, & Cipielewski, 2003). An examination of research on the Accelerated Reader Program finds that much of the research focuses on the elementary school levels (Nunnery, Ross, & McDonald, 2006), relatively few studies have considered middle school (Mathis, 1996; Peak & Dewalt, 1993), and even fewer research studies discuss contradictory findings of the program. It is unclear whether AR is primarily designed for or used in elementary school or whether there are just limited studies regarding AR use for middle school students (Thompson et al., 2008). In spite of the program's popularity, there have been no publications of qualitative research or mixed methods research evaluating its effectiveness. Most of the published studies have applied experimental research designs to compare the differences between experimental groups using AR and those in control groups not using the program. In addition, many of these studies have been done by the AR Company (Biggers, 2001). Consequently, there is a need to conduct more research studies about the program in various school contexts.

Given the popularity and also some criticism of the AR program, the major purpose of this study was to investigate the effectiveness of the AR program on middle school students' reading achievement and motivation. Two research questions were addressed:

1. Does Accelerated Reader have an effect on middle school students' reading achievement?
2. What are the students' views about using the Accelerated Reader program? Does the program promote reading motivation for the middle school students?

The Program

The Accelerated Reader program was created to engage students in large amounts of reading practice with authentic materials at individually appropriate reading levels and to provide rewards for student success in reading achievement (Renaissance Learning, 2002). AR is also a tool for teachers to use to measure student learning in reading achievement, to increase the amount of time spent reading, and to invite and motivate students to read books (Paul, 2003).

To use the program, students take the Standardized Test for Assessment of Reading (STAR; Advantage Learning System, 1993), to determine their reading level and then self-select books, read them, and complete computerized tests (Renaissance Learning, 2002). The number of test questions is based on the book's length, reading level, and complexity and books are given a point value on the basis of length and reading level according to the AR formula (Paul et al., 1996). Unlike other computerized reading programs, students do not receive points if their test scores fall below 60%, and they can take each quiz only once (Institute for Academic Excellence, 1998).

Literature Review

There are varied reports on the AR program; some research findings reveal positive results from the implementation of the program. In a study by Vollands, Topping, and Evans (1999), norm-referenced test scores for a sixth-grade experimental group using AR were compared to those of a control group not using the program. The experimental group had access to the program for six months, including the collection of points for tangible rewards. Both groups had similar pretest reading abilities and experienced thirty minutes of reading time each day. The results showed a statistically significant increase in reading scores when compared with the control group. Peak and Dewalt (1993) compared two middle schools in North Carolina, where the same language arts courses were taught, but one school had used AR for five years. The results revealed that those students using AR reported spending five to six more hours reading a week than non-AR students. Goodman's (1999) study of an AR program that was implemented in one Arizona middle school for one year showed significant growth from the pretest to posttest in the total score section of the Gates-MacGinitie Reading Test, which combined vocabulary and comprehension. All of these studies found the only disadvantage of using AR was limited book selections.

Although the above-mentioned studies suggest that AR can be successful in improving students' reading skills and attitudes about reading, other researchers

have had different conclusions. Mathis (1996) found that AR did not have a significant effect on 30 sixth-grade students' reading comprehension scores. Pavonetti et al. (2003) found there was no significant difference between the amounts of reading when comparing middle school students who had used AR in elementary school and those who had not used the program. After reviewing the AR score system and reading materials, Chenoweth (2001) also reported some of the most common disadvantages of using the AR program. First, students did not read more books and second, the choice of books is too limited. Carter (1996) and Biggers (2001) complained that the program's focus is on the prize, not on reading. Howard (2003) also questioned whether AR promotes long-term reading growth or the motivation to read if rewards are taken away. The National Institute of Child Health and Human Education found that the AR program did not meet federal standards since the program could not demonstrate long-term gains in reading achievement (Chenoweth, 2001). Research also found the AR company's studies were not proven through rigorous research processes (Melton, Smothers, Anderson, Fulton, Replogle, & Thomas, 2004).

Methods

Participants

The participating school was a suburban sixth through eighth grade middle school located in the southern United States. The student population was 387 with five classes per grade and the school had been using the AR program for three years. A total of 211 sixth to eighth graders (103 boys and 108 girls) participated voluntarily, completing the AR survey during the first week of the fall semester. Thirty students (16 boys and 14 girls) of the 211 were randomly selected for interviews and observations, and these students also participated in both pretests and post-tests during the course of the semester. Fourteen students were female and sixteen were male. Six were African Americans, two were Latin Americans, one was Native American, one was a new immigrant from Cambodia, and the remaining were Caucasian Americans. All students, except the Cambodian student, participated in the AR program during the first semester of the middle school year. Confidentiality was maintained for all data.

Procedures

Permission was sought before the study began and Parent Consent and Student Assent forms were returned by those interested in participating in the study. All participants were given an AR survey at the same time during the first

week of the semester. Two-hundred eleven (211) out of 387 surveys were returned to their homeroom teachers. During the second week, all of the selected students took the STAR Reading Program test, a computer-adaptive, norm-referenced reading test (Advantage Learning System, 1993), to determine their reading level. The test took approximately ten minutes to complete and involved the students choosing the best word to complete a sentence, and the software instantly delivered the next question. Based on the testing results, only three sixth graders did not achieve their grade level in reading. The researcher then observed each of the 30 selected students approximately 45 minutes once a week and took field notes, recording how they engaged themselves in classroom activities, how they spent time reading at the school, how they selected books to read, and what they discussed with their friends about the books that they had read. The researcher also interviewed each participant individually in a private room at the school site during the final week of the semester.

