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# Table of Contents

Literacy within the Disciplines: Seamless Integration of Literacy and Content
Comments from the Editors
Katherine Egan Cunningham, Courtney Kelly, and Kristin Rainville........................................4

Building Foundational and Vocabulary Knowledge in the Common Core, K-8: Developmentally-Grounded Instruction about Words
Shane Templeton................................................................................................................................7

To Win the Game, Know the Rules and Legitimize the Players: Disciplinary Literacy and Multilingual Learners
Pamela J. Hickey and Tarie Lewis..................................................................................................18

A,B,C and Do, Re, Mi: Literacy Strategies in the Music Classroom
Doreen Saccomano and Dana Saccomano..................................................................................29

Concept Mapping Revisited: Nurturing Children’s Writing Skills in Science
Aaron Isabelle, Caroline B. Hopenwasser, Jennifer Piekarz.........................................................44

A Survey of Teachers’ Selection and Use of Children’s Literature in Elementary Classrooms
Karyn Tunks, Rebecca Giles, and Sylvia Rogers.................................................................59

Mary-Jo Morse..........................................................................................................................73

Lindsey Hoyt...........................................................................................................................80

Eleanor Cerny..........................................................................................................................84

Call for Manuscripts 2016........................................................................................................90
Literacy within the Disciplines: Seamless Integration of Literacy and Content

Comments from the Editors

Katherine Egan Cunningham, Kristin Rainville & Courtney Kelly
Manhattanville College

Since the onset of the Common Core, you have most likely heard the maxim that everyone is now a teacher of literacy. However, we wonder if there has ever been a time when every teacher wasn’t a teacher of literacy. Math teachers have always supported students to read a variety of problems and write solutions of increasing complexity. Science teachers have always supported students to closely read both words and the world and to write with purpose. Likewise, social studies teaching and learning has always been grounded by reading and writing about people, places, and time periods. Disciplinary literacies, that is, reading and writing like a mathematician, scientist, and historian have always been integral to teaching within and across curricular areas.

Yet, the responsibility of teaching towards language arts standards, particularly the reading and writing of informational and explanatory texts, is perhaps a change for teachers across disciplines. With that change can come added pressure as teachers look around their buildings wondering who is responsible for teaching which skills and strategies. In addition, teachers may be wondering whom they can turn to for support. This issue of The Language and Literacy Spectrum is designed to support all teachers, especially teachers who teach across disciplines or who coach teachers in a variety of disciplines, to integrate literacy and content. As we continue to grow as a field, we believe we learn best from each other; that is, teachers and researchers sharing their successes and challenges with one another.

For many of us, when we think of our students most engaged in learning it was when we purposefully integrated literacy learning with other content. Like when our students became the historical figures they studied by acting out the First Continental Congress. Or when we bridged music and literacy by reading, writing, and performing songs to better understand a topic or time period. Or when we read aloud picture books about math content as a catalyst for a new math unit. Or when we took to our city garden plot to sketch, write, and share what we had observed with one another. These are moments of seamless integration of literacy and content. For many of us, cataloguing these moments could become a long list. Others might be wondering, how do I make that happen in my classroom?

We hope that the articles in this issue will inspire you to consider new ways to powerfully integrate literacy with content. We believe your students will remember these curricular moments and become stronger literacy learners as well as learners across the curriculum as a result.

In this issue of The Language and Literacy Spectrum, we are pleased to include the following authors and articles:

Shane Templeton, provides an overview of the role of word knowledge in the development of literacy with particular emphasis on the developmentally grounded expectations of the foundational and vocabulary expectations of the CCSS in his article “Building Foundational and Vocabulary Knowledge in the Common Core, K-8: Developmentally Grounded Instruction about
Words”. Shane argues that to supports students to reach these standards our teaching must be developmentally responsive.

**Pamela J. Hickey and Tarie Lewis** address disciplinary literacy, connecting it to the research on English language acquisition and the complexities around implementing effective disciplinary literacy instruction for multilingual learners in their article “To Win the Game, Know the Rules and Legitimize the Players: Disciplinary Literacy and Multilingual Learners.” They identify innovative instructional approaches discussed in current research and unpack them in ways that make them accessible to practicing teachers and literacy specialists, bringing together conversations from the field of literacy and the field of second language acquisition.

**Doreen Saccomano and Dana Saccomano** offer critical insights into the ways the arts, specifically music, can support all students cognitively and creatively through critical inquiry in their article “A,B,C and Do, Re, Mi Literacy Strategies in the Music Classroom”. They explore the ways music skills and literacy skills are interconnected and how teachers can bridge student learning across these areas through anchor charts, music “spellers”, and entrance and exit slips.

**Aaron Isabelle, Caroline B. Hopenwasser, and Jennifer Piekarz** chronicle the use of concept maps in a language arts in their article “Concept Mapping Revisited: Nurturing Children’s Writing Skills in Science.” They describe their research in an afterschool program for struggling readers and writers centered on hands-on science experiments. They describe the ways in which concept maps were used as tools to engage students in authentic writing.

**Karyn Tunks, Rebecca Giles, and Sylvia Rogers** in their article “A Survey of Teachers’ Selection and Use of Children’s Literature in Elementary Classrooms” offer findings from their research on how and why teachers are using children’s literature as a core component of literacy instruction. They found that two factors were statistically significant across the teachers’ responses to their surveys—teacher preparation courses and professional development—demonstrating the importance of educating pre-service and in-service teachers on how to select and effectively share literature with elementary students.

**Mary-Jo Morse** reviews Engaging Students in Disciplinary Literacy, K-6: Reading, Writing, and Teaching Tools for the Classroom by Cynthia H. Brock, Virginia J. Goatley, Taffy E. Raphael, Elisabeth Trost-Shahata, and Catherine Weber. Mary Jo explains the way the authors support elementary school teachers as they begin to tackle the challenges of implementing disciplinary literacy instruction with their elementary school learners. She further explains the authors five-part design framework for disciplinary literacy instruction that can be used to provide teachers with important background information related to how each of the disciplines thinks, reads, writes and talks about its content.

**Lindsey Hoyt** reviews Denise Johnson’s Reading, Writing, and Literacy 2.0 Teaching with Online Texts, Tools, and Resources, K-8. In her review, Lindsey explains the ways in with Johnson’s book provides quality lessons, online websites, apps, and eboks to shift literacy learning from 1.0 to 2.0 spaces and to assume the role of producer rather than just consumer.
Eleanor Cerny reviews Nell Duke’s *Inside Information: Developing Powerful Readers and Writers of Informational Text Through Project-Based Instruction*. In her review, Eleanor explains the ways in which Duke’s text serves as a practical resource for teachers seeking innovative ways to integrate reading and writing of informational text with project-based inquiry instruction all while aligning to the Common Core State Standards.

Please find our call for manuscripts for the 2016 issue of *The Language and Literacy Spectrum* at the end of this issue. We welcome your voices and scholarly contributions. We look forward to seeing you November 9-11 in Saratoga Springs, NY for the New York State Reading Association Annual Conference. See www.nysreading.org for details.

Enjoy!
Building Foundational and Vocabulary Knowledge in the Common Core, K-8: Developmentally-Grounded Instruction about Words

Shane Templeton, University of Nevada, Reno

ABSTRACT
How young children's and older students' knowledge of words develops – their structure, their meanings, how they work in context – is reflected in the Common Core English Language Arts expectations. Meeting these expectations for each learner requires that we teach in a developmentally-responsive manner. This includes our being familiar with the nature of the English spelling system, determining what each learner knows about the system, and then providing instruction that stretches but does not frustrate learning. There is a reciprocal relationship between reading and spelling words, and understanding how this relationship develops over time is the key to developmentally-responsive decoding and encoding instruction, as well as to developing every learner's vocabulary.

AUTHOR BIOGRAPHY
Shane Templeton is Foundation Professor Emeritus of Literacy Studies at the University of Nevada, Reno. A former classroom teacher at the primary and secondary levels, Shane’s research has focused on developmental word knowledge in elementary, middle, and high school students. Some of his books include Words Their Way; Vocabulary Their Way; Teaching the Integrated Language Arts; and, with Kristin Gehsmann, Teaching Reading and Writing: The Developmental Approach. Since 1987, Shane has been a member of the Usage Panel of the American Heritage Dictionary. He is educational consultant on The American Heritage Children’s Dictionary, and was consultant for and wrote the foreword to Curious George’s Dictionary.

When I taught first grade a good many years ago, I was pleased if my young charges understood “magic e” by the end of the year. That was, after all, the expectation in the 1st grade phonics scope and sequence back then – and the children did not have the benefit of a year of kindergarten in that rural school district. Fast forward to the English Language Arts Common Core (ELA/CCSS) expectations for what and when students learn about phonics/word recognition (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010): Not only is knowledge about final e expected but also other “vowel team conventions for representing long vowel sounds” (2010, p. 16). But that’s not all; first-graders are now expected to “Decode two-syllable words following basic patterns by breaking the words into syllables” (p. 16). Are we expecting too much of first graders?

Probably not. But hold that answer for a moment. Later on in my teaching career, when I taught High School English, I knew I was expected to teach about Greek and Latin roots – but I did not have a scope and sequence, much less an effective lesson plan, and I floundered. Now the CCSS expectation is that by the end of 4th grade students will be able to “Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word” (p. 29). Are we expecting too much of fourth graders?

Probably not. In this article, I would like to present a brief overview of the role of word knowledge in the development of literacy and look at how the foundational and vocabulary
expectations in the CCSS are developmentally-grounded and therefore realistic to expect — if our teaching is also developmentally-responsive.

**Stages of Literacy Development and Word Study Focus**

Developmentally-responsive instruction about words grounds instruction in Vygotsky’s “Zone of Proximal Development” (Vygotsky, 1978), or more simply, what educators have for years referred to as students’ “instructional level” (Gehsmann & Templeton, 2011/2012, 2013; Templeton & Gehsmann, 2014). My colleagues and I have defined “instructional level” as, in a nutshell, what students are “using but confusing” (Bear, Invernizzi, Templeton, & Johnston, 2016). We are able to determine this level primarily by looking closely at their writing as well as by administering a well-constructed spelling assessment (McKenna & Picard, 2006; Perfetti, 1993, 2007; Templeton, 1991; Tyler, 1997). In fact, Tyler observed that “… when teachers examine the spelling problems of their learners, they are observing the visible signs of a reading process which has been only partially absorbed” (p. 194, emphasis added). Specifically, students’ spelling errors reveal the types of information they are attending to when they read words. Let’s consider how this may look in learners from kindergarten through the intermediate grades (Bear, Invernizzi, Templeton, & Johnston, 2016; Templeton & Gehsmann, 2013, 2014); Table 1 provides reading level ranges for each developmental stage we will discuss. The following student examples represent the range of literacy development, from Emergent through Skilled/Proficient (Templeton & Gehsmann, 2014):

Lee, a kindergartener, writes PPLSMETSK (“The people saw him eating strawberry cake”). Lee’s writing reveals that she is a Late Emergent reader/writer. Not yet fully phonemically aware, she will benefit from continuing exploration of beginning and ending sounds and letters as well as repeated readings of texts, watching while the teacher points to words as they are read. Lee should be encouraged to write, and the Common Core Kindergarten expectations reflect this research-based practice: “Spell simple words phonetically, drawing on knowledge of sound-letter relationships” (p. 26).

Applying developing knowledge of letter-sound relationships in authentic writing activities is powerful indeed.

First-grader Alicia writes I LIK SETG INDR MI FAVRT CHRE (“I like sitting under my favorite tree”). A Beginning reader/writer, her writing indicates she is fully phonemically aware, attending to both consonant and vowels sounds. She is ready to explore short vowel patterns but not long vowel patterns.

Second-grader Kirstin writes Sharons frind brocke her arm yesterday by jumping off a swing. I cant whate till tomarrow. This type of writing reveals that Kirstin is a Transitional reader/writer, and though she is spelling some “longer” words correctly, her word study will focus on spelling patterns within single syllable words, as revealed in errors such as frind for friend, brocke for broke, and whate for wait.

Michael, a fourth grader, spells long vowel words such as float, train, and slight correctly, and his errors usually occur in two-syllable words such as shopping for shopping, surving for serving, and tightin for tighten. These types of errors reveal that
Michael is an Intermediate reader/writer. His spelling will continue to focus on words of more than one syllable, attending to syllable patterns and how base words combine with affixes (prefixes and suffixes) – the Common Core word recognition focus at third grade.

Seventh-grader Ashley spells words such as village, confidence, and fortunate correctly, but makes errors such as illiterate for illiterate and exhilarate for exhilarate. These are “higher level” types of errors, however, and characterize students who are becoming Skilled/Proficient readers and writers.

Table 1 - Stages of Literacy Development and Reading Levels

<table>
<thead>
<tr>
<th>Grade Range</th>
<th>Literacy Stage</th>
<th>Text Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Guided Reading $^1$</td>
<td>DRA$^2$</td>
</tr>
<tr>
<td>PreK-Early 1st</td>
<td>Early/Middle Emergent</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Middle/Late Emergent</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Late Emergent/Early Beginning</td>
<td></td>
</tr>
<tr>
<td>K – Early 1st</td>
<td>Early Beginning</td>
<td>C</td>
</tr>
<tr>
<td>1st</td>
<td>Middle Beginning</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>1st – Early 2nd</td>
<td>Late Beginning</td>
<td>F</td>
</tr>
<tr>
<td>Late 1st – early 2nd</td>
<td>Early Transitional</td>
<td>G</td>
</tr>
</tbody>
</table>

$^1$ Guided Reading

$^2$ DRA
<table>
<thead>
<tr>
<th>Grade</th>
<th>Skill Level</th>
<th>Letter</th>
<th>14-16</th>
<th>200-400</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Middle Transitional</td>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd – mid 4th</td>
<td>Late Transitional</td>
<td>J</td>
<td>18-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>K</td>
<td></td>
<td>300-600</td>
</tr>
<tr>
<td>3rd</td>
<td>Early Intermediate</td>
<td>N</td>
<td></td>
<td>500-800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P</td>
<td>30-38</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>Middle Intermediate</td>
<td>Q</td>
<td>30-38</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40-42</td>
<td>600-900</td>
</tr>
<tr>
<td>5th</td>
<td>Middle/Late Intermediate to Early Skilled/Proficient</td>
<td>T</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>6th</td>
<td>Late Intermediate to Middle Skilled/Proficient</td>
<td>V</td>
<td></td>
<td>800-1050</td>
</tr>
<tr>
<td>7th – 8th</td>
<td>Early Skilled/Proficient to Middle Skilled/Proficient</td>
<td>W-Z</td>
<td>70-80</td>
<td>850-1150</td>
</tr>
</tbody>
</table>

Adapted from Templeton & Gehsmann (2014)

1 Fountas & Pinnel (1996, 2001)

**Word Study Instruction**
Children’s minds do not learn words, or about words, by taking mental “photos.” They do not learn a printed word by “staring” at it until its image is imprinted on their brains, or by writing it ten times. Rather, mental images are constructed over time and they reflect children’s understanding of “the structure of words in general – letters, sounds, spelling and meaning patterns… and specific words that [they] may know” (Templeton & Gehsmann, 2004, p. 40). This is why there is an emphasis on how your students spell words - you’ll be able to determine the information they use not only to write words but also to identify words when they read. This is because reading words and spelling words are not separate processes – they rely on the same underlying knowledge of word structure.

Emergent Readers and Writers
At the kindergarten level, for emergent readers and writers, the Common Core acknowledges the important developmental scaffolding that supports phonemic awareness and which builds necessary prerequisites for this awareness. This includes rhyme, tapping syllables, and awareness of onset-rime. For children such as Lee, a very important developmental milestone will occur toward the end of this stage: The concept of word in text, which is the ability consistently to match the printed word unit in a memorized text with the spoken word unit – what Marie Clay years ago described as the voice-to-print match (1991). As Darrell Morris and his colleagues have pointed out, when children are able to voice-point “the word begins ‘to stand still’ for analysis, [and children] can attend to other letter-sound properties within the word unit (e.g., the ending consonant)” (Morris, Bloodgood, Lomax, & Perney, 2003, p. 321). Attaining a concept of word in text, in other words, helps children become fully phonemically aware. Importantly, they will also then be able to learn and remember a much larger number of sight words (Smith, 2012).

Beginning Readers and Writers
For beginning readers such as Allison, there is a reciprocal relationship between encoding and decoding: As she learns about short-vowel patterns in phonics, she is learning how to spell them as well. Over time, your decoding instruction will serve to point out “what’s going on” in words (such as the role of silent e, for example). Continued experiences with a silent e pattern through additional words encountered in reading will develop awareness and understanding of that pattern. If we try, however, to get a learner to spell these new words correctly - believing such work will reinforce memory for the word(s) – we will inadvertently require the child to try to work at a frustrational level. As Beginners learn to read and remember more words with silent e and perhaps other long vowel patterns, you will begin to see silent letters appear in their spellings – MAEK or MEAK for make; BIEK or BIEK for bike. Such spellings reveal that children are now ready to learn such words and patterns in their spelling, and instruction may focus on them – they have moved into the next stage of development. As the Common Core notes, they will be ready to read words of more than one syllable although their spelling will continue to focus on one-syllable words.

Transitional Readers and Writers
For Transitional readers and writers in the latter half of first grade and on into second grade, comparing and contrasting vowel spelling patterns supports spelling but also supports decoding of longer words of more than one syllable: Words such as roadway, batted, and biking.
Kirstin will usually be uncertain about spelling many of these longer words – doubling a consonant or dropping a vowel at the juncture of syllables – but she will be able to decode them. Examining such within-word patterns will both facilitate correct spelling of words with these patterns and strengthen the connections in Kirstin’s brain between sound and print – which in turn will help her decode the patterns within longer words when she reads. At this stage, and all successive stages, the ability to read most words accurately runs ahead of the ability to spell many words accurately. Remember your Educational Psychology 101? This is the difference between the processes of recognition and production: Readers will be able to recognize many words before they will be able to produce their forms correctly. The Common Core expectations reflect this developmental characteristic: in first and second grade, spelling instruction focuses on single-syllable words while word recognition/decoding moves on to two-syllable words. In third grade, spelling instruction does address two-syllable words, while word recognition includes attention to prefixes and suffixes.

At this stage, Kirstin may learn much about the role that position and neighborhood play in the spelling of sounds within single-syllable words:

- By comparing and contrasting words such as bait and wait with stay and play, learners realize that how sounds are spelled very often depends on their position within a word – the long a sound, for example, will usually be spelled ay at the end of a word but rarely in the middle; long a will never be spelled ai at the end of a word, only in the middle.
- By comparing and contrasting edge and badge with huge and page, learners may realize that the “neighborhood” of a sound often determines the spelling of that sound - soft g sound is spelled dge when a short vowel sound comes before it; it is spelled just ge when a long vowel sound comes before.

### Resources for Motivating and Engaging Word Study, PreK-2nd Grade


Templeton, S., & Gehsmann, K. (2014). *Teaching reading and writing: The developmental approach (preK-8)*. Boston: Pearson. (See in particular Chapters 6, 7, and 8)

### Intermediate Readers and Writers

An instructional focus on morphology really takes off in fourth grade, and as we noted at the outset, the Common Core acknowledges this. The generative power of learning Greek and Latin word roots is apparent when students realize that knowledge of one root can generate an understanding of dozens of more words (Templeton, 2011/2012; Templeton et al., 2015). For example, knowing that –tract- means “pull” supports learning of other words such as traction, retract/retraction, detract/detraction, tractable/intractable, and so on (and on!).
At this stage we can leverage the spelling system of English to generate vocabulary knowledge. Why? Because the system does a very good job of visually representing the meaning relationships among words. For example, you may first point out to students how familiar words that are related in spelling are usually related in meaning as well (Templeton, 1983, 2011):

- compete
- competition
- competitive

Though the pronunciation of several sounds within the underlined parts of the words changes, the spelling does not. Students come to the realization that if such words were spelled the way they sounded, we would lose these visual, meaning relationships that they share. And this is where the leveraging comes in: Students who encounter the unfamiliar word laborious while reading may figure out its meaning if they think of labor, a word that they do know. Knowing the meaning of labor reveals the meaning of laborious.

