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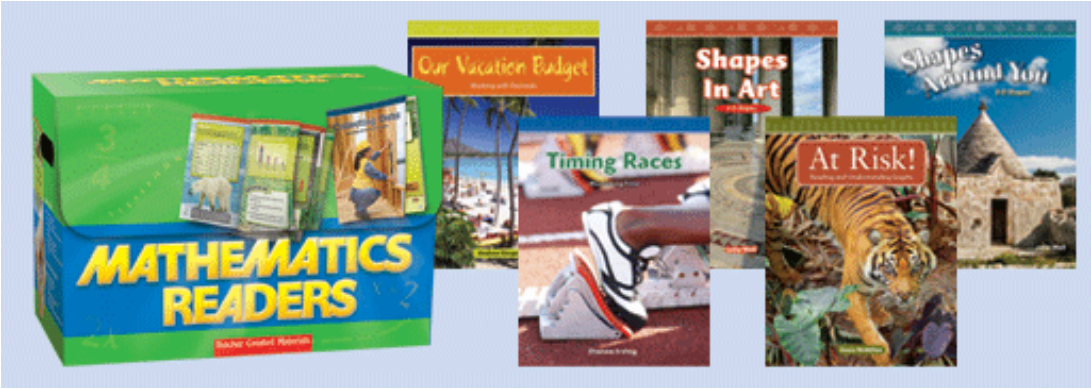
Research-Based Curriculum

Mathematics Readers

Complete Supplemental Program

Based on Respected Research & Literature


MATHEMATICS READERS
Our Vacation Budget
Timing Races
Shapes In Art
At Risk!

Research-Based Curriculum

Mathematics Readers

Introduction

More than ever before, there is a need to boost students' understanding of mathematics in all grade levels. "We must expect all of our students to learn mathematics well beyond what we previously expected. We need all students to be more proficient than in the past, and we need many more students to pursue careers based on mathematics and science" (Seeley, 2005). There is also great need for more effective instruction in reading comprehension using nonfiction texts. Alarming results were found in the oft-cited research study conducted by Michigan State University education researcher Nell Duke, entitled, "3.6 Minutes Per Day: The Scarcity of Information Texts in First Grade," (Duke, 2000). Not only did Duke find an extreme dearth of nonfiction materials in the classroom, but she also found a great disparity between the resources available in high socioeconomic classrooms versus low socioeconomic classrooms. Collier (2006) studied this further and found that students in low socioeconomic groups are also exposed to less than two minutes of informational text per day.

Today's world is focused on information. The advent of the Internet has put thousands of informational resources at our fingertips. Students will be ill equipped in the real world unless they are exposed to informational texts. Nonfiction texts are also prevalent on high-stakes tests. "Reading nonfiction materials would increase students' depth of knowledge in the content areas, and probably help students score higher on the standardized tests that are of such concern to teachers and administrators," (Ivey and Broaddus, 2000).

Current research by the National Council of Teachers of English shows that students have difficulty learning when subjects are taught in isolation (NCTE, 1993). "When language skills are embedded in meaningful contexts, they are easier and more enjoyable for children to learn. In the same way, numbers and their operations, when embedded in meaningful real-world contexts give children the opportunity to make sense of mathematics and to gain mathematical power," (NCTM, 2000).

Teacher Created Materials' ***Mathematics Readers*** is a mathematics-based reading program. It combines effective instruction in nonfiction reading-comprehension strategies with standards-based mathematical content. Although literacy continues to be the primary focus in today's schools, it is essential that teachers do not decrease instructional time spent in other crucial content areas. This program efficiently integrates instruction in mathematics and reading comprehension with a collection of engaging readers that focus on mathematical concepts. Nonfiction writing assignments are also provided, as an extension to what is being taught in the math and reading lessons. Each reader is written around real-life situations that are applicable to the students and includes captivating photographs, interesting facts and captions, mathematical exploration

questions, problem-solving scenarios, and leveled text. Nonfiction features, such as tables of contents, glossaries, and indices, are also included. All of the readers are organized by mathematical content strands to give the students a net of vocabulary and a breadth of understanding on which to build more comprehension.