Methods and Measures

This study used a mixed-method explanatory research design, which is a two-phase design involving both quantitative and qualitative methods, but they were assigned unequal weight (Creswell & Plano-Clark, 2007). In this study, the quantitative data provided a support and primary data set, while the qualitative data explained the initial quantitative results. To collect quantitative data, all participants were given the AR survey, and the thirty selected students' pretest and posttest scores were collected to support the quantitative data. Semi-structured interviews and classroom observational notes were used for collecting qualitative data. Both quantitative and qualitative data were analyzed separately. Then the researcher identified specific quantitative findings that needed additional explanation and used the qualitative data to explain initial quantitative results. Finally, the researcher compared and contrasted the two data sets and discussed and explained the findings in the interpretation phases.

The AR reading scores and an AR survey were provided for quantitative data. The AR survey contains eight items that are open-ended questions with a 4-point Likert-type scale (1=Almost never, 2=Rarely, 3=Often, and 4=Almost always), and two items that are closed-ended questions, such as "List five negative and five positive aspects associated with the AR" (see Figure 1). The researcher also created eight interview questions discussing the effectiveness of using the AR program (see Figure 2). Observational notes about the students' attitudes toward the program were also included.

Please give your answer under the appropriate column. Only give one answer for each question.	1 Almost never	2 Rarely	3 Often	4 Almost always
1. The Accelerated Reader (AR) program increases your reading scores.				
2. The Accelerated Reader (AR) program increases your reading levels.				
3. The Accelerated Reader (AR) program improves your reading comprehension skills.				
4. The Accelerated Reader (AR) program increases your vocabulary size.				
5. The Accelerated Reader (AR) program changes your habits and attitudes toward reading.				
6. The Accelerated Reader (AR) program fosters your motivation in reading.				
7. The Accelerated Reader (AR) program fosters your joy of reading.				
8. The Accelerated Reader (AR) program fosters your social interaction with your friends about book talk.				
9. List five positive aspects associated with the Accelerated Reader (AR) program.				
10. List five negative aspects associated with the Accelerated Reader (AR) program.				

Figure 1. Accelerated Reader (AR) Survey

1. What types of books do you like to read? Why?
2. What are your favorite books? Why do you like reading them? What makes you want to read?
3. Tell me about reading in your classroom, do you read alone or with others? Do your classmates value reading? How do you know?
4. What are some things in school that help or get in the way of your wanting to read? How do they help or not help?
5. What type of computer-based reading programs do you like? Why? How does the AR program motivate your reading?
6. Does the AR program cultivate your reading skills? How does it work? How often do you go the library to check out AR books to read?
7. What types of the AR books do you like to read? Why?
8. What are the strengths and weakness of using the AR program? Why?

Figure 2. Accelerated Reader (AR) Interview Questions

Data Analysis

Question 1: Does AR have an effect on middle school students' reading achievement?

The descriptive statistics analysis was used to analyze the results of the AR Survey. A t-test statistical analysis was used to compare the AR points that the selected students gained from the primary scores to the final scores at the end of the semester. Research has recognized that student voices can be a valuable, notwithstanding underused, resource for institutional reform (Mullinix, 2001; Smith, Petralia, & Hewitt, 2005). Interview and observational notes were also included.

Question 2: What are the students' views about using the Accelerated Reader program? Does the program promote reading motivation for the middle school students?

Question 2 was answered by largely qualitative data to identify students' beliefs, experiences, and attitudes about the use of the AR program, and also how the program promoted their reading achievement and motivation but quantitative data was also included to answer this research question. The constant comparative method (Glaser & Strauss, 1967) was used to analyze the qualitative data. For the validity and reliability of the qualitative data, the researcher used triangulation by interpreting meaning and moving back and forth between inductive and deductive reasoning, and also including description and interpretation. The process of the analysis involved coding individual units, creating categories, comparing incidents applicable to each category, integrating categories, deleting overlapping categories, finalizing categories, and developing themes. Data analysis was completed when new information was no longer uncovered and appropriate categories were identified. The qualitative analyses led to identifying categories and subcategories related to the effectiveness of AR programs for middle school students. The themes emerged through the iterative process of content analysis.

Results

Accelerated Reader's Effectiveness on Middle School Students' Reading Achievement

Quantitative Results

Descriptive statistics were used to report the summarization of the AR Survey with two of the survey questions directly related to the research question. Total responses for the AR survey are shown in Table 1.

Table 1. *The AR Increases Reading Scores and Levels*

Degree	Number of Students	Percentage of Students
1 (Almost never)	73	35
2 (Rarely)	75	35
3 (Often)	39	19
4 (Almost always)	24	11
Total	211 students	

Seventy percent of the students reported that AR almost never or rarely increased their reading levels and reading scores. Only thirty percent of the participants indicated AR often or almost always increases their reading achievement.

A T-test was employed to see if there was a statistically significant change in reading scores when comparing both pretests and posttests among the selected students. The results showed there was no difference between pretests and posttests ($t(29) = .63$, $p > .05$, $p = .54$) as shown in Table 2.

Table 2. *AR Scores for Pretest and Posttest*

Item	Pretest	Posttest	t-value	p-value
N	30	30		
df	29	29		
Mean	84.26	82.99		
SD	25.07	25.09		
	.63	.54		

Qualitative Results

Many students reported that they disliked the AR testing components, for example, students commented that “Some books were too long to read. We could not remember everything when we took a test” and “We did not like memorizing the texts.” Numerous students also described their concerns about the AR tests, for example, “We were good readers, but test scores did not prove that.”

The AR points are computed based on the difficulty of the book, readability, and the length of the books. Some students commented, “Some books were over 400 or 500 pages, but were only weighted 5-7 points.” Some of the students also questioned AR reading levels, such as “Some books were either too easy or too challenging to read.” Some high achieving students also found out that there were not

many high-level vocabulary words or more complicated sentence structures in their reading-level books.

