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by

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**Evidence Based Practice for Adolescent Reading Comprehension
Instruction: A Guide for SLPs in an Expanded School Role**

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Report

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Abstract

Evidence Based Practice for Adolescent Reading Comprehension Instruction: A Guide for SLPs in an Expanded School Role

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Following a brief description of the adolescent reading comprehension problem in the U.S., this paper presents five evidence based practices (EBP) sufficient to begin addressing the problem on a large scale. The five intervention practices are as follows: 1) explicit vocabulary instruction, 2) explicit comprehension strategy instruction, 3) extended discussion opportunities, 4) motivation and engagement promotion, and 5) intensive and individualized intervention. The first four are recommended for all students within the context of general content courses such as science and history. The fifth should be a supplemental practice for students who persistently fail to exhibit comprehension improvements from the first four. Research suggests that a combination of these practices can result in improved reading comprehension for both students with typical development (TD) and those with a learning disorder (LD). Unfortunately, the research is limited in that the optimal sequence, intensity, subcomponents, and weighting of these practices has yet to be determined. Furthermore, much of the literature, particularly with respect recommendations 2-4, includes few studies with norm-referenced reading comprehension

outcome measures. Consequently, it is difficult to make any strong conclusions with respect to long-term maintenance or generalization effects. Also, the abundance of researcher-developed outcomes often inflates effect sizes and limits the ability to make valid between-study comparisons in meta-analyses. Future research efforts should focus on building upon the 5 EBP foundation and filling in the considerable literature gaps within this foundation. Meanwhile, SLPs in their expanded secondary school role should use their language expertise to evaluate students' literacy strengths and weaknesses in order to create individualized reading profiles that will help determine which combination of the 5 EBPs will be most efficacious.

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Introduction

A staggering number of adolescents in the U.S. are struggling with reading. Recent data from the National Assessment of Educational Progress reported that only 36 percent of eighth-grade students were able to read and comprehend text proficiently (National Center for Education Statistics, 2013). This problem is particularly concerning given that academic achievement in other content areas such as science and history are highly dependent on reading comprehension abilities. Researchers have studied methods to improve reading comprehension for several decades, but the great majority of work was focused on preschool and early elementary children. Over the last 20 years, several researchers have responded to the alarming number of middle and high school students that continued to exhibit reading difficulties despite early intervention efforts. The rapidly growing volume and quality of adolescent reading intervention research has allowed experts to compile a solid foundation of evidence based practice (EBP) recommendations. EBP is defined as, “The integration of best research evidence with clinical expertise and patient values” (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000). To determine the best research evidence, educators or clinicians use the following hierarchy that rates evidence from strongest to weakest: 1) systematic reviews and meta-analyses, 2) randomized controlled trials with definitive results, 3) randomized controlled trials with non-definitive results, 4) cohort studies, 5) case control studies, 6) cross-sectional studies, and 7) case reports (Guyatt et al., 1995). Based on this hierarchy, adolescent literacy experts have identified five key EBP recommendations with respect to adolescent literacy treatment: 1) explicit vocabulary instruction, 2) explicit comprehension strategy instruction, 3) extended discussion opportunities, 4) motivation and engagement promotion, and 5) intensive and individualized intervention (Kamil, Borman, Dole, Kral, Salinger, Torgesen, 2008). Many secondary teachers report feeling unprepared to provide

reading instruction, or they feel this is not their responsibility (Heller & Greenleaf, 2007). Consequently, it is important that they understand the framework of these EBPs, their educational value, and how they can be implemented.

The role of the SLP is significantly expanding into the reading domain within the secondary education setting (American Speech-Language-Hearing Association, 2014). From 2010 to 2014, SLPs were increasingly involved with Response to Intervention (RTI) and Common Core State Standards. As of 2014, a large majority of SLPs, 77 percent, report involvement with RTI. As a result, they have a wonderful opportunity to help facilitate the application of adolescent reading comprehension EBPs. SLPs and educators have a legal and moral obligation to provide students with the best available reading comprehension practices. The five EBP recommendations outlined and supported in this paper will provide the information they need to fulfill this responsibility.