Importantly, though students at this stage may learn about this spelling-meaning characteristic of spelling as a vocabulary strategy, they should not be expected to remember the correct spelling of so many of the words that reflect this characteristic. Remember the recognition-production phenomenon? This is how it works at the Intermediate stage. At grades four and five, Common Core expectations are to “spell grade-appropriate words correctly.” How is “grade appropriateness” determined? Considerable effort has been invested in identifying the most appropriate words on which to focus attention – at the intermediate level as well as at earlier levels (Henderson & Templeton, 1986; Morris, 1995; Morris, Nelson, & Perney, 1986; Templeton, 2011). These are words that not only should be spelled correctly at this level but that will provide and reinforce the most frequent spelling patterns that students need to support decoding words in their reading – the rapid and automatic identification of most words and effective orthographic knowledge to decode unfamiliar words. Two resources that have provided these words by grade level and support developmentally-based spelling instruction are Templeton & Bear (2006) and Templeton (2012).

Significant attention is given at this level to syllable juncture patterns – examining what happens when syllables join, for this is where most spelling errors occur: Are letters dropped or changed? Are consonants doubled or not? For example, students will first examine what happens when inflectional endings are added to words: compare words such as hopping, hiking, cleaning. Students examine words that follow these spelling patterns (doubling, e-drop, no change) to derive a rule – and as at the previous stage, they realize that the spelling at syllable junctures depends on the “neighborhood.” At this stage, the neighborhood includes the spelling pattern and vowel sound in the preceding syllable:

- Short vowel sound followed by a single consonant = doubling
- Long vowel sound = no doubling; vowel-consonant-e pattern involves dropping the e; vowel pair plus single consonant involves no change

**Skilled/Proficient Readers and Writers**

Skilled/proficient readers in the elementary and middle grades may be expected to apply their understanding of the spelling-meaning connection that was introduced at the previous stage. They should, for example, be able to spell correctly related words such as compete/competition/competitive and labor/laborious. Building on this foundation, students should be able to meet the Common Core’s continuing emphasis on Greek and Latin elements at
the middle grades as these elements support determining the meaning of unknown words and the deeper understanding of new vocabulary words. Such understanding will also help explain Ashley’s “higher level” errors such as literate and exhilarate (Templeton, 2016). Further exploration may now include, for example, examining why illiterate has two l’s, even though there is only one /l/ sound. This investigation will reveal a widespread phenomenon in English spelling and vocabulary: because il- is a prefix (meaning “not”), in English we need to keep the spelling of that prefix. For older students, this awareness may open up an in-depth exploration of words and their histories: Originally, when the prefix in- was combined with literate to mean “not literate,” the combination inliterate was awkward to pronounce. So, over time, the /n/ was absorbed into the /l/ of literate, making the word easier to pronounce – and the spelling changed to represent this sound change. This phenomenon explains why we don’t have the word immeasurable in the language; rather, we have immeasurable. We don’t have irregular, but irregular. Students will learn, in other words, why the prefix in- may be spelled different ways (il, im, ir) – it has to do with the words or roots to which in- is attached, making the resulting word easier to pronounce.

What about Ashley’s misspelling, exhilarate? Because students at this level are exploring more deeply word roots and the relationships among words, spelling may illuminate a meaning relationship while ensuring that Ashley will never again misspell this word. We write the following word pair, underlining the letters the words share:

exhilarate
hilarious

We ask Ashley – as well as other students – to check both words in an online dictionary; they discover the common Greek root in each, hilaros, which means “cheerful.” Students have learned that, over time, roots and the words in which they occur often evolve in their meanings and take on additional connotations – both exhilarate and hilarious originally had to do with cheerfulness, but now have to do with being extremely cheerful!

Figure 2
Resources for Motivating and Engaging Word Study, Grade 3 and Above


I began this article telling stories about my early years in the profession, and I will end with another personal observation. As a beginning teacher at both the primary and secondary levels, I did not have the background in how the spelling of English reflects a logic that could support children’s and older students’ learning about decoding, encoding, and vocabulary development. This is, unfortunately, still the case with far too many educators (for example Hughes & Searle, 1997; Hurry et al., 2005; Wong-Fillmore & Snow, 2005). My hope is that the resources I have shared in this article, as well as the references that follow, may help provide both foundational and practical information to help you address for your students the expectations in the areas of foundational and vocabulary skills and knowledge.
References


To Win the Game, Know the Rules and Legitimize the Players: Disciplinary Literacy and Multilingual Learners

Pamela J. Hickey, Towson University
Tarie Lewis, University at Albany, State University of New York

ABSTRACT
Effective disciplinary literacy instruction is an essential element in the education of multilingual learners. In this article, we provide an overview of disciplinary literacy as well as instructional approaches that support meaningful pedagogy for these students. We recognize that multilingual learners are already skilled at negotiating language use for different purposes in different contexts. This article describes opportunities to build on these strengths. Essential elements of teacher knowledge and practice are presented. Multiple resources for classroom practice are included.

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Pamela J. Hickey is an Assistant Professor of Literacy at Towson University, Maryland. She teaches courses in literacy education and in the education of culturally and linguistically diverse learners and has taught English in K-12 settings in the United States and Eastern Europe. She holds National Board Certification in English as a New Language, Early and Middle Childhood. Her research addresses the literacy development of multilingual learners. Pamela can be contacted at phickey@towson.edu.

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In our work as teacher educators, we often see our teacher candidates grappling with the tension of providing a rich and rigorous curriculum for their students, while simultaneously creating appropriate differentiation and scaffolding to set learners up for success. We have noticed a worrisome trend: when planning disciplinary literacy tasks for multilingual learners, our candidates often substitute a disciplinary text with a lower-level text, or they simply provide alternate tasks because they feel uneasy about the level of challenge their students will experience.

While we appreciate these future teachers’ commitment to providing a positive learning experience for their students, we recognize that our candidates, as well as practicing teachers and literacy specialists, can benefit from a discussion of issues involved with appropriate instruction in disciplinary literacy (DL) for multilingual learners. As Scarcella (2003) argues, “Morally, it is right to provide ELs (English learners) with rigorous English instruction” (p. 11). Scarcella cautions that many times students do not receive the level of academic instruction to which they have a right for two reasons: their teachers underestimate their capacity to successfully engage in demanding academic activities and/or their teachers simply do not provide explicit and
transparent instruction for them. We believe that, provisioned with their own deep understanding of DL, teachers can implement strong, scaffolded teaching with high expectations, creating a space in which multilingual learners are legitimate players in the DL game, with opportunities to learn and to excel.

In the opening section of this article, we unpack the “rules” of DL. We explain the confusions that sometimes conflate DL with Content Area Literacy, and we explore academic language and its relevance to DL. In the second half of this article, we focus on the “players”—the multilingual learners themselves -- by addressing the elements of teacher knowledge that are essential in providing effective DL instruction for them. First, we discuss disciplinary linguistic demands and teacher understanding of these demands. Then, we focus on multilingual students and the processes of second language acquisition. We conclude with explicit examples of DL scaffolds, as well as a list of resources for teachers and literacy specialists to use in implementing DL instruction.

As literacy researchers and teacher educators, we work to locate and describe pedagogical practices that serve multilingual learners from a place of strength. As such, it is essential to begin at the beginning – with the very terms we are using to name them. We use the term multilingual learners (Mitchell, 2012) to refer to those students currently acquiring English at school who speak another language (L1) at home. While these students are more typically referred to as English Language Learners (ELLs) or English Learners (ELs), we use multilingual learners to recognize their developing bilingualism. As García (2009) points out, any term that positions students into a binary English/not-English construction “misleads educators and…robs emergent bilinguals of languaging and educational possibilities” (p. 323). As we will explore, the very fact that multilingual students’ “daily lived reality necessitates the negotiation of two or more languages” (Mitchell, 2012, p.1) positions them to effectively navigate the demands of disciplinary literacy.

Unpacking Disciplinary Literacy

Given that the terms disciplinary literacy and content area literacy may frequently be confused or substituted for each other, it is necessary to begin with a clear definition of what we mean by disciplinary literacy. We concur with the explanation put forth by Shanahan (2012) which states that, “disciplinary knowledge is knowledge of the breadth and depth of a field of study, including knowledge of the way information is created, shared, and evaluated” (p. 71). Thus, DL involves very particular ways of producing and consuming knowledge; it is the discourse of a subject area and a way of being, thinking, reading, and writing that is unique to that discipline (Moje; 2007, Shanahan, 2012; Shanahan & Shanahan, 2008). For example, historians engage in identifying bias in primary sources. So, when high school social studies teachers decide to use a shared “Bias and Point of View” graphic organizer with their students across grade levels, they are engaging in a DL approach. A graphic organizer like this helps students to ask questions that historians would ask, such as: Who created this text? Why was this text created? What biases are present? Who benefits as a result of the perspective stated in this text? This “Bias and Point of View” organizer would be equally useful for students when examining a newspaper advertisement for a slave auction from the 1800s, a letter written by Franklin Delano Roosevelt during World War II, or a recent op-ed column in the New York Times. Since this teaching tool facilitates students to think and read like historians, it is a clear example of DL.
In contrast, content area literacy focuses on a generic set of reading and writing protocols that can be employed across all subject areas and are not discipline-specific (Shanahan & Shanahan, 2012). For instance, when members of a sixth-grade teaching team who want to support their students with comprehension of informational text written in a compare-contrast text structure use a Venn diagram across all of the subject areas, they are employing a content-area literacy practice. It does not represent a specific kind of thinking or particular disciplinary approach. The Venn diagram as a scaffold is transferable and equally applicable in science, social studies, and English. In contrast, when we are instructing students in DL, we are supporting their development as thinkers, writers, and “experts” within a particular subject area – we are helping students to develop as “historians,” “scientists,” or “mathematicians.”

A study conducted by Shanahan and Shanahan (2008) offers examples of different literacy practices by discipline. The year-long investigation of reading behaviors of historians, chemists, and mathematicians provides evidence that each expert approached texts in a different way that was discipline-related. For example, historians read with a constant awareness of bias, always considering how the author’s context influenced this particular telling of what happened. Chemists, on the other hand, used different criteria to evaluate the credibility of the text from their field. They considered if the research was current and produced in a well-resourced laboratory. Finally, mathematicians mainly focused on determining the accuracy of the mathematical proofs in their text. In contrast to the historians and scientists, for the mathematical experts, when and by whom the proof was written was not as important. These examples illustrate how different reading processes and patterns of thinking are employed differently within particular disciplines. Accordingly, from a disciplinary literacy perspective, the goal of instruction is to help students read, write, and think like developing experts in the discipline.

Academic Language

Any discussion of DL must include an explanation of academic language (AL). References to AL are prevalent in teaching and teacher education. We have noticed that people use the term academic language to refer to many different aspects of language. Therefore, it is important to establish what we mean when we discuss AL. Nagy and Townsend (2012) provide a helpful description of AL as “the specialized language, both oral and written, of academic settings that facilitates communication and thinking about disciplinary content” (p. 92). AL differs from typical social or conversational language in several distinct ways, including level of abstraction, information density, grammatical structures, and word complexity (Fang, 2012; Fang & Schleppegrell, 2010; Nagy & Townsend, 2012). We provide the following examples in order to illustrate these differences.

Everyday English: It hadn’t rained for months. The farmers used new ways of watering the crops to deal with the lack of rain.

Academic Language: Hydration technology was utilized to ameliorate drought.
Table 1

Features of Academic Language

<table>
<thead>
<tr>
<th></th>
<th>Everyday English</th>
<th>Academic Language</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abstraction &amp; Information Density</strong></td>
<td>Uses more words to explain</td>
<td>More information in fewer words</td>
</tr>
<tr>
<td><strong>Syntax</strong></td>
<td>Active voice used more frequently</td>
<td>Passive voice used more frequently</td>
</tr>
<tr>
<td><strong>Word Complexity</strong></td>
<td>More common words that are also used in informal oral conversation</td>
<td>More multisyllabic words</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More words that use Greek and Latin roots</td>
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</table>

As we show in the examples above and in Table 1, there are distinct differences between everyday English and AL. Written AL packs more information into a smaller amount of text (21 words vs. 7 words), employs syntax that removes the doer from the doing (The farmers ...watering the crops vs. Hydration), and includes a greater proportion of rare and discipline-specific words (AL: ameliorate, technology, drought, hydration).

Each discipline is associated with particular ways of thinking and communicating. Each discipline also uses language in particular ways that are unique to that subject. Thus, we recognize a synergistic relationship between DL and AL. In order to teach DL, one must address the relevant AL of that discipline. When teachers understand the specific expression of AL within the various disciplines, they are positioned to offer explicit instruction and appropriate scaffolding to their students.

**Multilingual Learners and Disciplinary Literacy**

Given that culturally and linguistically diverse classrooms are the “New Mainstream” (Enright, 2011), it is essential that all teachers are able to provide meaningful and effective instruction for multilingual learners. As Enright notes, today’s students move through and between multiple communities, and therefore are “likely to have a complex repertoire of language and literacy practices as potential resources to support academic development and success” (p. 111). How can teachers identify and build upon these resources that multilingual students bring with them into the classroom? Revisiting the metaphor we offered in our title, the following section offers a “game plan” for teachers who want to position their students for success with disciplinary literacy. This plan involves three distinct components: teacher knowledge of the linguistic demands of the discipline, teacher knowledge of multilingual learners and the language acquisition process, and teacher knowledge of the role of scaffolding in DL instruction. As teachers build their own knowledge base, they become better able to step into the role of the DL “coach” and provide thoughtful, targeted instruction that both supports and challenges their students.
What Do I Need to Know About My Discipline?

The first step to providing more effective instruction in DL is to become more aware of specific linguistic conventions of the disciplines we teach. As Kibler (2011) writes, Through their own disciplinary training, content area teachers are often skilled interpreters of these types of writing, even if they have not been taught to articulate how these texts are constructed. Content area teachers often do not see language as their area of specialty. (p. 224)

Other researchers affirm Kibler’s notion that teachers might need support in order to identify their own subject area linguistic knowledge. Turkan, de Oliveira, Lee, and Phelps (2014) use the term “Disciplinary Linguistic Knowledge” (DLK) when referring to teachers’ awareness of their own disciplinary expertise. They explain that DLK is “teachers’ knowledge of the academic discourse of a discipline or content area” (p. 9). Turkan et al. posit that DLK is “the linguistic knowledge base that all teachers of ELLs need to facilitate students’ understanding of oral and written discourse within a discipline and their use of language in ways that allow them to actively participate in the disciplinary discourse” (p. 9). Not only do teachers need to have command of their content knowledge, but they also need to be aware of the discourse -- the way that language is used within their discipline -- so that they are able to unpack that discourse and make it transparent for their students. This knowledge will facilitate teachers to position multilingual learners as both users and generators of subject-area discourse in oral and written language. We have included several texts on our resource page that can support teachers who are interested in learning more about the disciplinary literacy practices of their subject area (Buehl, 2011; Moje, 2013).

What Do I Need to Know About Multilingual Learners?

**Heterogeneity.** The U.S. multilingual learner population is heterogeneous. This population includes students who are born in the United States and may be English-dominant, students who come into U.S. schools not having had access to educational opportunities in their home countries, as well as students who come into U.S. schools with a high level of L1 literacy. Consequently, it is vital that we be aware of within-group differences among multilingual learners, recognizing the need for differentiation based on the range of English proficiency and literacy levels. Effective teachers of multilingual learners do not make assumptions about their students’ strengths and needs; instead, they gather information from school records, conversations with the student and family, ongoing observation of class performance, as well as evidence of student learning on more formal measures. The following section provides specific information about language development that can be useful when seeking to understand your multilingual students’ needs.

**Second language development.** As teachers of multilingual learners and teacher educators, we have noticed that sometimes teachers experience confusion about the English language proficiency level of their students. Schleppegrell (2013) notes, “school children often quickly develop informal registers of the new language that serve them well in interaction with peers and teachers about everyday things” (p. 154). These informal registers may be mistaken by educators as markers of highly developed English language proficiency. This misunderstanding can lead teachers to provide instruction that does not address the specific academic English needs of the students (Scarcella, 2003). The literature on second language acquisition commonly refers to a typical acquisition period of about four to seven years in order to reach advanced proficiency (Collier, 1989, 1992; Cummins, 2000; Genesee, Lindholm-Leary, Saunders, & Christian, 2005).
Students may acquire conversational proficiency in as little as a year, while academic proficiency can take seven or more years (Saunders, Goldenberg & Marcelletti, 2013; Scarcella, 2003). Although the multilingual learners we teach may “sound” fully proficient in English based on our informal conversations and class discussions with them, it is important to know that such proficiency does not mean that students do not need ongoing and explicit instruction in the academic registers of English, which is why DL is such a powerful and relevant topic.

Bilingualism as a resource. In addition to acknowledging the specific needs of our individual multilingual students, to be effective teachers, we must simultaneously identify the strengths and resources they bring to the classroom. Contrary to the persistent monolingual bias that pervades K-12 education, research provides evidence that multilingual learners from a range of proficiency levels have a metalinguistic advantage over monolingual students, as they are able to analyze elements of grammar, vocabulary, and pronunciation across languages (Bain & Yu, 1980; Diaz, 1985; Martin-Beltrán, 2009). DL requires attention to language, the ability to analyze and compare linguistic elements, as well as the ability to use language in different ways depending on context and purpose. Hence, multilingual students, who spend their lives negotiating between two or more languages, already have daily practice and expertise in this area. If teachers bring this understanding of learners’ linguistic resources to bear in their instruction, the metalinguistic capacities of multilingual learners can serve as a platform for the development of DL.

How Can I Teach DL to my Multilingual Learners?

As we described in the opening of this article, when teachers attempt to differentiate for their multilingual learners, they often provide watered-down instruction that focuses on low-level skills. Based on their case study research of high school teachers, Athanases and de Oliveira (2014) describe how multilingual learners tend to experience learning “in which curricula grow impoverished, basic skills get foregrounded, and higher academic goals recede” (p. 292). Being aware of teachers’ tendency to “underteach” students to avoid overwhelming them reminds us to always ask the question: How can I scaffold DL instruction while maintaining the integrity of the content and instructional goals?

Indeed, a study by Wilcox and Jeffery (2015) found that adolescent multilingual learners experienced challenging disciplinary writing tasks in ways that highlight complex interactions between the difficulty of the task, the source text, and the students’ perceptions of their writing abilities. Of particular interest to us is the finding that multilingual learners often felt most positive about writing tasks that were challenging yet engaging. This finding led Wilcox and Jeffery to argue that teachers should not automatically reduce the complexity of a task, but rather enable students to “engage in writing that is both appropriate for their language proficiency level and stretches them to engage deeply in expressing their understandings of content in a variety of genres and using multiple modes of communicating their ideas” (pp. 54-55). This significant discovery -- that multilingual learners regarded challenging disciplinary writing tasks positively - - offers a variety of implications for instruction. Not only does providing low-level instruction bar multilingual learners from achieving at their highest level, but it also has the potential to disengage them from the learning process. With appropriate scaffolding and knowledge of our students, we can create immense possibilities for how our instruction of DL for multilingual learners can be meaningful and effective.

Scaffolding and explicit instruction. Scaffolding is an important consideration for all learners in our classrooms. However, appropriate scaffolds for multilingual learners also provide
To Win the Game Know the Rules and Legitimize the Players

explicit instruction and meaningful opportunities to understand and use the discipline-specific language. According to Hammond and Gibbons (2005), appropriate scaffolds offer “task-specific support” that facilitates the students’ movement toward independence with the targeted content (p. 8). Scaffolds include teacher explanations and demonstrations, visual, aural, and tactile supports such as posters or charts, audio media, and hands-on activities (Hammond & Gibbons, 2005). In terms of DL, the challenge is two-fold: not only do teachers need to have a deep understanding of the discipline-specific ways in which language is used in their subject area, they also need to be able to identify appropriate scaffolds that will help students learn and use discipline-specific ways of thinking and communicating. Below are two examples of scaffolding we have used with success in our own DL instruction.

