Decoding and Fluency Problems of Poor College Readers

The NCTN Research to Practice Briefs are designed to disseminate emerging college transition research from a variety of sources in a user-friendly format.

Submitted by
Lauren Capotosto
EdM, Doctoral student at Harvard Graduate School of Education

What are the challenges facing poor college readers?

College instructors, even those who teach developmental reading courses, often assume that their students have already mastered basic reading skills such as phonics, word recognition, and fluency (Dietrich, 1994). However, many of these students exhibit insufficient word recognition, limited phonics skills, and laborious reading rates whether or not they have reading disabilities (Bell & Perfetti, 1994; Martino & Hoffman, 2002; Sabatini, 1997). Compared to good college readers, these students read more slowly, decode less accurately, and make more oral reading errors that affect text meaning (Bell & Perfetti, 1994; Sabatini, 2002; Vukovic, Wilson, & Nash, 2004; Warde, 2005).

While developmental reading courses typically teach comprehension strategies and vocabulary, many students still need explicit instruction and practice in developing skills in phonics, word recognition, and fluency (Dietrich, 1994). However, such instruction is rarely incorporated into the college classroom (Dietrich, 1994). This brief provides an overview of research studies describing the difficulties faced by many struggling college readers, as well as studies that identify strategies for improving poor readers’ decoding and fluency. (See the Appendix for inclusion criteria).

"Reading teachers who work with students at any age level should not assume that their students have an adequate knowledge of phonological structures and orthographic patterns or that they have outgrown their need for this type of instruction" — Kitz & Tarver (1989, p. 204)

What does research say about word-level problems of college students?

Compared to skilled readers, poor college readers make more oral reading errors that affect the meaning of the text (Bell & Perfetti, 1994; Dietrich, 1994; Martino & Hoffman, 2002; Minus, 1992; Sabatini, 2002; Vukovic, Wilson, & Nash, 2004; Warde, 2005). The relationship between word-level skills and comprehension is clear: Students who either misread or skip unfamiliar words are at risk of failing to accurately comprehend a text. Analyzing the oral reading miscues of 40 university students who had failed a mandatory state reading test, Warde (2005) found that students who had learning disabilities (LD) made many more reading errors than students without LD (27 errors per 500-700 words for LD students compared to 3 errors for non-LD students). More importantly, the errors that LD students made were more likely to change the entire meaning of the text.

Such word-level troubles are at the center of many developmental college students’ reading problems. In a study of 30 community college students enrolled in developmental reading classes, most of whom were native English speakers, Dietrich (1994) found that the students’ average word-analysis skill (i.e. the ability to decode unfamiliar words) was at approximately a 5th-grade equivalent, while their average sight-word recognition (i.e. recollection of words or word parts from memory) was at an 8th-grade level. In addition, 90% of the students in this sample exhibited moderate to severe problems with phonics skills.

Similarly, in a study of 81 students in community college developmental reading classes and universities, Minus (1992) found that developmental reading students possessed significantly lower word-recognition and decoding abilities than their university peers. While all but one of the university students scored above the 12th-grade level on a word recognition test, the scores of community college students ranged from 5th-grade to above-12th-grade levels. When presented with nonsense words — a technique designed to reveal an individual’s ability to decode unfamiliar words — the community college students were able to read one-syllable nonsense words nearly as well as their higher-achieving university counterparts. But their ability to read polysyllabic nonsense words (such as uncableness and sanwixable) was significantly lower (Chall & Curtis, 1990).

In summary, research clearly suggests that phonics and word decoding problems pose significant challenges for many struggling college readers and that these problems affect their comprehension skills.

What does research say about the fluency skills of college students?