Explicit Vocabulary Instruction

Explicit vocabulary instruction involves four key steps: 1) preteaching vocabulary definitions that are critical to understanding course content, 2) modeling the use of vocabulary words in academic context, 3) providing several exposures, and 4) offering opportunities for students to actively use vocabulary in class through discussions and writing. Effective vocabulary instruction is crucial to adolescents' reading comprehension. In fact, multiple studies indicate that students need to understand at least 90% of the words in a text in order to comprehend what they read (Hirsch, 2003; Sedita, 2005). Furthermore, a panel of adolescent literacy experts identified six randomized controlled studies which provide strong evidence that utilizing explicit vocabulary instruction within content courses such as science, social studies, and language arts classes contributes to improved academic achievement for adolescents (Kamil et al., 2008). It should be noted that only a few studies using explicit vocabulary instruction showed positive effects on standardized comprehension measures. Additional research that incorporates norm-referenced comprehension assessments is needed to further substantiate a direct relationship between explicit vocabulary instruction and generalized reading comprehension. Despite this limitation, multiple well-designed studies support the conclusion that explicit vocabulary instruction contributes to improvements in vocabulary acquisition. In turn, acquiring target and/or root words included in science and social studies texts can result in improved comprehension of those specific materials, and thus positively impact academic achievement.

Unfortunately, these potential comprehension benefits are not often being realized. Recent studies indicate that most content area secondary teachers do not provide explicit vocabulary instruction, but rather expect students to independently learn words through incidental exposure during lecture, reading and/or use of a dictionary (Kennedy, Deshler,

& Lloyd, 2015). Teachers need to be made aware that this passive method is insufficient. Swanborn and de Gloppe (1999) reported in a meta-analysis of vocabulary literature that students only have an approximate 15 percent probability of learning a new word while reading. This is particularly relevant given that comprehension of adolescent texts, particularly those in science and social studies, are heavily dependent on the students' ability to understand the meaning of many infrequent, abstract, and/or ambiguous terms. Research indicates that students typically require multiple exposures, possibly as many as 17, in order to completely understand a new vocabulary term (Ausubel & Youssef, 1965). Additionally, successful comprehension is much more likely when exposures are spread over time and presented or used in a variety of contexts (e.g. written, read, discussed, visually represented, etc.) (Kamil et al., 2008). Terms such as "endothermic" or "hydrosphere" are extremely unlikely to be heard or used outside of the academic setting, and therefore are unlikely to be learned solely via classroom reading. However, explicit vocabulary instruction techniques such as breaking words into parts (e.g. hydro – pertaining to water or thermic – pertaining to heat) and accessing prior knowledge (A fire hydrant sprays water or a thermometer measures temperature) may stimulate understanding of not only these two terms, but also semantically related terms (e.g. hydroelectric, endoskeleton, etc.).

Explicit vocabulary instruction is not only effective, but also an efficient use of instruction time. Often teachers may recognize that students benefit from vocabulary instruction, but claim that they have limited class time which must be spent teaching the course material. However, research indicates that investing some time teaching students to become independent vocabulary learners can lessen the total amount of instruction time required for a course content lesson (Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003). Students will be able to read the material more quickly and efficiently with a greater

amount of understanding, and they will be better prepared to comprehend lecture and actively participate in discussion.

VOCABULARY SELECTION

Once educators appreciate vocabulary instruction as a potentially effective and efficient use of class time, it is vital that they understand how to select words. The process used to choose target words for adolescents should differ from that used with younger students. Often at the elementary level, the 3 Tier System is utilized: Tier I are basic, high frequency words the child will likely learn on their own through repeated exposure in everyday life; Tier II are high frequency words, common in adult conversations and literature; and Tier III are infrequent, context-specific words. Tier II words are appropriate targets for elementary children because the goal is to build upon their low vocabulary inventory, so they can effectively and accurately communicate in a more advanced, adult manner. The goal of vocabulary instruction for adolescents is often different. Once enough vocabulary is acquired to effectively communicate in everyday life, focus should now shift to support the students' ability to learn. Target words should be chosen based on how important they are to the comprehension of course materials that students are expected to read. Textbooks at the secondary level are filled with infrequent, jargon words (e.g. cytoskeleton or biodiversity) that would certainly be categorized as Tier III words; but nonetheless, are appropriate targets in that the comprehension of an entire chapter or lesson may depend heavily on understanding their meaning. In the same manner, explicit instruction centered on words parts (i.e. pre-fix, suffix, root word) may advantageous in a variety of courses such as biology, chemistry, geography, etc.