**Contrastive Analysis** (Taylor, 1989). This technique is used to draw attention to linguistic differences. While it is commonly used to demonstrate phonological differences, we have used contrastive analysis to facilitate explicit discussions of how academic registers differ in word choice, syntax, voice, and other dimensions.

*Example.* After reading and discussing Irish immigration in the 19th century, students receive a two-column chart with the left column labeled “How we say it” while the right column is labeled “How a historian says it.” The social studies teacher asks the students to record their understandings about the causes of this immigration on the left side of the chart. Then the class works together to construct statements about causation on the right side of the chart, using sentence frames like “We believe that ___ played a key role in Irish immigration because ___” or “The primary cause seemed to be ___” (Zwiers & Crawford, 2011, p. 148). This scaffold provides an entry point into historical thinking (asking what causes historical events) and communicating (using academic syntax as it would be found in historical texts).

**Functional Language Analysis (FLA)** (Fang & Schleppegrell, 2008; Fang & Schleppegrell, 2010). By bringing students’ awareness to the specific language used in disciplinary texts, we can provide a model for how to ask questions about text like an expert in that discipline. Teachers employ metalanguage, that is, language about language, to guide learners to consider authorial choices.

*Example.* The teacher leads the class in systematically comparing two texts, a narrative fictional text and a scientific biology text, highlighting differences in vocabulary, clause usage, and sentence structure particular to each (Fang & Schleppegrell, 2010).

As these examples demonstrate, effective scaffolding of DL requires teachers to create opportunities for multilingual students to identify and employ linguistic elements and usage particular to subject-area texts, helping them to puzzle out the pieces and patterns of disciplinary discourse. To further support instructional scaffolding of DL, we provide a list of resources and links to those resources in the Appendix.

**Conclusion**

Multilingual learners bring linguistic and cultural strengths to the table that may give them particular advantages over their monolingual English Only peers. Successful disciplinary reading, writing, and thinking rely upon understanding the ways language is used based on the disciplinary purpose and audience. Such linguistic negotiations are engaged in by multilingual learners every day as they draw upon their multiple resources to navigate both in- and out-of-school environments. By strengthening our understanding of DL, we can develop instructional contexts and create classroom cultures in which multilingual learners are positioned as capable and successful users and generators of disciplinary literacy.
Appendix

Resources

Suggested for teachers and literacy specialists seeking information for classroom practices:


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Suggested for teacher educators, reading specialists, and teachers seeking additional information on the concepts and theories outlined in this article. These resources would be valuable as part of a study group or “book club” that examines more complex aspects of DL:


Suggested for literacy coaches or professional development professionals who need to lead sessions on the basic tenets of a disciplinary literacy approach:

The Disciplinary Learning Suitcase developed by the Wisconsin Department of Public Instruction may be reproduced or disseminated for non-profit, educational purposes without prior permission. Available at [http://standards.dpi.wi.gov/stn_dl-suitcase](http://standards.dpi.wi.gov/stn_dl-suitcase)
To Win the Game Know the Rules and Legitimize the Players

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A,B,C and Do, Re, Mi: Literacy Strategies in the Music Classroom

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Dana Saccomano, Hartford, CT Public Schools

ABSTRACT
A goal of content area literacy instruction is to produce students who can read and think critically. As a result of this focus teachers are scrambling to embed higher order thinking skills within all levels of their instruction. Arts advocates view this shift as an opportunity to expand the arts so students will experience benefits the arts can provide in navigating complex and connected learning. An action research project was initiated by a music teacher to see if using literacy strategies would enhance note reading for her students. Specific strategies were identified and modeled by the teacher throughout the school year. Benchmark testing and student work samples indicated students benefited from using these techniques in instruction.

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A major goal of disciplinary literacy instruction is to produce students who can read and think critically, students who can think metacognitively. As a result of this focus, teachers are scrambling to embed higher order thinking skills, the ability to connect, apply, and understand reasoning, within all levels of their instruction, as school districts mandate more instructional time for reading. Arts advocates view this shift as an opportunity to expand the core arts standards to more extensive opportunities for practice so that students will experience benefits the arts can provide in navigating complex and connected learning: “There should be support for artistic literacy by providing a learning environment where the development of arts-centered inquiry leads to more deeply connected learning, with positive consequences extending far beyond building cooperative or creative skills for the work place (Logsdon, 2013, p. 52).”

Providing students with the study of the arts allows them opportunities for critical inquiry while promoting work habits that will develop inquisitiveness and creativity. Students today are functioning in a world that contains multiple forms of literacy, not just the traditional English classroom, but in all subjects, including a music classroom. The
power of literacy lies not only in the ability to read and write, but rather in a person’s competence to put this new learning to work in determining the path of his or her own life and to think about his or her own thinking. According to Shanahan and Shanahan (2012) disciplinary literacy “emphasizes the specialized knowledge and abilities possessed by those who create, communicate and use knowledge within each of the disciplines...emphasiz[ing] the unique tools that the experts in a discipline use to engage in the work of that discipline (p.8).” Teachers are trying to implement a broader view of literacy “demanding skills in reading and writing but also in other sign systems as a set of social practices associated with different domains of life that are purposeful and embedded in broader social goals and cultural practices (Begoray, 2008, p. 7)” and helping students to read not only the written word but the world at large. This work extends to all subject areas including the music classroom, broadening our view of disciplinary literacy instruction.

Literacy strategies, “tools for learning so that students can improve their literacy and content knowledge simultaneously (Gillis, 2014, p. 618),” are instructional methods that enhance reading and understanding connected texts, even if that text is more than the printed alphabet. When students use these strategies as they examine various “disciplinary choices or relatively specialized patterns of language use, they may become better equipped to deal with the learning demands of the particular disciplines (Shanahan & Shanahan, 2012, p. 10).”

As in traditional literacy instruction, music literacy shares the processes of hearing and manipulating sounds, reading symbols and encoding and decoding those symbols. English is one sign system taught in our school system, but not the only one. The music notes on the page are another form of literacy and one that can benefit from having literacy strategies applied to its instruction as students think about their work. Our understanding of literacy and text has broadened and literacy is as much a topic for instruction for the music teacher as it is for the English teacher. The music classroom is also a place for a variety of “texts” and sign systems. Teachers can adapt literacy strategies to work within the music classroom allowing for a more complete understanding of the subject matter. The discipline of music gives students the specific insights about the nature and manner of the language of music. Based on functional linguistics, literacy is the tool that will help students understand the function of the language of music (Halliday & Matthiessen, 2004). Teachers will then teach “discipline appropriate literacy practices, which vary according to the content area (Gillis, 2013, p. 621).” These strategies, taken directly from content area literacy instruction, help the music student think critically as they receive, process and produce information. When students write about music their understanding of the subject’s vocabulary and concepts is expanded and when they read music it develops their ability to read text and symbols. When students are given “tasks and experiences that provide opportunities for them to read, write, think, reason and inquire with substantive content presented through text of multiple genres, modalities, registers and sources (Fung & Coatoam, 2013, p. 630)” they engage in discipline specific practices to increase understanding, as evident in the music classroom.

Much work has been done to study disciplinary literacy, to understand the discipline specific literacy skills necessary to be able to address and master content subject matter (Shanahan & Shanahan, 2008, 2012, 2014; Fang & Coatoam, 2013; Gill, 2012). The majority
of this work focused on the more traditional subjects such as history, math and sciences, but what of music? How can disciplinary instruction be applied to music instruction? The study of disciplinary literacy within traditional subjects is certainly applicable to the study of the discipline of music. Each discipline approaches the reading of its material in a very different way: “The reading practices promoted by disciplinary literacy are actually drawn from the disciplines themselves rather than being imposed on them by the reading community (Shanahan & Shanahan, 2014, p. 628).” It is the job of the experts guiding the learning to convey to students how to approach their discipline’s materials to become literate in their content so they may develop the disciplinary habits of reading, writing, viewing, speaking, thinking, reasoning, and critiquing (Fang & Coatoam, 2013) in all subject areas including music.

**Literacy instruction in the music classroom**

The question remains: Is it possible to convince teachers of music education to see the connection between literacy instruction and their teaching in the classroom? The goal is to expand the definition of what constitutes literacy. Researchers have noted that the integration of disciplinary literacy has been shown to increase reading comprehension skills (Holloway, 2002; Ming, 2012; Vacca, Vacca & Maz, 2011). It has also been noted that musical skills are similar to literacy skills (Ming, 2012) and students expand their understanding of music vocabulary and concepts when they read, write and sing about the subject: “When students write about music it expands their understanding of its vocabulary and concepts. When they sing rote songs it develops their speaking and listening skills, and when they read music it promotes their ability to read text and symbols (Feret & Smith 2002, p. 43).” It is not suggested that the music teacher become a reading teacher, but instead a music teacher can effectively support literacy elements within the context of the music lesson. Barrett suggests (2001) “when connections between music and other disciplines are valid the bonds between the disciplines are organic; that is, they make sense without forcing fit or stretching a point. Valid connections carry meaning across the boundaries of subject areas (p.28).”

Direct similarities can be drawn between teaching English Language Arts (ELA) skills and music skills. First, both music and written text require formal written notation that must be read from left to right as well as developing meaning from the symbols on the page. Students read written text, many times repetitive in both subjects, which provides practice toward mastery. Second, students require listening skills for both ELA and music instruction to receive information. Students listen to teachers, other students, recordings, or experts on subjects to gather information. In both subjects students speak to demonstrate learning. They ask questions to clarify; they provide feedback or information and wonder about their thinking. Finally, students must write in both ELA and music class to demonstrate their learning of the subject matter.

In a meta-analysis performed by Standley (2008) a variety of music interventions were examined which demonstrated that music designed to teach literacy activities is effective in improving reading ability. It was also noted that when music interventions incorporate specific literacy skills the benefits to students are considerably extensive (Darrow, 2008). There is mounting evidence that applying literacy strategies, usually taught in the English Language Arts classroom, can be use to supplement students ability to
comprehend and read musical notation. Literacy strategies can be molded to work in this specific context.

This action research examined one instrumental music teacher as she worked with her classes for one academic year. The school district’s initiative for the school year was to embed literacy strategies into all subject areas. To meet this goal the teacher worked with a reading specialist to research literacy-based strategies that would benefit students, as they worked with music concepts, to support the development of literacy, specifically note reading in reading, writing, and listening activities. The teacher posed the following question: Will using literacy strategies during instruction in a music classroom help students meet the identified learning outcome of note reading enabling students to read and play notes on their instruments.

The work

Action research was conducted to determine if using literacy strategies for instruction in a music classroom would benefit students understanding of concepts in music and would students be able to transfer this understanding to playing their instruments. This certified music teacher has 7 years of teaching experience. For this project she worked with beginning instrumental students in grades 4-6. Forty-nine students were assigned to her classes and participated throughout the year. The students were all members of first year band and orchestra classes. Students participated in a once a week thirty-minute lesson. District and parental permission was obtained through a letter sent home to the parents informing them of this work. Signed permission was necessary to participate. Students were also verbally informed about their participation in the study.

This teacher’s school district requires her to identify specific Student Learning Outcomes (SLO) to be addressed throughout the school year during lessons. These SLO’s were developed based on district wide teacher expectations for musicianship and the Common Core Standards. This district has also developed benchmark testing for three points during the school year in September, January and May, to determine if the SLO’s are being met. These assessments, traditional paper and pencil assessments of concepts identified as necessary at each grade level, were developed by the district music teachers and are revised annually. Using data from the initial benchmark testing in September the SLO identified to work on for this year was: “SLO #1- Students will improve their note reading skills (East Hartford Public Schools, 2015).” To meet this goal a schedule was developed for communication between the teacher and reading specialist, planned for once a month, to discuss the strategy being used, how it was being implemented and, if necessary, how the strategy could be adapted more appropriately to meet the SLO. In addition the district required two more benchmark assessments, January and May, to continue to monitor and measure student growth and these were administered and analyzed accordingly along with teacher notations of the testing results.

The Lesson

Students were assigned to small group lessons based upon the instrument they chose to learn. Each lesson ran for thirty minutes, once a week. For this project the teacher had structured her lesson to include a short review when the students enter the room, instructional time, and then a short wrap up at the end of the lesson. Literacy strategy
instruction was embedded throughout each section of the lesson. This was a departure from past instructional practices for this teacher when the lesson time did not include specific literacy strategies. For example, as a review at the beginning of the lesson the students may write a question about something they needed help with, during the lesson modeling with a think aloud for instruction was provided and at the end of the lesson an exit slip to determine knowledge gained during the lesson may be used as a means of formative assessment. Examining the SLO’s and deliberately inserting literacy strategies into instruction to address these measures changed music instruction for this teacher and her students.

**Strategy work**

Before the lessons began, the teacher and reading specialist identified specific literacy strategies to be used to address the SLO of note reading. Identified were the think aloud, “speller” journal, entrance/exit slip, word wall, wonder wall, and anchor chart.

The first strategy, the think aloud, drove all of the lessons. Demonstrating the think aloud strategy the teacher modeled for the students what an “expert” musician does and thinks as they work on a piece of music. Using the think aloud, the teacher showed the strategies to ensure the students saw what they needed to be able to do; for example, the teacher talked the students through placing notes on the staff. She verbalized each note name as it was placed on the staff as well as “tricks” she had to remember the notes. The teacher then modeled where that note was for each instrument and how it sounded. The teacher talked through what she was doing to achieve a good sound, all the while referring back to the notes on the staff. This model draws from “the expert-novice paradigm from the cognitive sciences (which) have used observations and think-aloud protocols....Experts are asked to perform their skill while thinking aloud....(illustrating how) disciplinary experts read differently from novices in their fields (Shanahan & Shanahan, 2012, p. 13)”, providing the model students need to see the goal they are working toward. Students were then able to practice the skill on their instrument with the teacher and talk through their thinking as they worked to achieve a good sound, or, as they were writing in their “speller” or working on any number of skills. After multiple practice attempts the students were able to perform the skill on their own. This gradual release of understanding enabled the teacher to show students her thought process and what proficient musicians “look” and “sound” like.

Data were gathered throughout the school year. Student work samples, including written work and pictures of work samples were collected to determine if the SLO was being met. Benchmark testing data for pre assessment in September, monitoring in January and post assessment in May was also gathered, along with teacher notes. This evidence was examined to determine if the new structure of the class lessons, with embedded literacy strategies, was increasing the understanding of the identified SLO. Both the teacher and the researcher analyzed the results from all of the data gathered to determine if students were working toward mastery of the SLO of note reading.
Strategies taught

Music speller

When students write for authentic purposes they respond in meaningful ways to content (Ming, 2012, 214). Integrating writing with subject matter helps make that content come alive for students and helps make connections between the new and the known. This teacher used a “music speller” journal to help students make those connections and practice the process and mechanics of reading and writing music. These “spellers” kept track of the content the students were learning and were used to develop fluency of note reading and writing. Here students wrote about lines and spaces, notes and mnemonic devices. These spellers enabled the teacher to model correct notation, dialogue with the students about their work as they practiced, comment on proficiency as they moved toward understanding and make suggestions for improvement. Students were then able to transfer this note reading to note playing for their instrument. The speller helped to develop musical literacy in regard to writing and performing.

Figure 1
Music “speller”

Entrance/Exit Slips

Another literacy strategy modeled was the use of entrance/exit slips. Entrance/exit slips as a strategy can be used to help students to summarize information they have been learning in class (Fisher & Frey, 2004). As an entrance slip this strategy allowed the teacher to determine her student’s proficiency level before instruction for the identified outcome. As an exit slip the strategy allowed the students to review the concepts taught that day in class, pose a question about the day’s lesson or clarify a misunderstanding. The exit slip also allowed the teacher to determine the effectiveness of her instruction for that day. Modeling by the teacher using the think aloud illustrated different purposes for
entrance/exit slips and the students were able to use this strategy throughout the school year to demonstrate evidence of newly gained information and think about their thinking.

Figure 2

*Entrance/Exit Slip*

![Entrance/Exit Slip](image)

**Anchor charts**

Anchor charts, documenting learning in the classroom, were another literacy strategy incorporated into this music classroom. This instructional device allowed the teacher and students to organize, in a visual way, their thinking. These charts were developed with the students, before during and after lessons to preview, learn and review material. These visuals allowed the teacher to make explicit her teaching of concepts. The visuals provided the students with the reference needed to develop the understanding of the materials. Some of these anchor chart/visuals included a word wall of concepts necessary to achieve proficiency in the learning outcome and a wonder wall of the student’s questions about learning that needed clarification before moving forward in their understanding. Again, using the think aloud the teacher modeled her thinking for the word wall and her questions for the wonder wall. In this way the students were able to connect, apply and understand new concepts.

Figure 3

*Wonder Wall*

![Wonder Wall](image)
Supporting evidence

The teacher followed specific requirements outlined by the school district as she implemented her action research project. The district required the teacher to identify literacy strategies she was using in her classroom and to develop lesson plans in which these strategies were used. The district also mandated and provided the benchmark testing to be administered three times during the school year. The teacher administered the testing and collected pre test data, mid term data and post test data. Students were scored according to cut score levels determined by the district and rated as Exceeded.
Expectations, Proficient, Making Progress or Not Yet Achieved. The teacher’s thinking about the results was also noted. All of this data were collected by this teacher and reported to the administration, as was all other district music teachers’ benchmark test results. Administration then compiled the data into spreadsheets for the teachers so they could see the progress of their particular students at each testing period as well as compare their students to other groups of students. This teacher was then able to see how her students were progressing as she compared her results to other students from the district that were also in beginning music classes.

Table 1 outlines the results for this teacher’s first year instrumental students in grades 4, 5 and 6 that participated in this work and received a score of Exceeded Expectations or Proficient in note reading.

Table 1.
First Year Students Knowledge of Note Reading

<table>
<thead>
<tr>
<th>Testing period</th>
<th>Number of students tested</th>
<th>Number of students receiving proficient/exceeding expectations</th>
<th>Percent of students receiving proficient/exceeding expectations</th>
<th>Teacher notes/observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>47*</td>
<td>7</td>
<td>15%</td>
<td>Few understand note reading. Bass clef, alto clef, treble clef unknown to students.</td>
</tr>
<tr>
<td>January</td>
<td>49*</td>
<td>17</td>
<td>35%</td>
<td>Note reading continues to be a challenge for first year player. Strength - term/symbol identification.</td>
</tr>
<tr>
<td>May</td>
<td>44*</td>
<td>29</td>
<td>66%</td>
<td>Note reading improving, but still some difficulty for bass and alto clef readers - answering in treble clef. Strength - term/symbol identification.</td>
</tr>
</tbody>
</table>

*number varies due to student absences on day of testing
These results can also be disaggregated to sub groups of students for a closer look at Proficient/Exceeding Expectations in Table 2.

Table 2.
First Year Students Knowledge of Note Reading by Grade Level

<table>
<thead>
<tr>
<th>Testing period</th>
<th>Grade level</th>
<th>Percent of students receiving proficient/exceeding expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>4</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>50%</td>
</tr>
<tr>
<td>January</td>
<td>4</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>60%</td>
</tr>
<tr>
<td>May</td>
<td>4</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>75%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>80%</td>
</tr>
</tbody>
</table>

Discussion
The focus of this work was to examine if using literacy strategies within a first year instrumental music classroom would benefit students in meeting the outcome of note reading. The data in Table 1 reveals that students steadily worked toward proficiency or exceeding proficiency in this area. Base line data in September revealed that, as a whole, the students were not proficient in note reading with only 15% proficient or exceeding expectations. Table 2 indicates that grades 4 and 5 clearly had little knowledge in this area. Grade 6 students showed some understanding, possibly because they had more exposure in their general music classes and retained some of this information to be able to answer questions about note reading. Table 1 also includes a summary of the teacher’s notations. The teacher’s notes indicated that during the first testing period, few students understood the concept of note reading; students had no knowledge of the different clef’s notes for note reading and were generally unable to perform this task.