The ability to simply decode and recognize words is not enough. Readers must also be able to execute these processes rapidly in order to devote sufficient mental energy to the task of comprehension (Sabatini, 1997). After repeated exposure and with appropriate decoding skills, words and word parts are stored in a reader’s memory as visual orthographic images. This allows readers to bypass the decoding stage to quickly retrieve words from memory. For skilled readers, this process takes place within 250 milliseconds of encountering most words (Ashby, 2006, as cited in Strucker, 2008). This automaticity allows readers to concentrate on comprehension (Perfetti, 1985; Stanovich, 1986). In contrast, slow and laborious readers face two major obstacles to comprehension. First, they must dedicate more mental effort toward decoding, leaving limited cognitive resources for meaning-making (Apel & Swank, 1999; Adams, 1994; Perfetti, 1985). Second, slow reading taxes short-term memory, making it is more difficult to retain the long and complicated sentences often found in college texts (Strucker, 2008).

In light of the typical college student’s workload, this choppy and hesitant style of reading poses a practical challenge for the poor reader. A part-time student can expect 80 pages of reading per week for one course (Warde, 2005), while full-time students are assigned an average of 250 pages of textbook and outside reading per week (Nist & Diehl, 1994). This
workload is substantial even for the average college freshmen reading 263 words per minute (Carver, 1990), but may prove overwhelming for students with particularly slow reading rates. Some research indicates that poor readers are able to tackle only 133 to 156 words per minute, lagging the average college freshman’s rate by 100 words per minute (Elkind, Black, & Murray, 1996; Sabatini, 2002).

**What practices support struggling college readers?**

The literature regarding decoding and fluency strategies for college students is limited, though some researchers have noted some potentially beneficial pedagogical practices. The strategies that follow have all been field-tested in college classes.

**Text-to-Speech Software.** Some researchers suggest that speech synthesizer technology may increase the reading rate of slow readers, ultimately aiding reading comprehension (Elkind et al., 1996; Engstrom, 2005). While different computer programs offer different features, many highlight text on the monitor while the text is spoken. Users can select the speed and voice pitch at which the document text is spoken. Additionally, users can choose to have text read by page, paragraph, sentence, or word (Elkind et al., 1996).

Studying the effects of one text-to-speech software program with 50 dyslexic adults, Elkind and colleagues (1996) found that use of the software increased the reading rate of slow college readers by approximately 25 words per minute. However, the technology was not equally effective for all readers. Students whose unaided comprehension was already strong found that the speech synthesizer appeared to interfere with their understanding of texts, as revealed in declines in comprehension scores (Elkind et al., 1996). Students who made the greatest gains were those whose unaided reading rate and comprehension were poor, but whose verbal comprehension was better than average (Elkind et al., 1996). The software may also be particularly valuable for dyslexic students who have significant decoding difficulties (Engstrom, 2005). Nonetheless, even with a 25 words-per-minute (wpm) increase, students in this sample read only at an average of 180 wpm, still much slower than the mean of 263 wpm for college freshmen (Carver, 1990).

**Whole-Class Phonics Instruction.** There is some evidence that students in developmental reading classes may benefit from systematic and structured phonics instruction. In a quasi-experimental study of 30 community-college students, Dietrich (1994) randomly assigned students to either a control group, receiving traditional comprehension strategy instruction or a treatment group, which used a packaged phonics program called the Auditory Discrimination in Depth Program. Pre-tests revealed that students in both groups were in need of phonics support, as the mean word attack score was equivalent to grade 5.5. After a semester of instruction, only those students enrolled in the phonics program made significant improvements on word identification and word attack in Woodcock Johnson Achievement subtests.

In a similar study, Guyer and Sabatino (1989) examined the effectiveness of a five-week program of multi-sensory phonics instruction with learning-disabled college students. The researchers randomly selected 30 participants from a university’s tutorial center for students with learning disabilities and assigned them to one of three groups: no treatment, phonics instruction, and comprehension-only instruction. The phonics group received modified Orton-Gillingham training, which consisted of learning the 44 sounds in the English language, practicing segmenting words into their smaller components and blending sounds into words, and memorizing rules for syllabication. Results showed that students who received phonics instruction made significant improvements in reading, while students who received no treatment and more traditional comprehension instruction made no significant gains between pre- and post-tests.

