

Examining Promising Practices to Improve Linguistic Knowledge and Inform Practice in Teacher Education

by Shannon Gormley Budin, Nancy Mather, and Elaine Cheesman

“I toyed with the idea of teaching digraphs and blends, but realized that I was having a difficult time recalling exactly what a blend was myself.”

—Special education major explaining how she selected a skill to teach for an explicit instruction lesson during her student teaching practicum.

This preservice special education teacher’s statement clearly illustrates the axiom: “You can’t teach what you don’t know.” It also illustrates the limited knowledge base of many preservice teachers who will teach beginning, at-risk, or struggling readers, and the all too common knowledge gap between vital instructional components for struggling readers and actual classroom instructional practices. To address this gap, the International Dyslexia Association (IDA) has developed *Knowledge and Practice Standards* that are designed to drive the preparation of teachers of reading.

In informing IDA’s standards, one body of research has focused specifically on teachers’ knowledge of oral and written language concepts, as well as their knowledge of the most efficacious instructional methodologies for improving performance in phonological awareness, phonics, word recognition, and reading rate (e.g., Bos, Mather, Dickson, Podhajski, & Chard, 2001; Bos, Mather, Friedman-Narr, & Babur, 1999; Cunningham, Perry, Stanovich, & Stanovich, 2004; Fielding-Barnsley & Purdie, 2005, Mather, Bos, & Babur, 2001; McCutchen, Harry, et al., 2002; Moats & Foorman, 2003; Piasta, Connor, Fishman, & Morrison, 2010; Spear-Swerling, 2009). Findings from these studies have indicated that teacher knowledge and expertise improves student reading outcomes. For example, Piasta et al. (2010) reported that for students with more knowledgeable first-grade teachers, more time in explicit instruction increased gains in word reading, whereas for students with less knowledgeable teachers, more time in explicit instruction resulted in weaker gains. Thus, a teacher with insufficient knowledge of language structure may struggle to help students improve their phonological awareness, decode unknown words, recognize spelling patterns, identify word meanings based on their structure (i.e., morphemic analysis), or increase their reading rates.

“Wow, I never knew the sounds were organized that way!”

—Statement by an associate professor of curriculum and instruction, who holds a Ph.D. in literacy, following a 30-minute presentation about the alphabetic principle and the place, manner, and voicing of the speech sounds of English.

This statement from a twenty-year veteran, reading methods professor provides insight into why such content in college reading courses may be lacking. Even well-educated professors and teachers with years of experience display low levels of explicit linguistic knowledge related to the development and assessment of reading, writing, and spelling (Joshi, Binks, Hougen, et al., 2009; Piasta et al., 2010). When evaluated using the *Survey of Language Constructs Related to Literacy Acquisition*, approximately one-half of the participants could not recognize the correct definition of phonemic awareness and far fewer (19 to 29%) could identify the correct number of morphemes in specific words. Additional weaknesses included knowledge of the six syllable types, ability to count the number of speech sounds in words, and knowledge of the principles of phonics and spelling rules, such as knowing when to use a *c* or *k* to represent the phoneme /k/.

Although teachers may attempt to increase their knowledge through textbooks, the information provided may not have enough depth or description of linguistic concepts and structured reading methodologies. Walsh and colleagues examined textbooks and course syllabi from 223 required reading courses at 72 randomly sampled teacher education programs across the nation (Walsh, Glaser, & Wilcox, 2006). Using the National Reading Panel (2000) recommendations as their framework, Walsh and colleagues found that most education schools did not include the science of teaching reading in their coursework with a mere 15% actually teaching all scientific components. Similarly, only 4 of the 227 textbooks reviewed were rated as “acceptable” based on the inclusion and accuracy of the science of teaching reading. More recently, Joshi, Binks, Graham, et al. (2009) reviewed the 17 most widely used textbooks in elementary-level introductory reading education classes. Of these 17 textbooks, 76% included all five components of the science of teaching reading, but only 10 correctly defined each of the five components. In addition, the coverage varied widely (ranging from 4 to 60%). The most frequently omitted topics included phonological awareness and phonics and when included, these concepts were frequently defined inaccurately.

Thus, based on textbook selection alone, many preservice teachers may receive a cursory overview, an inaccurate portrayal, or an incomplete picture of the science of teaching reading. Indeed, Cheesman and her colleagues examined the knowledge and skills of 223 first-year teachers in regard to phonemic awareness. Only 18% could differentiate between phonemic awareness and phonics instruction. Little more than half understood the purpose of phonemic awareness instruction, and they had difficulty counting the number of phonemes in written words accurately (Cheesman, McGuire,

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Shankweiler, & Coyne, 2009). Fortunately, this knowledge base can be changed in teachers while influencing their students' reading outcomes (e.g., Bos et al., 2001; Brady et al., 2009; McCutchen, Harry, et al., 2002; Moats & Foorman, 2003; Piasta et al., 2010; Podhajski, Mather, Nathan, & Sammons, 2009).