Much of the research on elementary children's difficulty with mathematics centers on the quality of instruction they receive (Gersten, 1999; Burch and Spillane, 2003; Duke, 2000; and Miura, 1999). The *Teacher Resource Guide* included in ***Mathematics Readers*** offers comprehensive lesson plans and teaching suggestions for both the reading and mathematics components. As a result, teachers are able to engage students, address different learning styles, and develop student understanding that leads to higher-level thinking. This program will support teachers' effective mathematics instruction while boosting general reading skills.

Integrating Nonfiction Reading and Mathematics

Nonfiction reading and mathematics are most often taught in isolation. However, extensive research in recent years has proven the connection between mathematics achievement and reading ability. The link between achievement in math and reading skills has been found for all populations, including English Language Learners, special education students, regular education students, and students of both high and low socioeconomic classes, (Wang & Goldschmidt, 1999, Miuri, 1999; Martinello, 2008; Kulak, 1993; Gersten, 1999, Duke, 2000; Hirsch, 2003). Recommendations of these studies have suggested that integrating nonfiction reading skills with content area instruction would benefit all students.

Additionally, the content of high stakes tests today, supports the integration of reading and mathematics. High-stakes testing has also placed more pressure on teachers to maximize the instructional time during the school day. In order to provide deep content-area instruction in a tight time schedule, it only makes sense that teachers integrate subject areas. "Teachers across the grade levels and subject areas have to work collaboratively to shoulder the responsibility of equipping students with the lexical skills to successfully navigate today's high-stakes, standards-based educational environment," (Feldman and Kinsella, 2005, p. 10). Mathematics and reading comprehension are the two most-tested content areas on standardized tests nationwide and numerous studies have shown that reading skills including decoding, understanding vocabulary, and comprehension are required for math problem solving, (National Endowment for the Arts, 2007). This demonstrates the importance of teaching both content areas in the most effective ways possible.

Despite the demands for integrated instruction, it remains elusive. In one study, it was observed that during a typical fifth grade day, 37% of instructional time was spent on literacy, 25% on mathematics, 11% on science and 13% on social studies—a reality not in harmony with nationally declared aims to improve science and mathematical education (Pianta, 2007). One way to increase the amount of time spent on content-area subjects is to study those subjects within the literacy block of instructional time. "Literature provides

a context through which mathematical concepts, patterns, problem-solving, and real-world contexts may be explored," (Moyer, 2000, p. 246). When content instruction andlanguage instruction is combined, it helps students excel in both areas and reinforces their understanding. Similarly, Marzano (2003) notes that students need multiple experiences with topics in order for them to integrate the topics into their knowledge base. Additionally, illustrating the connection between mathematics and literature brings mathematics to life in a way that paper and pencil math lacks by itself. "Children love reading about real things. It gives them an understanding of our world and the way things work. And considering all the newspapers, brochures, guides, maps, Internet sites, and how-to manuals we navigate as adults, it's safe to say that nonfiction is the genre children will read most often when they grow up," (Taberski, 2001, p. 24).

Mathematics and literacy are linked naturally, especially in the area of problem solving. This is because math mastery requires a certain level of language and reading-comprehension skills. In a study of 225 fourth graders, led by psychologist Piia Maria Vilenius-Tuohimaaa, a very strong connection was found between reading comprehension and math word problem skills (Vilenius-Tuohimaaa, Aunolab and Nurmib, 2008). Students must be able extract meaning from the text of word problems in order to determine the question(s) being asked and the steps needed to solve the problem. Thus, reading comprehension skills need to be explicitly taught in order for students to be successful in mathematics. Moyer (2000, p. 246) found that "Opportunities for discourse in both reading and mathematics instruction promote children's oral language skills as well as their ability to think and communicate mathematically." Offering students opportunities to read and understand nonfiction text is also essential for their future academic success.