Accelerated Reader has been used differently among schools and within classrooms: the participating school rewarded students with pizza parties for earning a certain number of points to motivate them to read. The field notes revealed that students were not under any supervision when they took the AR tests and many students were taking AR quizzes and sharing answers with other students. This appeared more prevalent where AR points were tied to classes. The school principal also had an alternative award to encourage students to read; students would be given a movie ticket when they read up to 20 chapter books by the end of the semester. The field notes found that some students tended to select less challenging books and books with fewer pages so that they could easily receive the prizes from the principal. They also often skimmed through books and then took tests afterwards.

Students' Views about Using the Accelerated Reader Program

Qualitative Results

The qualitative results illustrated the students' experiences and perspectives of the AR program. Three major themes emerged from the qualitative analysis.

Theme 1: The book selection hindered the joy of reading and interest in reading.

Over 90% of the participating population indicated that the strongest negative associated with AR was book selection as more than 25 selected students were concerned about AR reading materials. Foremost, they all pointed out that there were limited book selections in the school yet currently, AR has over 1,000,000 books in its database (Renaissance Learning, 2010). The field notes indicated that the AR reading list generally included books from big publishing companies and popular authors and there were only a few small companies and unknown or new authors. Since the participating school purchased the economy package when they began the program three years ago, the students were not able to select newly released books. As a result, the ability of these students to explore currently available materials was severely restricted by the AR program.

Several of the selected students also indicated that "The AR books were not what our ages like to read because so many interesting books were not in the AR system." The researcher also discovered that many students were always wandering in the library, saying, "They (the books) are very boring subjects." The statement was often heard in either the library or in classrooms, especially from seventh and eighth

grade students. Some selected female students also complained about the content of the books; “Some books involved violent content.” Some male students frequently critically reviewed some books as they commented that the books were, “All about slavery and savages” and “These subjects were repeated over and over again in the middle school textbooks.” Even though these students made many negative comments about the AR reading materials, they all agreed that they were pushed to read but not voluntarily. They also believed AR could increase their amount of time in reading if the program provided more interesting topics and if the school designated some time to read AR books at the school.

Theme 2: The amount of time required for students to spend on the AR program inhibited their intrinsic motivation and engagement to read.

The participating school did not specifically allot a time for the AR hours; students had to find the time to read on their own which could conflict with their afterschool activities. Many comments students made supported this thinking, “We checked out books but we did not have the time to read at home because we had afterschool programs.” Greater than 80% of the participating students indicated that the time required for AR reading was beyond what they could manage. The majority of those selected also believed that the amount of reading required for them was impractical and was too time consuming.

The field notes revealed that the use of AR tended to lead some students to cheat as they shared books and answer keys in the classroom or selected books that had been made into movies that they had already seen. Some eighth-grade students often talked about how to find answer keys for certain books and used websites to read chapter summaries in order to take AR tests without actually doing any reading. Many students seemed to have the attitude that one had to learn how to beat the AR system.

Additionally, the result of the survey given to all 211 students showed that more than 70% indicated that AR did not foster students’ motivation to read (see Table 3). Field notes also revealed that since AR was being used at the school, many students felt they were being pressured or being “asked” to read as they were not given a choice to select from their personal reading interests. The field notes documented that there was little active motivation to read in the participating school and students’ attitudes indicated that they read because they had to. Some students mentioned that they were more interested in reading personal choice materials without taking any tests. They believed that personal interest increased their levels of attention and comprehension even when they were reading very challenging books.

Table 3. *AR Promotes Reading Motivation and Engagement*

Degree	Number of Students	Percentage of Students
1 (Almost never)	80	38
2 (Rarely)	76	36
3 (Often)	29	14
4 (Almost always)	26	12
Total	211 students	

Theme 3: AR decreased positive social interaction with peers and increased competition.

The quantitative results showed that over 92% of the students believed AR did not foster social interaction or support social activities with their peers. Students also reported that the AR reading program was not a “social activity” within a school context and that AR led students to become competitors because they had to pass the tests to accumulate points for the class (see Table 4).

Table 4. *AR Supports Social Activities/Communications with Peers*

Degree	Number of Students	Percentage of Students
1 (Almost never)	109	53
2 (Rarely)	85	40
3 (Often)	13	6
4 (Almost always)	4	1
Total	211 students	

Based on AR’s designed reading levels, students could identify their peers’ reading level. In some situations, competition can lead to hard feelings, low self-esteem, or outright ostracism. It also can push students to read at their frustration reading level or create problems among students. The field notes found that some students felt embarrassed when their friends said such things as, “You lost points again.” These students were also very nervous while taking the tests and struggling to find answers as they felt they were being neglected or denied when they did not pass the tests. Some sixth-grade students mocked other students for not earning enough points, or “making us lose a class pizza party.”

In relation to classroom contexts, the field notes revealed that some eighth-grade English teachers sometimes used instructional time for the AR program and students were given the time to read AR books without any instructional application. Their thinking was that since students had been instructed on how to pass the required standardized tests, many teachers believed that AR could improve their test

scores because AR gave them practice in taking multiple choice tests. The field notes also showed that a large number of students complained about taking the AR tests. "All about taking tests," was a common phrase heard at the school. Students also tended to view reading as an isolated academic task, while there were fewer book communities developing a love for reading, and even fewer book talks in classes. The researcher found that while many students were discussing books in school, they were mainly searching for answers to pass the AR tests.

Discussion

Results of the study indicated that, after a semester of exposure to the Accelerated Reader program, there were no statistically significant increases in reading scores among these middle school students. It also indicated that tests and prizes were not motivating forces to foster students' reading achievement and that book choices and personal interests were more effective in encouraging reading and promoting literacy development. To verify the results, there are some areas that need further discussion as to why the AR did not promote reading motivation and achievement for these middle school students as well as why the findings differed from the AR company's studies.

