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READING

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Message From the Editors

BY LINA B. SOARES, PH.D. AND CHRISTINE A. DRAPER, PH.D.

Malcolm X once said, "Education is the passport to the future, for tomorrow belongs to those who prepare for it today." While these prophetic words were spoken over 50 years ago, they are meaningful and relevant today. As teachers, it is important for us to understand the value of integrating the best practices in literacy to help students develop, expand, and improve the fundamental skills and tasks associated with knowledge construction. The literacy tools students use for reading, writing, listening, speaking, and viewing share a common thread to learning in all disciplines. Christine and I believe this edition of the *Georgia Journal of Reading* provides classroom teachers with the useful resources and instructional strategies they can use to guide instruction and to ultimately improve student learning.

"Reading and Writing and Math—Oh My! Reading and Writing Best Practices for Mathematics Teachers" by Sallie Averitt Miller and Erinn Bentley highlights the importance of integrating reading and writing into mathematics classrooms. The article features a professional development workshop Miller and Bentley designed and conducted to improve teachers' content and pedagogical knowledge for teaching middle grades mathematics in grades 4-8. Readers will find a wealth of literacy strategies that can be implemented into mathematics classrooms.

Maryann Tobin's "Enhancing Literacy Skills through STEM Activities: A Case for STREAM" is a timely piece that draws attention to STREAM (Science, Technology, Reading, Engineering, Arts, and Mathematics). For readers who may be new to this curriculum development or readers who want to know more about STREAM, Tobin presents a compelling model for implementation in the elementary grades that fosters the development of subject-matter language through developmentally appropriate STEM activities. Readers will appreciate the design process fourth grade students took to create a boat that would float and rescue their principal from a deserted island, culminating in digital stories.

"Using Language to Promote Literacy in Young English Language Learners" by Lama K. Farran and Mona W. Matthews is an important discussion on oral language as a necessary component in young children's early literacy development. Focusing on oral language as a window on ELLs' cultural and linguistic backgrounds, the authors build a case that teachers must draw upon children's literacy experiences from home in order to enhance literacy development in the classroom learning context. The authors provide a solid discussion on numerous researched-based strategies to build oral language as a precursor to young children's literacy development in the preschool through 2nd grade period.

Laura Shelton and Brooke Langston-DeMott's "Rethinking Assessment: Using Project-Based Learning to Assess Student Learning" features project-based learning (PBL) in a literacy setting, as well as a means to authentic learning in content area classrooms. The article first provides an overview of PBL and its many benefits to students, then follows with many useful ways to implement PBL in the classroom. Readers will appreciate the many applications and rubrics that have been developed to use PBL as a tool for assessing student understanding.

Finally, our own Christine Draper's regular column "Books You and Your Students Need to Check Out," co-authored in this presentation with Pamela Jewett, highlights several award winning titles from the 2016 Notable Children's Books in the English Language Arts award. The authors include several award winning titles for young and older readers from the 2016 NCBLA list that classroom teachers may want to add to their reading list.

As we come to the end of 2016, we maintain that developing an awareness of the skills and strategies involved in proficient reading for all grade levels and classrooms is of upmost importance to our readers. With that said, the Fall 2016 edition is one more venue to promote awareness and serve as a "passport" if you will, to fortify teachers with the necessary skills to teach reading, build language development, and enhance knowledge construction. As always, we wish to thank the reviewers for their countless hours and dedication to the *Georgia Journal of Reading* and to the authors for their contributions to this journal. So find a comfortable chair and take your time while reading through this edition of the *Georgia Journal of Reading*; you will be glad you did!

President's Page

BY JULIE WALKER

Georgia Reading Association Members:

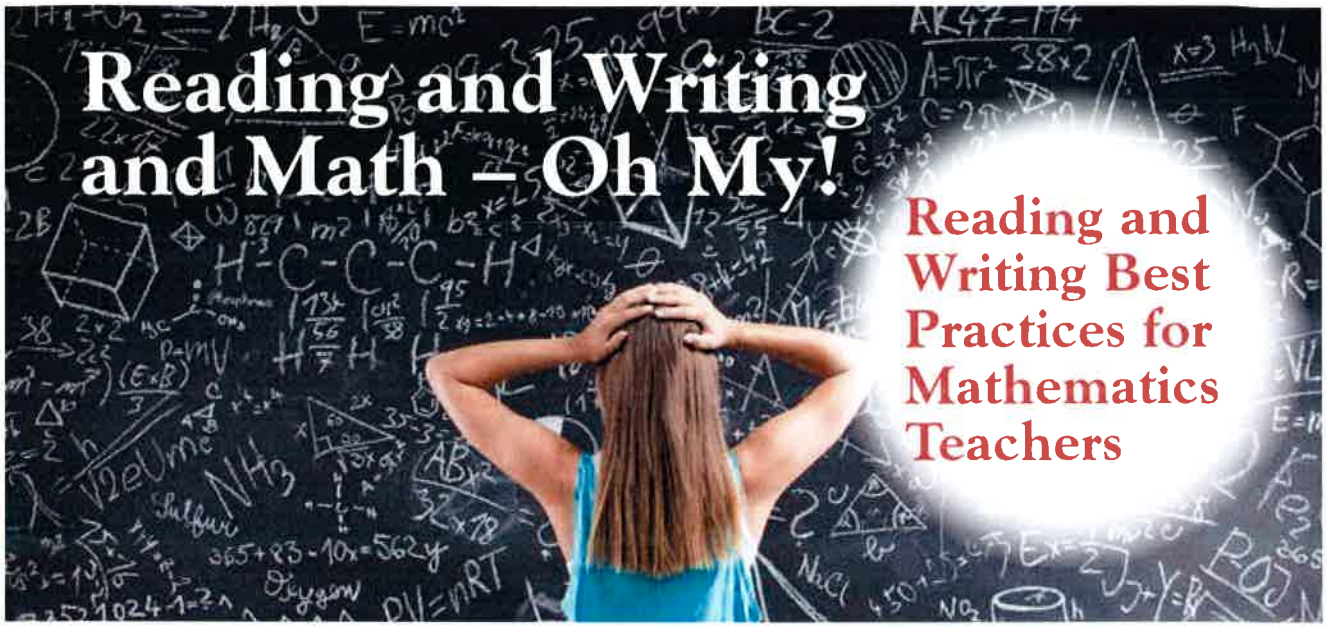
It is hard to believe that we are coming upon the year of 2017. Many changes continue to affect our world within the field of education. Disagreements over political candidates, high stakes accountability, and feuds over pay for performance. One thing that all educators agree on is the importance of children and adults being life-long readers.

As a member of the Georgia Reading Association, there are a variety of resources, teaching ideas and scholarship opportunities. This professional organization is a way to keep in touch with colleagues, ideas are shared, problems are solved, frustrations are heard and successes are celebrated. Local reading councils also provide valuable resources for teachers as well as providing opportunities to give back to their local communities.

Several years ago, I became active as an officer of the Georgia Reading Association, I was very humbled when I attended the State Reader of the Year ceremony. Hearing the students read their winning essays, "What Reading Means to Me" was mesmerizing. It was evident to me how these students brought their love of literature into their writing. One of my goals as president of GRA this year is to collaborate and encourage every system within the State of Georgia to submit entries for Reader of the Year. My other quest is to encourage every county in Georgia to establish a local reading council or partner with another county. The slow economy severely impacted memberships in the Georgia Reading Council and local councils. The impact that these organizations have on teachers and students is well worth the cost of membership each year. One person cannot grow these organizations to their maximum potential, but by taking necessary steps, it will encourage new memberships and will continue to encourage our students to excel toward greatness.

Sincerely,

Julie Walker
President, Georgia Reading Association



BY SALLIE AVERITT MILLER AND ERINN BENTLEY

Abstract

According to the National Council of Teachers of Mathematics (NCTM, 2010), students who have reading, writing, and listening support reap dual benefits in that they can communicate to learn mathematics and they learn to communicate mathematically. This article presents a description of a professional development workshop designed specifically for middle grades (grades 4-8) mathematics teachers to learn best practices for literacy instruction. Thus the purpose was three-fold; that is, to (1) provide professional development in reading and writing using research-based strategies to support student mathematical learning, (2) examine the perceptions of middle grades mathematics classroom teachers regarding the NCTM principle, and (3) determine the impact, or lack thereof, of the provided professional development in the teachers' classrooms.

Introduction

In recent years, there has been increased attention on reading and writing instruction within K-12 classrooms. In part, such attention has resulted from the inclusion of literacy standards in various content areas (Georgia Department of Education, 2015; National Governors Association & Council of Chief State School Officers, 2010). Researchers (Gere et al, 2013; Lattimer, 2014), as well as educational organizations including the National Council of Teachers of English (Gere et al., 2013) and the International Literacy Association (ILA, 2015) call for all teachers – across grade levels and content areas – to engage in literacy instruction. That is, teaching reading and writing cannot solely fall on the shoulders of elementary or secondary English teachers. Instead, schools must "...integrate reading, writing, speaking, and listening instruction into all subject-areas across all grade levels" (Gere et al., 2013, p. 4). Similarly, the Introduction to the ELA and Literacy Standards asserts, "instruction in reading, writing, speaking, listening, and language should be a shared responsibility" (NGA Center & CCSSO, 2010).

Faculty Context

As two faculty members specializing in reading and writing instruction within a teacher preparation program, we support this vision for comprehensive literacy instruction. As a former K-12 educator and a reading specialist, clinician, we also know that in order for content teachers to effectively integrate literacy strategies within their classrooms, they must first be knowledgeable of such strategies. Teachers may develop such pedagogical knowledge through coursework or professional development workshops. Recently, we were invited to create and facilitate such a summer workshop, specifically focused on integrating reading and writing instruction into the middle grades (grades 4-8) mathematics classroom. This 3-hour session was part of a week-long comprehensive professional development series offered to middle grades mathematics teachers across a tri-county region. The goal of the week-long series was to improve teachers' content and pedagogical knowledge for teaching middle grades mathematics. The series were developed and facilitated by members of a community outreach center (Regional Math Collaborative) housed within the Teacher Education Department of a local university and was funded by an Improving Teacher Quality State Grant Proposal (Title II). Sixteen middle grades mathematics teachers participated in the series (including the reading/writing workshop), and each was given a stipend of $500.00 and 5 Professional Learning Units (PLU).

Guiding Principles

As we developed the workshop, we first focused on the National Council of Teachers of Mathematics' Principle (2010), which states that students who have reading, writing, and listening support reap dual benefits in that they can communicate to learn mathematics and they learn to communicate mathematically. Communication, as in any subject area, is also an important skill in learning mathematics. Effective communication requires the use of four major vocabularies—reading, writing, speaking, and listening. Our workshop focused specifically on mathematics teachers' knowledge and use of instructional strategies for two of the four major vocabularies, reading and writing. With the NCTM (2000) Principle in mind, we next drew upon our knowledge and experiences using best practices for teaching reading and writing in our respective content area, language arts. We carefully chose strategies that could best be adapted for use in the math classroom. Finally, we wanted the workshop to actively engage the math teachers in using these strategies. Therefore, we invited the teachers to take on the personas of their students as they used the strategies and tools we provided to solve word problems.

Workshop Focus

The purpose for our workshop, then, was three-fold; that is, to (1) provide professional development in reading and writing using research-based strategies to support student mathematical learning, (2) examine the perceptions of middle grades mathematics classroom teachers regarding the NCTM principle, and (3) determine the impact, or lack thereof, of the provided professional development in the teachers' classrooms. To determine teachers' knowledge and perceptions of the mathematical literacy strategies, we invited teachers to complete a pre-survey and a post-survey during the workshop. To determine the impact, or lack thereof, of the professional development in the teachers' classrooms, teachers were invited to complete a third survey during the fall semester following the summer workshop experience. Descriptions of the workshop activities and survey results are as follows.

Reading and Writing Professional Development Workshops

Reading Workshop Description

The reading workshop session began with a rationale for the workshop using the following NCTM statement found in the publication *Principles and Standards for School Mathematics*. The (NCTM 2000, p. 60) states that "students who have opportunities, encouragement, and support for writing, reading, and listening in mathematics classes reap dual benefits: they communicate to learn mathematics, and they learn to communicate mathematically." Communication, as in any subject area, is also an essential part of learning in mathematics. Therefore, to be successful students must learn to communicate mathematically which requires the use of four major vocabularies (reading, writing, speaking, and listening). When the teachers attempted to identify the vocabularies there was some unexpected, lengthy hesitation.