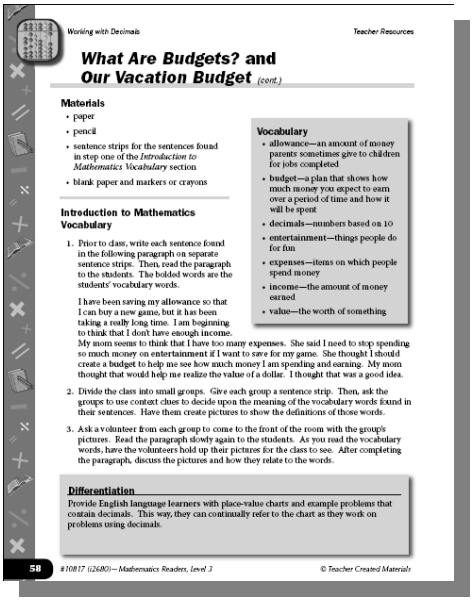
"Scholars have pointed out that informational texts can play an important role in motivating children to read in the first place," (Duke, 2000, p. 202). This process should not only build stronger readers, but also give them more success in reading textbooks in the higher grade-levels. The necessity for quality materials in the area of nonfiction reading in the elementary grades is maintained by *Becoming a Nation of Readers*: *The Report of the Commission on Reading*; "It is only common sense that children would be helped to make the transition to textbooks if early basal readers contained more high quality nonfiction," (Anderson et al., 1985, p. 67).

The *Teacher Resource Guide* for Teacher Created Materials' ***Mathematics Readers*** provides teachers with detailed lesson plans that encourage the teaching of specific nonfiction reading skills in addition to instruction for mathematical concepts. Each lesson has learning objectives and activities in mathematics, as well as reading comprehension objectives and activities. A nonfiction writing objective is also incorporated into the lessons. The students learn about mathematics through the engaging text and the meaningful pictures that support the context of the text. In addition, there are charts, captions, and leading exploration questions that guide student comprehension of multiple representations of information. Finally, problem-solving activities solidify the mathematical concepts. The lesson plans include before-, during-, and after-reading activities to strengthen overall reading comprehension of nonfiction text.

Teaching Nonfiction Reading Comprehension Strategies

Researchers recommend several key strategies for teaching nonfiction reading comprehension within the content areas. First, reading aloud to students and incorporating literature across the content areas is recommended by Dr. Wesley Sharpe in "Reading Aloud: Is it Worth It?" In this look at the benefits of reading aloud to children, Donna Maxim of the Center for teaching and Learning says, "Children's literature plays an important role in confirming the notion that **math** is more than computation on paper and provides opportunities for learners to develop the language of **math**," (Sharpe, 2001, p. 2). The lessons in ***Mathematics Readers*** include small group lessons in which students have the opportunity to use quality children's literature to learn math concepts and language skills. Additionally, the whole group transparency problem-solving lessons are based upon the literature in the readers and allow students to apply their math and reading knowledge to solve the problem.

Additionally, key reading researcher, Dr. Michael Pressley, suggests that the types of reading situations students encounter must also be carefully considered. He notes that many classrooms teach explicit reading comprehension strategies through direct instruction without considering equally important "transactional instruction," (Pressley, 1992). Pressley's early research advocated the use of direct instruction of reading strategies; however, his latest research suggests this is just a starting point. Pressley notes that instruction in which students work in small groups with the teacher to jointly construct meaning from the text is more effective in teaching students the foundational skills they will need for future problem solving (Pressley, 1992). ***Mathematics Readers*** provide just such an opportunity. For example, when using the *What are Budgets?* and *Vacation Budget* readers, students work in a small group with the teacher to define for themselves what they would want to save money for. They then read the books and use visualization skills to identify the main idea and create their own plans for budgets they will have in the future.


Working with Decimals Teacher Resources

What Are Budgets? and Our Vacation Budget (cont.)

Materials
- paper
- pencil
- sentence strips for the sentences found in step one of the *Introduction to Mathematics Vocabulary* section
- blank paper and markers or crayons

Introduction to Mathematics Vocabulary

1. Prior to class, write each sentence found in the following paragraph on separate sentence strips. Then, read the paragraph to the students. The bolded words are the students' vocabulary words.

I have been saving my allowance so that I can buy a new game, but it has been taking a really long time. I am beginning to think that I don't have enough income. My mom seems to think that I have too many expenses. She said I need to stop spending so much money on entertainment if I want to save for my game. She thought I should create a budget to help me see how much money I am spending and earning. My mom thought that would help me realize the value of a dollar. I thought that was a good idea.