Fewer studies, however, have been conducted at the preservice level (e.g., Spear-Swerling & Brucker, 2004; 2006). Instruction at this level must be further examined as most previous studies involving inservice teachers incorporate training methods not readily available to preservice teachers (e.g., year-long in-class support, mentoring or coaching component, access to students with a wide range of reading abilities). Despite these hurdles, several promising preparation practices in reading have emerged.

Promising Practices

Content Coverage-Course Objectives and Research-Based Textbooks as Tools to Enhance Content Knowledge

The first promising practice to improve the knowledge and skills of preservice teachers is simply content coverage. Arming teachers with information about the foundational concepts of oral and written language, dyslexia and other language-based learning difficulties, as well as research validated practices involved in structured teaching, produces changes in their knowledge and instructional practices that lead to improved student reading outcomes (e.g., Spear-Swerling, 2009; Spear-Swerling & Brucker, 2004; 2006). Content coverage may include coursework, field experiences with opportunities to practice skills, and incorporating instructional technology (Spear-Swerling & Brucker, 2004). Several experts have provided materials that expand and explain the facts and concepts put forth in IDA's new standards. For example, Aaron, Joshi, and Quatroche (2008) have described the influence of spoken and written language on literacy development and instruction. From a pragmatic point of view, Bursuck and Damer (2011) have provided pedagogical insight into the science of teaching reading. Specific instructional methodologies have been presented by Birsh (2005), and Carreker and Birsh (2005). Walsh and colleagues have provided additional reviews of reading textbooks in their report available through the National Council on Teacher Quality (Walsh et al., 2006).

Other seminal books and research syntheses that may assist teacher educators in increasing their knowledge include work by Adams (2000), McCardle and Chhabra (2004), Snow, Griffin, and Burns (2005), and Catts and Kamhi (2005). Moats' (2010) *Speech to Print: Language Essentials for Teachers* (2nd edition) clearly explains phonological awareness, phonics, and the speech-sound system of English and provides opportunities to self-assess and practice newly learned skills. Other self-instructional materials by Dow and Baer (2007), Chall and Popp (1996), Eldredge (2004), and Fox (2009) provide thorough explanations of phonemes, graphemes, syllabication, and other structured language concepts.

Additional resources to enhance content knowledge may include state Higher Education Collaboratives (HECs). These HECs can improve teacher preparation in the area of scientifically based reading research by providing teaching materials, resources, seminars, course syllabi, as well as forums for support and sharing across institutions (see article by Cheesman, Hougren, & Smartt, this issue). Similarly, federally funded technical assistance centers in Florida, Oregon, and Texas have offered insight into the implementation of scientifically based reading instruction as does the What Works Clearinghouse, which highlights empirically validated curricula.

Web-Based and Other Digital Teaching Enhancements

One concern with relying on text and print-based instructional materials when learning linguistic concepts is that the reader never hears how to pronounce the speech sounds. Distinctive features of speech sounds of English rely on an understanding of auditory and visual information that make them unique (i.e., teeth are on lips and a continuous air stream is produced when saying the phonemes /f/ and /v/; one voiced, one unvoiced). Thus, teacher educators should consider including an extensive oral review of concepts such as "place, manner, and voicing" when teaching preservice teachers how to pronounce speech sounds. If not, a teacher may not ever hear the correct way to produce phonemes; learn how to segment CVC words; or be able to distinguish between similar vowels sounds, such as the /i/ and /e/ in *bit* and *bet*.

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Electronic or digital tools may combat the effects of having linguistic content taught only in a text-based format by facilitating auditory and visual models. Podhajski, Varricchio, Mather, and Sammons (2010) have created *Mastering the Alphabetic Principle*, an interactive CD-ROM textbook with videos and practice exercises to teach "how our language works" (Podhajski, 1995) and effective ways to provide instruction in phonological awareness, phonics, spelling, and fluency. Another example is the online professional development course, *Improving Instruction for Students with Dyslexia*, offered by Middle Tennessee State University. It includes video models, interactive tutorials, and other "non text-based" presentation formats. In a more targeted effort, Gormley and Ruhl (2007) created an online module targeting the alphabetic principle and speech sounds of English delivered to general and special education preservice teachers in a two- to six-hour format. It included errorless learning tutorials and video models with no actual face-to-face instruction that resulted in increases in their oral and written letter-sound correspondence knowledge and application.

Another promising technological aid is the use of classroom response systems (also known as “clickers”) to review and reinforce key concepts within college coursework (e.g., Kay & LeSage, 2009). Students anonymously vote on multiple-choice questions embedded into conventional lectures. In a study of 62 students enrolled in a reading-methods course, Cheesman and colleagues (2010) found that students aged 21–57 responded very favorably to using clickers in the classroom. A majority of respondents valued the immediate feedback of the bar graph, felt peer discussions helped them synthesize course material and clarify difficult concepts, and were more likely to participate by voting with clickers rather than a show of hands. The anonymous voting reduced embarrassment over providing incorrect responses to important course content (e.g., How many morphemes are in the word artists?). See Fisher (2006) for a description of clicker effectiveness with sensitive or controversial topics in college classrooms.