From the perspective of an SLP or special education teacher, it may also be valuable to target “mental state terms” for some students, particularly those who have cognitive and/or language disorders. Mental state terms include “metacognitive verbs” (e.g. infer,

hypothesize, assume) and “metalinguistic verbs” (e.g. interpret, concede, imply). Higher level mental state terms appear frequently in secondary texts, and according to various studies, are critical to the discussion, analysis, and comprehension of course readings (Astington & Olson, 1995; Booth & Hall, 1994). Adolescents are typically at the developmental age at which they have the metacognitive ability to begin comprehending and using these terms, but support and repeated practice opportunities are likely necessary. This is particularly true for students with LD who often have difficulty with tasks requiring perspective taking, accessing prior knowledge, and relating knowledge/experience to vocabulary terms, discussion topics, or reading materials. Understanding of these terms is a virtual prerequisite for the development of critical thinking, a fundamental goal set of the Common Core Standards, a set of academic guidelines widely employed in U.S. secondary schools (Mathis, 2010).

LEARNING AND MAINTENANCE

After selecting appropriate words, it is important that a variety of instruction strategies and contexts are utilized to promote optimal learning and maintenance. Explicitly teaching and modeling the use of context cues in conjunction with prior knowledge is an evidence based strategy to promote independent vocabulary acquisition (Swanborn & De Glopper, 1999). As described previously, explicit instruction should involve preteaching vocabulary by explaining word meanings and modeling their use in academically relevant sentences; guiding students to practice using the vocabulary in multiple sentences and contexts and give corrective feedback; allowing time for independent practice with the vocabulary; and repeating the first three steps until the students can appropriately use the vocabulary independently as demonstrated in their reading and writing (Anstrom, 2009). Within this explicit instruction framework, teaching strategies such as semantic mapping (i.e. visually representing relationships between associative terms) may be effective for

some learners. Additionally, recent research indicates that multimedia vocabulary instruction may be valuable, particularly for students with LD (Kennedy, Deshler, & Lloyd, 2015). Other more traditional approaches such as modeling the appropriate use of dictionaries, glossaries, and thesauruses can be a useful supplement to explicit instruction, but they are typically only helpful after multiple exposures to the word (Anstrom, 2009). Research findings have not isolated one strategy that significantly outperforms the others. Experts in the field have concluded that multiple strategies should be used because children need repetitive exposure to words in various communication modes (e.g. verbal, written, visual) and contexts (Anstrom, 2009).

Although there is limited evidence directly linking explicit vocabulary instruction to improved performance on standardized comprehension measures, there is ample evidence supporting its positive effects on vocabulary acquisition and comprehension of academic texts that include the target words. Explicit vocabulary instruction can reduce the amount of classroom time required to cover a reading, and also improve academic achievement. Teachers should select target words that have the greatest impact on their students' ability to understand course reading materials. Explicit vocabulary instruction should include pre-teaching and modeling, guided practice and feedback, independent practice opportunities, and repetitions of the previous three steps to encourage independence. Multiple strategies allowing for vocabulary interaction in multiple communication modes and contexts should be utilized within this framework to promote optimal gains.

Explicit Strategy Instruction

Explicit reading comprehension strategies are defined as any conscious and deliberate effort to construct meaning from text (Cantrell, Almasi, Carter, Rintamaa, & Madden, 2010). Main idea summarizing (Solis, Ciullo, Vaughn, Pyle, Hassaram, & Leroux, 2011), asking and answering questions (Peverly & Wood, 2001; Raphael & McKinney, 1983), and using graphic organizers (Idol, 1987; Margosein, Pascarella, & Pflaum, 1982) are three strategies with perhaps the most significant bodies of supporting evidence. However, several other strategies included in the literature such as drawing inferences and paraphrasing have shown positive effects on comprehension as well (Dewitz, Carr, & Patberg, 1987; Hagaman, & Reid, 2008; Hansen & Pearson, 1983). Strategies such as these promote active reading and critical thinking, both of which are necessary to understand the increasingly complex texts at the secondary school level. While elementary students can often cut and paste answers to surface level questions, adolescents must take various perspectives, address abstract questions, and access/relate prior knowledge to the text. Explicit instruction of multiple comprehension strategies should be an essential component of adolescent reading instruction. Numerous randomized controlled trials and several other studies of various research design constitute a large body of evidence demonstrating the positive effects of strategy instruction on the comprehension of narrative and informational texts (Kamil et. al, 2008).