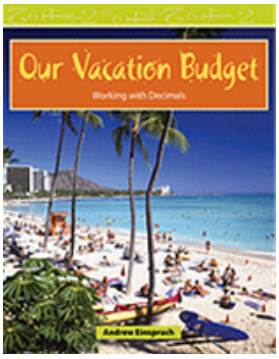
2. Divide the class into small groups. Give each group a sentence strip. Then, ask the groups to use context clues to decide upon the meaning of the vocabulary words found in their sentences. Have them create pictures to show the definitions of those words.
3. Ask a volunteer from each group to come to the front of the room with the group's pictures. Read the paragraph slowly again to the students. As you read the vocabulary words, have the volunteers hold up their pictures for the class to see. After completing the paragraph, discuss the pictures and how they relate to the words.

Vocabulary
- allowance—an amount of money parents sometimes give to children for jobs completed
- budget—a plan that shows how much money you expect to earn over a period of time and how it will be spent
- decimals—numbers based on 10
- entertainment—things people do for fun
- expenses—items on which people spend money
- income—the amount of money earned
- value—the worth of something

Differentiation

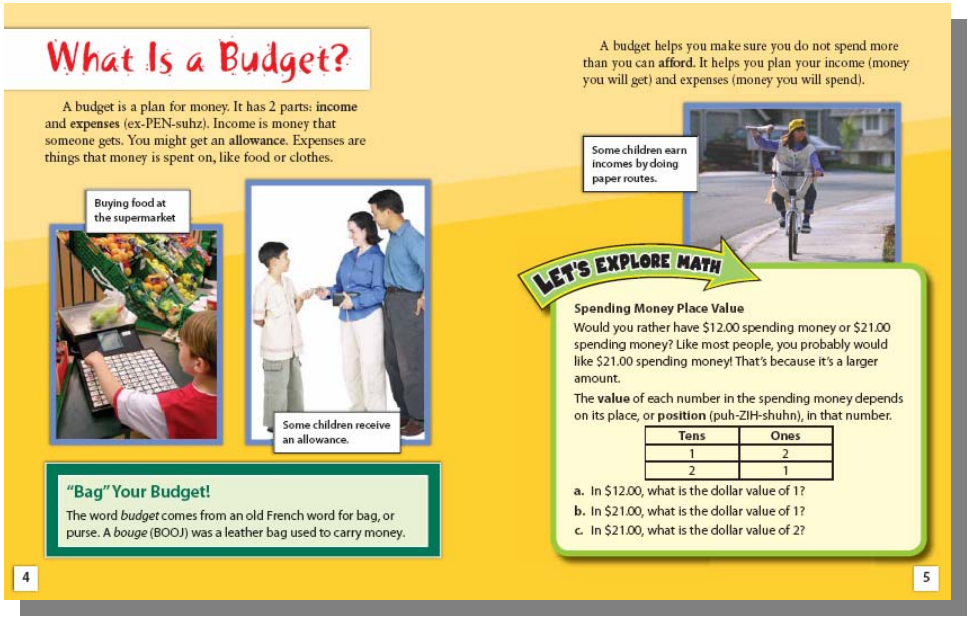
Provide English language learners with place-value charts and example problems that contain decimals. This way, they can continually refer to the chart as they work on problems using decimals.

58 #10817 (j2680)—Mathematics Readers, Level J © Teacher Created Materials



A group of researchers at Teachers College, Columbia University took Pressley's research further and suggest that students use different reading skills when faced with traditional stories versus math word problems (Bilsky, Blachman, Chi, Miu, & Winter, 1986). In a study of fourth and fifth graders, Bilsky, et al. gave students two types of texts (stories and math story problems) and used comprehension assessments to evaluate students' comprehension. They learned that when students read the math story problems, their comprehension, including recall of basic facts, was much lower than when they read a traditional story of the same reading level. Analysis of students' responses showed that students could easily identify math story problems based on the familiar structure of the text, and this led them to focus on retaining the quantitative information they might need to solve a math problem, rather than on understanding critical features of the text such as main idea.