As the year progressed and literacy strategies were used during lessons, the groups were retested in January. Data gathered during this time frame revealed 35% of students were proficient or better in note reading for both the group and the individual grade levels. Table 2 indicates that grade 5 showed the greatest improvement in understanding of note reading concepts during this time. Teacher’s notes were once again examined for
comments. Here she noted that first year students were having some difficulty with note reading but term/symbol identification was a strength. In her notes she indicated that note reading, especially for bass clef and alto clef readers, needed continued instruction and support.

By the end of the school year, when given the post-test in May, data gathered indicated all three grades showed continued improvement in note reading. Sixty-six percent of students were proficient or exceeded expectations. Table 2 indicates that each grade level displayed an increase in the percent of students who were proficient or exceeding proficiency in this outcome as well as an increase in note reading understanding for the group. Once again the teacher noted that there was an improvement in first year students note reading skills, but the challenge for this group continued to be reading bass clef and alto clef. This was an area she noted needed to be addressed in future work with these students.

Specific literacy strategies had been used throughout the school year to support the learning objective of note reading. Embedding these strategies into instruction was new to this teacher’s classroom instruction. By gathering evidence, areas of strength and weakness for this group of students were able to be determined. The data results gave the teacher additional information about the objectives identified for instruction.

Instruction using the “speller” provided evidence of the student’s ability to read and write about line notes, space notes, the staff as well as other basic concepts. When asked to complete this writing, student understanding of concepts could easily be seen in their responses. If students could write it, then they owned the information. This journal allowed the teacher to hone in on those students having difficulty with note reading, very specifically reading in a clef other than treble.

The entrance/exit slip strategy enabled the teacher to assess her goals for each lesson by examining each student’s response. Posing a question about a concept at the beginning of the class allowed the teacher to group students according to understanding as well as provide a formative assessment at the end of class for the day’s new concept. This information allowed the teacher to immediately see which students were not reading notes correctly or were reading in the wrong clef.

Using the strategy of the wonder wall students were able to write sticky notes for concepts they needed to have clarified. Here teacher and students could answer questions to help clear confusions. In addition, the word wall strategy was used as a reference point to clear up this confusion, specifically concerning vocabulary words. Students could, when working independently, in pairs or in a group, use the word wall as an aid to assist in clarifying their misunderstanding. Wonder and word walls were another way to get a “quick” answer when the teacher could not be at the student’s side.

Finally the strategy of anchor charts was used as reference points for the students. Charts were developed describing the basics of note reading, student responsibility as a musician etc. to be used throughout the year. These charts remained on the classroom walls throughout the school year. When working on their instrument or in the speller the students could refer back to these charts when they had a question. These tools provided additional sources of information for the students to help clarify their understanding. When students used these tools the teacher was not “telling” students what they needed to know but “showing” them how to develop their understanding and become independent...
learners. These strategies gave students another way to gather information other than “ask the teacher.” Now students had different strategies at their fingertips, which they could utilize when they needed assistance. In the past, the only source of information had been the teacher; now when students were working on identifying SLO #1-improving note reading skills, students had different sources of information to reference for guidance. Students were developing their own ability to work toward the goal of note reading with the application of note playing on their instruments utilizing appropriate disciplinary literacy practices.

**Implications**

Content teachers work within their subject to ensure that students learn specific material. When teachers use literacy strategies they can enhance this learning by fostering reading, writing, listening and speaking. The literacy strategies chosen for this work were all research based and have been proven to promote critical thinking and problem solving in the literacy classroom. Music teachers can use these strategies to their advantage to help students understand the literacy of music.

There are a number of considerations that can be drawn from the results of this work with students. First, music teachers should give their students multiple opportunities to make connections between literacy and music. Writing in the music classroom in journals such as the “speller” is a good technique for both teaching and assessing students and tracking long term development. As noted by Perman and Friedman (2009), these types of notebooks help students organize and track their learning while gaining knowledge of the content. Writing, questioning, and checking for understanding are all exemplary practices that strengthen music concepts, and should be used in any subject matter to help develop comprehension. “Literacy can be used as a tool for learning so that students improve their literacy and content knowledge simultaneously (Gillis, 2014, p. 618).” When music teachers use literacy strategies they help their students construct meaning in the arts by enriching the connection to specific skills associated with musical literacy.

Second, using graphic representations in the classroom facilitates students understanding of the relationship among concepts. Graphic representations “are important because they help the student identify the important parts of the text as well as the relationships/connections between the concepts contained within the text (Begorary, 2008, p. 7).” In the music classroom these representations can take the form of anchor charts for students to be able to refer to them throughout lessons for the fundamentals of music or for effective practicing techniques. Teachers should include these visual representations to help with developing comprehension and retention of the note reading system as students “organize, revise and modify the connections they make as they acquire content” (Ming, 2012, p. 218). In this way abstract musical concepts can be represented in a tangible manner for students enabling students to practice becoming critical thinkers capable of understanding and critiquing the materials they read in the music classroom.

Third, using the think aloud strategy to model learning demonstrates to students how proficient learners think. Providing this extra visual helps students to see that all learners have to process information as they develop understanding. Providing tools such as entrance/exit slips, a wonder wall, and a word wall, places the teacher in the role of
facilitator of knowledge, modeling how to use these tools to make connections, “read” notes, or “decode” music on the staff as students listen and learn to construct meaning for themselves. This type of teaching enhances thinking and learning encouraging students to develop their new understandings from the models presented by the teacher. This expert-novice model has been studied for the past three decades in various disciplines (Shanahan & Shanahan, 2012) and that research was applied to this classroom. Block and Israel (2011) also state “It has been proven that students come to realize that they can read with greater understanding and obtain more information … when a teacher uses think-alouds. As a result, fewer students struggle to comprehend texts at school and home” (p.167). Enhancing the use of the think aloud with visuals expands music instruction as more than a creative outlet to become a cognitive endeavor.

Finally, using literacy strategies within the music classroom will “enable the music educator to partner [with literacy] in planning strategies for curriculum and teaching” (Barry, 2008, 36). Determining which strategies can be used to support learning is key. Understanding the “text”, the language of the music discipline, will help the teacher choose the strategies that align with their goals and teaching style. Literacy strategies offer a set of instructional tools that can be used to reach these goals set in the classroom. It is important that the teacher understand how literacy strategies can enhance instruction, enabling their students to become literate in their field.

There are limitations to this work. This was just one teacher working with a small number of students. Including other classes in the district would give the project a larger number of participants from which to draw data for conclusions about note reading instruction. Also, making a comparison between this classroom, with strategy instruction, and one that did not have strategy instruction, may give more insight into the impact strategy instruction had on the SLO of note reading as well as introduce other strategies that would benefit student learning.

**Conclusion**

A music curriculum that includes literacy strategies provides a rich learning experience for students. Embedding appropriate literacy strategies within music instruction enables the music teacher to provide opportunities for students to become more involved in the learning process and to understand the special literacy demands of this discipline. These strategies enhance higher order thinking, and develop comprehension for students. Learning is enriched when students use these strategies as they construct new meaning. Teachers should investigate those literacy strategies that can be woven into their music instruction so they can develop a rich, long term comprehensive learning experience for their students.
References
Concept Mapping Revisited: Nurturing Children’s Writing Skills in Science

Aaron Isabelle, Caroline B. Hopenwasser & Jennifer Piekarz
State University of New York at New Paltz

ABSTRACT
Concept mapping has long been used as an assessment tool by educators to illustrate students’ conceptual development of a topic over time. In this article, we chronicle the use of concept maps in a language arts environment. Focusing on a literacy tutoring program for struggling readers/writers centered on hands-on science experiments, we explain how concept maps were used as tools to engage students in authentic writing. Using the example of one struggling reader/writer, step-by-step instructions are provided used by the student’s literacy tutor to transform ideas captured on a concept map (generated from experiments and readings about magnets) into a student-written non-fiction, informational book. Results from the student’s pre- and post-writing assessments not only show increased writing abilities, but also mastery of science language demands.

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Jennifer Piekarz is a Special Education teacher at Dutchess County BOCES where she works with second and third grade students on the Autism Spectrum. She is also a graduate student in the Literacy education program at the State University of New York at New Paltz. She strongly believes in teaching not only to students’ academic abilities, but also to their interests. In addition, she utilizes a cross-content curricular approach to engage all students. You may contact her at n00615427@hawkmail.newpaltz.edu.

Introduction
For decades, concept mapping has been used as an authentic assessment strategy in education to visually represent relationships among concepts. In science education, it has been used not only to illustrate students’ thinking about science concepts, but also to demonstrate how conceptual understanding develops over time and is modified as a result of instruction. David Ausubel (1968) was a pioneer in developing the concept mapping strategy and researching “structural knowledge.” Joseph Novak (1977) continued with novel research in this area focusing
on “meaningful learning” and using concept mapping as a metacognitive tool in science. Since their groundbreaking work, concept mapping has become a popular and effective assessment tool in K-12 classrooms (Novak, 1991).

As part of a graduate course focused on the remediation of literacy difficulties, hands-on activities related to the concept of “magnetism” was used to help motivate children’s reading of non-fiction science trade books, as well as writing about their experiences. For a period of twelve (12) weeks, graduate students (tutors) worked one-on-one with struggling readers/writers (tutees) in grades 2-5. At the beginning of each session (which lasted for approximately 1 hour and 45 minutes), the graduate tutors, with the assistance of a literacy professor and a science educator, facilitated hands-on collaborative science activities about magnetism inspired by the “Gravity & Magnetism” module in the Seeds of Science/Roots of Reading curriculum (Lawrence Hall of Science, 2009).

As instructors of the class, we incorporated the concept mapping technique as an embedded authentic assessment instrument, which is how concept maps are commonly used in K-12 science classrooms especially when focused on big ideas (Olsen, 2008). Concept mapping was, therefore, used throughout the course to assist the children in keeping a visual record of their learning about magnets. Specifically, each child and graduate tutor was given a large piece of butcher block paper which was taped to one of the classroom walls (Note: this could also be accomplished using sticky notes which would allow the students to easily move their words around). Toward the end of each session, the children added new ideas onto their concept maps based on their hands-on experiences with magnets, as well as reading about magnets.

For one 5th grade student (pseudonym Bella), who was reading at a 3rd grade level and displayed moderate writing difficulties, concept mapping became much more than a way for her to document and demonstrate her learning about concepts related to magnetism. Concept mapping became a critical tool which assisted her in the development of her writing skills and served as a motivator to write about her experiences. In this article, we document the steps which led to Bella’s increased writing ability using the concept mapping-writing technique which covers a range of Common Core State Standards in reading and writing (See Appendix A). [It is important to note that a new form of concept mapping, known as "Thinking Maps," has recently emerged which helps to organize the learner’s thoughts into separate maps that build on each other in the conceptual understanding of a topic. Although current research indicates student gains in critical and independent thinking using this new mapping approach, we chose to use utilize the traditional, more basic concept mapping technique primarily because this was the children’s first exposure to concept mapping of any kind (Long & Carlson, 2011).]

**Step One – Brainstorming and Creating a Basic Concept Map**

The graduate tutor (Jen) and Bella brainstormed words (sub-concepts) that related to the big idea of magnets. First, they had a race to write as many magnet-related words as they could and then they shared their words. Bella came up with six (6) words independently: poles, north, south, attract, repel, and magnetic. By asking Bella what words came to mind when she thought about science, she came up with three (3) more: evidence, prediction, and investigations. These words became the foundation for a basic concept map about magnets which represented Bella’s prior knowledge. Once the initial concept map was created (which required some initial instruction in concept mapping rules including linking words, linking lines, and directional arrows), the words were added to their science vocabulary inventory.
Step Two – Adding New Ideas and Making Connections

Bella added new words to her vocabulary inventory after the first hands-on activity using force blocks, springs, and rubber bands (Note: A science notebook page was used during each activity not only to help guide the exploration, but also to nurture writing as scientists; see Appendix B for a sample notebook page). Specifically, Jen asked, “What new things did we learn today” and “How can we add them to our map?” Jen tried to focus on the specific science language demands used during the hands-on activities. Reading excerpts from the non-fiction trade books, Forces and What My Sister Taught Me about Magnets, also assisted Bella in her understanding of the science concepts related to the force of magnetism. It is important to note that Bella was not simply scanning or browsing these science trade books, but rather she was employing a core “Science and Engineering Practice” as identified in the Next Generation Science Standards (NGSS): “obtaining, communicating, and evaluating information” (practice 8) (See Appendix A for NGSS connections). In other words, Jen assisted Bella in reading the non-fiction science texts “to extract information accurately.” As stated in A Framework for K-12 Science Education, “Because the precise meaning of each word or clause may be important, such texts require a mode of reading that is quite different from reading a novel or even a newspaper” (NRC, 2012, p. 74). Bella would use this practice whenever she used the trade books, as well in the creation of her own non-fiction trade book.

While adding these new words to the map, Jen emphasized the use of linking words to make sentences (propositions) about magnets that she knew to be true. Jen explained that they would continue to work together on their concept map throughout the semester, adding new concepts and vocabulary words after experiencing new ideas during the hands-on activities. Jen conveyed to us early in the semester that she planned on using the concept map with Bella as an informational text. In other words, Jen intended to use key elements of concept mapping combined with Bella’s concept map as a literacy strategy, which we refer to as the “concept mapping-writing strategy.” (Note: Bella’s concept map was written in pencil, so the same piece of butcher block paper was used throughout the semester. After each new learning experience, once Bella realized that a proposition was inappropriate or scientifically incorrect, she erased or modified the proposition.)

Step Three – Reading the Concept Map

At the next session, the graduate tutors and tutees participated in a hands-on activity using magnets and iron filings to illustrate magnetic lines of force. Afterwards, when they revisited the concept map, Jen reported that Bella was dissatisfied with the sentences she created on the map due to her limited vocabulary of linking words. Initially, Bella used “is” as her only linking word impeding her ability to fully express her level of understanding. With moderate scaffolding, Bella began using a variety of linking words once she realized that she could use short phrases to make the connections. An example of scaffolding that was consistently used by Jen was reading a proposition aloud and asking Bella if it made sense to her or if she wanted to modify the proposition in any way. This type of conversation served as a check-for-understanding for Bella which, in turn, allowed her to refine her original propositions. Bella really enjoyed reading the map as sentences. Jen and Bella discussed the possibility of using the concept map as the basis for creating and publishing a non-fiction book titled, “All about Magnets.” Bella loved the idea! She would use the information on the concept map to write full sentences, and then use those sentences to create her writing piece.
As identified in the “Science and Engineering Practices” of the NGSS, Bella employed two fundamental practices while developing her concept map: “Asking Questions” (practice 1) and “Developing and Using Models” (practice 2). In essence, the concept map served as a visual model or representation of Bella’s “structural knowledge” of the concept of magnetism. Her visual model was continually revisited and revised over the course of the twelve weeks illustrating her increased content knowledge. At the same time, Bella was “asking questions” about magnets as she critiqued the accuracy and completeness of her concept map propositions. Because of the strong visual aspect of this process, this strategy is particularly effective for teaching English Language Learners (ELLs). According to Carr, Sexton & Lagunoff (2006), using a visual approach such as concept mapping, educators can effectively assist ELLs with the language demands of science without “watering down” the science content.

**Step Four – Writing Sentence Cards**

One day per week over the next several weeks, we continued to facilitate hands-on activities related to magnets including: magnetic attraction between magnets and objects containing iron, the Law of Magnetic Poles, the strength of magnets and their shapes, the interaction between a magnet and a compass, and Earth’s magnetic field (See Appendix C for more detailed information about each of the science activities implemented). With each session, Bella continued making new connections on the concept map using linking words/phrases. After the final words were added to the concept map (over 18 in all), Bella began her writing project (See Figure 1 for Bella’s completed concept map). Bella used the concept map to create meaningful sentences about what she had learned about magnets. Using pieces of paper cut into halves, she wrote different sentences on each piece. For example, Bella combined the three propositions: “Magnets have Poles,” “Poles can be South,” and “Poles can be North.” Her new sentence card stated, “Magnets have poles. They have a north and a south pole.” Bella also created another sentence card focusing on the Law of Magnetic Poles (See Figure 2 for two sample sentence cards). Once again, Bella utilized a core “Science and Engineering Practice.” Specifically, in writing her sentence cards, Bella was “constructing explanations” (practice 6) which reflected her understanding of key principles related to magnetism. Using evidence that she gathered from the hands-on activities (practice 3) and which were recorded on her concept map, she was able to construct explanations and explain her thinking on the sentence cards.

Figure 1. Bella’s completed concept map
Figure 2. Two sample sentence cards

Magnet have poles. They have a north and south pole.
Step Five – Organizing Sentence Cards

After Bella completed writing all of her sentence cards (thirteen in all), she immediately began to organize the pieces of paper. Unprompted, Bella began placing the sentence cards into piles or groups that seemed to fit together. Jen knew that each group of cards would become the content for each chapter in her book, but at that moment Bella simply needed to organize the cards because there were so many of them. According to H. Taba and her colleagues’ work on the Inductive Model of Concept Development (1971), an individual can obtain a deeper or fuller understanding of a concept once his/her ideas are “organized” through the process of “grouping and labeling.” Interestingly, this process came naturally for Bella.

Procedurally, Jen read the sentence cards one by one, and Bella decided which sentence was the best match to another sentence card. She put the matches into different piles based on how well they went together. Sometimes Jen asked Bella guiding questions such as “Why do you think that card goes there?” to be sure that she was making logical choices in her sorting. At times, Bella felt that it was necessary to add supporting sentences when she felt something was missing. Then within the piles, Bella placed the sentence cards in sequential order which made sense to her. After all the cards were grouped and paper-clipped together, they worked together to assign each group a general category label that captured the main idea of the sentences in that pile (Taba et. al., 1971). The following group labels became the chapter titles for the trade book: Magnetic or Not; Iron and Magnetism; Poles (North and South); Force; and Pushes and Pulls (Note: we suggest using index cards, instead of pieces of paper, to help facilitate grouping the sentences).

Step Six – Editing Sentence Cards and Creating a Trade Book

Before Bella started typing her book, Jen assisted Bella with editing the sentence cards focusing particularly on spelling, proper conventions, mechanics, and word choice. After the editing process was complete, Bella typed each pile of sentence cards onto a separate page in a word processing document, added illustrations (with the help of a search engine), and included nonfiction text features such as a table of contents, section headings, captions for illustrations, and bold-face vocabulary words. The previously mentioned science trade books served as
“mentor texts” or “model texts” in this process. Finally, the pages were bound together, along with a title page, to create the nonfiction trade book. Bella’s book was presented as part of a literacy center open house at the end of the semester. It was clear that Bella was proud of her work, and Jen was equally pleased.

Results

Bella’s writing skills were evaluated using the “6 +1 Trait Writing Model of Assessment” developed by Educational Northwest (2011). This assessment instrument is used to rate students’ writing samples on a scale of 1-5 on several aspects of writing (see Table 1).

<table>
<thead>
<tr>
<th>Score</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Writer does not show any strength in area being tested.</td>
</tr>
<tr>
<td>2</td>
<td>Writer is emerging in area being tested.</td>
</tr>
<tr>
<td>3</td>
<td>Writer is developing in area being tested.</td>
</tr>
<tr>
<td>4</td>
<td>Writer is effective (“strengths outweigh the weaknesses”) in area being tested.</td>
</tr>
<tr>
<td>5</td>
<td>Writer is strong (demonstrates “control and skill”) in area being tested.</td>
</tr>
</tbody>
</table>

Table 1. Interpretation of “6 +1 Trait Writing Model of Assessment” scores

To create a baseline of Bella’s writing ability at the beginning of the semester, she was asked to write a three-paragraph story about a topic of interest. Scores on the 6+1 Trait Writing Assessment for this initial writing sample were used by her tutor to determine three areas of focus for writing instruction: organization, word choice, and sentence fluency. Bella’s final writing piece for the semester was used as a post-assessment for these traits. While the two writing tasks were different, it was important to determine what Bella could do independently and then provide scaffolding through the use of the concept mapping-writing strategy to improve her writing abilities (See Table 2).