USE OF MULTIPLE STRATEGIES

There is limited data to conclude that any one strategy is more effective than the others; however, it is evident that the use of multiple strategies generally contributes to higher levels of comprehension than a single strategy (National Reading Panel (US),

National Institute of Child Health, & Human Development (US), 2000). Although several individual strategies have been shown to improve comprehension, positive effects were short-term, and strategy use did not generalize to multiple reading contexts. Current research shows more gains can be realized using systematic interventions that teach a variety of strategies, therefore, allowing students more flexibility in their construction of comprehension. Reciprocal Teaching and Transactional Strategies Instruction are two evidence based examples of systemic interventions that explicitly teach adolescents when, where, and why particular strategies should be used. Many researchers theorize that improved comprehension does not result directly from strategy use, but rather the active reading required to appropriately choose, apply, practice, and internalize the strategies (Cantrell et al., 2010). Systemic strategy interventions foster this active reading component by allowing the students to practice self-initiation of strategies and self-monitoring of comprehension progress and difficulties.

EMPHASIS ON KNOWLEDGE AND SCAFFOLDING

Regardless of the program chosen, secondary educators should follow two important guidelines vital to effective application of strategy instruction. First, make certain students internalize the idea that knowledge and understanding, not strategy use, is the ultimate goal (Schunk, 2003). This objective needs to be explicitly stated prior to instruction, and should be continuously reinforced throughout the intervention. Periodic checks for understanding and learning are useful in this regard. Emphasis on knowledge goals (e.g. I want to learn how an engine works) as opposed to performance goals (e.g. I want to complete my summary about engines and make an A grade) is also a practical way to encourage engagement and stimulate critical thinking. Second, evidence supports the use of a scaffolding approach which begins with a high level of structure and support then gradually allows students to become more independent (Kamil et al., 2008). Three steps

involved in the scaffolding approach include 1) explaining the strategy and modeling its use by thinking aloud with a text, 2) allowing the student to use the strategy in guided practice (often in groups or with peers), and 3) asking the student to practice using the strategy independently with his/her own texts.

A systematic intervention program such as Reciprocal Teaching or Transactional Strategies Instruction should be utilized with adolescents to promote critical thinking and independent use of multiple comprehension strategies. Educators should use a scaffolding approach that allows for gradual progress toward independence and emphasize the construction of knowledge as the ultimate goal of explicit strategy instruction.

Extended Discussion

High quality extended discussions are those that allow students to continuously exchange critical thoughts or deep analyses in response to academic text. The most effective provide repeated chances to formulate questions, summaries, predictions, opinions, and logical arguments. Additionally, they allow students to take various perspectives, interpret implicit relationships, and link text to personal experiences and prior knowledge. These analytical skills are often required for deep level reading comprehension, and repeated practice opportunities are key for students to begin to internalize such cognitive processes. Educators and SLPs should include opportunities for adolescents to actively participate in deep level discussions about various texts as a component of an effective reading comprehension program. Although a combination of explicit vocabulary and comprehension strategy instruction may improve an adolescent's understanding of various reading materials, supplementing these components with extended discussion opportunities can promote deeper learning.

A large correlational study provides compelling evidence to support the use of extended discussion, particularly with middle and high school students (Applebee, Langer, Nystrand, & Gamoran, 2003). Its sizeable sample included 974 students in 65 language arts classrooms, representing diverse socioeconomic backgrounds and various academic achievement levels. The authors reported that extended discussion as a proportion of total instruction time was minimal in these classrooms, on average accounting for only 1.7 out of every 60 minutes and ranging from 0 to 14 minutes; however, classrooms near the top of this range produced significantly higher literacy growth than those near the bottom. Although this study does provide a positive correlation between extended discussion and reading comprehension, it offers limited data to accurately predict the potential benefits that may be realized if discussions were prolonged and occurred regularly. Furthermore, it

provided no comparisons with respect to the efficacy of specific programs that center on extended discussion.