Symbols and Unfamiliar Vocabulary

Many students may not easily comprehend mathematics texts, even when they are able to decode print materials (Cantrell, Burns, & Callaway, 2009). Mathematics texts make heavy use of symbols and unfamiliar vocabulary; use longer and more complex sentence structure; contain more words, symbols, and concepts per paragraph than other texts; and have little redundancy to help with interpretation (NCTM, 2016). Furthermore, mathematics texts are often written above the grade level of intended students (Barton & Heidema, 2002; Reehm & Long, 1996). Critical concepts that support a students' comprehension, understanding are, sometimes, buried in the text, implied, unstated, or not easily recognized. Mathematics is not an everyday language; meaning, mathematical concepts are not used outside the mathematics classroom. In reading mathematics text, readers need to analyze and expand meaning rather than condense ideas (NCTM, 2016).

Communication Builds Meaning

According to the National Council for Mathematics (2000), communication allows for the sharing of ideas and clarifying understanding; thus, students must be able to bring meaning to the printed symbols whether the symbols are letter-based or mathematical symbols. Communication builds meaning for ideas. Students must be able to translate word problems into statements that mean something to them; that is, **comprehension precedes computation**. Furthermore, listening to others' problem solving explanations allows students to develop more fully their own understandings.

Real World Word Problems

During the session, the facilitator and teachers discussed that for some students, a mathematical disability is caused by problems with language; thus, providing these students with practical, real world word problems often prove effective in motivating students by making mathematics less abstract and more interesting and relevant to them. The following are examples of real world word problems that the teachers examined during the workshop.

In the first example, the teachers worked in small groups to solve a real world shopping unit pricing problem using the K-N-W-A-M strategy. They were to

Table 1: KNWAM Word Problem Strategy (Part 1)

K	N	W	A	M
KNOW	**NOT**	**WHAT**	**APPROACH**	**MISSING**
What facts do I KNOW from the nformation in the problem?	Which information do I NOT need?	WHAT does the problem ask me to find?	What APPROACH (operation/ strategies) will I use to solve the problem?	What information is MISSING that I do not know but need to solve the problem?
Reference Table 2	*Reference Table 2*	*Reference Table 2*	*Reference Table 3*	*Reference Table 3*

Table 2: KNWAM Word Problem Strategy (Part 1I)

Item	Size	$ Price	$ Price Per Unit / Show your work!
Cream Cheese Package A Package B, Dealer's Best Brand	 6 ounces 1 pound	 $1.79 $3.89	 Best Buy:_____
Milk Carton A, Fourth of July Section Carton B, Special Buy	 1 gallon 1 quart	 $3.29 $1.25	 Best Buy:_____
Corn Oil Bottle A, New Packaging Bottle B	 64 ounces 1 quart	 $5.74 $2.29	 Best Buy:_____

Table 3: KNWAM Word Problem Strategy (Part II1)

Item	Size	$ Price
Cream Cheese Package A Cream Cheese Package B, Advertised, Brand	6 ounces 1 pound	$1.79 $3.89
Milk Carton A, Fourth of July Section Milk Carton B	 1 gallon 1 quart	 $3.29 $1.25
Corn Oil A, New Packaging Corn Oil B	64 ounces 1 quart	$5.74 $2.29

select an appropriate method for solving the problem, identify missing information, solve problem, and reflect on the reasonableness of their answers. This strategy is an adaptation of the K-W-L approach for solving word problems (Barton & Heidema, 2002). Teachers used the following three-step problem solution process.

Step 1, the teachers completed a K-N-W-A-M chart designed for solving the real world shopping unit pricing problem. K-N-W-A-M is a step-by-step process for reading comprehension (see Table 1). It is used for both reading and mathematical comprehension. The strategy engaged the teachers in the exploration of word problems as they decode the information provided, determine the question, select an appropriate solution method, and discover what other information they need but do not know. K-N-W-A-M evaluates understanding and checks for misconceptions as well as inadequate content knowledge and skills.

Step 2, the teachers were instructed to solve the practical, real world shopping unit pricing problem by identifying which items are the best buy (see Table 2).

Step 3, the teachers were asked to find the unit price for each item in the group (see Table 3). They were to determine which item offers the consumers the most product for their money.

The teachers concluded the activity by discussing the following question. *What new information have I learned while completing the K-N-W-A-M chart and solving the practical, real world shopping unit pricing problem?*

In the second example, the teachers solved a *real world time calculation problem* using the SQRQCQ strategy (see Table 4). The SQRQCQ (Survey, Question, Read, Question, Compute, Question) assisted the teachers

Table 4: SQRQCQ Word Problem

SQRQCQ	Student Response
Survey: Scan the problem to get a general idea of what it's about.	
Question: What is the problem about; what is the information in the problem?	
Read: Identify relationships and facts needed to solve the problem.	
Question: How do I solve the problem? What operations must be performed and in what order?	
Compute (or construct): Do the calculations or construct a solution.	
Question: Are the calculations correct? Does the solution make sense?	

in answering the following three questions: 1) What is the problem asking? 2) What information is critical? 3) What process should be used to solve the problem? The SQRQCQ trains a student to solve word problems in detail. The focus prompts build the problem solution; thus, providing adequate information for a successful learning outcome. The reasonableness of the solution was the culminating component to this exercise.

> Real World Word Problem: Corey is going on a backpacking trip with his family. They need to hike to their favorite camping spot and set up the camp before it gets dark. Sunset is at 8:00 P.M. It will take 3 hours to hike to the camping spot and 30 minutes to set up the camp. What is the latest time that Corey and his family can start hiking?

Using *real world math word problems* provided a logical transition for the teachers' discussion of some common, specific language difficulties that can block progress in math. These included 1) Difficulty with mathematics vocabulary, 2) Confusion by language word problems, 3) Unable to discern irrelevant information, 4) Trouble understanding written directions, 5) Struggle to explain and communicate about math, 6) Difficulty reading texts to direct student's own learning (Educational Foundation, 2002). Items 1-6 are all about communication, which requires the use of the major vocabularies: reading, writing, listening, and speaking. The teachers practiced the two previous reading problem-solving strategies that primarily addressed the above items 2-6. These strategies engaged the teachers in exploring the problem as they decoded the information provided, determined the question, and selected an appropriate solution method, discovered what other information is needed., and the reasonableness of a solution (Barton & Heidema, 2002).

The third example required the teachers to use the Frayer Model to formulate a better understanding

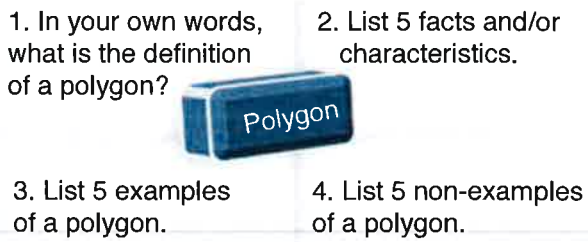


Figure 1: Frayer Model –Vocabulary

of complex concepts by asking them to identify not just what something is, but what it is not (Barton & Heidema, 2002). The following strategy specifically targets Item 1 ([d]ifficulty with mathematics vocabulary) illustrates the Frayer Model, one of many vocabulary development models for mathematics. Again, the teachers worked in small groups to complete the vocabulary concept map (see Figure 1).

Vocabulary Concept Map: Mathematical problems using polygons are relevant and very much a part of the real world; for example, angles and polygons are used by engineers, surveyors, contractors, and others. Nearly every object is some type of rectangle or triangle. Squares, triangles, and hexagons are the most common of polygons.

Writing Workshop Description

The writing workshop portion of the professional development session focused primarily on the second half of the NCTM (2000) principle: To guide

the teachers in ensuring their students "communicate [through writing] to learn mathematics" (p. 60). Both education scholars (Urquhart, 2009) and organizations (NCTM, 2000) have recognized that students benefit from writing in the mathematics classroom. One such way that students can enhance their problem-solving skills is by asking students to both solve a math word problem and explain their thinking or problem-solving process in writing. This approach can be beneficial for teachers because "[w]hen students write explanations of their work and give examples, teachers can better assess student understanding and progress throughout time. Writing is an ideal vehicle for formative assessment, providing teachers with the information they need to adjust their instruction (Urqhart, 2009, p. 7). In order to demonstrate how this approach might be used in the classroom, teachers in the professional development session were led through a writing workshop, which was comprised of several best practices. In *Writing Next* (2007), a comprehensive analysis of research-based and effective strategies for teaching writing to adolescent learners, Graham and Perin (2007) identified 11 of the best strategies. Three of these strategies included studying sample/model responses, engaging in revising (peer review), and writing for content learning. These three strategies formed the basis for this math writing workshop.

Word Problem and Writing Prompt (Strategy 1)

First, the teachers provided with the following word problem/writing prompt; they were asked to compose a response that a 4th grade student might provide to this prompt: *Susan is building a fence for her dog in the shape of a square. She plans to make each side 12 feet long. She bought 50 feet of fencing. Does she have enough fencing for her project? Explain your answer.* Most teachers answered this prompt by writing, "Yes" or "Yes, she does." They explained that their middle grade students tend to write as little as possible. Even when they are told to explain their answers, their students still offer short responses.

Word Problem and Writing Prompt (Strategy 2)

Next, teachers were shown a revised version of the word problem/prompt: *Susan is building a fence for her dog in the shape of a square. She plans to make each side 12 feet long. She bought 50 feet of fencing. Does Susan have enough fencing for her project? Explain how you came up with your answer in one paragraph.* Teachers believed the revised prompt was more explicit; however, they were not sure if their students would understand precisely how to construct their response in paragraph form. The teachers were then presented three model answers to the word problem/writing prompt and were asked to choose the "best" response:

Model answer A: Yes, she has enough. Because she has 50 feet.

Model answer B: Yes, Susan has enough fencing. She has 50 feet and she needs 48 feet. I added each side of the square to find the perimeter (12+12+12+12 = 48). The perimeter of the square is 48 feet. 48 is less than 50, so she has enough fencing.

Model answer C: Yes, she has enough fencing. She needed 48 feet and she has 50 feet.

All teachers agreed that model answer B was the best response. As a whole group, teachers analyzed this response to determine the specific components of this paragraph that made it the "best" one. Together, they created the following writer's checklist to use when responding to word problem/writing prompts 1) Answer the question in a complete sentence, 2) Describe the steps you took to solve the problem, 3) Use math vocabulary (e.g., added, perimeter, and less than), 4) Restate your answer. By analyzing the model answers and developing a list of that answer's effective writing components, the teachers were engaging in the best practice, "study of models," as identified by Graham

Table 6: Peer Review Writing Workshop Form

Instructions: You will work with a partner. 1) Read aloud the paragraph you wrote in response to the prompt. 2) Ask your partner the questions in the 2nd column. 3) Write your partner's responses in the 3rd column. 4) Complete the same peer review process with your partner's paragraph.

Writiing Trait	Ask Your Partner	Partner's Response
Idea: The purpose or message of the piece.	Did I answer the question in the prompt?	
Organization: The logic or structure of the piece.	Did I clearly describe all the steps I took to solve the problem, or is there missing information/steps?	
Word Choice: The vocabulary/ language a writer uses.	What are some examples of vocabulary or academic language that I used in my paragraph?	
Conventions: Use of grammar, mechanics, spelling, and punctuation.	Where are places that I need to correct spelling, grammar, or punctuation?	

and Perin (2007).

Word Problem and Writing Prompt (Strategy 3)

Teachers were then given a second opportunity to take on the persona of a middle grades student writer and compose a response to a second word problem/writing prompt. This time, the teachers were told to use their writing checklist as they composed their response to this prompt: *Mike has 25 feet of fencing. He plans to make a fence for his dog in the shape of a rectangle. The fence will be 10 feet long and 5 feet wide. Does Mike have enough fencing for his project? Explain how you came up with your answer in one paragraph.* After completing their responses, teachers worked with a partner to conduct a peer review workshop on one another's writing. Teachers used the peer review workshop form, displayed in Table 6.

The teachers explained that completing the second writing prompt activity was much easier than completing the first prompt activity. They noted that it was easier to write a detailed response to the prompt when that prompt explicitly asked for them to explain how they devised their answer to the math problem. Additionally, they commented that seeing the sample responses and developing the writer's checklist helped them better envision what their paragraph should look like. Finally, they liked participating in the peer review workshop because it allowed them the opportunity to see how others structured their paragraphs and to discuss their mathematical thinking. By participating in the peer review activity, the teachers were experiencing another best practice, as identified by Graham and Perin (2007): the revision process. Finally, as teachers engaged in the full sequence of instructional activities – from analyzing writing prompts, to analyzing model answers, to developing a writer's checklist, to composing a response, and to reviewing/revising their response – teachers engaged in a third best practice: writing for content learning (Graham & Perin, 2007).