<table>
<thead>
<tr>
<th>Area Being Tested</th>
<th>Pre-Tutoring Score (Independent – Baseline Writing Sample)</th>
<th>Post-Tutoring Score (With Scaffolding – Final Writing Project)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideas</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Organization</td>
<td>3</td>
<td>4*</td>
</tr>
<tr>
<td>Voice</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Word Choice</td>
<td>3</td>
<td>4*</td>
</tr>
<tr>
<td>Sentence Fluency</td>
<td>2</td>
<td>4*</td>
</tr>
<tr>
<td>Conventions</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2. Bella’s “6 +1 Trait Writing Model of Assessment” pre- and post-tutoring scores (Note: asterisks indicate areas of improvement)
Prior to tutoring, Bella scored “developing (3)” in the area of organization. Although she wrote in a logical sequence, she relied heavily on sequencing words (such as “next” and “then”) when transitioning, focused on non-essential details, and rushed through important parts of her story. After using the concept mapping-writing strategy, Bella’s post writing assessment scored “effective (4)” in this area. The concept mapping-writing experiences helped her not only with organizing (grouping and labeling) her sentence cards, but also transforming the cards into her own non-fiction trade book organized by chapter. Overall, the concept mapping technique greatly assisted Bella in shaping and organizing her thoughts, and this was reflected in her final writing project.

Bella was initially unable to effectively capture the reader’s attention with her word choice and scored “developing (3)” in this area of her pre-tutoring writing sample. Her story consisted solely of everyday nouns and mundane verbs. For example, she stated what happened with little or no elaboration (e.g. “I hit the ball”). After using the concept mapping-writing strategy, she scored “effective (4)” in this area. We attribute the growth in this trait from repeatedly adding to and extracting words from her concept map. In essence, her concept map served as a working inventory of ideas for her to draw upon when writing.

Lastly, Bella was initially rated “emerging (2)” in the area of sentence fluency. Many sentences began the same way; she started many sentences with “I” or with a sequencing word; however, her final writing project was assessed as “effective (4)” in this area. This was her greatest area of growth which we attribute to experiences with combining and refining propositions from the concept map into meaningful sentences. As Jen stated, “Bella learned to construct sentences in many different ways, which in turn gave her writing better rhythm and flow.”

With regard to science language demands, we also implemented a “Science Vocabulary Knowledge Rating Scale” based on ten (10) key vocabulary words inspired by the Seeds of Science/Roots of Reading magnetism module (See Appendix D). We considered what science words related to magnetism, as well as words related to the nature of science, which the students would need to understand to successfully complete the activities and readings over the course of the semester. Vocabulary or knowledge rating is a formative assessment strategy designed to assess students’ background knowledge of a concept. The use of this type of rating scale can help students become aware of new vocabulary terms and can activate students’ prior knowledge (Young, Righeimer & Montbriand, 2002). Students are first asked to rate their own understanding of each vocabulary word using the rating scale. If they state that they know the word well, then they are asked to give a definition or “showing sentence,” which is a sentence that illustrates a student’s understanding of the word's meaning (Caplan & Keech, 1980). At the end of the unit, the words are revisited on the rating scale. Comparing the students’ self-ratings and the development of their sentences or definitions can be used to show growth. If the student gives a definition or develops an appropriate showing sentence at the end of the unit, then that term can be considered to have been mastered (Young, Righeimer & Montbriand, 2002).

All students were asked to complete the Science Vocabulary Knowledge Rating Scale at the beginning of the semester and at the end of the semester. Bella showed significant growth in her science vocabulary knowledge. At the beginning of the semester, Bella was “proficient” in only three (3) out of ten words (10). In other words, she could either define or use the following words in a “showing sentence”: scientist, prediction, and evidence. She claimed seeing many of the other magnet-related words, but could not provide a definition or showing sentence to explain what they meant. By the end of the semester, Bella was “proficient” in all of the
vocabulary terms. For example, whereas Bella could not define or use the word “attract” in a showing sentence at the beginning of the semester, by the end of the semester she conveyed to Jen, “When two magnets come together that’s called ‘attract.’” Bella’s valid showing sentences for all of the key vocabulary words were a strong indicator of her mastery of the concepts related to magnetism.

Conclusion

Research has shown that “science makes kids want to read” (Lundstrom, 2004). We whole-heartedly agree; however, according to our experiences, we found that concept mapping in science makes children want to write. Although this article tracks the literacy development of one 5th grade child which resulted in increased writing skills in the areas of organization, word choice, and sentence fluency, this concept mapping-writing strategy is now being used with many of the struggling readers/writers who participate in our graduate remediation course. In addition to creating non-fiction texts as Bella did, tutees have since created poetry, graphic novels, narrative fiction, how-to texts, and informational brochures by incorporating science information from their concept maps. Based on preliminary findings, the majority of children participating in our remediation program have shown similar increases in their writing abilities.

The approach described in this article can be easily modified for classroom use. First, the teacher would model the concept mapping-writing strategy for the entire class. Then, the students would utilize the strategy in small, cooperative groups. Specifically, after the students conduct a series of activities on a particular science topic, they would collaboratively add their new learning onto a group concept map, co-develop sentence strips based on their concept map, and then write a non-fiction trade book together as a group. Once this has been practiced using a cooperative group approach, students would be responsible for their own writing using individual concept maps and sentence cards focused on another topic in the science curriculum; therefore, through a gradual release of responsibility, the classroom teacher would be able to use the concept mapping-writing technique as an individual form of assessment. Although further research on the efficacy of this strategy is necessary, we invite you to implement the concept mapping-writing technique in your own science classroom.

Concept Mapping Resources

http://go.hr.com/resources/go_sc/gen/HSTPR006.PDF
http://www.readingrockets.org/strategies/concept_maps
References


Appendix A
Connections to the Common Core State Standards (CCSS) in ELA-Literacy & the Next Generation Science Standards (NGSS)

I. Common Core State Standards Connections: ELA-Literacy

W.3.2
Write Informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.3.4
With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.

W.3.5
With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

W.3.6
With guidance and support from adults, use technology to produce and publish writing.

W.3.8
Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

RI.3.1
Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

II. NGSS Connections

3-PS2 Motion and Stability: Forces and Interactions

PS2.B: Types of Interactions
Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. (3-PS2-3), (3-PS2-4)

Cross-Cutting Concept – Cause and Effect:
Cause and effect relationships are routinely identified.
Science and Engineering Practices:

*Practice 1: Asking Questions and Defining Problems
Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships (Students ask questions that can be investigated based on patterns such as cause and effect relationships).

Practice 2: Developing and Using Models
Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

*Practice 3: Planning and Carrying Out Investigations
Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.

Practice 6: Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.

Practice 8: Obtaining, Evaluating and Communicating Information
Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. (Students obtain and combine information from books and other reliable media to explain phenomena.)

*NOTE: Although Practice 1 and Practice 3 directly relate to standard 3-PS2 “Motion and Stability: Forces and Interactions” in the Next Generation Science Standards (NGSS), Practices 2, 6, and 8 were also essential skills used during the concept mapping-writing experience.
Magnetic Poles

All magnets have a North Pole and a South Pole. What happens when you bring the poles of different magnets together? Draw and label what you observed during the activity:

Key words: North pole (N), South pole (S), attract, repel, like poles, opposite poles, Law of Magnetic Poles

What happens when you bring like poles together? What happens when you bring different (opposite) poles together?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

If a magnet’s poles are not labeled (N and S), what can you do to figure out where the poles are?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Appendix C. Summary of science activities and big ideas related to magnetism

<table>
<thead>
<tr>
<th>Big Science Ideas</th>
<th>Science Activities</th>
</tr>
</thead>
</table>
| • A force is a push or a pull between to objects.  
• Some forces can act when two objects are touching (contact). Other forces can work without touching (non-contact). | **Student Investigation:** Making Forces with Force Blocks  
**Materials:** force blocks, springs, rubber bands  
**Summary:** Using force blocks, springs, and rubber bands, students investigated forces. When pushing two force blocks together connected with a spring in the middle, students experienced the spring “push” the blocks apart. When pulling two force blocks apart with a rubber band connected in the middle, students experienced the rubber band “pull” the blocks together. |
| • Forces can work without touching (non-contact). One example is the force of magnetism.  
• Magnetic Lines of Force represent the pathways of the push or the pull. This is also called a Magnetic Field. | **Student Investigation:** Making a Magnetic Field Visible  
**Materials:** Paper clips, string, magnets, masking tape, metal shavings, printer paper, trays  
**Summary:** In the first part of this activity, one end of a string was taped to the table and the other end was securely fastened to a small paper clip. Students attracted the paper clip with the magnet without allowing the magnet to touch the paper clip; the paper clip was suspended in the air. In the second part of the activity, we covered a bar magnet (on a tray) with a piece of white paper. Iron filings were then sprinkled onto the paper. The iron filings revealed the shape of the Magnetic Field. |
| • Magnets do not attract non-metals.  
• Magnets will attract some metals (iron) but not others.  
• All magnets have the ability to attract other magnets. | **Student Investigation:** What do magnets attract?  
**Materials:** magnets, bag of assorted objects to test (aluminum foil, nails, plastic spoons, pennies, paper clips, etc.)  
**Summary:** Students explored different objects to determine which ones were attracted to a magnet and which ones were not. |
| • Magnets can have different shapes.  
• Different magnets have different strengths. | **Student Investigation:** Strength of Magnets  
**Materials:** magnets, paperclips, rulers  
**Summary:** A paperclip was placed on a table and a ruler was placed vertically next to the paper clip. Students slowly lowered a magnet down the ruler. When the magnet attracted the paper clip, the distance between the magnet and the paper clip was recorded. This was done for different types of magnets (horseshoe, bar, button, ring magnets) to determine that different magnets have different strengths. |
| • All magnets have a north pole and a south pole.  
• Different (opposite) poles attract each other, but like poles repel each other. | **Student Investigation:** The Law of Magnetic Poles  
**Materials:** assorted magnets  
**Summary:** Students explored what happens when two like poles come near each other and when two opposite poles come near each other. |
| • Many everyday objects contain iron which makes them magnetic.  
• If an object does not contain iron, it is non-magnetic. | **Student Investigation:** What everyday objects are magnetic?  
**Materials:** horseshoe magnets  
**Summary:** Students conducted a building scavenger hunt to find objects that are attracted to a magnet. |
A compass contains a small, lightweight magnet.

- The Earth is like a magnet. It has a north magnetic pole and south magnetic pole.

- One end of a compass needle will always point toward Earth’s North geographic pole (which corresponds to its south magnetic pole).

**Student Investigation:** What happens when you bring a magnet near a compass? Simulating Earth’s magnetic field by making an “Earth Ball”

**Materials:** compasses, bar magnets, Earth balls

**Summary:** Students first explored the effect of bringing a magnet near a compass and determined which end of the compass needle was a north pole and which end was a south pole. Students also learned that one end of the compass needle always points toward Earth’s North geographic pole (Note: we labeled the classroom walls as North, South, East, and West). Afterwards, students created an “Earth Ball” by inserting a powerful bar magnet inside of a soft, foam ball resembling the Earth. Students had to determine which way to orient the bar magnet inside the ball to accurately simulate Earth’s magnetic field. Earth’s magnetic field was then simulated by placing paper clips on the outside of the Earth Ball.

**Appendix D. Science Vocabulary Knowledge Rating Scale**

<table>
<thead>
<tr>
<th>Vocabulary Word</th>
<th>Focus</th>
<th>Emerging</th>
<th>Proficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don't know anything about the word in the context of science (i.e. haven't seen or heard the word before in the context of science).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Scientist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Force</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Magnetism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Attract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Repel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Pole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Evidence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Explore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Investigate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Prediction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A Survey of Teachers’ Selection and Use of Children’s Literature in Elementary Classrooms

Karyn Tunks, Rebecca Giles & Sylvia Rogers
University of South Alabama

ABSTRACT
Children’s literature in the elementary curriculum is a time-honored and well-documented practice. Its primary role, however, has varied from providing instruction to promoting recreational reading as a result of changing educational trends. Sixty-nine prekindergarten through fifth grade teachers were surveyed to gain an in-depth look at the selection and use of children’s literature in today’s classrooms. Data from a 35-item survey were analyzed on four demographic factors. Two factors -- teacher preparation courses and professional development -- resulted in statistically significant findings; thus, demonstrating the importance of educating teachers on how to select and effectively share literature with elementary students.

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Benefits of using children’s literature as a part of the elementary school curriculum are well documented. Through exposure to literature, critical thinking is stimulated and children gain factual information (Hancock, 2000). Children’s literature has been used for reading instruction as well as to promote a love of reading. Through literature, children learn concepts from various content areas including math, science, and social studies and make important connections between reading and writing (Denyer & Florio-Ruane, 1998). Exposure to children’s literature helps students develop an understanding of various genre and text structures (Donovan & Smolkin, 2006; Duke, 2000). Research demonstrates that because of the varied and multiple benefits, using children’s literature in the classroom is no longer a treat or indulgence but a necessary component of the literacy curriculum (Leu, Kinzer, Coiro & Cammack, 2003).

Children’s Literature and Reading Instruction
The ways in which children’s literature has been used in classrooms is based in part on trends in education, particularly as they relate to teaching reading. Approaches used to teach reading have varied widely throughout history. For example, teaching reading was once based on the ability of students to recite words aloud. This was considered an effective means of instruction until the introduction of phonics-based texts in the early 1900s. This system for
teaching children how to read opened up a new field of scientific research, and throughout the first twenty-five years of the 20th century, researchers reported numerous discoveries about reading instruction (Huey, 1908; Judd, 1914; Thorndike, 1917; Judd & Buswell, 1922; Hollingworth, 1919; Gates, 1927, 1947).

As practices in teaching reading have changed, so has the use of children’s literature in the elementary classroom. In the first half of the 20th century when phonics-based, controlled vocabulary, or sight word approaches were used to teach children how to read, children’s literature was primarily used for story time or supplemental and recreational reading. When the exclusive use of basal readers for teaching reading was challenged in the 1960s and 1970s, it opened the door to using quality children’s literature for reading instruction (Martinez & McGee, 2000). By the 1980s, literature-based reading programs were being developed (Goodman, 1986; Baumann, Hoffman, Moon & Duffy-Hester, 1998; Lehman, Freeman & Allen, 1994) and new research was conducted on classroom practices used for teaching reading (Baumann, Hoffman, Moon & Duffy-Hester, 1998; Lehman, Freeman & Allen, 1994; Martinez & McGee, 2000).

Legislation has also played a role in reading instruction and how children’s literature is used in the classroom. The findings of the congressionally-mandated National Reading Panel (NRP) were published in 2000 (National Institute of Child Health and Human Development). In order to receive federal funding, districts were required to adopt a reading program based on the practices specified, and teachers were expected to adhere to the prescribed reading curriculum. Although reading texts adopted by schools may have included children’s literature, the published stories were often abridged or edited for each grade level.

The implementation of Common Core State Standards (CCSS) is the latest educational initiative intended to improve student achievement in reading (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Unlike the mandates that resulted from the NRP report, children’s literature plays a significant role in meeting CCSS standards. Key components include the need for students to read a range of classic and contemporary literature as well as informational texts on varied topics. Critical content such as myths, stories from diverse cultures, historical documents, and American literature are required reading, but there is flexibility for other types of literature as determined by individual states and school districts.

The Common Core State Standards (CCSS) call for a better balance of the type of texts used in the classroom, and there is an expectation of increased use of informational text at subsequent grades levels. Informational text is characterized as text with the primary purpose of expressing information about the arts, sciences, or social studies. A broad spectrum of materials such as newspapers, magazines, nonfiction trade books, textbooks, reference materials and digital information comprise the category of informational texts. The CCSS specify four types of informational text: literary nonfiction, expository, argument or persuasion, and procedural. Increasing the complexity of texts at each grade level is also stipulated by the CCSS. Teachers must be familiar with a wide range of literature in order to identify text with an appropriate level of complexity.

**Children’s Literature and the Content Areas**

With the adoption of CCSS, teachers are embedding and explicitly teaching literacy skills across content areas. Contemporary literacy scholars support the integration of literature and literacy activities in content subjects (Vacca & Vacca, 2005; Tomlinson & Lynch-Brown, 2002; Tompkins, 2004) and prominent professional education organizations advocate for the
integration of subject area learning through literacy, including the National Council of Teachers of Mathematics (NCTM), International Literacy Association (ILA), and the National Council of Teachers of English. Integrating children’s literature into the mathematics, science, and social studies curriculums has become common practice.

Studies have shown that integrating mathematics with literature has a positive outcome for learners and deepens students’ understanding of mathematical concepts (Whiten & Wilde, 1992, 1995; Whiten & Whiten, 2004; Burns, 1992, 1995; Zambo, 2005). The National Council of Teachers of Mathematics (NCTM) supports presenting mathematical concepts using children’s literature because the practice enables students to view mathematical constructs from a different perspective. The integration of the two constructs promotes the use of mathematical language and problem-solving (Ducolon, 2000), and provides students with real-world applications (Whiten & Wilde, 1992), which in turn provides practice solving word problems (Ward, 2005).

Benefits of integrating science instruction with literature have also been identified (Rice, 2002; Abisdris & Casuga, 2001). Carefully selected trade books encourage students to think critically and ask questions (Goldberg, 1991; Simon, 1991). Reading science-based literature allows children to study concepts at their own pace and increases interest in science-related topics (Madrazo, 1997; Cerullo, 1997). Integrating science with children’s literature helps students build necessary background knowledge and, as in other content areas, improves comprehension (Rice, 2002).

The National Council on the Teaching of Social Studies (NCSS) supports the use of children’s literature as a method for teaching social studies content. Incorporating trade books expands students’ understanding of events, provides an emotional perspective, and enables students to relate to others in the past and present (Krey, 1998; Galda & Cullinan, 1991). Events can be described in greater detail and offer a broader perspective through literature as opposed to social studies textbooks (McClure & Zitlow, 1991). Trade books also offer richness, originality, and creativity in presenting social studies concepts (Gunning, 2012).

The connections between children’s literature and literacy learning are obvious. In addition to using children’s literature to teach reading or support reading instruction, it is also widely used to teach writing. Children’s literature is used as mentor texts to support young children learning to write as well as a model for older students to further develop their writing. Dorfman and Cappelli (2007) explain that like a mentor who models and coaches a pupil, the mentor text is a model of quality writing used to guide learners. Mentor texts possess the ability to model the use of literary elements in literature (Culham, 2014) as well as how to write in various genres (Fuhler & Walther, 2007) and improve specific skills such as sentence fluency (Matulis, 2008).

**Children’s Literature and Motivating Readers**

The body of research on teaching students how to read is distinctly different from that on motivating students to read. It is an unfortunate fact that possessing the ability to read does not necessarily make one a reader. Therefore, teachers have a responsibility to not only teach children how to read but to motivate them to be readers. Children’s literature has played a significant role in accomplishing this goal. Quality literature is at the heart of key classroom factors that motivate readers (Gambrell, 1996). These factors include: 1) a teacher who models reading, 2) access to a book rich classroom environment, 3) the opportunity to self-select books, 4) familiarity with books, and 5) social interactions with others relating to books.
**Reading role model.** Being a reading role-model is one of the most effective and simplest ways to motivate readers. According to Allington and Gabriel (2012), the only requirement or skill needed to read aloud to students is a conscious decision to allocate class time. Many benefits from reading aloud to students have been identified including improving vocabulary, comprehension, background knowledge, and sense of story (Wu & Samuels, 2004). Unfortunately, as students become capable of reading independently, adults are less likely to read aloud to them (Trelease, 2006; Jacobs, Morrison & Swinyard, 2000).