Most importantly, the Bilsky, et al. (2001) noted that students could not make inferences as well on the math story problems. The authors conclude, "further exploration of the potential of using context to facilitate comprehension is warranted," (Bilsky, et al., 2001). Making inferences is a skill that is necessary for higher order math problem solving. Thus, students may be at a disadvantage if they do not have adequate experience in developing reading comprehension strategies in mathematics. The ***Mathematics Readers*** include longer texts that follow a distinct narrative with opportunities to solve math problems interspersed throughout. The "Let's Explore Math" opportunities allow students to develop mathematics skills, including making inferences, while remaining an integral part of the larger text.



What Is a Budget?

A budget is a plan for money. It has 2 parts: **income** and **expenses** (ex-PEN-suhz). Income is money that someone gets. You might get an **allowance**. Expenses are things that money is spent on, like food or clothes.

Buying food at the supermarket

Some children receive an allowance.

"Bag" Your Budget!

The word *budget* comes from an old French word for bag, or purse. A *bouge* (BOOJ) was a leather bag used to carry money.

4

A budget helps you make sure you do not spend more than you can **afford**. It helps you plan your income (money you will get) and expenses (money you will spend).

Some children earn incomes by doing paper routes.

LET'S EXPLORE MATH

Spending Money Place Value

Would you rather have $12.00 spending money or $21.00 spending money? Like most people, you probably would like $21.00 spending money! That's because it's a larger amount.

The **value** of each number in the spending money depends on its place, or **position** (puh-ZIH-shuhn), in that number.

Tens	Ones
1	2
2	1

a. In $12.00, what is the dollar value of 1?

b. In $21.00, what is the dollar value of 1?

c. In $21.00, what is the dollar value of 2?

5

Importance of Sound Mathematics Instruction and Content

The National Mathematics Advisory Panel (2008, xii) continues to suggest that there are great consequences to our nation, as well as the personal lives of our students if they are weak in mathematical proficiency.

> We risk our ability to adapt to change. We risk technological surprise to our economic viability and to the foundations of our country's security. National policy must ensure the healthy development of a domestic technical workforce of adequate scale with top-level skills…Success in mathematics education also is important for individual citizens, because it gives them college and career options, and it increases prospects for future income.

The job market today is quickly becoming a global marketplace centered on science, business, and mathematics. In order to compete in this type of arena, "Sound education in mathematics across the population is a national interest…By the term *proficiency*, the Panel means that students should understand key concepts, achieve automaticity as appropriate (e.g., with addition and related subtraction facts), develop flexible, accurate, and automatic execution of the standard algorithms, and use these competencies to solve problems," (National Mathematics Advisory Panel, 2008, pp. xii, xvii). However, mathematical proficiency is not only important for prosperous career opportunities. It correlates to general problem solving aspects of our daily lives.

In mathematics, it is not enough just to be able to compute and answer streams of numbers. Students need to be able to read about situations, make inferences about the types of solutions that might be possible, and write about their problem-solving strategies. Students also need to be able to find solutions to real problems that arise in life. Simply using procedural knowledge to compute arithmetic problems will not help students reach these goals. However, many teachers tend to focus on procedural knowledge during instruction. It is a fallacy to think that a student understands the concept if he or she can complete the procedure and compute the correct answer. Research has established that students need both procedural and conceptual knowledge in order to learn and understand mathematics (NCTM, 2000). When a student can compute the answer to a problem and accurately explain how and why the answer is correct, he or she has both procedural and conceptual knowledge of the concept.

With a strong focus on rigorous mathematical content and accuracy, ***Mathematics Readers*** offers a balance of procedural and conceptual information in both the readers and the lessons. Students practice procedural skills throughout the program. Conceptual knowledge is built when the students explore the concepts, apply the concepts to real-life situations, and complete real-life problem-solving activities. The lesson format allows students to have multiple chances to learn more about the concept, see its application to real life, and then practice using the procedural skills as they apply them to a problem-solving activity. "When students are given sufficient practice, they can approach being able to use the newly learned skill in new situations with accuracy so that that skill will be retained" (Sousa, 2006).