Not all studies found that phonics instruction could benefit struggling college readers, however. In one experimental study (Chandler, 1993), students who received “traditional” comprehension and vocabulary instruction in a developmental reading course outperformed those who received structured and systematic phonics instruction. It is important to note, however, that researchers only assessed students’ comprehension, making it possible that the students did make progress in other areas, such as phonics, word recognition, or fluency. The design challenges of this study highlight the importance of assessing students to ensure appropriate course placement and instruction.

**Individualized Phonics Instruction.** Struggling readers may also benefit from individualized phonics support in reading labs or from supplemental tutoring services. Documenting the supplemental services received by a 29-year-old college student with a learning disability, Apel and Swank (1999) determined that the student’s word recognition and word analysis skills improved through individualized phonics instruction. Working with learning specialists, this student was encouraged to tap out the number of phonemes (sounds) he heard in a word and to use continuous voicing, a strategy in which readers sound out each letter or digraph (two or more letters that make a single sound, such as ph, sh, or ch) in a word without a voicing break. After 33 hours of this intervention, the student made grade-equivalent gains of three to five years on various reading assessments.

**Untimed Tasks.** To assess what students know, as opposed to how quickly they can retrieve and output information, instructors may consider incorporating untimed tasks (Whitt, 1993). In a study of 21 university students enrolled in a developmental reading class, 81% increased their vocabulary in context exercise scores when they were allowed more time to complete tasks than when they were timed (Whitt, 1993). While untimed exercises may not make sense for all assignments, they can yield different information about what a student knows or can do than timed tasks.

**Assessments.** There are numerous reasons why adult readers may struggle in college. Although word-level challenges, such as decoding and fluency, may explain why many poor college readers have difficulties, they do not explain the problems faced by struggling learners. Students may have strong print skills, for example, but exceptionally weak academic and content vocabularies, which can contribute to comprehension difficulties (Chall, 1983). To ensure that the course placement, instruction, and supplementary services match students’ needs, assessments that test word recognition, phonics, and fluency are equally as important as those that test comprehension and vocabulary (e.g. Accuplacer or Nelson Denny). Studies reviewed in this brief employed a variety of assessments, from comprehensive batteries such as the Woodcock Reading Mastery Tests – Revised (including Apel & Swank, 1999; Guyer & Sabatino, 1989; and Marino & Hoffman, 2002) to phonics-specific tests, such as the Wilson Assessment of Decoding and Encoding (Engstrom, 2005). By moving beyond relying solely on comprehension test scores, transition programs and colleges can provide more targeted support that addresses students’ specific reading needs.
What practices do not seem to work as well in supporting struggling college readers?

In addition to identifying potential strategies for supporting college students’ decoding and fluency development, researchers have also noted approaches that appear to be less successful.

**Independent Work.** In a study of 18 community college students enrolled in a developmental reading course, Kuehner (1999) found that students who completed 18 hours of independent study in a reading lab did not show gains in reading comprehension or reading rate. Participants in this study read independently from texts, answered a series of comprehension questions, and recorded their own reading rates. They also used Ultimate Reader, a software program for increasing reading rates. The results of this study were replicated by findings of the National Reading Panel (2000), which found that self-sustained silent reading did not seem to impact students’ reading rates. Kuehner (1999) concluded that a reading program, whether text- or computer-based, that requires students to read passages and answer questions independently does not benefit students, as measured by standardized tests. These findings support the argument that instruction matters.

**Texts with Cue Boundaries.** Research suggests that students with fluency challenges have difficulties identifying meaningful "chunks" of texts, such as distinguishing dependent phrases from independent clauses, and that they struggle with identifying appropriate pause points in a sentence (Chall, 1983). In an attempt to address these challenges, 42 developmental reading students in one study were assigned to read either unmarked texts or texts in which slash marks were used to indicate "cue boundaries" demarcating appropriate pause points (Rasinski, 1984). Results showed no differences between the two groups on comprehension post-tests, but significantly slower reading rates for the group that received texts with explicitly cued phrase boundaries (Rasinski, 1984). Rasinski proposed that the obtrusiveness of these boundaries may have interfered with comprehension. In later work with adolescent readers, Rasinski and colleagues (2005) found that repeated reading and choral reading are two strategies that better help to develop fluency.