Summary of Workshop Results

A second purpose of this article was to examine the perceptions of middle grades mathematics classroom teachers regarding the NCTM (2000) principle, which states that "students who have opportunities, encouragement, and support for writing, reading, and listening in mathematics classes reap dual benefits: they communicate to learn mathematics, and they learn to communicate mathematically" (p.60). That is, what connections (if any) did teachers notice regarding students' literacy achievement and mathematical

Table 7: Survey Results

Pre-Survey and Post-Survey Questions	Strongly Agree (SA)	Agree (A)	Neutral (N)	Disagree (D)	Strongly Disagree (SD)
Pre-Survey Students who read and write well are usually successful in mathematics.19% responded A.	0 0%	3 19%	5 31%	6 38%	2 12%
Post-Survey **Students who read and write well are usually successful in mathematics. 37% responded SA or A.**	1 6%	5 31%	6 38%	4 25%	0 0%
Pre-Survey Students can have very strong mathematical skills and still be poor readers and writers. 88% responded SA or A.	6 38%	8 50%	1 6%	0 0%	1 6%
Post-Survey **Students can have very strong mathematical skills and still be poor readers and writers. 94% responded SA or A.**	5 31%	10 63%	1 6%	0 0%	0 0%
Pre-Survey I can recall certain students that appear to have proficient math skills but underperform in solving mathematical word problems. 88% responded SA or A.	7 44%	7 44%	1 6%	0 0%	1 6%

achievement? Teachers completed a pre-survey and post-survey; their responses are as follows in Table 7.

In both the pre-survey and post-survey, fewer than half of the teachers believed that students who read and write well are usually successful in mathematics. In fact, only 19% agreed or strongly agreed with this statement in the pre-survey, and 37% agreed or strongly agreed in the post-survey. Similarly, nearly all teachers agreed or strongly agreed that students could have strong mathematical skills and poor reading or writing skills. Therefore, teachers did not perceive a strong link between students' literacy proficiency and math content proficiency.

Next, teachers were asked to reflect upon their actual classroom experiences. In response to a pre-survey item, 88% of teachers said they agreed or strongly agreed to the statement, "I can recall certain students that appear to have decent math skills but underperform in solving mathematical word problems." Thus, the majority of teachers admitted to having worked with students who seemed to struggle, in particular, with word problems despite possessing otherwise competent content knowledge. According to new standards recently implemented at the national and state levels, students must demonstrate more than procedural fluency in mathematics. That is, students must be able to comprehend complex word problems and communicate their understanding orally and in writing (National Governors Association & Council of Chief State School Officers, 2010; Georgia Department of Education, 2015). According to these standards, students must "think critically" to create "reasoned, logical connections" as they solve problems (GADOE, 2015, p. 2). To do so, students will need to possess the necessary reading and writing skills. In turn, teachers must be equipped with strategies to assist students in both mathematics and literacy instruction.

The third purpose of this article was to determine the impact or lack thereof of the professional development in the teachers' classrooms. Teachers completed pre- and post-surveys in which they identified their understanding and use of literacy instructional strategies within their classrooms and reported on their knowledge gained from the workshop sessions. Survey results are as follows in Table 8.

Although 75% of the teachers responded that they currently use reading and writing strategies to teach

Table 8: Professional Development Impact Survey

Pre-Survey and Post-Survey Questions	Strongly Agree (SA)	Agree (A)	Neutral (N)	Disagree (D)	Strongly Disagree (SD)
Pre-Survey Currently I use reading and writing strategies to help teach my students mathematics.75% responded SA or A.	2 12%	10 63%	3 19%	1 6%	0 0%
I am confident in selecting appropriate reading andwriting strategies for my students to use in studying mathematics. 50% responded SA or A.	1 6%	7 44%	6 38%	1 6%	1 6%
I can list at least 4-6 reading strategies that target teaching mathematics. 6% answered SA.	1 6%	0 0%	10 63%	4 25%	1 6%
I can list at least 4-6 writing strategies that target teaching mathematics. 12.5% answered SA.	2 12.5%	0 0%	9 56%	3 19%	2 12.5%
Post-Survey **I understand and can list some of the reading strategies presented that target developing mathematical literacy. 100% responded SA or A.**	**7** **44%**	**9** **56%**	**0** **0%**	**0** **0%**	**0** **0%**
I understand and can list some of the writing strategies presented that target developing mathematical literacy. 100% responded SA or A.	**7** **44%**	**9** **56%**	**0** **0%**	**0** **0%**	**0** **0%**

students mathematics in the pre-survey, only 50% of teachers reported that they were confident in selecting appropriate reading and writing strategies. Prior to participating in the reading and writing professional development sessions, merely 6% could list four reading strategies and 12.5% could list four writing strategies. The pre-survey data, then, indicated that many of these middle grades teachers lacked knowledge of reading and writing strategies as well as the confidence for selecting and using such strategies in their classrooms, particularly with students who struggle with understanding the content material.

Table 9: Final Project Evaluation

#	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	During Fall 2015, I implemented some of the ***reading*** strategies presented during the Summer Reading Workshop that targeted developing mathematical literacy through reading.					
2	During Fall 2015, I implemented some of the ***writing*** strategies presented during the Summer Writing Workshop that targeted developing mathematical literacy through writing.					
3	Students who read and write well are usually successful in mathematics.					
4	Students who do not read and write well are not usually successful in mathematics.					

Following the professional development sessions, the post-survey results reflected that 100% of the teachers could list some of the reading and writing strategies. Yet, understanding how to use a strategy hypothetically and actually implementing that strategy in one's classroom are two distinct tasks. To determine to what extent the reading and writing professional development sessions impacted teachers' real-world instructional practices, a follow-up survey was emailed to each of the summer teachers during fall semester (see Table 9). None of the teachers chose to participate in this follow-up survey, which included the following items.

Additional open-ended questions included 1) If you implemented any of the reading strategies, which ones worked best for you and your students? 2) If you implemented any of the reading strategies, which ones worked best for you and your students? 3) What are some obstacles that have prevented you from teaching mathematics using research-based reading and writing strategies?

Article Findings and Next Steps

Pre-survey and post-survey results indicated that the majority of this article's teachers did not see strong connections between students' literacy and math skills, despite the fact that these teachers are being held accountable by new standards emphasizing literacy. As these teachers adapt their curricula and instruction to the newly adopted math and literacy standards, ongoing professional development will be needed to ensure all students receive adequate support.

In fact, the NCTM acknowledges the need for all educators to receive training in the new standards by recommending "[s]ubstantial opportunities for ongoing professional development" and by acknowledging that "systematic improvement takes a number of years" (2013, p. 60). This call for ongoing and "substantial" professional development echoes other scholarship regarding effective teacher development (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009, p. 21). That is, "[w]hile many teachers get a day or two of professional development on various topics each year, very few have the chance to study any aspects of teaching for more than two days" (Darling-Hammond et al., 2009, p. 20). As a result, these limited or one-time events may not significantly impact teachers' practices.

Clearly, teachers' survey responses indicate that taking part in one brief session did not allow them the time to gain in-depth knowledge of the literacy instructional strategies. Next, teachers were provided stipends for participating in the week-long series and in follow-up sessions focused on mathematics instruction. Their participation in completing the follow-up literacy survey and in implementing reading and writing strategies from the sessions was voluntary. Since none of the teachers completed the follow-up literacy survey, it is unknown as to what extent the teachers may have integrated strategies from the workshop into their classroom settings. As scholars (Darling-Hammond et al., 2009) have noted, "professional development is most effective when it addresses the concrete, everyday challenges involved in teaching and learning specific academic subject matter" (p. 10). Thus, it is recommended that future professional development series include follow-up sessions, preferably held during the academic year and focused specifically on the real-world challenges mathematics teachers face as they implement newly learned strategies.

References

Barton, M.L. & Heidema, C. 2002. *Teaching reading in mathematics.* A supplement to teaching reading in the content areas: If not me, then who? Aurora, CO: Mid-continent Research for Education and Learning.

Cantrell, Susan Chambers, Leslie David Burns, and Patricia Callaway. 2009. "Middle- and High-School Content Area Teachers' Perceptions about Literacy Teaching and Learning." Literacy Research and Instruction 48 (1): 76–94.

Darling-Hammond, L., Wei, R.C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad.* Dallas, TX: National Staff Development Council.

Educational Foundations. 2002. Misunderstood Minds. *Difficulties with Mathematics.* Retrieved from: http://www.pbs.org/wgbh/misunderstoodminds/mathdiffs.html

Georgia Department of Education. (2015). Georgia standards of excellence. Retrieved from https://www.georgiastandards.org/Georgia-Standards/Documents/Grade-6-8-Mathematics-Standards.pdf

Gere, A., Homan, E., Lilge,D., Neiderhiser, J., Parsons, C., Spooner, R.A., Swafford, S., & Uzogara, C. (2013). *Comprehensive literacy.* National Council of Teachers of English. Retrieved from http://www.ncte.org/library/NCTEFiles/Resources/Journals/CC/0223-mar2013/CC0223PolicyBrief.pdf

Graham, S. & Perin, D. (2007). *Writing next: Effective strategies to improve writing of adolescents in middle and high schools.* New York: Alliance for Excellent Education.

International Literacy Association. (2015). *Collaborating for success: The vital role of content teachers in developing disciplinary literacy with students in grades 6-12.* Retrieved from http://literacyworldwide.org/searchresults?indexCatalogue=fullsitesearch&searchQuery=call+for+all+teachers+%E2%80%93+across+grade+levels+and+content+areas+%E2%80%93+to+engage+in+literacy+instruction.&wordsMode=0

Lattimer, H. (2014). *Real-world literacies.* Urbana, IL: National Council of Teachers of English.

National Governors Association & Council of Chief State School Officers. (2010). *Common core state standards for English language arts & literacy in history/social studies, science, and technical subjects.* Washington, DC: Authors. Retrieved from http://www.corestandards.org/wp-content/uploads/ELA_Standards.pdf

National Council of Teachers of Mathematics (NCTM). 2000. *Principles and Standards for School Mathematics.* Retrieved from http://www.fayar.net/east/teacher.web/math/standards/document/chapter3/comm.htm

National Council of Teachers of Mathematics (NCTM). 2013. *Supporting the common core state standards for mathematics.* Retrieved from http://www.nctm.org/uploadedFiles/Standards_and_Positions/Position_Statements/Common%20Core%20State%20Standards.pdf

National Council of Teachers of Mathematics (NCTM). 2016. Retrieved from http://www.nctm.org/Publications/mathematics-teacher/2015/Vol108/Issue7/Anticipation-Guides_-Reading-for-Mathematics-Understanding/

Shanahan, Timothy, and Cynthia Shanahan. 2008. "Teaching Disciplinary Literacy to Adolescents: Rethinking Content-Area Literacy." Harvard Ed Review 78 (1): 40–59.

Urquhart, V. (2009). *Using writing in mathematics to deepen student learning.* Denver, CO: Mid-continent Research for Education and Learning.

Enhancing Literacy Skills through STEM Activities: A Case for STREAM

BY MARYANN TATUM TOBIN

The current buzz around STEM and the increased push towards programs that feature mathematics and the sciences give those of us in the literacy world pause, as we see the research funding pendulum swinging away from us and towards this shiny and new curriculum paradigm. But, what is presented here is an olive branch between literacy and STEM instruction and a perhaps a new way to view cross-curricular pedagogy. STREAM (Science, Technology, Reading, Engineering, Arts, and Mathematics) is a robust, multimodal approach for improving science, mathematics and literacy skills by embedding dynamic and artistic literacy-building activities into Science, Technology, Engineering and Mathematics (STEM) units (Breiner, Harkness, Johnson, & Koehler, 2012).

Proof of Concept

Since the Common Core standards were released nationwide in 2010, students have been required to develop much broader literacy skills that are transferrable across all content areas than previous years, especially in the "science and technical subjects" of the STEM disciplines (Bybee, 2010; NRCCSEPP, 2006; Stanovich, 1986; Stanovich & Stanovich, 1997). Therefore, we sought to establish a model for accomplishing this that aligned with developmentally appropriate STEM activities and fostered the development of language both about the activity and about the subject matter. What emerged was a model for developing STREAM units, centered around the Jamerson Design Process (Barger, Gilbert, Douglas, & Douglas, 2005) and Vygotsky's principle of the Zone of Proximal Development (ZPD) (1978). Our STREAM lessons included whole class direct vocabulary instruction, small group guided reading, and a collaborative project in which students were required to plan, design, check, and share their solution to a content-specific design challenge, and demonstrate their understanding of knowledge through the creation of a digital story.

According to Vygotsky (1978), development is primarily influenced by socio-cultural interactions between children and adults where language is the main tool for learning and communication (Cole, 1996). Language, in this case, content-specific vocabulary words, is internalized into an inner "meta-language" that is used for self-regulation: planning, monitoring, and evaluating the task they are completing, all skills which the students used throughout the development and planning of both their engineering design challenge and their digital stories. The mechanism that mediates the use of this meta-language in a group setting is the ZPD, which is the developmental area between the child's independent performances of a task and those tasks performed with a more skilled peer or adult's assistance (Thomas, 1985). Within the ZPD, participants are able to develop and use specific language for and about the activity.