First, there is a need to discuss the components of the STAR program used to diagnose students' reading levels. The STAR is a cloze procedure where students select the best vocabulary word for each question. It does not incorporate oral reading comprehension or any teacher's observations of students' reading behavior. According to the program's philosophy, the STAR tests tell students their Zone of Proximal Development (ZPD; Vygotsky, 1978), or what level books they should read. In this study, many students often guessed what they considered to be the best answers while taking the STAR assessment. Therefore, some students ended up reading books that did not match their grade level. This study also corroborated some findings from previous studies that the STAR test is not a reliable and valid instrument to determine students' reading levels or provide the student's independent performance level (Biggers, 2001; Pavonetti et al., 2003; Pennington, 2010).

Second, there was a question about the AR scoring system and quizzes. According to the AR program, it demonstrates students' reading achievement by student completion of computer-generated multiple-choice tests. The program does not suggest written responses, extension activities, or repeated interaction with the text. In AR, students are taking end-of-book tests that are composed of literal recall questions. There is only one specific correct answer for each question (Institute for Academic Excellence, 1998) and students cannot retake the test when the test

scores are below 60%. Therefore, students have to focus on memorizing the texts to pass the tests in order to demonstrate comprehension and readiness to progress to the next level, eventually scoring high on an AR test. The AR scoring points and multiple-choice tests could be detrimental to reading motivation and the quality of reading and learning for some students because the AR tests do not require high-level thinking skills and reflection on the texts (Bigger, 2001; Carter, 1996; Pavonetti et al., 2003; Pennington, 2010).

Third, looking at book selections, many kinds of books may not be present at the school library, especially the newest releases, nonfiction, and poetry. Students were neither given opportunities to select books not in the AR program nor allowed time for purely recreational reading. This could cause students to miss some wonderful new books or miss opportunities to access more current world literature. In this study, many students gradually lost their curiosity and interest in reading due to limited personal reading choices. While AR has over one million titles available, this school library chose the economy package and thus their selection was limited. The limited book selections could also decrease students' interest in reading for its own sake. This study has also corroborated several earlier research studies that said one of the disadvantages of using AR was the limited book selections (Carter, 1996; Chenoweth, 2001; Pennington, 2010; Thompson et al., 2008).

Fourth, concerning the attitude and motivation of the students about the program, AR focuses on external motivation, therefore control of reading is strengthened by the reward and competitive points systems built into the program (Biggers, 2001; Pavonetti et al., 2003). Extrinsic motivators such as those suggested by AR could be problematic and reduce intrinsic motivation to read because many students dislike having to pass a test to earn points. In this study, many students lost confidence in reading when they failed tests, read less challenging books, and cheated on the tests. AR is a highly reward-based reading program that could replace the intrinsic rewards of reading and devalue reading because many students were more interested in extrinsic awards. The current study also verified the claims of earlier studies that students become dependent on the reward for their motivation, and read less frequently when the reward was discontinued or taken away (Baker & Wigfield, 1999; Gambrell & Marinak, 1997; Sweet, 1997; Wigfield & Guthrie, 1997).

Fifth, AR tends to minimize the teaching and instructional practice of diagnostically based reading strategies (Pennington, 2010). Students are not grouped by ability or skill deficits with AR and teachers neither spent additional time with low achieving students nor did students receive differential instruction according to their designated AR reading ability. For example, the STAR test identified three students

who were below their reading grade level but they did not receive any supplemental reading materials or extra instruction. Some teachers believed they were giving differentiated instruction because all of their students were reading books at their own reading levels. Additionally, while comparing test scores, the social nature of reading and positive peer interaction was minimized. This caused more competition as students became discouraged and tried to avoid reading in the classroom context. The results of this study also corroborate some previous studies, such as Brisco (2003) and Krashen (2002), which found AR does not have an instructional component, nor does it offer extension activities or increased interaction with the text.

Limitations

The current study has four limitations. The study was conducted in only one middle school with 211 students in the southern United States so the results of the study cannot be generalized as a whole. This study also did not compare the students' standardized scores after they were exposed to the AR program thus there are no research findings that document the effectiveness of AR programs on the standardized test results. The original data collecting procedure was for the researcher to visit each classroom to recruit students to participate in this study. Since the school had varied schedules for each grade level, the principal suggested that the researcher give the surveys to each homeroom teacher. Self-reported surveys by students could be a limitation because they were done without having the researcher's supervision. The final limitation is that this study only explained one of many aspects of middle school students' computer-based reading activities. The effects of reading achievement and motivation need to be further investigated in middle school contexts. This research may include such topics as interesting reading topics, instructional practices, teacher's expectations, and peer influences in reading activities.

Implications

In spite of these limitations, the study suggests four important messages for teachers, librarians, and administrators. One is that we need to provide different genres and levels of books for students to make choices. Many studies have shown that students learn more or perform more efficiently when given choices about their reading. Choice also could increase students' reading interest and motivation (Parker & Lepper, 1992; Sweet, Guthrie, & Ng, 1998). Personal reading choice and interest can be powerful motivating forces to drive middle school students' reading and achievement.

The testing system has also been ingrained in American school contexts. Taking tests is inseparable from the larger school context and grades are often used as yardsticks to measure students' learning (Lau, 2004). Students are also being "tested" or put under "trial and error" experimental testing programs. We need to consider the effects of such testing on students' abilities to foster creative thinking and instead bring them the pure joy of reading (Pavonetti et al., 2003). We also need to value students' voices and let students have ownership and self-regulation of their reading experiences to promote reading motivation.

Since many state standardized or computer-assessed programs are considered as requirements in middle school contexts, many teachers, administrators, and policy makers seem more focused on students' testing scores and comparisons of nationally standardized, state-administered tests or even international ones. We often believe the results of these tests present or reflect the effectiveness of teacher instruction and student learning performance. This trend leads many publishers and commercial programs to create more computerized instruments and programs to promote their perspectives of reading achievement. We need to know how to implement a variety of effective strategies and assessments to better meet students' instructional needs and identify their learning outcomes.