High Quality Field Experiences, Including Tutoring

At the inservice teacher level, researchers have documented changes in teachers’ linguistic knowledge following professional development and training (e.g., Bos et al., 1999; McCutchen, Green, Abbott, & Sanders, 2009; Moats & Foorman, 2003; Podhajski et al., 2009). Likewise, at the preservice level, a few studies have shown that with varying degrees of instruction, teacher candidates’ knowledge of language structure and other linguistic concepts can be improved (e.g., Gormley & Ruhl, 2007; Spear-Swerling, 2009). Whereas increases in teacher knowledge are important, of even greater interest is the impact that increased knowledge has on students’ reading outcomes.

Some preparation practices suggest a similar pattern of improved student reading outcomes as those observed with inservice teachers (e.g., students in these teachers’ classrooms excelled or outperformed their peers in classrooms where teachers did not receive such training). These practices align with IDA’s Knowledge and Practice Standards pertaining to supervised practice of teachers of students with documented reading disabilities or dyslexia. According to IDA, preservice teachers must complete a one-to-one practicum with consistent feedback from a certified instructor where they can apply their knowledge about reading research and instruction into classroom-based practices.

Tutoring is an effective means to address the reading difficulties of students with or at-risk for reading disabilities (i.e., Elbaum, Vaughn, Hughes, & Moody, 2000), however, at the preservice level Spear-Swerling (2009) observed that “... most studies of tutoring by novices have not been done in the context of teacher preparation, which requires balancing the learning needs of two groups: the teacher candidates and the children” (p. 432). Despite needing to “balance learning needs,” field experiences that provide direct reading tutoring appear beneficial for both teachers and students (Al Otaiba & Lake, 2007; Spear-Swerling & Brucker, 2004; 2006). Al Otaiba and Lake (2007) found that preservice teachers whose coursework included research validated tutoring sessions with struggling readers demonstrated significant changes in their knowledge of language structure and preparedness to teach

reading. Although no control group was included in this study, participants outperformed (85% versus 50%) a similar group (Bos et al., 2001), for whom tutoring was not included, on the same language structure knowledge assessment (*Teacher Knowledge Assessment: Structure of Language*; Mather, Bos, & Babur, 2001). The second-grade students who took part in the tutoring also experienced significant gains, particularly in their Nonsense Word Fluency (Effect Size=2.61) (Al Otaiba & Lake, 2007).

Another tutoring program (i.e., Spear-Swerling, 2009) focused on systematic, intensive phonics instruction using a structured lesson format supervised by the course instructor. Tutees improved in the areas targeted for instruction and greater linguistic knowledge gains were noted in preservice teachers who took part in the tutoring in addition to their regular course content. These results again suggested that both preservice teachers and their students can benefit from a relatively brief tutoring program conducted in the context of a preservice preparation program.

Where to Go from Here? Model Programs as a Promising Practice

Across the United States, many dedicated teacher educators regularly and thoroughly incorporate many ideas put forth in IDA’s standards to prepare well informed teachers. In the future, IDA intends to formally review and endorse training programs—either university based or independent programs—that align their courses and requirements with the Knowledge and Practice Standards. The formal review process will unfold during the next year. Currently, several innovative programs appear to support the scientific teaching of reading through a collaborative effort across disciplines.

For example, Simmons College in Boston has offered a language and literacy master’s degree for about a decade. Massachusetts General Hospital Institute of Health Professions offers an integrated master’s program that leads to certification in speech-language pathology as well as reading specialist licensure in the state of Massachusetts. At the doctorate level, the University of Central Florida offers a Ph.D. program in language and literacy between the College of Education and Communication Sciences and Disorders in the College of Health and Public Affairs. Emerging master’s degree programs that prepare students with dual certification in speech-language pathology and reading (or reading and special education) are also underway at both the University of Central Florida and at Appalachian State University. In addition, the National Council on Teacher Quality makes available on its website (www.nctq.org) evaluations of teacher preparation programs in several states with detailed information on individual university programs and textbooks. Whereas this list is not intended to be exhaustive, it illustrates a small sample of cross-disciplinary teacher training programs. These types of training programs are the key to ensuring that all children who struggle to learn to read will have highly qualified reading teachers. It is our hope that when the review process has started, numerous institutions will seek IDA’s endorsement.

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To make progress in learning to read, children with dyslexia require intensive instruction by highly trained teachers. As Richardson noted (1992) over two decades ago, “It is incumbent on the educational system to recognize dyslexia and to provide the appropriate alternative instructional approaches to beginning reading for children with developmental dyslexia” (p. 46). Effective reading teachers have acquired a highly specialized body of knowledge regarding language structure and early reading acquisition that informs their classroom instruction (Piasta et al., 2010). Fortunately, as teacher preparation programs begin to incorporate the IDA standards, more and more classrooms across the country will have highly qualified reading teachers.

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