To facilitate development of the STEM design challenge, the Jamerson Design Process (Barger, et al., 2005) was selected as a framework to guide the activities within the STEM units, as it is a modified version of the engineering design cycle adapted for use with elementary students in grades K to 5. In order to fully-support the STREAM model, the four phases of Jamerson's Design Process align with the four phases of active reading proposed by Dole, Duffy, Roehler, & Pearson (1991) in which readers make a plan for reading a new text, monitor their comprehension while reading, clarify their understanding by asking questions, and summarize learned information into meaningful units (see Appendix A). In this STREAM example, Vygotsky's principles are instantiated by both the engineering design challenge and the digital storytelling activity in which students are required to think metacognitively about their activity pre-, during, and post-engagement. Likewise, to create an environment for fostering ZPDs, both engineering design challenges and digital storytelling activities required students to work in small groups, externalizing their thinking with language and mediating their interactions with language and instrumental tools. The outcome for students is a reconstructed literacy system, including the means of acquiring new vocabulary that can be transferred to any content area (Blanton, Pilonieta, & Wood, 2007).

Setting

During the 2014-2015 school year, a large, private university in partnered with an underperforming, public elementary school, to target content area reading skill development with struggling fourth grade students, specifically with science and technical texts. The partnering school received an "F" grade on the state-wide assessment and was identified as a FOCUS-D school by the Elementary and Secondary Education Act (ESEA). Of the 608 students enrolled in grades PK-5, 96% are on free or reduced lunch. Additionally, the school serves a predominately minority population, with 91.7% of the students identifying as Black/

African-American and 5.42% as Hispanic. In 2013, this Title I School had failed to make Adequate Yearly Progress (AYP) for the previous two years and had been consistently in the bottom 20% of all schools in the state. In low-SES, urban schools such as this one, students often have not had the same access to quality resources and may fall farther behind their peers (Au, 1991; 1997; Ogbu, 1987; Stanovich, 1986; Taylor & Dorsey-Gaines, 1988). However, evidence has shown that students in underperforming schools who are given access to quality instruction and research-based learning strategies across the content areas can be successful in their school careers (Alvermann, Phelps, Ridgeway, 2006; Duke, 2007).

Grade four is a pivotal year for young readers when they are expected to have transitioned from "learning-to-read" to "reading-to-learn," which is colloquially referred to as the "fourth-grade slump" (Torrance, 1967; Hirsch, 2003). Students who do not successfully acquire the skills necessary to navigate increasingly difficult vocabulary in the content areas are at greater risk of falling into the slump, thus precipitating the need for interventions as this crucial stage (Graves & Slater, 1987; Stockard, 2010). However, little research is available to guide development of activities that address the recent implementation of the Common Core State Standards (CCSS) and the cognitive demands placed on students to navigate disciplinary text of increased complexity (Tobin & Blanton, 2014). To that end, research is needed to promote the transfer of strategies learned in reading classes with the content area strategies necessary to succeed in reading science and technical subjects (Mooney & Laubach, 2002; Biancarosa & Snow, 2006; WWC, 2010).

Implementation

Groups of students were given the design challenge of creating a boat with various pre-selected, recycled materials that would float and hold a designated amount of weight. The initial challenge presented to the student groups included a storyline in which their principal was stranded on a deserted island with no supplies except specific materials that would wash up on shore as a result of marine pollution. After cycling through the Jamerson Design Process, groups were then asked to create their own digital story in which they told a narrative about their principal using their design process to create a means of survival and escape.

Phase One: Plan. In the Plan phase, students developed their ability to research by investigating marine pollution via multiple resources, in this case, facilitator selected texts at varied levels. As the students prepared to read, they were led through standard pre-reading practices, such as prediction and schema activation. In this school setting, a Title I grant allowed for the purchase of iPads and rich, printed informational leveled readers on marine pollution to be used for this activity. At the end of the plan phase, each group collaboratively decided on a prototype boat design to be constructed based on their research.

Phase Two: Design. In the Design phase, students simultaneously collaborated on their boats and their digital story. They engaged in discourse using their newly-acquired vocabulary and STEM content knowledge to negotiate design decisions as they built their boats and began storyboarding their digital stories (Lindeman, Jabot, & Berkley, 2013). The parallel interactions between informational knowledge and the narrative construction of story instantiates the principles of the STREAM model.

Phase Three: Check. During the Check phase, students tested whether their boats could hold the required weight. Groups with boats that did not float returned to phase one or two of the design cycle to problem solve, thus developing their ability to think critically and continue using vocabulary to negotiate and collaborate (Molina & Rivera, 2015). Groups with boats that did float then knew which materials to include in the narrative of their digital stories in which their principal successfully constructed a

boat out of marine litter and escaped the island. To complete their digital stories, students documented their boats' construction using the iPads to take pictures and Powerpoint to create a slideshow of images and animation, affording students a creative outlet for artistic expression and another medium for demonstration of their ability to plan, monitor, negotiate and evaluate their understanding cooperatively (Hull & Katz, 2006; Tobin, 2012).

Phase Four: Share. In the Share phase, groups presented both their final boat, including an accounting of their design process, and their digital story. This sharing requires them to practice their vocabulary, convey challenges they encountered, and make recommendations and for the next time they would attempt this project. Facilitators asked content-specific predicting and clarifying questions to help solidify student knowledge and assess their overall understanding.

Evidence of Effectiveness

The purpose of this documentary account was to explore the ways in which a STREAM approach impacted the content area vocabulary development of struggling fourth graders. A combination of both quantitative methodologies (a paired t-test) and qualitative methodologies (triangulation of field notes and student work samples) were utilized to accomplish this task.

Quantitative Data Sources. Data sources included pre and post vocabulary assessments from the Vocabulary Knowledge Task (VKT) subtest of the state's progress monitoring assessment were used to establish this proof of concept (Florida Department of Education, 2009b). To analyze the results of the VKT assessments, a paired t-test was utilized. A Type 1 error of was set, so that statistical significance would be found at $p < .05$.

The VKT subtest is aligned to the state standards for language arts and assesses a student's ability to complete sentences using the appropriate content area vocabulary word, similar to the well-established cloze assessment model (Taylor, 1953). Students must also identify the morphologically correct vocabulary word based on context clues and the options provided. The VKT is administered three times a year on computer. For this study, we analyzed the growth between the second and third administrations of this assessment.

Qualitative Data Sources. Data sources include student created storyboards, digital stories, field notes from classroom observations of the students involved in the STREAM activities, and qualitative questions on the student survey. Qualitative artifacts will be coded in a three-step process as described by Miles and Huberman (1994) and analyzed for themes. An a-priori list of codes for first-level coding, including pertinent vocabulary, will be developed and expanded as needed during the data analysis.

Preliminary Findings. Results of the paired t-test comparing the pre and post VKT assessment was found to be $p < .01$ ($p = 0.003$) indicating there was a significant difference in participants' vocabulary knowledge after engaging in STREAM units that included the elementary engineering design cycle. Other data sources will be analyzed to further understand the impact of participation in STREAM activities on fourth grade students' vocabulary development.

Scholarly Significance

Preliminary quantitative findings suggest there is value in incorporating literacy into STEM activities with elementary students in order to enhance their vocabulary knowledge. Research indicates that students in underperforming schools often lack access to a technology-rich learning environments, resulting in lower achievement in reading, specifically in their content area vocabulary knowledge (Beck, McKeown, & Kucan, 2002; Kamil, Borman, Dole, Kral, Salinger, & Torgesen, 2008; Riddle-Buly & Valencia, 2002; Slavin, Lake, Chambers, Cheung, & Davis, 2009). Since low-SES schools are often also under-resourced, multi-disciplinary literacy approaches, such as STREAM units, can positively affect students' vocabulary development across subject areas (Kamil, et al., 2008; Slavin, et al., 2009). The STREAM approach offers 21st century educators a dynamic way to engage students in activities that promote literacy development, provide all students with collaborative opportunities that integrate technology into the curriculum, and promote multidisciplinary learning, irrespective of their socio-economic status or the classification of their school under ESEA. (International Literacy Association, 2000).

Conclusion

Perhaps the most compelling argument for the STREAM approach is a need to keep literacy at the focus of all instruction, even in content-rich, cross-curricular paradigms such as STEM learning. Reading is the key to unlocking all content areas, and should not be taught or viewed as an isolated skill set. Without the ability to read and write, students will be unprepared for future STEM challenges, regardless of the robustness of their subject area knowledge or their facility with technology. Critical analysis, reading for meaning, and the abstract thinking provided by engaging in visual literacy and the arts are essential to graduating well-rounded, fully-prepared students who can meet the demands of college and the workplace.

Using Language to Promote Literacy in Young English Language Learners

By Lama K. Farran and Mona W. Matthews

All children walk into our schools using ways they have learned to communicate and problem solve within their homes and communities. These "ways of knowing" are important, familiar, and valued because children have learned them at the knee and by the sides of those they care about the most. As educators, we need to value the "ways of knowing" or "funds of knowledge" (Gonzalez, Moll, & Amanti, 2005) that accompany all students to school. However, for English language learners (ELLs) or children whose first language is not English, if we don't know about their communities and homes, we are teaching blind, so to speak. In this paper, we focus on one foundational area for early literacy development – oral language as a window into ELLs' cultural and linguistic backgrounds, and outline ways teachers can become familiar with their ELLs' "ways of knowing." First, we discuss language as a phenomenon that evolves naturally and serves as the basis upon which literacy develops. Then we offer a number of suggestions for ways teachers can enhance language to benefit young children's literacy development in the preschool through 2nd grade period.

What Makes Language Special?

We view language broadly. At a basic level, language is made up of multiple components: semantics, phonology, morphology, syntax, and pragmatics (MacWhinney, 2011; Paul & Norbury, 2011). These components work in concert and play a role in learning to read. For example, children must learn how to cross-check syntactic, semantic, and graphophonic cues in text to determine if their reading makes sense. In addition to the language components, language comes in many forms, such as, questions, phrases, and sentences, which then we organize to accomplish different functions and purposes, such as asking questions to gather information.

Most importantly, what makes language special is that humans are the only species that enters the world prepared to learn the language spoken around them. The marvel of that preparation is that the human infant learns that language regardless of context, phonological input, grammatical structure, or semantic landscape (Tomasello, 2003). Without instruction, children learn the linguistic elements via day-to-day interactions with others. In a few years, the language the children speak conforms to the social and linguistic contexts in which it was developed. Of significance, absent a biological constraint or extreme deprivation, all children learn to talk and are able to engage with others in their environment.

This ability for children to learn the language spoken around them, along with its meaning and function, is what ties them to their home and community (Gee, 2001). The words, phrases, and sentences spoken come embedded within images, emotions, and children's perceptions of their world (Gee, 2001). Thus, much of children's identities resides in language and connects them with others who share that language (Gee, 2013).

The understanding and knowledge of the world in which children live are intertwined intimately with children's home language, social-emotional experiences, and cultural identity. Therefore, as children enter school, they bring with them a wealth of information about language—how language sounds, how language is organized, what nonverbal cues add to their words, and the names and meanings of objects around them (Orellana & D'warte, 2010). Teachers must thus draw upon these resources children bring to the learning context to provide continuity between children's previous home experiences and their new experiences in school. It is through the use of children's home language that teachers recognize and express their appreciation and the importance of children's cultural and linguistic backgrounds (Razfar & Gutierrez, 2013).

However, all too often, especially for children whose home language differs from that spoken at school, this vast language knowledge is ignored or rendered irrelevant when children enter school. Because that knowledge comes embedded within images, emotions, and perceptions of their home and community (Tomasello, 2003), viewing that knowledge as irrelevant, by implication, renders their home and community irrelevant (Orellana & D'warte, 2010).

As concerning as this is, when this information is ignored, lost is the foundation upon which formal reading instruction should be based. Clay (2001), in her *Theories of Literacy Processes*, describes literacy as a developmental process that begins at birth. During the early years prior to formal literacy instruction, children acquire multiple language-based systems they use to process information from their environment. These informal systems should serve as the foundation upon which to base formal literacy instruction and include:

(a) talking (the sound and organization of language); (b) looking (the visual forms of the objects, events, and pictures); (c) storying (the organization and meaning of stories); and (d) understanding (the routine nature of the activities and events that organize their days) (Clay, 2001).

Why Is Supporting Children's Home Language and Literacy Important?