A recent meta-analysis addresses the two primary limitations presented in the aforementioned study: 1) It quantifies comprehension benefits of regular, extended discussion use, and 2) It compares the efficacy of various programs that utilize extended discussion as the primary instruction method (Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009). A major conclusion reported by the authors was that that extended discussion can lead to improved reading comprehension; however, in order to realize these desired results, programs must be organized, and teachers must systematically facilitate conversation focused on academic-related content. Whereas all programs led to increased student-talk and decreased teacher-talk, only discussions centered educational objectives positively affected reading comprehension outcomes.

COLLABORATIVE READING AND QUESTIONING THE AUTHOR

Two programs in the Murphy et al. analysis that yielded large reading comprehension effect sizes, Collaborative Reading (CR) and Questioning the Author (QtA), may be particularly valuable for adolescents. CR is similar to a debate in that students are presented with a central question that has no definitive answer and is designed to evoke various points of view. For example, in a science or health-related course, the teacher may ask students to choose the optimal human diet and defend their choice. The goal of CR is to help students develop critical thinking by asking them to construct a logical argument based on information in texts in conjunction with personal experience and prior knowledge. Students are encouraged to take alternate perspectives, challenge the arguments made by others, and maintain an open mind to amend their own positions if warranted. In contrast, the goal of QtA is to help students construct deeper meaning of a particular text by critiquing the author's writing. During QtA group reading activities,

students periodically discuss various critical understanding questions at logical stopping points. They are encouraged to question the author's intentions, qualifications, writing abilities, logic, etc. Student directed discussions are initiated and sustained by a list of potential questions written on the board by the instructor (e.g. what is the author trying to say here? Did he explain his ideas clearly? Why did he describe the character in this way?).

QtA and CR intervention resulted in large effect sizes in critical thinking/reasoning comprehension, 2.499 and 2.465, respectively. The authors defined critical thinking/reasoning comprehension as "reasoned, reflective thinking that is focused on deciding what to believe or do, drawing inferences or conclusions." Given that academic success at the secondary level is highly dependent on such deeper level text processing, either or both programs should be considered as valuable classroom components. While deep level comprehension is an extremely important objective in secondary school, surface level text comprehension is also crucial to academic success. Effect sizes for QtA and CR with respect to explicit text comprehension (i.e., comprehension requiring information that is explicitly stated, usually within a sentence) were lower, but still significant at .899 and .490, respectively.

DISCUSSION PROGRAM SELECTION

Educators and SLPs should carefully choose which discussion program is appropriate given the type of text (i.e. informational or narrative) and class comprehension goals (i.e. deep level, critical comprehension or surface level, text explicit comprehension). Most QtA research has been conducted using narrative texts because they lend themselves well to author critique questioning. Therefore, QtA is a rational choice for a classroom such as language arts that regularly reads narrative materials. Additionally, explicit text comprehension effects sizes (QtA = .899 > CR = .490) indicate that QtA may be a better choice for reading assignments in which surface level comprehension is the primary goal

as opposed to critical thinking. In contrast, CR may be more appropriate for informational text assignments that require deep level comprehension. CR's large critical thinking/reasoning effect size is comparable in size to the corresponding QtA effect size (CR = 2.465 versus QtA = 2.499); however, the CR ES may be interpreted as more valid given that it is based on data from a greater number of studies.

EXTENDED DISCUSSION APPLICATION

Regardless of the program selected, it is vital that educators effectively facilitate productive discussion centered on academic content. This may prove difficult as many teachers are used to a lecture-formatted class in which they do a majority of the speaking. In order for teachers to feel comfortable transitioning to an effective, extended discussion format, professional development opportunities should be provided. Such opportunities should help teachers establish a "discussion protocol" that will allow them to stimulate collaboration and critical thinking while still letting students direct the conversation. One such evidence-based protocol outlines six recommendations: 1) prompt the students to provide specific support for their position, 2) model effective reasoning processes by thinking aloud, 3) play the role of devil's advocate by proposing counter arguments, 4) acknowledge good reasoning, 5) summarize the main points of the discussion as it draws to a close, and 6) use vocabulary that reflects critical thinking (Reznitskaya et al., 2001). Beyond these recommendations, it is vital for teachers to emphasize that the ultimate goal of discussion is not to reach a consensus, but rather to engage in critical thinking and deeply reflect on the reading.