With the standardized-test phenomenon, literacy instruction is changing in profound ways. As literacy educators, we should not limit reading to the computer-assisted testing domain because reading requires substantial strategic efforts and motivation (Stipek, 2002; Wigfield & Guthrie, 1997). Research has found that both teachers' designing of the classroom learning and interpersonal interaction with individual students can promote or reduce students' motivation for learning and achievement (Hardre & Reeve, 2003). We also need to continue providing effective literacy strategies including integrated technology applications, opportunities for students to participate in social interaction (Pavonetti et al., 2003), and a wide array of interesting reading materials and topics to advocate for middle school students' motivation to read.



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The Allure of Animals

Terrell A. Young, Ed.D. & Barbara A. Ward, Ph.D.

Books that feature animals seem to have an almost universal appeal for young readers. Whether they are domesticated creatures such as cats and dogs that are part of many families' lives or animals in their natural habitats in the wild, there is simply something intriguing or endearing about their behavior and personalities. A few years ago, young readers couldn't get enough of the story of a friendship that sprang up between a 130-year-old Alhambra tortoise in Kenya and a baby hippo, marooned after the 2004 tsunami in Asia. Readers of all ages reacted powerfully to their story, told by a six-year-old girl and her father in *Owen & Mzee: The True Story of a Remarkable Friendship* (Hatkoff, Hatkoff, & Kahumbu, 2006) and *Owen & Mzee: The Language of Friendship* (Hatkoff, Hatkoff, & Kahumbu, 2007). In fact, other books (Bauer, 2007; Winter, 2006) celebrating this most unlikely friendship were published as other authors became interested in the story. Below we share some recent titles with animals at their heart.

Grades K-3

Ehlert, Lois. (2011). *RRRALPH*.

Beach Lane Books/Simon & Schuster. Unpaginated, \$17.99, ISBN: 978-1-4424-1305-4.

An unnamed narrator spends the day with a dog named Ralph. Clearly, Ralph can speak since in addition to his own name, he says words such as "roof," "bark," "rough," "wolf," and "yep" as the two friends walk through the woods and then return home. To distinguish the two voices for young readers, the narrator's observations are in a black font with spoken words in white. Ralph's responses are a series of puns. The illustrations stand out in the book, created from



zippers, wood, buttons, twine, metal, bark, screws, textile fragments, and papers that have been hand-painted and handmade. The woodpecker on the title page with its beak fashioned from a screw is particularly intriguing.



Gravett, Emily. (2011). *Blue chameleon*.

Simon & Schuster. 32 pages, \$16.99, ISBN: 978-1-4424-1958-2.

In the opening pages of this picture book, a lonely chameleon sits by himself, hands on his face, unable to find a friend or a place where he fits in. Incidentally, the illustrations and text make it clear that feeling blue is another way to express the feeling of despondency. When he spies other objects and

creatures, the chameleon quickly tries to become just like them, down to the colors and shapes: yellow and curved like a banana, pink and strutting like a cockatoo, swirly like a snail, among others. He even tries to blend in with the white page of the book. Alas, the chameleon remains lonely until he finds another chameleon just like him. The illustrations are wonderfully imaginative, allowing the chameleon and his would-be friends to roll, swim, hop, and even hide across the pages.



Johnson, Lindsay Lee. (2011). *Ten moonstruck piglets*.

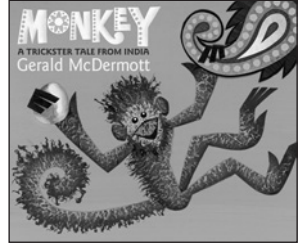
Illustrated by Carll Cneut. Clarion. 32 pages (Unpaginated), \$16.99, ISBN: 978-0-6188-6866-7.

Mama Pig slumbers as the dazzling full moon rises in the sky and her ten piglets wander off into the night. Playful rhymes describe the piggies' actions: "All in a scramble,/ all ready to gambol,/ ten moonstruck piglets/ on a midnight ramble" (n.p.). The pigs

delight in their adventure until the clouds block the moon's light. "Then 'Hoot!' cries the Owl,/ and fox comes to prowl,/ Jowl-twitching piglets/ scatter and howl, 'MAMA!'" (n.p.). Carll Cneut's whimsical acrylic illustrations establish the magical moonlit setting and point to the individuality and personality of each of the ten piglets. The front and back end pages provide even more insight into the pigs' dispositions and provide readers with their names.

McDermott, Gerald. (2011). *Monkey: A trickster tale from India*.

Harcourt. 32 pages, \$16.99, ISBN: 978-0-15-216596-3.

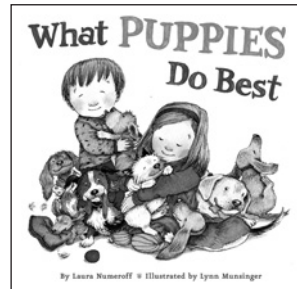


In McDermott's final story in his trickster tales series, Crocodile is determined to make a meal out of Monkey. Monkey, on the other hand, wants to eat the delicious mangoes growing on the island in the middle of the river but he must outsmart the hungry, wily crocodile in order to fill his belly. Can Monkey avoid Crocodile's sharp teeth? McDermott's bold collage made of cut and torn handmade paper from India is the perfect complement to this traditional Buddhist story from the Jataka Tales. Teachers will find this story delightful for reading aloud and their students will enjoy the mischievous monkey's antics.

Numeroff, Laura. (2011). *What puppies do best*.

Illustrated by Lynn Munsinger. Chronicle Books.

Unpaginated, \$14.99, ISBN: 978-0-8118-6601-9.



Puppies of all colors and all sorts frolic across the pages of this early reader. Almost irresistible, they spill across the pages, dashing from their beds to awaken their human companions, jumping on humans' beds, clamoring for walks, chasing balls, making new friends, and even learning how to retrieve and how to sit. They have slobbery kisses for the humans in their lives, and the boys and girls greet them with affection. In the end, readers are reminded what those of us who share our lives with dogs know: What puppies do best is share their love with others. The watercolor, pen and ink, and pencil illustrations allow the spirited nature of the puppies, whether they're holding up a paw to shake or fiercely shaking a couch cushion, to come out on the book's pages.