Although implied previously, we summarize several key characteristics that make the language children bring with them to school invaluable because of its connections to their home and community and to their overall literacy development. Children learn language by interacting with important others in their environment, essentially without formal instruction. Through these interactions, children acquire the patterns that constitute the language they hear and eventually speak as they strive to understand and interact with others around them. Because learning to read is a developmental process that begins at birth, reading instruction should be built on how young children have learned to make sense of their world prior to formal schooling.

Children's home language serves as the foundation that enables children to understand and navigate their physical and social environment (Kohnert, Yim, Nett, Kan, & Duran, 2005) and is associated with positive cognitive outcomes (Bialystok, 2001). From a developmental perspective, children's oral language and literacy are intimately tied in primary (home) and second language. Research shows that a strength in home language (L1) predicts second language (L2) outcomes as well as L1 and L2 literacy outcomes (August & Shanahan 2008; Durgunoglu & Goldenberg, 2012). Importantly, literacy experiences promote the use of decontextualized language, which is positively related to early reading success (Snow et al, 1998) and vocabulary growth (Alvermann, Unrau, & Rudell, 2013).

Thus, the paramount role of oral language lies in being the first building block for literacy learning, with ample evidence suggesting a bidirectional relationship between oral language and literacy. As educators, we must address both language and literacy needs for young ELLs in preschool through 2nd grade. To that end, we offer the following suggestions.

Learn about the community and the family's literacy practices. Teachers in our courses implement a project called, "Whom Do You Teach?" to identify the literacy practices children participate in at home and the print they see in their community and the print available in their homes. The project includes several activities. Implementing one activity a month demonstrates to students and their families the commitment to learn about their "ways of knowing." The types of activities are limitless. To illustrate, we describe three activities we include in the project.

a. Take a walk through your teaching neighborhood. As you walk through the neighborhood, take photographs of the print the children see, for example street signs, billboards, names of stores, and store advertisements. Also, collect samples of print, such as community newsletters, handbills, and posts. Share these with your students. Each student can select one to write about which can be compiled with the others to form a class book of the neighborhood (see Figure 1 as an example a teacher collected.)

b. Interview your students about their lives outside of school. Sample questions include, but not limited to:

- Where does your family buy groceries?
- What does your family do that's fun?
- What music is played in your house?
- How does your family spend time together?
- Where do you do your homework?

c. Invite children to bring in one example of the print they see at home. Before you ask students to do this, share examples of the types of print you have in your home. Include print found in and on objects in addition to typical forms of print, such as newspapers or books. These could include a grocery list, notes to yourself, such as one to reminder you of an appointment. The items children bring to school can be displayed in the class on a bulletin board labeled, "Reading and Writing Found in our Homes." To further demonstrate your recognition of their language, include on the bulletin board a translation of the title in the languages spoken by the students in your class.

Figure 1

Identify information children bring to school from home. Because children learn about their world through the day-to-day interactions with family, we use Clay's list of informal systems (described earlier: talking, looking, understanding, storying) to guide our teachers' collection of this information (see Table 1 for an example). The information can be gathered from anecdotal comments made by the children, interviews with the parents, or home visits. You can gain further knowledge of students' home practices by actively recruiting family and community members to visit and present in your classroom about their cultures and daily literacy practices. This is especially helpful when the classroom teachers are not knowledgeable about children's L1.

Model use of language (all five components mentioned earlier) to enhance your students' language. (a) To teach semantics (meaning), introduce and teach words in storybooks before reading. Only choose key words. Fortunately many of the words children need to know to understand stories are words that represent emotions, for example *happy* and descriptors, for example *big*, for which they likely know a word in their home language (Hiebert & Cervetti, 2011). Ask students to share that word in their home language. Use photographs when available of common objects or words. Use semantic maps to help students identify, understand, and remember the meaning of words embedded within the texts they read. A semantic map provides a means for ELLs to make visual connections between sets of words or phrases, thus maximizing the ability to make meaning from print. To create a semantic map,

Table 1. Information from Children's Out-of-School Lives: An example from the Home of a Child of Spanish Descent

Talking: Sound & Organization of Language	Looking: Visual forms Objects, Events, Pictures	Storying: Organization of Stories	Understanding: Daily Routines	Reading and Writing: Print Forms and Materials
The "h" is silent; the letter "j" is absent in Spanish; The "v" in Spanish is pronounced as a b" in English. Spanish has longer words with more syllables than English. Spanish is a highly inflected language compared to English. Spanish adjectives are post-posed (house big); English ones are pre-posed big house). Spanish and English share cognates; children may bring Spanish words that have English cognates.	Child wears earrings and necklaces Child wears good medallion with Diosito (baby Jesus) and Santa Toribo (a saint) Home print objects include prayer books and a church newsletter	Each family member writes about their daily experiences in personal notepads Child scribbles in her notepad Mother and Father talk about life in Mexico so that the children, "Will not forget their home country." When a Great Aunt who lived in Mexico dies, the family shares stories about her	Family reads newspaper and writes letters to relatives Family plays music and dances Paper, notepads, pencils, crayons used at home to write during regular routines such as when Mom cooks dinner, child often sits in kitchen and writes and draws Family sits in living room after dinner and Dad reads the Bible and then they pray Child helps mother with English – Mother helps child with Spanish	Newspaper Notepads Bible Email Notes Prayer Books Church Newsletter

Source. Adapted from Roseberry-McKibbin (2002). Principles and Strategies in intervention.

select a target word that your ELLs do not know and place it in the middle of the paper (or page if using a digital medium online). Pronounce the target word and ask your students to repeat the word after you. Find words that fit the meaning of the target word and select pictures that depict the meanings of those words. (b) Introduce rare or low frequency words and challenging vocabulary including polysemous words (words with multiple meanings) as children advance in their learning (Beck, McKeown, & Kucan, 2002). (c) Encourage children's expression of meaning as opposed to "correct" utterances. This is especially appropriate during everyday conversations and the goal is to understand as opposed to those times when emphasizing enunciation. (d) Promote phonology by practicing the sounds of the alphabet in L1 and L2 and increase children's phonological awareness by focusing on the manipulation of word parts through play, such as using rhymes. (e) Promote morphology, by teaching and generating word relatives from a root word (Goodwin & Perkins, 2015). (f) Enhance syntax by modeling use of complex syntactic frames that stretch beyond children's current syntactic abilities (Paul & Norbury, 2011). Finally, (g) teach pragmatics or the use of language for social purposes by modeling greeting classmates or asking for assistance with homework (Paul & Norbury, 2011).

Another approach for promoting language to improve literacy is illustrated by Koizumi (2000), who emphasizes on the importance of responding to the child's current focus on interest. Koizumi introduces the idea of anchor points, which, we believe, adds significance to need to attend to children's attentional focus in order to stimulate their interest. An anchor point comes in many forms: a person, such as a friend; an object, such as the classroom rug; or an instructional routine, such as the teacher greeting each student at the door. Anchor points forge personal and affective connections to an environment and ease children's transition to school, thereby making them more comfortable and prepared for learning. Cobb (2007) in his study of how children transition from Mexican immigrant homes to English-dominant kindergarten classrooms describes how one student's, Victor's anchor points eased his transition to school and oriented his attention to learning. One of Victor's anchor points was the song the class sung each morning. When Victor entered the class on the first day of school, he was visibly upset. However, when the class moved to the front of the room to sing, he displayed his first smile, joined his classmates, moved his mouth to mimic singing, and performed the movements. School appeared to be fun for Victor during this time of day and as the year progressed, it became a primary anchor point from which he learned the words to the songs, participated with his classmates, and mastered the movements to the songs. What are your students' anchor points? Spend a few minutes each day, observing your students. Focus on one child at a time. What does the child attend to? When does the child lose focus?

Move across symbol systems. English learners need a lot of practice in using oral language (Dickinson, Golinkoff, & Hirsh-Pasek, 2010). The production of L1 and L2 oral language can be accomplished in multiple ways including nursery rhymes, repeated book reading, and singing. Further, engaging in dramatic play and following story reading with drawing has been shown to enhance comprehension (Mages, 2006). Combining symbol systems maximizes opportunities to enhance children's literacy development. For example, Short, Harste, and Burke (1996) describe an activity they call Sketch-to-Stretch (1996) which asks children to draw after hearing a story to illustrate what the book makes them think of. This allows children to make personal connections to the story. Moving across symbol systems, such as reading to art, singing to dramatic play, or reading to physical movement deepens thinking and stimulates imagination. Always when combining symbol systems, make sure at least one provides an opportunity for the children to practice using language.

Create a "Literacy Playlist" of songs. An axiom of reading is that the more students read the better they get at reading (Stanovich, 1986). In this activity, teachers use singing as a way to increase the amount students read and to reinforce critical beginning reading skills and understandings. Iwasaki, Rasinski, Yildirim, and Zimmerman's (2013) recommend using songs to teach reading to young children. Teacher with whom we work, have found including songs and singing can be used successfully with ELLs. Each week the teacher introduces a new song to the students. The teacher displays the words to the song on a chart. Singing while tracking the words to the song enables the teacher to reinforce critical beginning reading skills, such as, phonological and phonemic awareness, sight word recognition, and comprehension (Iwasaki et al, 2013). At the end of the week, the chart is hung on a chart stand and placed in a center for children to read during center time. Singing offers a way for English language learners to experience the sounds, rhythms, and intonation patterns of English. Teachers tell us their students really enjoy this "less stressed" way to read and they enjoy teaching important reading skills and understandings through such a fun way. (Refer to the article for a full description of how one teacher used songs to build her students literacy learning.)

Conclusion

Ample evidence demonstrates the potent role oral language plays in literacy learning. However, the

language children learn in the laps and by the sides of those closest to them comes embedded within experiences, images, and emotions that tie them to their families in communities. Thus, oral language provides a window into ELLs' cultural and linguistic backgrounds. We hope the suggestions described in this paper offer teachers a way to peek into that window, thereby enabling them to become more familiar with their ELL students' "ways of knowing."

References

Alvermann, D., Unrau, N., & Ruddell, R. (Eds.) (2013). *Theoretical models and processes of reading* (6th ed.). Newark, DE: International Reading Association.

August, D., & Shanahan, T. (Eds.) (2008). *Developing reading and writing in second language learners* (pp. 1-17_. New York: Routledge.

Beck, I., McKeown, M., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction.* New York: Guilford Press.

Bialystok, E. (Ed.) (2001). *Bilingualism in development: Language, literacy, and cognition.* New York: Cambridge University Press.

Clay, M. M. (Ed.) (2001). *Change over time in children's literacy development.* Portsmouth, NH: Heinemann.

Cobb, M. B. (2007). *Keep your eyes on Ms. Clark: Two Mexican immigrant children make the transition to kindergarten* (Unpublished doctoral dissertation). Georgia State University, Atlanta, GA.

Dickinson, D. K., Golinkoff, R. M. & Hirsh-Pasek, K. (2010). Speaking Out for Language: Why Language Is Central to Reading Development, *Educational Researcher*, 39(4), 305-310.

Dugunoglu, A. & Goldenberg, C. (Eds.) (2012). *Language and literacy development in bilingual settings.* New York: The Guilford Press.

Gee, J. P. (2001). Reading as situated language: A sociocognitive perspective. *Journal of Adolescent & Adult Literacy*, 44(8), 714-725.

Gee, J. P. (2013). Reading as situated language: A sociocultural perspective. In D. E. Alvermann, N. J. Unrau, & R. B. Ruddell (Eds.), *Theoretical models and processes of reading.* (pp. 136- 151). Newark, DE: International Reading Association.

Goodwin, A., & Perkins, J. (2015). Word detectives: Morphological instruction that supports academic language. *The Reading Teacher*, 68(7), 510-523.

Gonzalez, N., Moll, L., & Amanti, C. (Eds.) (2005). *Funds of knowledge: Theorizing practices in households and classrooms.* Mahwah: Lawrence Erlbaum Associates Publishers.

Hieber, E. H., & Cervetti, G. N. (2011). What differences in narrative and informational texts mean for the learning and instruction of vocabulary. *Reading Research Report #1101.* San Francisco: TextProject, Inc. Retrieved from http://textproject.org/assets/publications/TextProject_RRR-11.01_Vocabularies-of-Narrative-and-Informational-Texts.pdf

Iwasaki, B., Rasinski, T., Yildirim, K., & Zimmerman, B. S. (2013). Let's bring back the magic of song for teaching reading. *The Reading Teacher*, 67(2) 137-141.

Kohnert, K., Yim, D., Nett, K., Kan, P., & Duran, L. (2005). Intervention with diverse preschool children: A focus on developing home language (s). *Language, Speech, and Hearing Services in Schools, 36*, 251-263.

Koizumi, R. (2000). Anchor points in transitions to a new school environment. *The Journal of Primary Prevention*, 20(3), 175-187.