Extended discussions provide students with repeated exposure to words and concepts learned through explicit vocabulary and strategy instruction, and therefore acts as a valuable comprehension promoting supplement. Discussion programs such as QtA and CR offer multiple practice opportunities to construct knowledge by formulating

summaries, predictions, opinions, and logical arguments. Evidence suggests that QtA may be better suited to narrative texts while CR is often more aligned with information texts. The ultimate goal of extended discussion is not increased student-talk, but rather increased knowledge and comprehension. In order to support this goal, teachers must utilize a discussion protocol to facilitate organized, academically-centered, student-led discussions.

Motivation/Engagement

Four motivation/engagement promoting strategies to be explained later in the chapter are as follows: 1) emphasize knowledge goals rather than performance goals, 2) allow for student choice and autonomy, 3) create real-world relevance, and 4) provide competence support to enhance self-efficacy. Educators should apply these strategies that increase adolescents' motivation to read and engagement in critical thinking if potential deep comprehension benefits from explicit instruction and extended discussion are to be realized. Motivation in the literacy context is the desire to read whereas engagement refers to the degree of active participation and involvement in learning. The distinction is subtle, but both are important factors in learning from text. For example, a student may be extremely interested in learning about space exploration (i.e. motivation), however, is unable to because the text is too difficult to actively participate in reading activities (i.e. engagement). Furthermore, if a student applies active reading strategies such as concept mapping (i.e. engagement) to a text about the mating habits of snakes, but perceives no value in understanding the material (i.e. intrinsic motivation), genuine learning is not likely to occur or be maintained. In summary, motivation and engagement are closely intertwined with the first three EBP practices in this paper. Motivation and engagement are simultaneously prerequisites and products of effective explicit strategy/vocabulary instruction and extended discussion application. Adolescent struggling readers have often developed a severe aversion to books after years of ineffective effort and frustration. Consequently, they often do not possess the prerequisite motivation and engagement to initiate and participate in EBPs 1-3. Educators must utilize practices outlined in this chapter to spark an initial level of engagement and motivation that will promote self-efficacy and allow students to benefit from explicit strategy/vocabulary instruction and extended discussion.

THREATS TO MOTIVATION/ENGAGEMENT

Several factors at the secondary school level threaten motivation and engaged reading, and thus negatively impact deep reading. First, textbooks are considerably more difficult, often too difficult. In fact, Guthrie (2007) reports that science, history, and literature texts are, on average, 2 to 4 years beyond the reading comprehension levels for students in grades 10 to 12. Students' self-efficacy is diminished when they are asked to read text beyond their capacity, and lacking confidence in the ability to effectively read a text can significantly decrease engagement. Second, middle and high school students typically relinquish a lot of control in their reading during a developmental period in which they crave autonomy. In elementary school, students are allowed the flexibility to read what interests them, but secondary teachers often provide little or no choice in what texts are read, and students typically have much less time to read for pleasure. Third, increased emphasis on performance evaluation in the form of grades and standardized assessments threatens intrinsic motivation. Extensive research shows that learning or knowledge goals as opposed to performance goals are more likely to positively impact reading comprehension (Kamil et al., 2008). Many practical evidence based practices have been identified to help educators reduce these threats, stimulate adolescent motivation and engagement, and foster reading achievement. The four listed at the beginning of this chapter will be explained further in the subsequent sections: 1) emphasize knowledge goals rather than performance goals, 2) allow for student choice and autonomy, 3) create real-world relevance, and 4) provide competence support to enhance self-efficacy.