Srinivasan, Divya. (2011). *Little Owl's night*. Viking. Unpaginated, \$16.99, ISBN: 978-0-6700-1295-4.

Wide awake at night, Little Owl watches his nocturnal friends go about their business. He takes note of everything that's happening around him, even how the moths fly through the air, shedding silver dust, and how the fog moves into the field. As dawn approaches, he begs his mother for a bedtime story. She obliges and describes how night ends and day begins, but Little Owl never hears the end of the story because he's fast asleep. The illustrations are drenched in rich colors that pay tribute to the beauty of the night and its nocturnal creatures that thrive best in the dark.

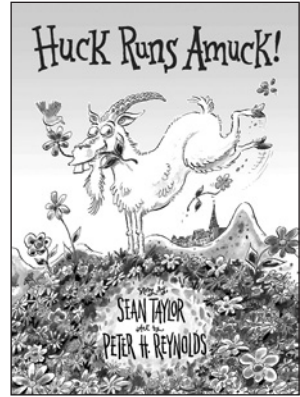


Stein, David Ezra. (2011). *Love, Mouserella*. Penguin. Unpaginated, \$15.99, ISBN: 978-0-3992-5410-9.

After her Grandmouse goes home, Mouserella misses her sorely. Because she wants to insure that Grandmouse doesn't miss out on the events in her life, Mouserella decides to write her a letter. At first, there seems to be little to say. But as she starts to write, the news begins to flow, and she describes finding a cat whisker at the zoo, teaching a bug how to fetch, and making shadow puppets during a citywide blackout. What makes the story even more appealing is how the book is designed so that young readers read it from top to bottom, just as they would a real letter. The letter also includes photographs and gifts—a packet of ketchup saved from the cafeteria—for Grandmouse from her granddaughter as well as drawings. Although letter writing seems to be a lost art in the era of email correspondence, this book might inspire youngsters to begin their own correspondence with someone, just to get a letter back. The illustrations are created from watercolor, stencils, crayons, and pencils.

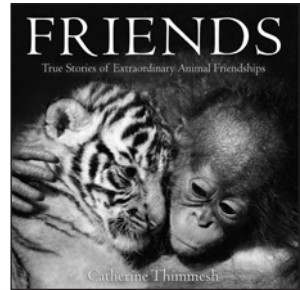
Taylor, Sean. (2011). *Huck runs amuck*.
Illustrated by Peter Reynolds. Dial. 48 pages, \$16.99,
ISBN: 978-0-8037-3261-2.

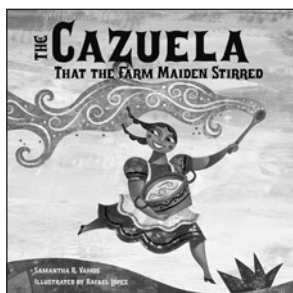
Mountain goat Huck will do anything for the taste of yummy flowers. When it seems that all the flowers in his grazing range have been devoured, he heads to the city to find more. After a series of near accidents, mishaps, and an encounter or two, Huck faces a dilemma. The wind blows the delectable flower-laden hat off Mrs. Spooner, the mother of the bride in an impending wedding, and it lands atop a church spire. Huck races to retrieve the hat, and just as he gets ready to munch on the petals, he hears onlookers calling him a hero. What's a goat to do? Huck climbs down, resists temptation, and gives the hat back to its owner. Huck gets his just reward, and manages to bring down the house—or the flower-bedecked tablecloth—during the party. The watercolor, ink, and tea illustrations capture the almost crazed obsession Huck has for delicate petals.



Thimmesch, Catherine. (2011). *Friends: True stories of extraordinary animal friendships*.
Houghton Mifflin. 32 pages (Unpaginated), \$16.99,
ISBN: 978-0-547-39010-9.

Catherine Thimmesch blends spare text with stunning color photographs to document 13 unusual animal friendships. Each opening offers a large photograph of the friendly duo, a paragraph explaining the relationship, and a poem. For instance, the poem “No matter/ who’s small,/ or who weighs/ a ton-/friends romp and they roll/ and their days turn to fun” (n.p.) is placed opposite a full page photo of a polar bear and a chained Eskimo sled dog, and an accompanying paragraph explains that the bear and dog frolicked together on Manitoba’s frozen tundra for ten straight days. While these friendships may seem unlikely, evidence of their existence is right in front of the eyes on these pages.

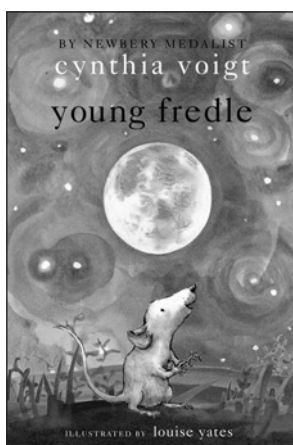




Vamos, Samantha R. (2011). *The cazuela that the farm maiden stirred*.

Illustrated by Rafael Lopez. Charlesbridge. 32 pages, \$17.95, ISBN: 978-1-5808-9242-1.

In this delightful bilingual cumulative story, a maiden prepares rice pudding by first stirring a pot. One by one, the farm animals join her, churning the butter, producing the fresh milk, purchasing the sugar, and adding all the ingredients for a yummy dessert. But as the concoction begins to bubble, the farm maiden, the farmer, and all the animals get so caught up in celebrating that they almost forget to keep an eye on the rice pudding. Back matter includes a recipe for *arroz con leche* and a glossary of Spanish words. The acrylic illustrations painted on grained wood lend a warm and friendly nature to the engaging text. Some scenes capture perfectly the delight with which the animals, including a goat, a hen, and a donkey, lend a helping hand.