MacWhinney, B. (2011). Language Development. In M. H. Bornstein & M. E. Lamb (Eds.), *Developmental Science: An advanced textbook* (6th ed., pp. 529-579). East Sussex, Great Britain: Psychology Press.

Mages, W. K. (2006). Drama and imagination: A cognitive theory of drama's effect on narrative comprehension and narrative production. *Research in Drama Education*, 11(3), 329-340.

Orellana, M F., & D'warte, J. (2010). Recognizing different kinds of "head starts," *Educational Researcher*, 39(4) 295-300.

Paul, R. & Norbury, C. (2011). *Language disorders from infancy through adolescence: Listening, speaking, reading, writing, and communicating* (4th ed.). Mosby.

Razfar, A. & Gutierrez, K. D. (2013). Reconceptualizing Early Childhood Literacy: The sociocultural influence and New Directions in Digital & Hybrid-mediation p. 52-79. In J. Larson and J. Marsh (Eds.), *The Sage Handbook of Early Childhood Literacy* (2nd ed., pp. 52-79). Los Angeles: Sage Publications.

Roseberry–McKibbin, C. (2002). Principles and strategies in intervention. In A. Brice (Ed.), *The*

Hispanic child: Speech, culture and education (pp. 199–233). Boston, MA: Allyn and Bacon.

Short, K., Harste, J., & Birke, C. (1996). *Creating classrooms for authors and inquirers.* Portsmouth, NH: Heinemann.

Snow, C. Burns, S., & Griffin, P. (Eds.) (1998). *Preventing reading difficulties in young children.* Washington, DC: National Academy of Sciences.

Stanovich, K. E. (1986). Mathew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21, 360-407.

Tomasello, M. (2003). *Constructing a language: A usage-based theory on language acquisition.* Cambridge, MA: Harvard University Press.

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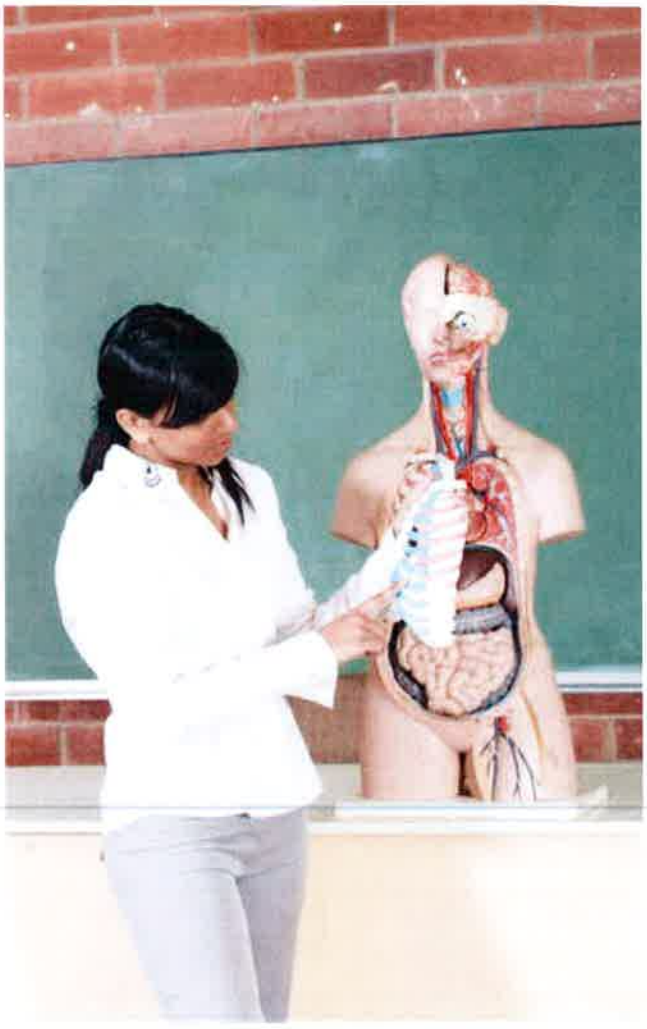
Rethinking Assessment: Using Project-Based Learning to Assess Student Learning

By Laura Shelton and
Brooke Langston-DeMott

Ms. Terrle, a fifth grade teacher, is teaching about the circulatory system. She shows a video that explains how the heart pumps blood through the body. She introduces the vocabulary words students will see in their text: blood vessels, veins, arteries, capillaries. She asks students to look the words up in the glossary and write the words and definitions in their science journals. Ms. Terrle has students work in pairs to read chapter 6 in their science books to learn about the circulatory system. Students then complete a worksheet answering comprehension questions about the text. Finally, she assesses students' learning by administering a test with multiple-choice questions, a diagram that students must label, and a short essay in which they describe what they know about the circulatory system.

Across the hall, Ms. Magby's fifth grade students are also learning about the circulatory system. She begins by having students measure their pulse before and after doing a series of exercises. Then, she has them discuss the data with one another to investigate why their heart rate increases with their activity level. Next, her students read articles about celebrities with heart conditions. As they read and discuss the articles, students post questions on a bulletin board for the class to investigate later. The students are then challenged with an engineering task based on a real-world case study of a child with a hole in their heart. Students must work as biomedical engineers to design a working model of a circulatory system to understand the child's condition and find out which parts of the body might not be getting enough circulation. They enter the classroom each morning excited to learn! Throughout the planning and construction process, students conduct gallery walks and provide feedback to each other. They also receive feedback from Ms. Magby who uses checklists and rubrics to assess student progress. After testing and redesigning their model, students write a reflection about how their model addresses the case study and connects to the circulatory system.



In which of these classrooms does the most authentic learning take place? Which one provides a more motivating experience? Which classroom provides a well-rounded picture of student understanding of the content? The description of Ms. Magby's classroom is one where project-based learning (PBL) is being implemented--students are engaged, motivated, and learning! As educators who, like Ms. Magby, have seen many academic and motivational benefits to students engaged in PBL, the authors of this paper want to encourage educators to incorporate this approach to teaching and learning in their own classrooms. The purpose of this article is to provide an overview of PBL, describe its benefits for students, and help educators think about ways to implement PBL while using PBL as a tool for assessing student understanding. In the following pages we first describe PBL, synthesizing definitions from the literature. We then discuss the ways PBL benefits students, discussing both cognitive and motivational benefits. Next, we address the teacher's role and provide examples of how educators can implement PBL in their classrooms. Finally, we share how teachers can assess PBL through the

development of rubrics and the use of formative and post assessments.

What is Project-Based Learning?

Project-based learning, or PBL, is a type of performance task, where students are asked to complete an open-ended, long term project around specific content area standards. The National Education Association (2014) describes the PBL approach as being developed by John Dewey in the early 1900s. It was originally known as the "learning by doing" method. More modern PBL requires students to learn by doing as well as to develop skills and knowledge through engagement with projects that investigate real-world problems, working to answer questions relevant to student lives, or thinking through authentic challenges (Bell, 2010). Using projects to teach allows students to apply content rather than memorize and recall information for a test. It provides opportunities for students to focus on learning goals, solve meaningful problems, practice sustained inquiry, engage in learning for authentic purposes and produce for authentic audiences (Bell, 2010). PBL creates an enriching environment where students are engaged in meaningful learning, while teachers capture data on student knowledge and understanding.

PBL is also a way educators can assess students authentically. Since the implementation of the No Child Left Behind Act in 2002, there has been an ever-increasing focus on assessing students through standardized testing. However, there are many issues with relying solely on this type of assessment to understand student achievement. For example, "multiple choice tests do not reflect the nature of performance in the real world, which rarely presents people with structured choices" (Darling-Hammond & Adamson, 2010, p. 3). Darling-Hammond (2014) urged teachers to move toward assessments that improve learning. Specifically, she encouraged educators to question the current forms of assessment and ask: "How can we engage students in assessments that measure higher order thinking and performance skills—and use these to transform practice? How can these assessments be used to help students become independent learners, and help teachers learn about how their students learn?" (Darling-Hammond, 2014, p. 12). Engaging in the authentic assessments, such as those implemented through PBL, is one way teachers can address the concerns of assessments.

Authentic assessment involves real world tasks, can be collaborative and co-constructed, allows for multiple products and artifacts, and can involve digital modes of assessment (Barber, King, & Buchanan, 2015). They are meaningful for students and require multiple modes of evaluation of their knowledge (Frey, Schmitt, & Allen, 2012). Student understanding is analyzed and tracked throughout each stage in an authentic assessment; and the criteria for success are continuously communicated to the students (Frey et al., 2012). From an engagement standpoint, authentic assessments, like those used in PBL, are "interesting, require complex thought, and require high levels of student participation" (Frey et al., 2012, p. 13).

Using authentic assessments is not a new idea in education reform. Creating a robust assessment such as a performance task or project creates curricular planning that is guided by "the overall purposes and goals of the instruction, not by miscellaneous content coverage pressures or test items" (Brophy, 2000, p.13). PBL offers an approach to assessment that requires students to explore and discover content using critical thinking and real-world problem solving skills. Because hands-on projects require higher order thinking, teachers can assess a student's understanding and application of the material. The result is a project that students have had ownership of and an opportunity for teachers to assess student-driven goals and gain insight into students' critical thinking. Researchers have shown that students who have opportunities to engage in learning such as PBL have higher academic achievement including better scores on standardized assessments and retention of knowledge than peers who have not had exposure to such instruction (Karacalli & Korur, 2014). Teachers that integrate PBL into their curriculum can assess a fuller picture of the student that goes beyond traditional formal assessment methods.

How does Project-Based Learning Benefit Students?

Collin, a student in Ms. Magby's class, rolled his eyes and let out a grunt of annoyance when Ms. Magby initially explained that students would be working on a project with their peers. Due to being retained in the first and then again in the third grade Collin is two years older than his peers. He is on a second grade reading level and to distract his classmates from his academic struggles he often engages in disruptive behavior. Knowing that Collin would initially resist having to work in groups, Ms. Magby encouraged Collin to brainstorm independently about how to address the case study before helping him select a group that would help him be successful. As Collin began sharing his thinking with his group, he became a leader among his peers. He also began to see how the circulatory system works because he was able to experiment with how the heart pumps blood throughout the body. One day, as he and his group were discussing how to fix a circulation problem in the leg of their model, - one of the straws kept closing up - Collin came up with an idea. His grandfather had a stint put in his leg which

helped hold one of his veins open. Collin suggested placing a tiny paperclip into the straw to hold it open. His group loved the idea, and best of all, it worked. As Collin's understanding grew, so did his confidence. This new role among his classmates made Collin want to go to school, and the real world context of the case study gave the project new weight.

As can be seen in the case study example above, the benefits to students who engage in PBL are countless! This approach to learning provides a space for students to use real-world problem solving skills, make connections to their lives, develop independence, and apply knowledge in ways that take advantage of their exploratory nature. The project Ms. Magby implemented required that her students use critical thinking skills to create working models and evaluate the work of their peers. Ms. Magby was able to collect data throughout the project by examining the feedback students provided to their peers and the reflections they wrote. Ms. Magby's students, including Collin, were engaged and excited about the material. They were given a sense of ownership by thinking through an authentic task. Trusting students to complete projects like this one boosts engagement and comprehension of material (Bell, 2010). It has also been shown to increase motivation and time on-task, as well as improve student learning outcomes (Ilter, 2014), as it did with Collin. Bell (2010), highlights additional benefits to students who engage in PBL, including increased independence, accountability to others (e.g., peers), and increased proficiency with twenty-first century skills such as negotiation.

PBL allows students to feel a sense of agency and take ownership of their education by promoting "learner-driven learning, catering to the needs and interests of the [individual] students" (Newell, 2003, p. 8). Moreover, it helps students develop life-long learning skills such as collaboration and responsibility (Bell, 2010; Newell, 2003). PBL increases student motivation by providing opportunities for students to write for authentic audiences and purposes (Bell, 2010; Tobias, Campbell, & Greco, 2015). It also creates space for students to make choices and learn about topics they are interested. In fact, Gallavan (2009) reported that students in elementary school describe any assignment resembling PBL as their "most satisfying and rewarding moments in school" (p. 86). By implementing PBL, education centers on the learner and their interests, instead of the instructor and assessments, making learning meaningful to students.

What is the Teacher's Role in Project-Based Learning?

Teachers who use PBL often act as a support and guide, coaching students through the project. The instructor role-shift can serve as a motivator for students. Moreover, research has shown that teachers who apply PBL in their classrooms find it "professionally transformative" (Colley, 2008, p. 28). When PBL is used as an approach to teaching and learning, classrooms transform into laboratories where teachers can become excited about learning alongside their students. In this way, the role of the teacher in PBL is that of consultant, facilitator, as well as learners themselves (Colley, 2008; Wray, 1999). When teachers are excited about learning and engage in the learning process themselves students become more enthusiastic about content as well (Newell, 2003). Ms. Magby facilitated instruction as she guided students through thinking about the challenges they ran into while designing their models—she asked questions such as, "How are you using the design process to help you solve this problem?" and "What are the most important things to consider when thinking about how you will repair this child's heart?"