KNOWLEDGE VERSUS PERFORMANCE GOALS

Educators should help students create knowledge goals as opposed to performance goals as a means of fostering deep learning and comprehension. Teachers have little direct control over standardized assessment and school grading policies; however, fostering a

classroom environment focused on knowledge goals is well within their influence. Pintrich (2000) reports that performance goals focused on “getting the best grade” or “completing the assignment” are prone to encourage shallow strategies like memorization and or skimming text for answers rather than reading for deep learning. In contrast, adolescents that pursue knowledge goals (e.g. “I want to understand why I can see my breath when it’s freezing outside”) are more motivated and engaged and perform better on reading comprehension measures (Schunk, 2003). Although knowledge goals can be effective whether set by the teacher or student, those developed by the student are likely to be more motivating and result in better engagement and learning. Some students may lack the will and/or skills to develop their own knowledge goals. In this case, teachers should provide explicit scaffolded instruction on the goal setting process.

STUDENT CHOICE AND AUTONOMY

Beyond allowing students some level of autonomy in goal construction, teachers should provide opportunities for choice to promote motivation, engagement, and self-direction in literacy. Adolescents in overly controlling classrooms are likely to disengage from reading tasks (Guthrie, 2007). Many teachers would likely agree that providing choice is ideal, but argue that it is not feasible. They feel constrained by curriculum requirements, large class sizes, limited instruction time, and large variability in student reading proficiency. While these concerns are valid, they do not eliminate the ability to motivate adolescents through choice. It is clear that the educational system in place will not allow teachers to let students read and learn whatever they want; however, it does allow the opportunity for teachers to provide “microchoices” capable of increasing student motivation and engagement. The following are examples of practical microchoices that correlate with higher levels of engagement: 1) input into the topic or sequence of activities,

2) selection of books or sections of books, 3) options for demonstrating learning (e.g. report, presentation, video, poster, etc.), and 4) selection of peer partners.

REAL-WORLD RELEVANCE

It is critical that educators link text reading to the real-world in order to convey to students that the reading is relevant and worthwhile. Students in a study by Assor, Kaplan, and Roth (2002) reported that demonstrating relevance was one of the most motivating teacher practices. Relevance is particularly important for lower achieving students who are unlikely to read beyond a superficial level when text is not linked to direct or recalled experience. Two effective ways to provide this link are through hands-on activities and opportunities for historical re-enactment. Viewing vivid related movies prior to reading is less optimal, but may also be sufficient.

COMPETENCE SUPPORT AND SELF-EFFICACY

Educators should provide the competence support necessary to enhance students' self-efficacy in reading. Bandura (1997) defines self-efficacy as "an individual's beliefs about one's capacities to learn or perform behaviors at designated levels." Schunk (2003) reported that students with low self-efficacy exhibit reduced engagement, persistence, and achievement compared to their peers. In short, if students are to perform well, they must believe they are capable of doing so. Perhaps the most important action educators can take to build self-efficacy is to provide an abundance of reading materials at the student's appropriate reading level. As mentioned previously, text books are, on average, 2-4 years above the reading comprehension level for students in grades 10-12. Furthermore, a 2002 national U.S. survey of 12th graders reported that students read materials other than their text book only 35% of the time in science and 38% in social studies (Guthrie, 2007). This means that well over half of the time, a majority of our high school seniors are reading texts that are much too difficult, and therefore, frustrating and disengaging. Teachers may

believe that it is important to challenge their students with difficult texts in order for significant learning to take place. Evidence suggests, however, that reading at a level near the students' ability results in more significant growth than reading texts at grade level (Guthrie, 2007). Therefore, educators should try to provide reading materials of appropriate difficulty level that complement and/or supplement the primary text required under district or state curriculum.

Another practical way to promote self-efficacy is by establishing initial confidence. This is achieved by beginning instruction with brief manageable tasks, short readings, and simple questions. If a student gains confidence at beginning of class, they are more likely to sustain engagement when tasks progressively become more difficult. Feasible competence supports such as providing books of appropriate difficulty and promoting initial confidence enhance self-efficacy, increase intrinsic motivation, and promote deep level comprehension.