Voigt, Cynthia. (2011). *Young Fredle*.

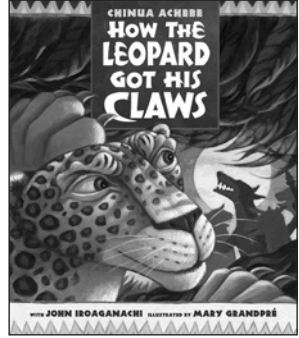
Illus. by Louise Yates. New York: Knopf. 240 pages, \$16.99, ISBN: 978-0375864575.

When Fredle, a curious young mouse, and a rodent friend spy a round chocolate patty hidden way in the back of a kitchen cabinet in the house where they live, they end up eating it and becoming quite ill. Because the other mice know little about healing, Fredle is carried outside and left for dead. But Fredle isn't ready to quit the world. With some help from the other mice who live outdoors and a dog or two, Fredle survives being kidnapped by raccoons, a watery voyage, and an encounter with a snake. Once he has made his way home, he is no longer content to hide in the kitchen and never see the world outside, and he convinces a few adventurous mice to join him in looking at the stars in the sky and breathing the fresh air of outside. The illustrations are softly drawn and show Fredle's personality perfectly, reminding readers that there are always adventurers among us.

Grades 4-6

Achebe, Chinua, & Iroaganachi, John. (2011). *How the leopard got his claws*.

Illustrated by Mary Grandpré. Candlewick Press. 32 pages (Unpaginated), \$16.99, ISBN: 978-0-7636-4805-3.



“In the beginning all animals in the forest lived as friends” (n.p.). Their kind, gentle, and wise King Leopard ruled the animals. Of all the animals, only Dog had sharp teeth and claws. The animals needed a shelter from the rain, so the King Leopard called them together to begin building a common shelter. All participated except for the dog and the duck. As the rains began to fall, dog’s cave was flooded and he demanded to enter the village hall. The dog attacked the animals with his teeth and claws to force his way into the hall attacking the animals with his teeth. Soon the animals turned their allegiance to the dog and made him their king. The blacksmith made deadly iron teeth and bronze claws for the leopard, and Thunder gave him a mighty roar. From that time forward the animals were enemies with the strong killing the weak. Dog eventually became a slave to the hunter and leads him to the forest to kill any animals Dog finds.

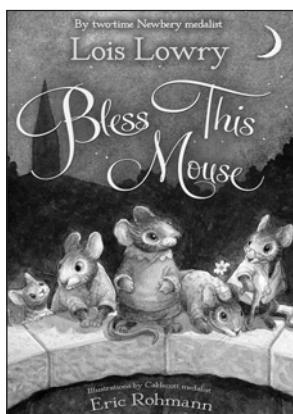
Bial, Raymond. (2011). *Rescuing Rover: Saving America’s dogs*.

Houghton Mifflin. 80 pages, \$16.99, ISBN: 978-0-5473-4125-5.



Bial has an agenda in his latest nonfiction venture: he wants readers to be mindful of the responsibility of pet ownership, but he also wants to publicize the ever-increasing numbers of dogs who end up in animal shelters. Because so many dogs are never spayed or neutered, unwanted litters of puppies are born each year, and those puppies often have nowhere to go. Bial visits several local animal shelters in Illinois to report on the dogs and the men and women who care for them. In his usual carefully detailed style, he describes the cost of caring for these unwanted dogs and tells some of

their stories. Bial and his family have several family pets that they adopted from the shelters. The book is filled with heart-tugging photographs.



Lowry, Lois. (2011). *Bless this mouse*.

Illustrated by Eric Rohmann. Houghton Mifflin. 160 pages, \$15.99, ISBN: 978-0-5473-9009-3.

The somewhat self-important Hildegard is the Mouse Mistress of St. Bartholomew Church, home to more than 200 mice. It is her job to keep them safe and out of sight from the humans who visit the church. Most of the time, everything goes well but lately, some of the mice have been taking risks and have been spotted by the humans. Hildegard now must deal with the Great X as the parish priest contacts an exterminator to rid the church of its rodent problem. She is also in a dither because the Feast of St. Francis is approaching, and she knows the church will be filled with animals of all shapes and sizes, including cats. How she saves the day and insures a safe and blessed future for her mice minions will amuse readers, reminding them that all creatures great and small deserve kindness and a blessing or two.



MacLachlan, Patricia. (2011). *Waiting for the magic*.

Illustrated by Amy June Bates. Athenenum. 144 pages, \$15.99, ISBN: 978-1-4169-2745-7.

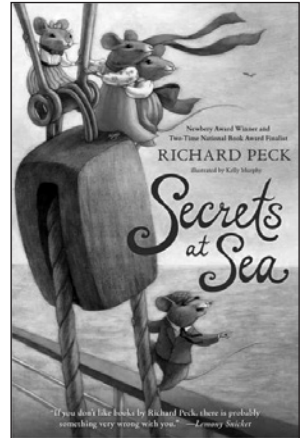
When their college professor father leaves the family in order to write, four-year-olds William and Elinor are confused as is their mother. But Mama decides that what the family needs to fill the void are some furry friends. When they return from the animal shelter, they have four dogs and a cat ranging in size from Neo, a still-growing Great Pyrenees; Grace, a retired Greyhound; Bryn, whose lips curl to show her teeth and who is devoted to Mama; Bitty, a small terrier; and Lula, a cat relaxed enough to let Elinor dress her in doll clothes. When their father comes to his senses and returns home,

the children have all come to recognize that there's something special about these animals: they can talk to those who will listen to them. Along with a surprise Mama has been keeping, they save a family that has drifted apart.

Peck, Richard. (2011). *Secrets at Sea*.

Illustrated by Kelly Murphy. Dial. 239 pages, \$16.99, ISBN: 978-0-8037-3455-5.