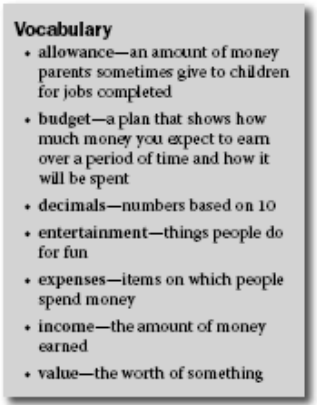
Within this program, the covered concepts hit many of the essential focal points listed in the *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics*, which states that "[t]o build students' strength in the use of mathematical processes, instruction in these content areas should incorporate the use of the mathematics to solve problems; an application of logical reasoning to justify procedures and solutions; and an involvement in the design and analysis of multiple representations to learn, make connections among, and communicate about the ideas within and outside of mathematics" (NCTM, 2006, p. 10). ***Mathematics Readers*** incorporates all of these aspects of instruction into the readers and the lessons.

Additionally, the focus in recent years on reading achievement has made it clear that matching students to texts at their instructional reading level is a key element of any good reading program. Duke (2000) and Harvey & Goudvis (2000) highlight the differences between fiction and nonfiction reading. Content area reading is often more difficult because it includes unknown vocabulary, unfamiliar text structures, and a variety of text organizers. Most teachers today assess students' reading comprehension skills and then provide them with reading material that matches their assessed level. However, there has been a dearth of nonfiction reading material that has been leveled. Teacher Created Materials partnered with The Lexile Framework® for Reading to level each reader in ***Mathematics Readers.*** The Lexile Framework® is one of the best-researched leveling systems available today. Therefore, teachers can easily match the readers to the nonfiction reading levels of their students.

Developing Mathematical Vocabulary

"The language of mathematics is very precise compared with the English used in common discourse, and this difference separates mathematics from most other curricular areas," (California State Board of Education, 2006, p. 339). Therefore, all students need explicit introduction of the vocabulary in order to be able to apply their knowledge of the words to their understanding of mathematical concepts. Often, teachers give the students a list of words and definitions. However, this common practice is problematic for struggling readers and English Language Learners. It is not enough to give these students a list of words and have them look up the definitions in dictionaries or glossaries. Dictionaries are written to concisely conserve space in order to get as many words in as possible; therefore, they lack "an accessible explanation using familiar language and an age appropriate example that is relevant to children's own experiences," (Feldman and Kinsella, 2005, p. 2). "Students who are struggling with learning a language, in particular, are not going to find the process easier by simply being given more words to sort through," (Echevarria, Vogt, and Short, 2004). Struggling readers and English language learners need context-embedded activities that acquaint them with the necessary and most central words for comprehension of the content. "Effective vocabulary development includes the rich contextual environment in which to learn terms as they read content text," (Echevarria, Vogt, and Short, 2004).

It is important for content vocabulary to be learned independent of the text in which it is found because many students do not possess the tools to use context clues within a sentence to determine the meaning of an unknown word. "Developing readers cannot be expected to simply 'pick up' substantial vocabulary knowledge exclusively through reading exposure without guidance. Specifically, teachers must design tasks that will increase the effectiveness of vocabulary learning through reading practice," (Feldman and Kinsella, 2005, p. 3). The lessons in ***Mathematics Readers*** provide the necessary mathematical content words along with activities that will best stimulate comprehension. The activities help students connect what they already know about the words to what they will learn. These vocabulary words are also appropriately kept to a minimum to ensure that students will learn their meanings. The students are also given opportunities to share knowledge and practice using the vocabulary terms in correct contexts.


Vocabulary
- allowance—an amount of money parents sometimes give to children for jobs completed
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- value—the worth of something

"Additionally, although common wisdom holds that mathematics is a language in itself and can be learned by those who do not speak the language of instruction, in fact the language of mathematics contains numerous difficulties for English learners," (Diaz-Rico and Weed, 2006). Students must be able to proficiently speak, listen, read, and write the linguistic and symbolic language of mathematics. By being introduced to the words and symbolic representations in *Mathematics Readers* lessons, students will be given ample opportunities to interact with and use the language of mathematics, which is the foundation that struggling readers and English Language Learners need in order to learn the concepts behind the vocabulary.