**Access to books.** The classroom environment itself supports enthusiastic readers as well as reluctant or struggling readers (Eggersdottir, 2009). Access to books is necessary for students to develop a love for reading. This has been identified as a key factor for young children in their home (Lindsay, 2010) as well as in school (Sanacore, 2002). Students in classrooms with well-designed and stocked classroom libraries spend more time reading and interacting with books and exhibit more positive attitudes towards reading and increased levels of reading achievement (National Assessment of Educational Progress, 2002). English Language Learners (ELL) also benefit from greater access to books. ELLs placed in classrooms identified as book-rich environments experienced enhanced comprehension and motivation to read (Koskinen, et al., 2000).

**Self-select books.** Children need an opportunity to self-select the books they read. Struggling readers in particular need authentic experiences with quality children’s literature (Solity, 2006). When students are encouraged to choose books they want to read, reading motivation and comprehension improve (Guthrie & Humenick, 2004), the likelihood of reading for pleasure increases (Ivey & Broaddus, 2001; Reis, McCoach, Coyne, Schreiber, Eckert & Gubbins, 2007), and students’ reading performance is enhanced (Krashen, 2011). Self-selected books may be based on students’ interests or may include books that are popular among a particular age group.

**Familiarity with books.** Students have a heightened interest in books that are familiar in some way. This includes familiarity with an author, characters, and book series (Gambrell & Marinak, 2009; Gambrell, 1996).

**Social interactions with books.** Giving students the opportunity to talk about what they are reading is a natural way to motivate readers. In discussing what they’ve read with peers, students naturally engage in higher-order thinking such as analyzing and making connections to the text. Conversations about books improve comprehension and attention to the text (Cazden, 1988). Discussing books with peers has even been shown to improve scores on standardized tests (Nystrand, 2006).

**Purpose of the Study**

The value of children’s literature as a tool for teaching children how to read, teaching content, and motivating children to become readers is evident. But, are preservice teachers receiving sufficient preparation in the field of Children’s Literature to know how to use books in their teaching? Once in the classroom, do teachers receive professional development in how to teach using children’s literature? Empirical evidence relating to these questions does not exist.

The purpose of this study was to gain a current, in-depth look at how elementary classroom teachers (grades 1-5) select and use children’s literature. The study was designed to determine how the selection and use of children’s literature differs according to the following factors:
• grade level
• years of teaching experience
• number of courses completed during teacher preparation
• participation in professional development related to children’s literature

Descriptive statistics were used to report responses to the following questions:
1) what is important when selecting children’s literature for teaching? 2) how is children’s literature used in the classroom? 3) how has the adoption of Common Core Standards affected your use of children’s literature? 4) what are the reading habits of your students? and 5) how is reading for pleasure promoted?

Methods
Participants
After obtaining permission from the superintendent of schools of a southern region of a Gulf Coast state, requests to participate in the study were e-mailed to elementary school principals. Of the 152 elementary school teachers who received the online survey, 69 completed the survey resulting in a 45% participation rate. The participation rate of 45% was above the response rates identified in a 2008 study comparing studies using various modes of survey delivery (Manfreda, Bosnjak, Berzelak, Haas & Vehovar, 2008).

Participating teachers ranged in age from early twenties to over sixty years old. All respondents were female. Teaching experience ranged from one to more than thirty years with 50% of respondents reporting between six and fifteen years of experience. Schools where respondents teach were described as rural, urban, and suburban. Forty-four percent of the teachers had students speaking English as a second language in their classrooms. Respondents included teachers who taught prekindergarten through fifth grade classes. See Table 1 grade levels taught by participants.

Table 1: Grade Level Currently Taught

<table>
<thead>
<tr>
<th>Grade Levels</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prekindergarten-First Grade</td>
<td>25</td>
</tr>
<tr>
<td>Second-Third Grade</td>
<td>14</td>
</tr>
<tr>
<td>Fourth-Fifth Grade</td>
<td>26</td>
</tr>
<tr>
<td>Multiple Grades</td>
<td>4</td>
</tr>
</tbody>
</table>

Instrument
The 35-item survey used in the study was developed and administered in a European study comparing teachers’ use of children’s literature in four different countries: United Kingdom, Turkey, Spain, and Iceland (Kiris, et al., 2011). Permission to use the survey was granted by a lead investigator. The components of the survey included: demographics, selecting and using children’s literature in teaching, reading habits, promoting reading for pleasure, and reading strategies and processes. Two additional questions were added to gather data relevant to Common Core State Standards initiative (Council of Chief State School Officers and the National Governors Association, 2010) which is unique to the United States.

Results
Survey data gathered and analyzed to determine how children’s literature is selected and used in elementary classrooms in public schools. The data were screened before analysis and blank responses were removed. The survey responses were compiled and analyzed in SPSS version 20 (IBM, 2011). Statistical analysis of the data was conducted using descriptive statistics and a series of chi-squares to determine if teachers’ use of children’s literature varied. The independent variables were grade level, teaching experience, teacher preparation courses, and professional development related to children’s literature. An alpha level of .05 was used as the cutoff value for statistical significance.

Use of children’s literature in the classroom. There were statistically significant results for items in the questionnaire that dealt with what was important for selecting children’s literature, how often they used children’s literature, and if they shared classics of children’s literature every year with their students.

Criteria for selecting children’s literature for teaching. Participants were asked to prioritize up to five choices indicating reasons for selecting children’s literature. A series of chi-squares were conducted on the choices. A statistically significant association was found between the number of teacher preparation courses taken in children’s literature and selecting literature for the purpose of broadening children’s views of others, $\chi^2(4, N=67)=12.04, p = .02$. An examination of the adjusted residuals found that a higher number of respondents who had taken “three or more” children’s literature courses during teacher preparation used literature to broaden children’s view of themselves as opposed to those that had two courses or fewer. Other criteria for selecting children’s literature for teaching were teaching ethical values, teaching children about feelings, and broadening children’s views of themselves.

Sharing classic works of children’s literature. A chi-square test was conducted and a statistically significant association was found between the number of teacher preparation courses taken in children’s literature and sharing classics of children’s literature with students every year, $\chi^2(2, N=59)=8.28, p = .02$. An examination of the adjusted residuals indicated that respondents who had taken only one course in children’s literature did not share classic works of children’s literature every year as much as those who had two or more classes in children’s literature. Furthermore, of the respondents who indicated that they had taken three or more classes, 74% reported they shared classics every year. Of those who had one course in children’s literature in their teacher preparation program, only 30% reported that they shared classics in children’s literature every year.

How often children’s literature is used. Participants were asked to indicate how often they used children’s literature to support teaching and learning beyond the required reading curriculum. A chi-square test was conducted, and there was a statistically significant association found between teachers who had received professional development in children’s literature and how often they used children’s literature beyond the required reading curriculum, $\chi^2(4, N=67)=12.04, p = .049$. An examination of the adjusted residuals indicated that teachers who had reported receiving any professional development in the use of children’s literature used children’s literature beyond the required reading curriculum more than those who indicated that they did not have professional development.

Adoption of Common Core Standards and the use of children’s literature. Participants were asked to indicate if the adoption of Common Core State Standards (CCSS) affected their use of nonfiction/informational literature in the classroom. A chi square test was conducted, and there was a statistically significant association between the number of undergraduate courses respondents had taken in children’s literature during teacher preparation.
and their use of nonfiction/informational literature in the classroom, \( \chi^2(4, N=59) = 12.07, p = .02 \). An examination of the adjusted residuals found that respondents who reported taking “three or more” courses in children’s literature during teacher preparation reported an increased use of nonfiction/informational literature due to CCSS, whereas those that had taken two or fewer courses reported no change or decreased use of nonfiction/informational literature in their classrooms.

**Teachers’ Knowledge and Modeling of Children’s Literature**

**How teachers gather information about children’s literature.** Teachers were asked to select up to five methods they used to gather information about children’s literature. The three most common responses selected were reading children’s books, word of mouth, and reading websites. The results for this question are listed in Table 2.

**Table 2: How Do You Gather Information about Children’s Literature?**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading children’s books and publications</td>
<td>43</td>
</tr>
<tr>
<td>Word of mouth</td>
<td>43</td>
</tr>
<tr>
<td>Reading website</td>
<td>42</td>
</tr>
<tr>
<td>Attending courses and workshops</td>
<td>31</td>
</tr>
<tr>
<td>Reading and watching other media</td>
<td>19</td>
</tr>
<tr>
<td>Reading academic journal</td>
<td>11</td>
</tr>
<tr>
<td>Reading brochures by publishers of children’s literature</td>
<td>8</td>
</tr>
<tr>
<td>None of the above</td>
<td>2</td>
</tr>
</tbody>
</table>

**How often teachers read aloud to children in class.** Teachers were asked how often they read aloud to their students. The majority of teachers responded that they either read daily or more than once a day to their students. The results for this question are listed in Table 3.

**Table 3: How Often Do You Read Aloud to Children in Your Class?**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>31</td>
</tr>
<tr>
<td>More than once a day</td>
<td>16</td>
</tr>
<tr>
<td>About twice a week</td>
<td>11</td>
</tr>
<tr>
<td>A few times a month</td>
<td>1</td>
</tr>
</tbody>
</table>

**Why teachers read aloud to children in class.** Teachers were asked to indicate the top five reasons they read aloud in class. The two most common responses that teachers chose were to model reading and for their students’ enjoyment. The results for this question are listed in Table 4.

**Table 4: What Are the Reasons You Read Aloud to Children in Your Class?**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model reading</td>
<td>57</td>
</tr>
<tr>
<td>For students’ enjoyment</td>
<td>53</td>
</tr>
<tr>
<td>Introduce children to new books</td>
<td>44</td>
</tr>
<tr>
<td>Widen children’s vocabulary</td>
<td>40</td>
</tr>
<tr>
<td>Teach specific literacy skill</td>
<td>32</td>
</tr>
</tbody>
</table>
Strategies teachers used to help children learn about literature. Teachers were asked to choose up to five activities that they regularly used to help children learn about literature. The two most commonly used strategies reported were reading aloud and group discussion. The results for this question are listed in Table 5.

### Table 5: Which Activities Do You Regularly Use to Help Children Learn about Literature?

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading aloud</td>
<td>51</td>
</tr>
<tr>
<td>Group discussion</td>
<td>44</td>
</tr>
<tr>
<td>Oral questioning</td>
<td>31</td>
</tr>
<tr>
<td>Oral retelling</td>
<td>29</td>
</tr>
<tr>
<td>Story mapping</td>
<td>23</td>
</tr>
<tr>
<td>Dramatization or reader’s theater</td>
<td>15</td>
</tr>
<tr>
<td>Vocabulary investigation</td>
<td>15</td>
</tr>
<tr>
<td>Writing as if you were a character</td>
<td>14</td>
</tr>
<tr>
<td>Visualization</td>
<td>13</td>
</tr>
<tr>
<td>Visits to the local library</td>
<td>6</td>
</tr>
<tr>
<td>Author visits school</td>
<td>5</td>
</tr>
<tr>
<td>Note-taking</td>
<td>2</td>
</tr>
</tbody>
</table>

Discussion

Of the four independent variables investigated - grade level taught, years of teaching experience, number of children’s literature courses completed during teacher preparation, and participation in professional development related to children’s literature, only two factors resulted in statistically significant findings. The independent variable, “number of courses completed during teacher preparation” was statistically associated with three survey questions. “Participation in professional development” was statistically significant in one question.

Participants who reported completing “three or more” courses in children’s literature during their teacher preparation program:

- Increased their use of nonfiction/informational literature as a result of the adoption of Common Core State Standards.
- Selected children’s literature for the purpose of broadening children’s views of others.
- Shared classics in children’s literature.

These findings are important because they reflect expectations for teaching key components of CCSS such as introducing children to time-honored tales and historical narratives. The results also support previous findings regarding the ability of children’s literature to enhance reader’s view of themselves and others (Jewitt, 2011).

Teachers who reported participation in professional development on children’s literature support its teaching and learning (outside of reading instruction) significantly more than teachers who have not had professional development relevant to children’s literature.
Frequency data (Tables 2-5) provided specific information regarding teachers’ selection and use of children’s literature in their classrooms. The primary means of learning about literature includes reading children’s books and publications about them, taking suggestions from others through word of mouth, and through websites that share information on children’s literature. The majority of respondents indicated they read aloud to students at least once a day. Purposes for reading with the highest frequency were: to model reading, for students’ enjoyment, and to introduce children to new books. Teachers reported using read alouds and group discussions as activities used regularly to help children learn about literature.

**Recommendations**

These findings demonstrate the importance of educating teachers on children’s literature and how to use it in the classroom. Specifically, multiple courses in children’s literature should be required in teacher preparation programs and professional development opportunities for teachers should be offered. Unfortunately, it appears the trend is in the opposite direction. In an invited contribution, Hoewisch (2000) defended the need for quantity and quality in children’s literature courses. Children’s literature courses are becoming less prevalent in teacher preparation programs. Instead of offering multiple courses relevant to children’s literature, the requirement is being removed from programs. Subject matter from children’s literature courses is being integrated into content area courses or attached to classes in reading methods. In some cases, children’s literature is offered as a part of the general education program or removed from the teacher preparation program entirely.

In 2004, the Children’s Literature Assembly (CLA) of the National Council on Teachers of English published guidelines defending the need for courses in children’s literature in teacher preparation programs. Resolutions included a need for: critical study of books for children and adolescents taught by faculty with an in-depth knowledge of the subject, a sustained and continuing emphasis on how to select and use literature effectively in the classroom, and a broad knowledge of authors, illustrators, resources, and relevant literature topics.

Due to the statistical findings and descriptive data from this study, we echo Hoewisch’s (2000) call to action and affirm the CLA’s (2004) guidelines for course offerings in children’s literature as part of teacher preparation programs. In order for students to continue to benefit from children’s literature, teachers must know how to select and effectively share literature with students. This calls for children’s literature courses and professional development based on sound pedagogy and rich content.

For those teachers who completed preparation programs with limited coursework in children’s literature, there are benefits to participating in professional development activities. Professional development is a source of continuous learning and support designed to improve the knowledge and practices of classroom teachers. Teachers can seek out professional development in children’s literature through educational organizations and local in-service centers. In addition, there are vast resources on selecting and using children’s literature available through books and online resources.

Teachers seeking ways to integrate literature into content areas will find the following a wealth of useful resources. *Perfect Pairs: Using Fiction and Nonfiction Picture Books to Teach Life Science* was written by Melissa Stewart, an award winning author of nonfiction children’s books, and Nancy Chesley, a science and literacy specialist. Together they devised 22 lessons based on relevant children’s books. Students are guided through inquiry based activities to teach life science concepts.
Through her company, Math Solutions, Marilyn Burns offers resources for integrating children’s literature and math including a seven book series. Based on grade levels from Kindergarten through grade 8, each book suggests children’s literature that can be used to engage students to think, reason, and use math skills to problem solve.

Ted DeMille, author of Making Believe on Paper, shows teachers how to use children’s literature as a model to support their early writing experiences. Lynne Dorfman and Rose Cappelli have written books for teachers on how to teach nonfiction writing (2009) and poetry (2012) through mentor texts.

In addition to resources in print, teachers will find an abundance of online resources on how to select, share, and teach with children’s literature. A list of recommended blogs is provided in Figure 1.

Figure 1.
Children and Young Adult Literature Blogs

*A Year of Reading* [http://readingyear.blogspot.com/]
Two teachers and authors of professional books for teachers share their passion and experiences with teaching using children’s literature.

*Jen Robinson’s Book Page* [http://jkrbooks.typepad.com/blog/]
Jen’s blog is dedicated to sharing books with parents, teachers, and librarians so they can promote them in the lives of children. She offers many good reviews and links to related sites.

*Poetry for Children* [http://poetryforchildren.blogspot.com/]
Dedicated to sharing poetry, this blog includes teaching activities, videos, and links to children’s poets’ websites.

*Read Aloud Dad* [http://www.readalouddad.com/]
This blogger offers reviews of children’s books based on his own experience of sharing literature with his twin son and daughter.

*Frog on a Blog* [http://frogonablog.net/]
Picture book fanatic and author, Lauri Fortino shares reviews and interviews with authors and illustrators.

**Conclusion**

The number of children’s literature courses completed during teacher preparation programs as well as opportunities for professional development related to children’s literature significantly influence teachers’ knowledge and use of children’s literature in the elementary classroom. Therefore, children’s literature courses and literature-based professional development is necessary for providing beneficial experiences to students in the elementary classroom.
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Resources


Book Review: Engaging students


Mary–Jo Morse
State University of New York College

ABSTRACT
Engaging Students in Disciplinary Literacy, K-6: Reading, Writing, and Teaching Tools for the Classroom, a collaborative effort by authors Cynthia H. Brock, Virginia J. Goatley, Taffy E. Raphael, Elisabeth Trost-Shahata, and Catherine Weber, and recently published in the fall of 2014, is an easily accessible text written to provide support to elementary school teachers as they begin to tackle the challenges of implementing disciplinary literacy instruction with their elementary school learners. The authors develop and utilize a five part design framework for disciplinary literacy instruction and additionally provide teachers with important background information related to how each of the disciplines thinks, reads, writes, and talks about its content. Brock and colleagues provide classroom examples of disciplinary literacy lessons in action, and include a host of useful teacher resources in each chapter to enable the successful transfer of the ideas into one’s own teaching practices.

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As we continue to move forward with implementation of the Common Core State Standards, it is becoming increasingly imperative that we also continually strive to reach across the disciplines of science, social studies and math to teach reading, writing, listening, and speaking skills within and through the teaching of these individual disciplines. This is especially true in the elementary grades where the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects require the integration of literacy standards within the context of instruction in the disciplines of science, social studies, and mathematics. The mandates of the Common Core are clear about this integration, and yet there are few resources available to assist the elementary classroom teacher in her implementation of disciplinary literacy instruction. Engaging Students in Disciplinary Literacy, K-6: Reading, Writing, and Teaching Tools for the Classroom (Brock et al., 2014) is one of the newer texts published that is meant to help provide elementary school teachers with the needed background information and resources to effectively integrate disciplinary literacy instruction into their everyday teaching practices.

Co-authors Cynthia H. Brock, Virginia J. Goatley, Taffy E. Raphael, Elisabeth Trost-Shahata and Catherine M. Weber, have written a text that is readily accessible, clearly and concisely written to and for the intended audience of K-6 elementary teachers, as a means to help support elementary classroom teachers in meeting the expectations of the English Language Arts
Common Core State Standards within the context of classroom disciplinary instruction in the areas of social studies, science and mathematics. Brock and her colleagues are keenly aware that most elementary classroom teachers are not trained as content specialists, i.e. historians, scientists or mathematicians, and they have therefore set out to write a text which supports the elementary classroom teacher in understanding the differences in which experts in these three disciplines think, read, write and talk about information in their respective fields. Throughout the text the authors provide the reader clear descriptions and examples of how practitioners in each discipline differ in how they talk, write, think, and convey information. Brock and her colleagues illustrate how to apply knowledge to designing effective disciplinary literacy instruction. The authors’ use of classroom scenarios and descriptions of disciplinary literacy instruction planning and implementation, make this text a highly relevant and a useful go-to resource for new and veteran teachers alike, as they begin their individual journeys into designing and implementing disciplinary literacy instruction for their young learners.

The 115 pages of running text are broken into three sections: “Setting the Context” (chapters 1 and 2); “Windows into Classroom Teaching and Learning” (chapters 3-5) and “Designing Your Own Disciplinary Literacy Instruction” (chapter 6). Early in each chapter, the authors pose two to three questions to activate the readers’ thinking about the topic of the chapter, while the major context of the chapter helps to provide additional insight into the questioned posed at the onset. Each chapter is written by several co-authors and this makes for a complete text that reads as if written by a single author, the voice is consistent and clear throughout, making it a user-friendly reading for the target audience of classroom teachers. Additionally, each chapter ends with a brief review of the major ideas presented.