When serving as a facilitator and guide, teachers must also plan student-led assessments throughout the process. This helps students take ownership in their project and allows the teacher to ensure that students are on track in completing the assignment. Similarly, teachers can develop checkpoints for students to use as confirmation they are making progress. Also, teachers will want to pay close attention to student collaboration efforts. Creating diverse groups helps students become more independent and can help facilitate cooperative collaboration (Bell, 2010; Hopper, 2014; Wray, 1999).

How Can Educators Implement Project-Based Learning?

Ms. Magby's enthusiasm for PBL inspired several other teachers to implement this approach to instruction in their own classrooms. For example, down the hall in Mr. Vernon's third grade classroom, students are asked to grow and sell plants at an upcoming community event to raise money for a field trip. Students are charged with surveying their parents and relatives on what kinds of plants they would be more likely to buy and researching how to grow and care for those plants from seedlings. They are also responsible for creating marketing materials to help promote their products before and during the community event and developing a report to summarize the success of the plant sale.

The project above has several components and integrates content from all subject areas; this can appear overwhelming at first. To begin implementing PBL, teachers use content standards to develop project criteria that are driven by a real-world problem.

Figure 1. Components of Project-Based Learning

Component	The Project Must:
1. Problem	- Be problem or question driven - Be based on a real-world situation - Be developmentally appropriate - Be open-ended - Be able to be solved in a variety of ways
2. Curriculum	- Be central to the curriculum - Be content focused - Target the use of specific skills (i.e. critical thinking; collaboration)
3. Product	- Require transformation of prior knowledge - Require research and field work - Be created for an authentic audience
4. Collaboration	- Be student driven - Provide opportunity to incorporate student talent - Provide opportunity for student voice to be heard
5. Assessment	- Be complex and multifaceted - Provide a rubric to guide students - Make use of formative assessments throughout
6. Reflection	- Include self-reflection that occurs throughout - Include peer evaluation - Incorporate peer feedback

Through this, the teacher identifies a problem that the children will work to solve. The teacher devises a question that will drive the project and will allow students to develop solutions to the problem.

Mr. Vernon posed an authentic problem of raising money for the field trip. This project was designed to develop student's fluency in addition and subtraction, as well as provide a real world context for multiplication to determine the volume of plants to be produced. Students also learned about economics and generated writing and art projects for an authentic audience, while learning about how plants survive in their environments--all of which are skills required in the third grade standards. This model of integrating content areas to PBL gives students a real reason to develop academic skills while maintaining a high level of rigor.

Ms. Magby also posed a real-world problem regarding fixing a hole in a child's heart as a way to teach students about grade level science standards focused on the circulatory system. She was able to integrate English Language Arts standards such as comprehension by having students read articles about this topic, writing by asking students to turn in a reflection at the end of the project, and speaking and listening by encouraging students to provide feedback to peers.

When trying to develop an assessment to measure understanding through PBL, it is important to remember that the main goal is for students to deepen their understanding of a variety of concepts (Wray, 1999; Frey et al., 2012). Gaining factual knowledge is only a small piece of engaging in PBL (Wray, 1999; Frey et al., 2012). Figure 1 provides an overview of six key components to consider when developing a successful learning project (Wray, 1999).

Teachers can create a checklist for students to follow to help them stay on track throughout the project. The checklist should include: various steps in the planning process, formative assessments, peer assessments, teacher feedback, student research, various revisions, presenting the project, and student reflections (Newell, 2003). It is important to note that requiring students to present their projects to an audience provides opportunities for students to showcase their work and review their peers' presentations. It also allows teachers to assess students' knowledge and true comprehension of the material. Presentations truly reveal how much students mastered the content and learned through the project process. To help teachers begin thinking about ways to implement PBL in their own classrooms, a sample list of topics appropriate for PBL has been provided in Figure 2.

Figure 2:

Teacher Action	Description
Examination	- Examine throughout - Final product
Observation	- While students work - Use checklist or rubric
Question	- Ask students what they are doing - Reflection questions - Prediction questions

Figure 3. Primary Ways to Assess PBL (Wray, 1999)

Grade Level	Topic	Content Area	Project Summary
K	Weather	Science	Students will observe and investigate different types of weather. They will use weather instruments to measure and record data. In their classrooms they will create a station where students can view daily weather and weather trends.
1	Habitats	Science	Students will design and test habitats for different types of insects and animals. Groups will decide which habitat may work best for which animal and why. The animals can include, but not be limited to: darkling beetles, rabbits, frogs, goldfish, and baby chicks.
2	Fables & Folktales	English Language Arts	Students will conduct their own author study focused on fables and folktales. They will work to create newspaper-style reviews for each book they read by a self-selected author in the given genre. Students will then share their reviews with another class aiming to teach their peers about the characteristics of fables and folktales.
3	Persuasive Writing	English Language Arts and Social Studies	Students will research and read about girls' education rights around the world. They will work in groups to decide on ways to raise money for girls' education efforts. Some ideas for fundraisers include organizing a 5Kwalk with care.org, raising money through trick or treat for UNICEF, or planning a fundraiser through the Malala fund at malala.org. They will then engage in a writer's workshop in which they use what they learn about the persuasive genre to convince the school community to participate in a fundraiser. Groups will be assigned another class in the school to present their persuasive writing to and host a school wide vote on which fundraiser to do. Students will then work to organize the fundraiser.
4	Informational Writing	English Language Arts	Students will work together in small groups to create and produce a monthly newspaper for the school. They will conduct interviews with faculty, staff, students, and parents to write articles that address issues the school faces. The students will incorporate traditional elements of a newspaper including: editorials, news articles, opinion pieces, entertainment, and sports sections. Students will apply and interview with peers for classroom based jobs related to the newspaper such as section editor, copy editor, reporter, photographer, graphics, etc.
5	US History	English Language Arts and Social Studies	Students will conduct research about child labor during the Industrial Revolution. They will research child labor that continues throughout the world today and come up with ways they can help bring awareness to this issue. They will work in groups to write their own one act plays to send to SCREAM, an organization that works to end modern day child labor.
6-8	Conservation	Science and Social Studies	Students will be challenged to improve the quality of water in their communities while also working to raise awareness about water conservation. They will conduct research about water quality, specifically learning about the water crisis in Flint, MI. Groups will then collect data regarding the quality of water in their school and homes. They will work to come up with solutions to the water quality issues faced in their own communities and plan ways to educate community members about water quality and consumption.

How Can Educators Assess Projects?

According to Wray (1999), there are three primary ways to assess project work, all of which should be incorporated into the overall assessment of the success of the project. Figure 3 provides a description of how teachers might approach assessment of project-based learning products. Ms. Magby incorporated each of these methods into her PBL lessons to create a safe learning environment for her students. As students are constantly receiving feedback from the teacher, they are able to shape their project to fit the rubric, reducing failure and increasing engagement for the duration of the project. Additionally, teachers can track student progress throughout the project to see how their students' understanding of the content evolves and deepens over time.

In the following sections we will further discuss project-based learning as a form of assessment. Specifically we will share ideas for developing a rubric, pre-assessment, formative assessment, and post-assessment. Ms. Magby worked to incorporate each of these into her project-based learning lessons.

Developing a Rubric

As with any performance task, PBL requires a standards-based rubric that students can refer to, use

Figure 4: Sample Rubric

Skill	1 point	2 points	3 points	4 Points	Total
Data Analysis	Did not collect data, AND did not make decisions based on data.	Data is unorganized OR doesn't make accurate decisions based on data.	Data is somewhat organized OR decisions are not accurately based on research.	Data is well organized and decisions are based on the data collected from research.	4 points possible
Research	Research is poorly organized AND does not use reliable sources.	Research is poorly organized OR does not use reliable sources.	Research is somewhat organized. Uses some research to create a care plan.	Research is organized. Uses research to create logical steps to care for the plant.	4 points possible
Botany	Does not care for plant.	Some effort into plant care and does not make a plan or plan is not documented.	Cares for plant but does not document plan OR plan is not based on research.	Uses research to accurately care for plant and documents the care plan.	4 points possible
Marketing	Materials are plain AND unorganized AND have more than 15 errors.	Materials are plain OR unorganized OR has more than 10 errors.	Materials have some creativity OR there are several errors.	Materials are presented creatively and with minimal errors in final product.	4 points possible
Cost Analysis Report - Final	Report is missing many key parts, is not based on reflections, student does not describe what worked/ did not work in their project, AND has more than 20 errors.	Report is missing several key parts, is not based on reflections, OR student does not describe what worked/ did not work in their project; OR more than 10 errors.	Report has all parts and somewhat based on reflections. Student inaccurately describes or does not describe what worked/did not, fewer than 10 errors.	Report is thorough and clearly based on reflections throughout the project. Student accurately describes what worked/did not, minimal errors.	4 points possible

for self-assessment, and receive feedback on through the project. When used appropriately, rubrics "divide an assignment into its component parts and provide a detailed description of what constitutes acceptable or unacceptable levels of performance" (Stevens & Levi, 2005, p. 3). Additionally, components of the rubric must be aligned with the content standards the project addresses. Rubrics can be used as either formative or post assessments. Using the project rubric as a formative assessment allows teachers and students to gain insight into how the project is developing against the content standard; thus providing a clear picture of how well the student is mastering the skills and knowledge embedded within the project (see Figure 4).

The sample rubric in Figure 4 was developed for Mr. Vernon's plant sale project. The rubric was given to students in advance so they would know what was expected of them during the project. Additionally, Mr. Vernon continuously checked in with his students to monitor their progress on the rubric so he could provide immediate and descriptive feedback along the way.

The PBL rubric should be specific, but still to allow for multiple interpretations of the project. The rubric should include skills, concepts, and the final product presentation. Teachers can even involve students in the rubric development process. This approach creates an even stronger partnership and collaboration between the teacher and learner (Stevens & Levi, 2005).

Effective rubrics evaluate student thinking and their presentation of material. Rubrics should help teachers determine if students comprehend the material used for the project, and their ability to synthesize the material into a cohesive project that addresses the problem at hand. When working with older students, teachers may also want to use a rubric to assess student effort, work ethic, and time management throughout the project. It is essential that the rubric is used to provide descriptive feedback throughout the project. Also, students should be given the opportunity to assess peer projects using the rubric (Newell, 2003).

Pre-Assessment

A pre-assessment should be administered at beginning the project since it allows teachers to determine the varying stages of knowledge and development their students have before starting the project (Wray, 1999). Pre-assessments should align with the content covered throughout the project. It can be as simple as a short essay, such as: Explain how the circulatory system supplies blood throughout the body. The pre-assessment can also be a standard multiple choice test about the topic. Whatever pre-assessment model is used, it should also align with the standards and skills addressed in the rubric. Teachers can use the pre-assessment data to determine cooperative groups and guide students toward the development of their project.

Formative Assessment

As mentioned earlier, it is imperative to build formative assessments into the entire project. This provides students with an opportunity to reflect on and assess their progress, as well as provide feedback to their peers. Students can help develop the formative assessments in their cooperative groups and track their progress. Keeping accurate records and notes throughout the formative assessments is crucial. Anecdotal notes can be used for descriptive feedback on the rubric, either at a checkpoint or at the end of the project, and provide important insight to the teacher, student, and parents about student progress.

Because PBL is student driven, the students and teachers are both accountable for the process and product of the project. Having students reflect on their process, evaluate their work, and hold themselves accountable for its quality is essential to success. In teaching students to evaluate their own work, it is important to have them refer to a rubric so that they have a reference point to judge the quality of their efforts. Additionally, having students assess their progress using the rubric allows for teacher-guided improvements and revisions to draft products (e.g.

Figure 5: Sample Formative Assessments

Project/Grade Level	Assessment Question	Explanation of Assessment
Plant Project by Mr. Vernon's 3rd Grade Class	Describe how you are using the data from the parent survey to decide which plants we should sell in our plant sale. Cite specific examples from your group's data.	This assesses the student's ability to analyze their data and describe their decision making process.
Circulatory System Project by Ms. Magby's 5th Grade Class	Which part of your model seems to be getting the least blood supply? What will you do to fix it? How do you know your solution will work?	This assesses students' ability to recognize faults in their designs and think more deeply about their project.

reports, posters) before submitting the final product (Katz & Chard, 2000). Formative assessments relieve the pressure of final presentations because students know where they stand throughout the process. Figure 4 provides examples of the formative assessments used by Mr. Vernon and Ms. Magby (see Figure 5).