Assessment Opportunities

Thomas Rhomberg (1995, p. vii) in *Reform in School Mathematics and Authentic Assessment stated,* "The central feature of the current reform efforts involves an epistemological shift from the mastery of a set of concepts and procedures to mathematical power." Mastery of concepts is easily evaluated through traditional assessments. However, true mathematical power, or in depth understanding, requires lengthy observation and ongoing assessment.

Ongoing assessment is essential for any instructional program. Teachers must know which skills their students have mastered in order to provide instruction that is both engaging and meaningful. Opportunities for assessment are provided throughout ***Mathematics Readers***. A pre-test for each lesson provides a screening tool for teachers to use to differentiate instruction. The warm-up mathematics vocabulary activity included in each lesson also serves as an assessment of prior knowledge. Guided practice problems during the lesson show how well students are learning new concepts. Diagnostic assessment is included, and it can be used for program pre- and post-tests. Finally, an authentic assessment is provided in the form of a culminating activity for the entire program.

Differentiating Reading and Mathematics Instruction

"Students often hold negative attitudes about reading because of dull textbooks or being forced to read" (Bean, 2000). Teaching reading can be a complex task because every student comes to the classroom with different background experiences, reading abilities, levels of English proficiency, and learning styles. Furthermore, teaching reading is not about simply passing on a set of skills that can be memorized or replicated by the students. "Learning to read is a complex process. Most children learn to read and continue to grow in their mastery of this process. However, there continues to be a group of children for whom learning to read is a struggle" (Quatroche, 1999, p. 1).

Often many English language learners (ELLs) and struggling readers do not have a large vocabulary or real world experiences from which to draw academic language. Nonfiction literature is rich in language and vocabulary. By combining literature and mathematics, students can "focus their attention on the mathematical content [and] at the same time strengthen their reading skills and English proficiency," (Whitin and Whitin, 2006, p. 198). *Mathematics Readers* provides students with the opportunity to read, write, and discuss mathematics from a shared experience. This benefits ELLs and struggling readers because it gives them practice in "communicating, representing, and connecting their ideas in various ways," (Whitin and Whitin, 2006, 196). It is important to understand that "struggling students do not need significantly different instruction than their successful reading peers; however they do need high-quality instruction," (Klenk and Kibby, 2000).

For each mathematical concept in ***Mathematics Readers***, there are two readers that offer exposure and insight into learning the concept. The text of one of the readers is written for students who are reading on grade level. The text of the second reader is written at a lower reading level. ***Mathematics Readers*** is unique because although the reading levels in each pair of readers are different, the mathematical rigor is the same. Fuentes (1998, p. 81) noted the importance of this, "It is important for teachers of mathematics to realize that young children develop reading and mathematics skills at different rates. Some children develop algorithm skills (i.e., the ability to compute) quite well until they are faced with word problems." This is important because high-quality reading materials written at the appropriate reading levels are vital for learning readers. "Quality texts effectively communicate the purpose and are appropriate of the audience," (Alexander and Jetton, 2000). In addition to the differentiation within the readers themselves, the lesson plans provide differentiated reading-activities that allow all of the students in the class to participate in the reading lesson, as well as access the mathematics curriculum. Small-group guided reading sessions focus on skills that struggling and average students need. Additional lesson suggestions are included to differentiate instruction for above-level learners as well. Additionally, content area connection activities are also provided to further expand the lesson and allow for differentiation.

Using Real-Life Problem Solving to Teach Mathematics

Research shows that the students who are not successfully mastering mathematical concepts tend to demonstrate slow or inaccurate retrieval of basic facts, lean toward impulsivity when solving problems, and also have difficulty forming mental representations of math concepts or keeping information in working memory (Gersten and Clarke, 2007). In order for students to form those necessary mental representations of mathematical concepts, they must be able to relate to the context through which the concepts are taught. Research has shown that real-life applied activities and problem-solving activities establish a contextual setting for many lessons, providing motivation and encouraging curiosity (Hiebert and Carpenter, 1992). When students are engaged and interested in a topic, they are more likely to retain the information and apply it in the future.