From the moment that the reader engages with the text, she is provided with wealth information that sets the stage for the remainder of the text. Beginning with the introductory chapters, Goatley, Raphael & Brock (2014) lay the groundwork for the importance of effective disciplinary literacy in this era of mandates and expectations of the Common Core State Standards. The focal point is the framework of five design principles, established by the text’s five co-authors, which the authors consider to be an effective means of creating learning experiences that meet the Common Core State Standards for ELA within the realm of disciplinary learning. These five design principles proposed by the Brock et al. include: the use of authentic social and cultural practices; the use of the optimal learning model (gradual release of responsibility); the use of key inquiry questions as the basis for disciplinary study design; the use of multiple and a wide range of resources; and the use of authentic assessments that assess the varied processes of making meaning that students employ as they read, write, and speak in the context of the learning environment.

The five design principles are not only clearly delineated and explained, but are also referred to throughout the remainder of the text, and they form the basis for the core chapters (3, 4 & 5 in Part 2) of the text. The authors systematically explain each component of the framework and thereby also provide their reasoning for why these five design principles, when employed effectively, allow educators to meet the “dual commitments” as presented by Flioro-Ruane, Raphael, and George, that teachers have to each of their respective students to provide student access to age-appropriate, complex grade-level texts, while also providing students with the necessary support to move each student forward in their reading development through the use of materials written at each student’s instructional level (as cited in Brock et al., 2014, p. 9). As Goatley et al. (2014) state, “To achieve the intent behind the CCSS and to accelerate learning with the goal of reducing the persistent achievement gap, instruction in the English language arts
will need to keep these dual commitments front and center” (p. 9). In essence then, the introductory chapters set up the framework that will be employed throughout the remainder of the text in Parts 2 and 3.

Once Goatley et al. (2014) have established the disciplinary literacy instructional framework that will be utilized, the focus turns towards the concept of disciplinary literacy and the challenges it presents for many elementary classroom teachers. Co-authors Brock, Goatley, Raphael, and Trost-Shahata (2014) provide several key reasons, with detailed explanations, as to why disciplinary literacy instruction implementation can be problematic for elementary classroom teachers. Taken together these problems can make it challenging for many classroom teachers to be in their comfort zone when attempting to provide effective disciplinary literacy instruction. Of the several issues that Brock and colleagues outline, two of these key points are especially relevant to purposes and goals of the text as a whole: 1.) the lack of a clear understanding of what disciplinary literacy entails and 2.) lack of elementary classroom teachers’ exposure to instruction and modeling of how experts in the disciplinary fields “think, act, talk, and write within their disciplines” (p. 21).

Co-authors Brock, Goatley, Raphael, and Trost-Shahata (2014) explain that it is problematic that there is a lack of a consistent definition or understanding of what disciplinary literacy is and what it entails. The authors clarify that disciplinary literacy is not equivalent to content area literacy. According to the authors, content area literacy involves secondary content area teachers utilizing general literacy strategies in the context of their content instruction, with the focus being on the “process of instruction through strategy use” (p. 20). Whereas, disciplinary literacy on the other hand, begins with the disciplines themselves and the content knowledge associated with each discipline. The goals of the content area literacy and disciplinary literacy are also very different. As Greenleaf, Cribb, Howlett and Moore assert, “disciplinary literacy…ask(s) educators to consider how to teach reading, writing, and talking as tools, similar to the way disciplinary experts use these tools. The teacher’s goal is to use reading, writing and talking with her students in those unique ways to teach them the content and discourse of the disciplines” (as cited in Brock et al., 2014, pp. 19-20). The classroom scenarios provided in chapters 3, 4 and 5 are key in illustrating how it is possible for classroom teachers to meet such goals.

The text makes clear that designing instruction with the intent of teaching students disciplinary literacy skills is not a case of using typical ELA reading and comprehension strategies and applying them to texts in the content areas. Rather, it is the belief of the authors, that to make sense of the information provided in texts found in each specific discipline, it is necessary to change our thinking about what disciplinary literacy instruction entails. Consequently, the lack of exposure of elementary classroom teachers to instruction and modeling of how experts in the disciplinary fields write, read and talk within their discipline makes effective disciplinary literacy instruction problematic for many elementary school teachers. Brock, Goatley, Raphael, and Trost-Shahata (2014) assert that “Disciplinary literacy instruction in the elementary grades must foreground the norms of the discipline in terms of how disciplinary experts think, act, talk and write” (p. 23). To this end, the text’s five co-authors have framed the core of the text (chapters 3, 4 and 5) to provide many textual and online resources to not only build the knowledge base of the reader and provide real life examples of disciplinary literacy planning and instruction in action, but to also provide elementary classroom teachers access to additional appropriate educational materials in each of the three disciplines (social studies, science and mathematics) examined in the text.
The heart of this book, and its most useful contexts are found when the reader engages with the chapters written to explain and illustrate how to use the five design principles to teach disciplinary literacy skills through meeting the expectations of the Common Core State Standards for ELA in reading (chapter 3), writing (chapter 4) and speaking (chapter 5). It is also within the context of chapters 3, 4 and 5 that we have the opportunity to observe how three expert teachers (4th grade social studies, 2nd grade science, and 6th grade mathematics) have developed effective and engaging disciplinary literacy instruction within their respective disciplinary units of study. It is through the observations of these classrooms that the reader is shown how to implement the five part framework of disciplinary literacy instruction in the elementary classroom. In this regard the authors have done an outstanding job of not just telling but also showing and explaining how the five part framework is effective in disciplinary literacy instruction in each of the three focus areas of science, social studies and mathematics. That being said however, I would have liked to have seen a greater number of classroom examples provided in each chapter, rather than just the two per chapter that the authors included. One for each discipline in each chapter would have provided the reader with a broader base upon which to build. Alternatively, an appendix or accessible online resource that illustrated many of the other classroom disciplinary literacy instruction scenarios that were obtained from the research behind this text would provide the elementary classroom teacher with a wider range of examples to support her growth in disciplinary literacy instruction implementation.

To illustrate how Brock et al. (2014) have written a text to help guide elementary school teachers to more effective planning and implementation of disciplinary literacy instruction, a closer examination of components from the core chapters (chapters 3, 4 and 5) focused on reading, writing and speaking will be provided. To begin with, chapters 3, 4 and 5, all follow a similar pattern in format. In particular, I believe that the reader will gain the most from two specific sections of each chapter, the “What Matters About…” section along with subsequent section “Disciplinary Literacy and…”. The reader is provided with important background information early on in each chapter through discussion of what the authors feel are important components of reading instruction, writing instruction, and classroom talk. It within these “What Matters About…” sections that the respective authors highlight what research has suggested are the important considerations for each of these instructional areas. The authors spend considerable time detailing out each of these important considerations and components, for brevity I will provide and expand only upon those items which appear to be highly relevant to the goals of the text.

For example, in Chapter 3 “Reading Within and Across Texts” (Brock, Wiest, Goatley, Raphael, Trost-Shahata and Weber, 2014), the reader is provided with background information and explanations for each of the five teacher knowledge components advocated by the authors, as necessary for effective disciplinary literacy instruction. Of particular note, the authors stress that for elementary classroom teachers to be able to effectively and efficiently be able to use informational texts from each of the disciplines to provide disciplinary literacy instruction it is imperative that educators have knowledge of the reading context- not all texts are read in the same manner. According to Shanahan and Shanahan the way in which experts in each disciplinary field read is related to the “unique features and contexts of each discipline” (Brock et al., p. 37). Scientists look at connections between the running text and graphic illustrations such as charts and diagrams, whereas historians learn to look and comprehend author bias and point of view as they read (as cited in Brock et al. 2014, p. 37). Therefore, the authors stance, as well as those of other leading researchers such as Fang and Scheppregrell and Moje is that
children be exposed to the different ways in which disciplinary texts are read and written, as they are learning to read (as cited in Brock et al., 2014, p.37). This really is the crux and focus of the background and classroom scenarios that are described and included in the “Disciplinary Literacy and…” section of chapters 3, 4 and 5.

The reader when engaging with the “What Matters About….” section in “Writing Within and Across Texts”, Chapter 4, (Goatley, Crowther, Pennington, Brock, Raphael & Weber, 2014), will learn important information concerning three critical components of a well-designed, logical framework for disciplinary writing instruction. What is especially noteworthy is the stress that Goatley and her colleagues place on the type of writing assessment that should occur in association with disciplinary writing instruction. The authors assert that assessment should reflect the types of real world writing that would be expected in each of the discipline areas. This is further evidenced in the classroom scenarios provided in chapters 3, 4 and 5, where the science teacher assesses students’ written observations, the social studies teacher assesses the writing of timelines, while the mathematics teacher assesses persuasive essays written about local budget concerns.

When the reader reaches the “What Matters About Classroom Talk” section in Chapter 5, (Brock, Obenchain, Raphael, Weber, Trost-Shahata & Goatley, 2014). they are introduced to explanations of four components for effectively utilizing classroom talk as a part of disciplinary literacy instruction. What is both interesting and perplexing to me is the placement of this chapter last in the sequence of topics. In my role as a literacy educator for teacher candidates, my own teaching practice positions the CCSS of speaking and listening as front and center. The first several weeks are spent on these standards and the accompanying strategies and skills, because they lay the groundwork for all that is to follow. The majority of time in a classroom revolves around verbal interactions between teacher and student and students among themselves. We learn from each other as we listen and talk with one another. The authors themselves have positioned “talk is a central tool for learning” (p. 80) as the first important component of utilizing classroom talk. Therefore, it would seem reasonable to have seen the speaking and listening standards addressed prior to the reading and writing standards, because it is through utilizing these oral communication skills of speaking and listening that instruction, instructional engagement activities and ultimately learning will occur.

In essence then, across all three chapters the “What Matters About…” section helps to lay a solid foundation upon which the remaining section “Disciplinary Literacy and…” with its detailed examination of classroom disciplinary literacy planning and instruction in action, builds and provides the reader with a rich learning experience and deeper understanding of how to design and implement effective disciplinary literacy instruction.

The heart of chapters 3, 4 and 5, as well as the text as a whole, begins when we get to look into the classrooms and see disciplinary literacy instruction in action. The “Disciplinary Literacy and…” sections offers the elementary classroom teacher not only glimpses into classroom scenarios where disciplinary literacy instruction is occurring, but more importantly makes available to the reader information about how each of the disciplines reads, writes, talks and thinks about its own content. I learned a considerable amount of new information about how historians, mathematicians and scientists approach reading, writing and thinking about their subject matter, and I feel that most readers would experience the same. The respective authors for these three chapters (3, 4 and 5) have taken the time to help fill in some of the blanks between what the expert in the discipline knows about how to approach their content and what
most teachers know about how to read and teach disciplinary specific content. For the sake of brevity, I have included only two of the six scenarios presented across the three chapters.

Case in point, within the context of a single chapter (“Reading Within and Across Texts” -Chapter 3) we get to see how disciplinary literacy instruction is implemented in a fourth grade Social Studies class discovering why we remember Sacagawea, and a sixth grade mathematics lesson on budgets. However, Brock and her colleagues do not just give us glimpses into the respective classrooms, rather they begin by providing the reader with important information about what it is about each of these disciplines that can make gaining meaning from reading the text challenging for students, and adults alike. To understand how historians think about history, the work of Bruce VanSledright is discussed (as cited in Brock et al., 2014, p. 45). VanSledright proposes that the ability to read history exists on a continuum of four levels, ranging from Level 1-novice to Level 4-expert. Each level is indicative of the progression of reading skills that the reader brings to the text to aid comprehension. Readers at the novice stage are able to monitor comprehension, reread, gather an initial understanding of the text and are engaged primarily in intra textual analysis, the lowest level of expertise. The reader reaches Level 2, when he is able to evaluate the text, by Level 3 readers begin to be able to pull together information and details across multiple sources to build an understanding of the historical event that they are reading about. When a reader has gained the ability to read across multiple texts and make critical evaluations of what then are reading then according to VanSledright they have reached Level 4. The fourth grade social studies teacher uses this knowledge of VanSledright’s work to implement her own disciplinary literacy instruction in her classroom, and has designed her lessons about Sacagawea to focus on developing elements of the first three levels of expertise of historical reading in her students. Therefore, the teacher’s lessons will help her students to accomplish the following goals: monitor their reading by checking rereading, checking for details and getting the gist of the reading; use within the text analysis; evaluate the text; demonstrate a better understanding of historical events; and use knowledge from multiple sources to create a preliminary understanding of an historical event.

To accomplish the aforementioned goals while answering the question “Why we remember Sacagawea”, Brock et al. detail out how the fourth grade teacher demonstrates the five essential knowledge components for effective reading instruction, and additionally how her lessons follow the five part framework of effective disciplinary literacy instruction. The authors illustrate how the fourth grade teacher was able to build her students’ understanding not only the historical content about the importance of “Why we remember Sacagawea”, but also how historians read, write and think about their content through the incorporation into her lesson designs of read-alouds, the use of multiple texts, and by teaching students of how to read maps, and how to read and construct time-lines. The description of the lesson sequence and development to answer the focus question of “Why we remember Sacagawea?” provides important insight as to how to structure similar lessons focused on reading within and across texts, throughout the elementary grades in the area of social studies.

Turning to the sixth grade mathematics class on budgets, Brock et al. (2014), provide the reader with the necessary background to explain disciplinary literacy instruction in the realm of reading within and across texts as viewed through the eyes of a mathematician. In this particular instance, this sixth grade teacher focuses on while also building their mathematical skills. Quantitative literacy is based upon the work of Miller and Weist, Higgin, and Frost, and requires that the reader have the ability to question data and not accept it at face value, critically assess claims made and critically evaluate evidence provided to support those claims and lastly
to look for and uncover faulty reasoning (as cited in Brock et al., 2014, p 51). The authors then illustrate step by step how the sixth grade mathematics teacher developed her lesson on budgets such that her students were provided with the opportunity to engage in each of the major components of quantitative literacy. The descriptions provided, as with the former example of the social studies lesson, make development and implementation of similar lessons in mathematical disciplinary literacy instruction within the reach of the elementary classroom teacher. As a college instructor of undergraduate and graduate literacy courses, I found this inclusion of quantitative literacy and VanSledright's historical literacy extremely beneficial, as it provides the research and reasoning behind the methodology that both of these classroom teachers employ in their effort to provide effective disciplinary literacy instruction in reading.

In other chapter, the reader is invited into the classroom disciplinary writing instruction of a second grade science class and a sixth grade mathematics class, where student writing samples are included that illustrate the various types of disciplinary writing that the students engaged in during these respective lessons. I especially appreciated the fact that the authors included a variety of student samples. A few exemplary samples were provided, but also included were student samples which illustrated areas of needed improvement which the authors expanded upon in their discussion. Additionally classroom scenarios employing disciplinary literacy instruction through classroom talk in the fourth grade social studies class, and the second grade science class are provided in Chapter 5. The scenarios and explanations provided by the authors in this chapter help to make this text an extremely beneficial resource for teachers looking to incorporate classroom talk into their disciplinary literacy instruction.

I found Engaging Students in Disciplinary Literacy, K-6: Reading, Writing and Teaching Tools for the Classroom (Brock et al., 2014) to be a highly accessible and informative text and one which I will be recommending to both my undergraduate and graduate students for inclusion in their professional libraries. No matter what role that you may play in the education of children in grades K-6 (classroom teacher, literacy specialist, or literacy coach) you will find Engaging Students in Disciplinary Literacy, K-6: Reading, Writing and Teaching Tools for the Classroom (Brock et al., 2014) to be an especially useful text in providing guidance for incorporating disciplinary literacy instruction into your classroom practices. The text incorporates several classroom examples of disciplinary literacy lessons in action, and also provides a host of useful teacher resources embedded in each chapter to enable the successful transfer of the ideas proposed into one’s own teaching practices. At a mere six chapters and 115 pages of running text this book would make an ideal choice for discussion within a professional learning community, professional development setting, as well as an independent read for your own professional growth.
ABSTRACT
Johnson’s, Reading, Writing and Literacy 2.0 Teaching with Online Texts, Tools, and Resources, K-8 is an excellent resource for educators looking to incorporate digital materials and resources into their instruction. This book provides quality lessons, online websites, apps and e-book ideas that are engaging and motivating for students and offers 21st century learning tools that will help students become college and career ready. Educators can learn how to use digital literacies to provide enriching reading, writing, speaking and listening activities to any population of students. This book essentially explains the paradigm shift from literacy 1.0 to literacy 2.0 and the continuation of literacy changes to follow. It provides a wealth of knowledge for educators to recreate their curriculum and assume the role of the producer, rather than the consumer.

AUTHOR BIOGRAPHY
Lindsey Hoyt is a reading teacher at the Phillip Schuyler Achievement Academy school in Albany, New York. She is currently a graduate student at the University of Albany located in New York. In the past, she worked with students with special needs and now works as a reading teacher. Lindsey has always had a passion for teaching students how to improve their reading and find ways to motivate urban populations of students to engage in authentic and interesting reading instruction.

Denise Johnson’s book, Reading, Writing, and Literacy 2.0 Teaching with Online Texts, Tools, and Resources, K-8, delivers informative web based resources and technological lesson plan exemplars readily accessible to elementary and middle school teachers. She provides enriching reading, writing, speaking and listening activities that emphasize collaboration, participation and a plethora of knowledge centered around teaching with technology resources. With the expansion of technology growth in education, it is important that educators not only have the technology tools (e.g., web sources), but also know how to use and deliver appropriate instruction to students with this technology. This book brings 21st century learning tools to the everyday classroom incorporating key traditional reading and writing skills. It is a gold mine for teachers looking to enhance their instruction with engaging digital lessons.

Dr. Denise Johnson is a professor of reading education and director of the Literacy Leadership program at the College of William & Mary in Williamsburg, Virginia. She has worked as an elementary school teacher, a middle school reading specialist and a Reading Recovery teacher. She is active in professional organizations including serving as chair of the Technology, Communication and Literacy Committee. Johnson continues to work with teachers and children to increase the use of technology in literacy curriculum.

With the new innovations of digital literacies, teachers need to provide a learning environment that includes digitized activities. In chapter one, Johnson discusses the paradigm shift from literacy 1.0 to literacy 2.0 and all that encompasses a successful digital learning environment. Johnson explains that many children enter school with a familiarity of digital
media, but lack the ability to fully access in an educational manner. She explains that the “lack of engagement with the Internet as a learning source suggests new ways of thinking about the role of a classroom teacher” (Johnson, 2014, p. 4). Teachers can prepare children to successfully interact with digital environments by scaffolding students acquisition of the new literacies required to comprehend, compose and communicate online. In this chapter, Johnson defines ‘new literacies’ as an umbrella term that encompasses, 21st-century literacies, internet literacies, digital literacies, new media literacies, multiliteracies, information literacy and computer literacy. She points out that the advantages of these literacies involve creativity, communication, collaboration, critical thinking and comprehension.

In chapter two, the book explores pedagogies and frameworks to help teachers incorporate technology into their instruction successfully. The Technological Pedagogical Content Knowledge framework (TPACK) included in this chapter, asks teachers to begin planning with content or the curriculum. Johnson suggests that technology will be more purposeful when the starting point is the literacy curriculum goals and then instructional strategies, which will help teachers be more discriminate when choosing technology. Although the Common Core Standards suggest the inclusion of media and technology, Johnson claims that technology tools and resources should be integrated into the instruction of ELA standards. With this in mind, Johnson states that providing teachers with access to technology does not provide them with the preparation they need to implement technology in their instruction. Johnson says, just as teachers use their expertise and knowledge to choose instructional strategies to drive instruction, so should they use that expertise to choose appropriate technology tools to incorporate in their instruction. In chapter two, Johnson provides a list of hardware, software and online applications that educators could use within their instruction to meet students’ literacy needs. What I found most interesting in this chapter was the internet reciprocal teaching (IRT) approach, which builds on the same ideas as reciprocal teaching, providing students with the opportunity to take the role of the teacher and support the skills and strategies needed for students to successfully read, write and communicate in a digital environment. Students engaged in a role that the student becomes the leader, provides the teacher informal feedback of their peers or other students’ understanding. These student leaders can be a role model for others who may be struggling.