Post-Assessment

Because PBL uses ongoing formative assessments, post-assessment often includes a student presentation or performance and requires student reflection of the entire process. According to Newell (2003), PBL requires a foundational shift in the traditional teacher input/student output education routine. Ms. Magby's class, for example, Collin was able to find a voice in his project, which not only made him excited about the material, it gave him a new level of understanding enabling him to apply the content. In PBL, students are no longer required to memorize isolated facts, but instead are required to problem solve and understand content areas within the broader context of real world problems. This long-term approach to teaching and learning requires a more holistic examination of how students master content.

The culmination of the final production should assess student understanding of the subject and their process for developing the project. When Collin and his group shared their models with their parents in a showcase, Collin talked extensively about how his grandfather's surgery influenced his project. In turn, Ms. Magby was able to analyze the depth to which Collin tackled the subject of their project and his ability to integrate multiple skills and levels of understanding (Newell, 2003). For the culminating project, students are provided with a rubric with detailed feedback that encourages students to continue working on the project; these details help students understand that projects are never perfect and can always be improved and explored in greater depth. Collin showed social and academic growth, earning full credit on the post assessment rubric for collaboration, content knowledge, and application of content.

Conclusion

PBL is not just a snapshot of student achievement; it is a holistic approach to teaching and assessment. Students take ownership of their learning and play an active role in assessment by reflecting on their work and providing feedback to peers. Teachers, like Ms. Magby and Mr. Vernon, who use PBL develop a cohesive, supportive, and engaged classroom community, where students think critically and apply content.

Using PBL as an assessment tool allows teachers to gain insight into student understanding and reasoning about multiple subjects at once. Taking detailed notes about student progress and using detailed rubrics throughout the process allows teachers and students alike to track progress. As students receive feedback from their peers and teacher, their projects will evolve. A project is never fully "complete," it merely becomes ready to share with an audience.

When students are given a sense of agency in their learning, they not only master the content, they apply important twenty-first century skills. This paradigm shift in instructional design transforms students' educational experiences by encouraging them to tackle real problems in their world. Teachers that use PBL have clearer insight into student understanding. PBL can lead to highly engaged students that develop into lifelong learners.

We have all likely been students in classrooms like Ms. Terrle's. We may even have been versions of Ms. Terrle in our own classroom, relying on teaching through textbooks, worksheets, and memorization of facts. However, taking steps toward implementing instruction more like that in Ms. Magby's class is not out of reach. Appendix A offers a list of additional print and online resources to help begin this process. We hope the resources provided here will be a roadmap for educators to implement PBL in their classrooms.

References

Barber, W., King, S., & Buchanan, S. (2015). Problem based learning and authentic assessment in digital pedagogy: Embracing the role of collaborative communities. *The Electronic Journal of e-Learning*, 13(2), 59-67.

Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House: A Journal of Educational Strategies, Issues, and Ideas, 83*(2), 39-43.

Brophy, J. (2000). *Educational Practice Series: Vol. 1. Teaching*. Geneva, Switzerland: International Bureau of Education.

Colley, K. (2008). Project-based science instruction: A primer. *The Science Teacher*, 75(8), 23-28.

Darling-Hammond, L. (2014). Testing to, and beyond, the common core. *Principal, 93*(3), 8-12.

Darling-Hammond, L. & Adamson, F. (2010). *Beyond basic skills: The role of performance assessment in achieving 21st century standards of learning*. Stanford, CA: Stanford University, Stanford Center for Opportunity Policy in Education.

Frey, B.B., Schmitt, V.L., & Allen, J.P. (2012). Defining

authentic classroom assessment. *Practical Assessment, Research & Evaluation*, 17(2), 1-18.

Gallavan, N. P. (2009). *Developing performance-based assessments: Grades K-5.* Thousand Oaks, CA: Corwin Press.

Hopper, S. B. (2014). Bringing the world to the classroom through videoconferencing and project-based learning. *TechTrends*, 58(3), 78-88.

Ilter, I. (2014). A study on the efficacy of project-based learning approach on social studies education: Conceptual achievement and academic motivation. *Educational Research and Reviews*, 9(15), 487-497.

Karacalli, S. & Korur, F. (2014). The effects of project-based learning on students' academic achievement, attitude, and retention of knowledge: The subject of "electricity in our lives." *School Science and Mathematics*, 114(5), 224-235.

Katz, L. G. & Chard, S. C. (2000). *Engaging children's minds: The project approach* (2nd ed.). Stanford, CT: Ablex Publishing Corporation.

National Education Association. (2014). Research spotlight on project-based learning: NEA reviews of the research on best practices in education. Retrieved July 14, 2016, from National Education Association website: http://www.nea.org/tools/16963.htm

Newell, R. L. (2003). *Passion for learning: How project based learning meets the needs of 21st-century students.* Lanham, MD: R&L Education.

Stevens, D. D. & Levi, A. J. (2005). *Introduction to rubrics* (2nd ed.). Sterling, VA: Stylus Publishing.

Tobias, E. S. Campbell, M. R., & Greco, P. (2015). Bringing curriculum to life: Enacting project-based learning in music programs. *Music Educators Journal*, 102(2), 39-47.

Wray, D. (1999). *Inquiry in the classroom: Creating it, encouraging it, enjoying it.* New York, NY: Pippin Publishing.

Once you learn to read, you will be forever free.

—FREDERICK DOUGLASS

GRA Membership Application

Fill out the form below and mail it with a check for $15.00 ($7.50 for students and retirees), payable to Georgia Reading Association (GRA). Do not send cash.

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Books You and Your Students Need To 'Check Out'!

BY CHRISTINE A. DRAPER
AND PAMELA C. JEWETT

For the past four years, both Pam and I have sat on the Notable Children's Books in the English Language Arts (NCBLA) Book Award Committee. Every year the seven member national committee selects 30 award winning titles in fiction, non-fiction, and poetry for children in grades K-8. To receive this award, books must meet one or more of the following criteria:

- explicitly dealing with language, such as play on words, word origins, or the history of language;
- demonstrating uniqueness in the use of language or styles;
- inviting child response or participation;
- having an appealing format;
- being of enduring quality;
- meeting generally accepted criteria of quality for the genre in which they are written.

This column includes several award winning titles from the 2016 NCBLA list that you may want to add to your reading list. Listed below are a few of our favorites:

For Younger Readers:
Escoffier, M. (2015). *Where's the baboon?* (K. Di Giacomo, Illus.). New York, NY: Enchanted Lion Books, unpaged.

Is it a book? Is it a game? Is it a detective story? Readers of Escoffier's picture book will celebrate in the hide-and-seek word play of this story. The fun begins when the reader joins a classroom filled with animal students. Each page presents a question, and the illustrations give clues for words embedded inside other words. For example, in the first full-page spread, an ostrich at the teacher's desk asks, "Who brought the APplE. The highlighted letters come to life in the next page where an APE continues the inquiry by asking, "Who is hiding behind the CAsTle? Perfect for young readers who love riddles, surprises, hijinks and word-play, Where's the Baboon, brings together images and text to create imaginative new meanings. This book immerses readers in the sheer liveliness and vitality of our language where words are playthings that abound with possibilities! Ages 5-8

Hanson, F. (2015). *The wonder*. Somerville, MA: Templar Books, unpaged.

This stunning picture book tells the story of a boy whose head is filled with wonder. He wonders where birds fly and who makes clouds. He wonders about playgrounds and how stars shine. However, as he makes his way to school, his wonderings go unacknowledged by annoyed adults in his life - that is until he goes to his art class where he finds a blank piece of paper and is told, "Just use your imagination." And he does. Given the freedom to soar – and inspired by the experiences of his day – pages of creative fantasies follow with brightly plumed birds, whimsical worlds, complex flying machines, imaginative circuses, and invented observatories. At the end of the book, we see an older version of the boy at a museum standing by his sculpture titled "The Wonder," one that spirals up and up through the museum's ceiling and into the night sky. Ages 6-10

Grimes. N. (2015). *Poems in the attic*. (E. Zunon, Illus.). New York, NY: Lee & Low Books, unpaged.

Motivated by her life as a child of a military family, Nikki Grimes tells a story of a young girl visiting her grandmother who discovers poems hidden away in the attic that her mother had written when she was a child. The poems narrate the varied places her mother called home from Alaska to Germany, Japan to Colorado, and Texas to Portugal as her family moved from posting to posting. When she reads the poems the young girl gains insight into strong family ties that characterized her mother's childhood. In response, the little girl creates her own book of poetry which she presents to her mother. To continue her story, as she prepares to leave her grandmother's home, she returns not only her mother's poetry to the attic, but her own for someone else to find another day. Her mother's poems, written in Tanka and her responses in free verse weave a tale of commemoration and the significance of home, wherever it may be. Ages 6-10

For Older Readers:
Matson, S. (2015). *A year in the life of a complete and total genius*. Naperville, IL: Sourcebooks, 268 pp.

Arthur (Artie) Bean, imaginative genius, writer extraordinaire and seventh grader at Terry Fox Junior High School, plans to be a world-famous, very rich author. He also intends to win this year's city-wide Junior Author's Short Story Contest. Artie's story unfolds through a series of letters, emails, journal entries, notes to and from teachers and parents, doodles and drawings. His imaginative and brutally honest commentaries about fellow students, teachers and school events, however, land him in serious

trouble with just about everyone - his English teacher, school newspaper advisor, drama coach, classmates, arch-enemy, substitute teacher and Kennedy Laurel, who he aches to call his girlfriend. Through his writing, we not only learn about his dreams of fame but also of the family loss he is learning to handle one day at a time. Artie's story ends with the stars in alignment and with a short note and year-end report card from his English teacher, who we learn will be his home room teacher again in 8th grade. Ages 9-12

Nelson, M. (2015). *My Seneca village*. South Hampton, NH: Namelos. 87 pp.

This slender volume of poetry, which draws upon historical records and remarkable literary imagination, brings to life Seneca Village. This was a multi-ethnic, multi-racial 19th century village and was Manhattan's first community of African American property owners. Through a series of poems highlighting the voices of the people who lived there, Marilyn Nelson paints a collection of portrayals that together illuminate life in Seneca Village from 1825-1857. Each person, inspired by Nelson's research into census records, describes moments in time, and we meet people like Epiphany Davis, an unerring conjurer who charges 15 cents to tell the future and Diana Harding who plants a sapling to mark her freedom. We meet others such as Levin Smith who presides over the African Relief Society and Andrew Williams, a bootblack who listens carefully when his rich customers exchange financial tips. This book also tells of endings, and one of the last poems describes how work crews came to build Central Park in 1857 and through the power of eminent domain, they completely erased the prosperous community of Seneca Village. Ages 9-12

If you would like to view the entire list of award winners for 2016, please visit the Notable Children's Books in the English Language Arts webpage on the Children's Literature Assembly website at http://www.childrensliteratureassembly.org/notables.html

GEORGIA JOURNAL OF READING CALL FOR MANUSCRIPTS

As editors of the *Georgia Journal of Reading*, a refereed journal of the Georgia Reading Association, we invite those interested in improving reading and language arts instruction at all levels to submit manuscripts for publication in future issues. *The Georgia Journal of Reading* is published twice yearly in Spring and Fall.

We request articles that are grounded in current theory and research, book reviews, or creative teaching strategies that address all levels from elementary to college. Three types of manuscripts are currently being solicited.

Full-length Articles
These articles should deal with research, current issues, and recent trends in reading or literacy programs. Appropriate topics for the Journal include project descriptions, research or theoretical reports that address pedagogical implications or issues in reading education at the local, state or national level. Preference is given to articles focusing on topics that impact Georgia's students.

Articles for the Exchange Column
Articles for this column should describe creative teaching ideas and strategies that can be implemented in the classroom. These articles are shorter than full-length and may or may not require references.

Book and Resource Reviews
Reviews should describe and critique children's books, professional books, or reading resources that are appropriate for use by teachers and reading professionals. Complete bibliographic information, the address of the publisher, and the cost of the resource should be included.

Manuscript Guidelines
Manuscripts should be submitted electronically in Microsoft Word, double-spaced, and the format should conform to the guidelines presented in the Publication Manual of the American Psychological Association (6th Ed.). Manuscripts should not exceed twenty double-spaced typed pages. The author's name, full address, telephone number, email address, and school/affiliation, and a brief statement on professional experience should be submitted on a separate cover page. The author's name or any reference that would enable a reviewer to know who the author is should not appear on the manuscript. Manuscripts will not be sent out for peer review until this information is provided. All manuscripts will undergo a blind review by at least two members of the editorial board. Decisions will be made within 8-12 weeks of publication of the journal for which the submission was made. Only electronic submissions will be accepted.

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