**Speed Reading Instruction and Software.** While students may be trained to read rapidly by limiting the amount of time they fixate on individual words, research suggests that there is a trade-off. Increased reading rates often come at the expense of decreases in accuracy and comprehension (Just & Carpenter, 1984). Two studies on the use of speed-reading software with community college students in developmental reading classes showed no significant differences in post-test reading rates between students who read on paper and those who used speed-reading packages (Kuehner, 1999; Wepner, Feeley, & Wilde, 1989). Eye movement research may help explain these findings. While it was once commonly accepted that slow eye movements caused reading difficulties, researchers now know that it is the difficulty of a text that determines a reader’s eye movement patterns (Stanovich, 1986). While reading software programs have clearly evolved over the past decade, instructors interested in using such technology should carefully research products and monitor student progress to ensure that software programs are helping students achieve their reading goals.

**Conclusion**

The reading difficulties faced by many struggling college readers are complex and often extend beyond comprehension challenges. Students who have completed high school or an adult education program may still confront decoding challenges and exhibit slow reading rates in college. While extant research provides insight into the complexity of college students’ reading challenges, many questions remain. Should community colleges offer classes in phonics and fluency? Are students with poor print skills better served with whole-class instruction in developmental reading or individualized tutoring? What share of the difficulties facing poor college readers can be attributed to word recognition, phonics, and fluency problems, and what share stems from other challenges, such as limited vocabulary? With so many questions unanswered, developmental reading instructors face a challenging, but not insurmountable, task. Simply being aware that some college students struggle with word-level challenges places educators in a position to better serve students. Reading teachers may want to consider further assessment to identify the specific learning challenges facing these readers and implementing strategies to improve phonics and reading rates. For more information, see the resources below.

**Resources**

**Text-to-Speech Software.** The Harnessing Technology to Serve Adult Literacy website provides links to both free and commercial text-to-speech software. [alri.org/harness.html](http://alri.org/harness.html)

**Research on Adult Literacy.** A publication from the National Institute for Literacy, Research-Based Principles for Adult Basic Education Reading Instruction, compiles the best information available about how adults learn to read and offers practitioners a guide to the components of reading, information about assessments, and tips for practice. [www.nifl.gov/publications/pdf/adult_ed_02.pdf](http://www.nifl.gov/publications/pdf/adult_ed_02.pdf)

**Assessments.** The National Institute for Literacy website provides detailed assessment strategies and reading profiles. Educators can access free assessments, as well as tips for working with adult students of varying reading abilities. [www.nifl.gov/readingprofiles](http://www.nifl.gov/readingprofiles)

**References**


**Appendix: How were articles selected for inclusion in this brief?**

To synthesize research on college students’ decoding and fluency, the following databases were searched: ERIC, Education Abstracts, Academic Search Premier, and Dissertations and Theses. In addition, relevant articles referenced in texts were identified and reviewed.

We established methodological, publication, and substantive criteria for inclusion in this Research to Practice brief. First, given the limited amount of research on the phonics and fluency skills of poor college readers, it was important to include studies that relied on multiple methodologies. Thus, this synthesis includes literature reviews, case studies, correlational studies, quasi-experiments, and experiments. Only opinion papers not supported by research were excluded. Peer-reviewed articles, papers presented at conferences, and dissertations were all reviewed and included in this brief. Finally, all research included in this synthesis specifically studied struggling college readers. Research samples included students in developmental reading courses at community colleges, adults who performed exceptionally low (lower than the 25th percentile) on a standardized assessment, and students with learning disabilities who were struggling academically.

Three sets of descriptors were used in this search. Set I included words related to reading (phonics, decode/decoding, literacy, phonology, phonological, reading, word recognition, word attack, word reading, fluency, and reading rate). Words in Set II related to type of school (college, transition to college program, community college, and university). Finally, Set III referred to words related to the type of class and student (developmental reading, remedial reading, struggling college reader, poor college reader). Twenty studies were included in the final synthesis, while additional resources not specific to adult literacy were included to explain reading theory.