Chapter three focuses on building classroom community and staying connected with families. Johnson believes that a supportive classroom community helps learners build a positive identity, which leads to acquisition of knowledge. Johnson stresses the importance of teacher language to build a strong class community. Within this chapter, she includes digital lessons that teachers can implement into their instruction as ‘getting to know you’ activities. She also includes multiple suggestions and opportunities for teachers to create ways for family members to be included within the classroom, with or without access to digital tools. In my own teaching, family integration helps increase student self-efficacy and motivation to learn. When students believe they are supported in and out of school, they are more willing to participate and get excited about school. When parents are involved in their child’s education and schools invite parents to collaborate, their child is more likely willing to participate in class. Digital storytelling, described in in this chapter helps build classroom community. An online website/free app called VoiceThread, is described to provide resources for educators to build community in their classrooms.

In chapter four, Johnson discusses the importance of vocabulary instruction to increase students’ ability to become familiar with unknown words and acquire knowledge from multiple
Book review: Reading, Writing and Literacy 2.0

VOLUME 25
THE LANGUAGE AND LITERACY SPECTRUM

souces of information, specifically digital sources. During instructional activities, such as read alouds, the teacher plays a key role in helping students access new information through both expressive and receptive mediums, which help with acquisition of new and unknown vocabulary. This chapter includes lessons and online resources that teachers can access to help enhance vocabulary instruction. Johnson also includes resources for virtual online field trips (VFTs) for teachers to expose to their students broader ideas and places without physically leaving the classroom. Johnson provides three noteworthy online vocabulary resources, Wonderopolis (wonderopolis.org), Wordle (www.wordle.net) and Wordsift (www.wordsift.com). Both Wordle and Wordsift use content area texts and select important words to make them appear larger than other words. This helps students identify the more important words and can be used as a prediction activity to point out important vocabulary that students will see in the text. Lastly, Johnson includes activities for fluency development, which can help struggling readers with comprehension as well. These activities include readers theater, rereading, modeled reading from the teacher, read alouds and audiobooks. Though resources have been limited in this area, as we pursue technology use in the future, there may be better ways to think about how fluency can be implemented digitally in the classroom.

Chapter five opens with a discussion on the shift from reading traditional storybooks and chapter books to reading books on ebook devices and online. Johnson discusses criteria for choosing quality ebooks, online storybooks and online stories. Johnson explains that traditional storybooks cannot offer the digitized, interactive and engaging activities online texts can offer. In this chapter, Johnson provides examples of the motivating and engaging components of student choice when reading online or ebooks, including how to consider text level and difficulty. She provides examples and websites where teachers can find interactive and online stories that students can easily access online. On page 72, Johnson provides a table that outlines the criteria for selecting digital texts. She cautions that previewing digital texts is crucial to ensure that they are reader friendly, accessible and just right for students. Although Johnson provided a few examples of storybook titles that educators can access online in this chapter, I feel that it would be advantageous of Johnson to include a list of online storybooks or ebooks that are popular amongst elementary and middle school students.

In chapter six, Johnson provides website resources and examples on how teachers can scaffold comprehension utilizing e-literature. Johnson claims that using digital texts as a way to differentiate instruction can meet the needs of all learners. Those struggling to read, English language learners, and all readers would benefit from hearing a story read aloud. Johnson suggests, “Embedded links, images, video and audio all support students in understanding content and concepts in ways not provided by printed texts” (2014, p. 81). Embedded links and images can help foster student understanding of topics that are unknown or difficult for them to understand. In this chapter, Johnson includes information for teachers to use when scaffolding comprehension instruction in digital environments. An excellent comprehension resource provided in this chapter is an online annotation website known as WebNotes (www.webnotes.net), which takes the place of sticky notes and allows readers to write notes or highlight important information as they read an online text and offers an option to share through social media such as Twitter.

Johnson reminds us of the global audience associated with the internet, and the role of readers as producers, not only consumers noting, “The participatory nature of the read/write web extends the role of the reader to creator, contributor, and distributor of knowledge to a worldwide audience” (2014, p. 100). In chapter seven Johnson discusses ways teachers can transition
traditional writing to web based writing. Johnson suggests that teachers must still provide digital mentor texts to model for students how specific online writing formatting would look. She includes exemplar lessons for younger and older students that begin with traditional print writing, with the expectation of transfer to digital print. Along with specific online formats, Johnson highlights the importance of teaching students how to comment and respond to others’ writing in a formal manner, rather than the informal ways seen on social medias. Johnson describes writing, specifically online writing, as a collaborative experience that should encourage teachers to provide ample opportunities for students to write collaboratively with peers.

Chapter eight focuses on how to teach students to embrace inquiry learning and ask questions to demonstrate critical thinking skills. The chapter provides explanations of inquiry learning and the possible paths it could lead students. When conducting research projects, Johnson discusses the importance of allowing students to create topics of inquiry through questioning. The chapter includes suggested steps with digital and traditional resources that teachers could use when modeling how to conduct research projects. Johnson provides online resources, examples and two exemplar lessons for younger and older students that could help teachers spark student engagement in researching topics within any content area. I found the F/Q/R (fact, question, response) to be most notable in this chapter, which is a chart that helps students synthesize new and old information along with ask questions and provide personal responses or connections to the text. I have incorporated this strategy in my reading instruction and found success with third grade students who were able to write their questions and respond.

As discussed previously, chapters three through eight provided information that demonstrated ways to “engage students in authentic, creative and collaborative learning in which both traditional and new literacies were meaningful for knowledge construction” (p. 137). Chapter nine provides information about new forms of assessment, specifically when looking at digital literacies. There are multiple traditional assessments (e.g., checklists, rubrics, and inventories) with specific examples and templates for reference. The assessment tools directly connect to 21st Century learning tools that school leaders encourage in classrooms today. The assessment tools provided show teachers how to transition their traditional assessment to new digitized literacies. For example, Evernote is a program that provides teachers availability to upload student data and work examples. Data including audio recordings, snapshots, scanned worksheets, web pages, written notes, videos and Google documents can be uploaded to this program for teachers to create personal portfolios for their students.

This book discusses the shift from literacy 1.0 to literacy 2.0, but Johnson wraps up the book with a short discussion of literacy 3.0. In the last chapter, Johnson writes about the evolution and continuation of digital literacies. During the midst of these changes, teachers will need to stay abreast of changes in technology information. Johnson gives examples of online learning networks that teachers can join in order to collaborate and share ideas with others and celebrate their successes and challenges as teachers. The digital literacy opportunities provided in this book, such as sharing ideas and troubleshooting as professionals, would enhance reflection and embedded professional development that is meaningful to teachers. As we continue to shift our technology teaching to meet the needs of all student learners, it is important for us to collaborate and reflect as we continue to learn and grow as professionals.
Book Review:

Eleanor Cerny
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ABSTRACT
Nell Duke's Inside Information Developing Powerful Readers and Writers of Informational Text Through Project-Based Instruction is a practical resource for teachers seeking innovative ways to integrate reading and writing of informational text with project-based inquiry instruction aligned to Common Core State Standards. Duke uses her experience and 20 years as a researcher to guide the reader from beginning to end of this process, starting with the introduction of a strategic launch, through reading and writing of informational text, toward the celebration of publication. Along the way, she provides helpful hints and cautionary insights that an experienced researcher and educator would highlight on behalf of the reader regarding differentiation, classroom management and assessment. The book culminates with suggestions on how to increase the number of project-based inquiry units.

AUTHOR BIOGRAPHY
Eleanor Cerny is a doctoral student in the Department of Literacy, Teaching and Learning at the University at Albany, State University of New York. She is also an Instructional Facilitator at a K-5 elementary school in Rockland County, New York. Eleanor has 14 years of experience in the field of education. She can be reached at: ecerny@albany.edu

With Common Core State Standards guiding educational practice, educators and literacy specialists are trying to design and implement curriculum in an efficient, effective and engaging way for both students and teachers. To help meet this obligation, Nell Duke, professor and researcher at University of Michigan, shares her experiences and years of research in Inside Information: Developing Powerful Readers and Writers of Informational Text Through Project-Based Instruction (Duke, 2014). Educators, both new and experienced, will find that Inside Information is an excellent resource that offers valuable research-based instructional strategies on how to develop powerful readers and writers of informational text through the lens of project-based instruction. Project-based instruction creates an amalgamation of rigorous learning through the integration of literacy and other disciplines while promoting student-led active citizenship. Duke builds upon two influential theorists Dewey and Kilpatrick. As Dewey (1902) informs us that "learning is active" (p.9) and William Kilpatrick (1960) has stated in a taped interview "each child learns what he lives and he learns it in the degree in which he lives it"(Georgia College).

This book is divided into three parts: foundation, project phases and next steps. Duke designed each part to seamlessly include research-based practices and share her experiences to provide the reader with the confidence and appreciation of innovative strategies to practice project-based instruction. With these tools, she encourages practitioners to build internal
capacity within a professional learning community that will encourage others to practice project-based instruction.

**Foundation**

Duke's excitement about and support of seeing an increase in informational text usage in elementary school is evident throughout the book. Duke acknowledges that teachers receive a range of professional development around informational text; therefore, she designed the book so that readers can pick any chapter as an entry point. In part one, Duke informs the reader how to structure a project-based unit, align it to the Common Core Standards, and schedule it within the school year. Project-based instruction goes beyond most curriculum requirements by connecting students and teachers with real-world problems, concerns or issues. This twofold connection allows students to gain the disciplinary knowledge and skills to address community-related issues/policies, while teachers address the knowledge and skills identified in the standards. For example, math, social studies, and literacy skills can be addressed by creating a school map and information packet for new students or visitors; science and literacy skills can be addressed through creating a bird guide for the local nature sanctuary; and local concerns such as hazardous potholes or the value of stop signs can be addressed by writing a letter to the local newspaper or community organization.

**Design and Planning**

Chapter two is one of the many gems in this book that a busy teacher will appreciate. Duke shares planning templates, graphic organizers and reading/writing interest surveys for teachers, students and families, which she has made available in the appendix and on her website. When designing a project-based unit, Duke reminds the reader that the unit should not be confused with a genre study. A genre study does as the title implies, whereas project-based inquiry is based on an event inside or outside of school that can incorporate more than one genre, which is more engaging for students. The design process includes identifying the teacher’s instructional goals, the genres, the project’s purpose, the teacher-guided and student-choice product, and the student-family interest survey. The student-family connection is an extremely valuable learning area outside of the standards; and when included, can provide priceless knowledge and create a positive relationship between school and community. For example, parents may be experts in the topic of a project, or be able to provide insight regarding cultural traditions, or even share their knowledge about hobbies that relate to a research topic. This partnership can provide opportunities that allow students to see real-life connections between literacy and other disciplines.

**Real Learning Throughout the Phases**

The foundation and project phases guide the reader with invaluable resources and suggestions that will help an educator differentiate instruction and resources. Duke suggests that real learning takes place during each phase of the inquiry unit. Starting with the launch phase, moving through the reading, writing and research phase, culminating with the final presentation and celebration phase. She cautions the reader that the project launch must be successful as it will be a major factor in the implementation of the project-based learning unit. This caution is the foundation of Dewey’s (1918) structure of inquiry “On the other hand, to set up a problem that does not grow out of an actual situation is to start on a course of dead work, nonetheless dead because the work is "busy work." (p. 108). She suggests a quick way to measure the launch success is to ask students one or both of the following questions, “Why are you writing that?” or "Why are you reading that?" The answer can be the compass of the launch’s success and navigate the teacher to stay on course, alter course or shift altogether. Duke guides the reader
through the launch starting with examples of introductory lessons to classroom management strategies for whole-class, small group or individual work time.

Read to Learn, Learn to Read with Informational Text

Nell Duke acknowledges that the reading and research phase is complex and admits she could write a whole book around reading and research; but has condensed her suggestions to meet the basic requirements of what, when and how to teach in the reading and research phase. In this chapter Duke not only answers these three questions, but also provides her research of informational text to support her suggestions. In doing so, Duke refers the reader to her earlier research regarding the value of taking time to build content knowledge, "building knowledge is an essential component of effective comprehension instruction" (p.75). To answer "what to teach", Duke identifies targets of instruction that the teacher should consider when teaching reading and research which emphasize the student’s use of comprehension strategies while reading and researching. In addition to comprehension strategies, these targets include standards, text structure, graphics, text features, vocabulary, and sourcing and evaluation.

To answer "how to teach", Duke focuses on four principles that will develop students' knowledge and skills. Most teachers, novice or experienced, might consider the reference to the principles along with the chart of CCSS aligned instructional techniques for multiple grade levels a gift from the author. The first principle adheres to Vygotsky’s theory of gradual release of responsibility. Duke explains this in an easy ten-step approach as the teacher moves from whole class, onto small group/individual instruction toward the wrap up. According to Duke, the second principle, read-aloud, is very important for comprehension because an elementary school student’s reading comprehension is not as strong as his/her listening comprehension until middle school. The third principle, needs-based grouping, extends the practice of grouping by reading level to grouping by comprehension needs to allow for more small group specific reading strategy instruction. The fourth principle, smart support, focuses on support that students need to engage with and complete the project successfully. A few examples of smart support include providing a re-reading or audio version of the text in order to enhance comprehension for students who need additional support; or extending the project-based inquiry through deeper, more probing questions for students who need an additional challenge; or for dual language learners, providing text in the student's primary language.

Learn to Write with Informational Text

In next phase, Duke focuses on the instructional targets of writing and how they apply to the research phase. In the author's particular way, she advises the reader that her list of key features is only a suggested list, stressing that state standards, mentor texts and teacher observations will point out which additional writing standards need to be taught.

To answer the question, how to teach in the writing and research phase, Duke does not fall short. She recognizes the complexity involved and provides five fundamental practices to help effectively and efficiently instruct student writers. Based on her experience and observations, Duke cautions the reader that there are two areas where teachers falter. Teachers can omit explicit instruction or release students too early. Duke emphasizes the importance of teacher modeling writing, using mentor text, and analyzing writing style through author studies. Duke shares her research based on interactive writing 10.5 minutes per day in a first grade classroom, the students' growth as writers was distinguishable. The gain came from teacher modeling and jointly composing text through teacher-student interaction, the practice of scaffolding interactive writing. As some teachers use data to drive instruction, Duke reminds the
reader of the value of assessments to inform writing instruction, as well as, writing checklists and rubrics.

Revision and editing, as Duke admits in the end of chapter six, is the phase where most teachers "teach least well including Duke, herself." Yet again, for someone who feels that she teaches this least well, she shares two valuable overarching principles for guiding students through revision and editing: use multiple strategies and provide feedback. Duke provides twelve strategies, such as: reminding students of the audience, model and explicit teaching of revision and editing, provide specific feedback, focus on one thing at a time like not overloading on revisions, create revision focus groups for whole class or small groups, provide praise, and use the standards.

Regarding feedback, Duke strongly suggests that it should be genre- or unit-specific, not generic. Once again, Duke reminds the reader of the standards, this time related to technology usage. Students should know how to provide feedback and edit using technology tools, as they do with print. Such tools could include online word processing applications that promote collaboration and peer editing amongst students, as well as, between the student and teacher. Feedback should be focused and structured, therefore, the usage of checklists and forms might aid in this phase. In this area, Duke encourages the reader to reflect on when it is appropriate for students to move away from forms and checklists. Since research is limited in this area, she encourages school discussion regarding this topic.

During the project-based inquiry presentation and celebration phase the author provides one initial caution, only share students' work with the audience when it is ready and the audience should be able to read it. For young writers, it may be necessary for the teacher to translate the students' writing. For a celebration, try your best to obtain a response from the audience, this feedback shows the students that their efforts were appreciated and further develops the importance of communication.

**Building a Library of Project-Based Inquiry Units**

As Duke mentioned initially, start with one project-based unit and then you will see and feel the power to try another. In Duke’s follow-up section, she offers strategies to make this manageable. First, be strategic. Some projects can be recycled each year, some rotated every second or third year and some can be based on current events. Looking ahead, plan your year of project-based inquiry units. Don't plan too many or too few. Utilize other resources in the school such as sharing project-based inquiry units amongst the grade level or collaborating with the curriculum coordinator to develop a unit. Duke does remind the reader that some believe that a project-based unit must germinate from the classroom students. Her description on project-based inquiry states that it is a project-based approach over an extended time to solve a real problem or address a real need.

Duke confirms that implementing someone else's project does not have to be done with fidelity; it can be revised to meet the needs of the students in your class and your instructional goals. She goes on to challenge the reader to collaborate and create a Professional Learning Community around developing project based units. Once again, Duke provides a template created by Walpole and Najera (2013) to guide educators through this collaborative process.

**Strengths, Suggestions and Questions**

This book has many strengths such as the author's research expertise in the field, applicable tools that new or experienced literacy educators can utilize to teach disciplinary literacy, and the author's obvious appreciation and recognition of teachers' desire to become more
efficient and effective in their instruction during this transitional time towards more rigorous standards.

While the book has numerous resources, some teachers may want more guidance on how to meet the needs of students in their classroom, whether the needs are English language learners or learners of different modalities and abilities. To be a more inclusive resource for the teaching of reading and writing of informational text in project-based inquiry learning, educators might benefit from additional resources that meet the range of needs presented by students. However, when students are solving real-world problems and are encouraged to use multiple genres, a busy teacher will need to read this book carefully to make sure they benefit from learning and using strategies for finding multiple resources.

This book raised important questions for me regarding appropriate resources. As school districts financially manage curriculum resources, how can technology help educators meet what Duke has termed “smart support”? As we encourage students to inquire and use different genres to present their solutions, how can educators effectively and confidently guide students towards these resources? *Inside Information* is a valuable toolbox for K-5 educators; it will inspire teachers to integrate literacy and content with new methodologies that will engage students to become proficient consumers and producers of informational texts.
References

Call for Manuscripts
Deadline: January 15, 2016

The editors of The Language and Literacy Spectrum, the New York State Reading Association’s Journal, invite submissions of manuscripts for peer review. This issue is drawing from the 2015 theme of the New York State Reading Association’s annual conference “Diverse Learners—Diverse Literacies”. We are seeking manuscripts that consider:

- the complexity of how we define “diverse learners”
- the complexity of how we define “diverse literacies”
- stories of innovative uses of new technologies to tap into students’ interests and strengths
- classroom applications for supporting both language and literacy development
- what’s changing in your classrooms and schools including new standards, new evaluations, new technologies, and shifts in demographics; how you are responding; and what you need to meet the needs of all learners

While theoretical and research articles are invited, please keep in mind that this is a journal for the NYSRA memberships, which consists primarily of practicing teachers and literacy specialists. We encourage articles from K-12 practitioners as well as articles written by authors and presenters from the 2013 conference.

Submission Guidelines

- Manuscripts, abstracts, and cover letters must be sent electronically.
- As a separate attachment, include a cover letter that specifically outlines how your paper addresses the call for manuscripts.
- Your name and institutional affiliation should only appear in the cover letter.
- Only original manuscripts that have not previously been published and are not currently under review at another journal will be reviewed.
- Manuscripts are ordinarily between 10-20 pages long and must be submitted as Word documents that are double-spaced in 12 pt Times New Roman font. Abstracts should be 125 words or less.
- All submissions must adhere to APA format.
- All submissions should include an author biography of 50-75 words that includes an email address where readers can contact them.

Manuscripts may be submitted to:
 tlalspectrum@nysreading.org