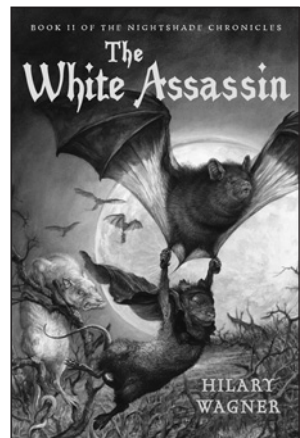
In 1887, two families occupied the Cranston home in the Hudson Valley: the Upstairs Cranstons—a human family—consisting of Mr. and Mrs. Cranston and their two daughters Olive and Camilla; and the other family, the Mice Cranstons who had occupied the home for generations longer than their human counterparts. The mice consisted of four surviving siblings, Helena, Louise, Beatrice, and Lamont. On the day that the mice learn that the social climbing Human Cranstons plan to set sail for England to find a husband for Olive, they refuse to be left behind. Certain that they are needed to shape the destiny of their human counterparts, the Mice Cranstons decide that they also must travel to Europe. The four mice encounter many titled humans and titled mice as they sail on a life-changing journey filled with many dangers and surprises.



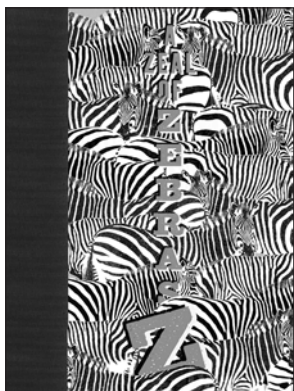
Wagner, Hilary. (2011). *The White Assassin*.

Illustrated by Omar Rayyan. Holiday House. 242 pages, \$17.95, ISBN: 978-0823423330.

Three years have passed since the Catacombs have been freed from the cruel clutches of Killdeer and the blood thirsty Billycan. Since the white rat has disappeared into the swamps, all should be safe; however, Billycan now rules a group of swamp rats eager to help him wreak vengeance on Nightshade City. When he is almost killed as the result of his greed, Billycan is brought back to Nightshade City and given a truth serum so the rats can learn the identity of the



traitor who was helping him. But the truth serum is actually an antidote for the drugs Billycan was given as a lab rat. As secrets about treachery and loyalty are revealed, some old alliances threaten to crack while others are formed. This touching story about rat society also makes astute observations about the nature of humans, animal experiments, and the power of family and forgiveness. As in the previous title, *Nightshade City* (Wagner, 2010), the characters have depth and complexity. Wagner forces her readers to regard Billycan in a different, more sympathetic light through a series of flashbacks in which he remembers more about his days in the laboratory. This title is certain to earn even more fans for the author and the rat society she imagines so vividly.



Woop Studios. (2011). *A zeal of zebras: An alphabet of collective nouns*.

Chronicle Books. 64 pages, \$17.99, ISBN: 978-1-4521-0492-8.

Starting from A and ending with Z, this delightful alphabet book pays tribute to collective nouns. Some of them, such as a caravan of camels and a yoke of oxen, will be familiar ones, but others, such as an aurora of polar bears and a venom of spiders, will not, leaving readers to marvel at the uniqueness of collectivity and the marvel of wonderful vocabulary words.

The whole notion of a troubling of goldfish and an unkindness of ravens is intriguing, in part because of the phrases' unusualness, in part because of the images the phrases conjure. The authors provide thumbnail sketches with additional information about the species in the collective nouns and featured in the poster-quality Adobe Photoshop illustrations.

Grades 7-12

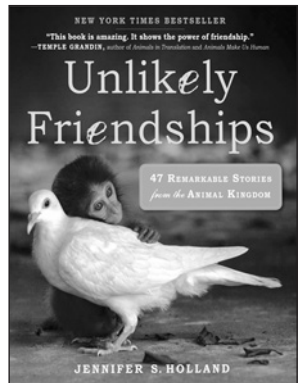
Deedy, Carmen Agra, & Wright, Randall. (2011). *The Cheshire cheese cat: A Dickens of a tale*. Illustrated by Barry Moser. Peachtree. 256 pages, \$16.95, ISBN: 978-1-5614-5595-9.

An alley cat looking for shelter as winter draws near, Skilley learns that the local innkeeper is looking for a cat that can keep the mice from his establishment, and he quickly makes himself indispensable. But Skilley doesn't kill the mice he catches, and he quickly becomes friends with one of the mice, Pip, who loves to use large vocabulary words in expressing himself. The inn is one of the favorite haunts of several London writers, including Charles Dickens who is suffering from a writer's block and is unable to come up with the right opening lines for his latest masterpiece. Looking for inspiration, Dickens observes Skilley's antics and realizes that he catches the same mouse over and over again.



Holland, Jennifer S. (2011). *Unlikely friendships: 47 remarkable stories from the animal kingdom*. Workman. 210 pages, \$13.95, ISBN: 978-0-7611-5913-1.

Holland, a senior science writer for *National Geographic*, points out that empathy and friendship are not unique to humans. Some of her stories are familiar and already well documented such as the ancient tortoise that befriends an orphaned hippopotamus, or the relationship between the gorilla that communicates with humans and her kitten via sign language. Others are lesser known, such as the young leopard and the cow, the horse that protected a fawn from coyotes, or the dog that raised a baby squirrel with her own puppies. Students who have seen the bright color photographs make their rounds over the Internet will enjoy reading the stories behind the intriguing images.



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About the Authors

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Reading Horizons began in 1960 as a local newsletter and has developed into an international journal serving major colleges, universities, and individual subscribers across the United States and Canada as well as a host of other countries. The journal serves as a forum for ideas from many schools of thought dedicated to building upon the knowledge base of literacy through research, theoretical essays, opinion pieces, policy studies, and syntheses of best practices. *Reading Horizons* seeks to bring together school professionals, literacy researchers, teacher educators, parents, and community leaders as they work collaboratively to widen the horizons of literacy and the language arts.

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