Providing problems in a real-life context is also beneficial for assessments. "A synthesis of findings from a small number of high-quality studies indicates that if mathematical ideas are taught using 'real-world' contexts, then students' performance on assessments involving similar 'real-world' problems is improved" (National Mathematics Advisory Panel, 2008, p. xiii).

According to the *Principles and Standards for School Mathematics*, "Problem solving is an integral part of all mathematics learning. In everyday life and in the workplace, being able to solve problems can lead to great advantages. However, solving problems is not only a goal of learning mathematics but also a major means of doing so. Problem solving should not be an isolated part of the curriculum but should involve all Content Standards," (NCTM, 2000, Problem Solving section p. 1).

In order to effectively integrate problem solving into this program, every reader includes a problem-solving activity that relates to the topic and math concept of the reader. In addition, a second problem is included for more practice with the problem-solving strategy. Every problem-solving activity has lesson plans and suggestions for guiding instruction. As a scaffold, the students are given steps to help them complete the problem successfully. In order for students to apply their problem-solving skills in their daily lives they "need to develop a range of strategies for solving problems, such as using diagrams, looking for patterns, or trying special values or cases. These strategies need instructional attention if students are to learn them" (NCTM, 2000). In this program, students will get the necessary instructional attention to learn how to problem solve effectively.

Using Mathematics Readers in a Response to Intervention Model

"The RTI process is a multi-step approach to providing services and interventions to students who struggle with learning at increasing levels of intensity. The progress students make at each stage of intervention is closely monitored. Results of this monitoring are used to make decisions about the need for further research-based instruction and/or intervention in general education, in special education or both," (National Center for Learning Disabilities, 2006, p. 1). RTI is the marriage of data-driven instruction and intervention.

Recent meta-analysis showed that Response to Intervention models are implemented in varying ways across the country (Daly, Barnett, Martens, Witt & Olson, 2007). It is often difficult to identify one strategy or set of strategies that will help a child experiencing difficulties in school, and Daly, et al. found that various factors constrain the implementation of interventions for some students. As a result, they developed a set of recommendations for effective implementation of Response to Intervention. These include effective assessment, high quality instructional materials, quality practice time, and opportunities to reinforce and apply learned skills. ***Mathematics Readers*** provide each of these elements.

Mathematics Readers can serve as a means for responding to Tier 1 and Tier 2 students. This program is an in-class or small-group resource that provides the necessary reading and mathematical scaffolding for student success. Because the readers are written at two different reading levels, there are differentiated resources for struggling students. With the variety of problem-solving experiences integrated into the readers and lesson plans, students have multiple opportunities to apply mathematical concepts in skills in real-world contexts.

Assessments from this program can also be used to allow teachers to monitor the instruction and progress of struggling students. This is important because "[m]onitoring and record keeping provide the critical information needed to make decisions about the student's future instruction" (National Center for Learning Disabilities, 2006, p. 5).

Conclusion

The *Mathematics Readers* program integrates effective instruction of nonfiction reading-comprehension strategies with standards-based mathematical content concepts. "For all content areas, conceptual understanding, computational fluency, and problem-solving skills are each essential and mutually reinforcing, influencing performance on such varied tasks as estimation, word problems, and computation" (National Mathematics Advisory Panel, 2008, p.30). This program will enable teachers to get the most out of their instructional time in the classroom and illustrate to students the prevalence of mathematics in the world around them.

The following references were employed in the creation of this research-based program:

Alexander, P.A., & Jetton, T. (2000). Learning from text: A multidimensional and developmental perspective. In M. Kamil, P. Mosenthal, P. D. Pearson, & R. Barr. (Eds.), in *Handbook of Reading Research, Volume III*. New Jersey: Lawrence Erlbaum Associates, Publishers.

Anderson, R. C., Hiebert, E.H., Scott, J.A., & Wilkinson, I.A.G. (1985). *Becoming a nation of readers: The report of the commission on reading.* Center for the Study of Reading.

Bilsky, L., Blachman, S., Chi, C., Mui, A., & Winter, P. (1986). Comprehension strategies in math problem and story contexts. *Cognition and Instruction*, 3(2), 109 - 126.

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