CONCEPT ORIENTED READING INSTRUCTION (CORI)

Concept-Oriented Reading Instruction (CORI) is an evidence-based reading program that centers on motivation and engagement, but additionally includes explicit strategy and vocabulary instruction and extended discussion as key components; therefore, CORI provides an excellent model to illustrate the potential value of implementing the first 4 recommendations outlined in this paper. In 2008, a highly regarded panel of reading experts concluded that a collection of evidence, including several CORI studies, established a moderate level of support for the use of engagement and motivation enhancement practices as an effective method to improve adolescent literacy (Kamil et. al, 2008). Two primary reasons prevented the panel from justifiably categorizing the evidence as strong: 1) limited evidential support specific to the adolescent population, and 2) quasi-experimental design of existing CORI studies prevented the ability to unambiguously

conclude a causation effect as opposed to correlation. Prior to the panel's report, a meta-analysis of 11 CORI studies showed a large average effect size of .73 on informational text comprehension; however, students in the studies ranged from grades 3 to 5 (Guthrie, McRae, & Klauda, 2007). CORI showed potential as a valid intervention for adolescents, but the evidence was significantly lacking.

Recently, two large-scale CORI studies targeted the aforementioned limitations, and provided some evidence that the program's positive effects on motivation, engagement, and informational text comprehension could generalize to the adolescent population. The first, a 6-week program that included 1159 seventh graders, tested the effects of CORI in a science curriculum context (Guthrie & Klauda, 2012). Each week revolved around a thematic unit such as "Animal Survival in Ecosystems." Sessions were 90 minutes each day and included several elements discussed previously as effective comprehension and motivation/engagement enhancing practices: explicit vocabulary instruction; explicit strategy instruction and teacher modeling; opportunities for guided practice; extended group discussion; real-world relevance; knowledge goals; choice and autonomy; and competence support. Results of the study showed an effect size of .75, CORI > control treatment, for higher order informational text comprehension. Higher order comprehension questions were those that required synthesis, integration, and reasoning with science text. Although the study did include a large sample size consisting entirely of adolescent students, it was still somewhat limited by its quasi-experimental, within subjects, repeated measures, time series design. A quasi-experimental design does not include randomized assignment to either experimental or control groups as does an experimental design; thus, no conclusive between-group comparisons can be drawn. Additionally, quasi-experimental designs can be susceptible to multiple internal and external validity threats (Cook & Campbell, 1979) with regard to several variables

including maturation, client history, statistical regression, variable testing times, and experimental mortality. While the authors could not possibly resolve the lack of between-group comparisons, they did provide an exhaustive and detailed explanation why the subsequent list of potential threats were highly improbable and/or controlled for.

Guthrie and Klauda's (2014) second large-scale adolescent CORI study, including 615 seventh graders, improved upon previous evidence in two meaningful ways: 1) It utilized a switching replications experimental design which included more rigorous controls than the quasi-experimental design employed in previous CORI studies, and 2) It showed that CORI, previously limited to a science context, could also be implemented within a history course curriculum and produce comprehension improvements. The ES in this study, .26, was lower than previous CORI studies. This relatively low ES may indicate that CORI is more difficult to effectively implement within the context of history than science. Additionally, the small ES may be explained, in part, by the reduced intervention duration, only four weeks as opposed to six weeks in the previous study. Although comprehension effects are modest in the history text domain, the two sizeable adolescent CORI studies provide some quantifiable data to support the sound theoretical foundation for engagement/motivation enhancement measures as components of reading comprehension intervention, but further validation is certainly warranted.

CORI STRENGTHS

Several important strengths are present within the two CORI studies. First, significant effect sizes in motivation, engagement, and complex comprehension of informational text were observed in middle school students after only 4-6 weeks of intervention. It may be reasonable to predict that further comprehension benefits would result from extending intervention to a semester, an academic year, or longer. Second, CORI was implemented in multiple academic domains (i.e. science and history), embedded

within the natural context of a content classroom (as opposed to a reading or language course), and subsequent positive improvements were shown to generalize (i.e. the topics of material used during testing were different from those used during therapy). Given that a significant proportion of academic reading occurs in science and history courses, the value of CORI's broad application capability is significant. Third, both studies were conducted in a natural school environment with teachers as opposed to researchers, indicating that CORI implementation is relatively feasible. This judgement is further evidenced by the limited amount of professional development required. Teachers in Guthrie and Klauda's history-based program needed only two half-day training sessions to learn how to apply motivation/engagement support, implement strategy instruction (i.e. concept mapping, summarization, and inferencing), select appropriate books, and manage groups. Based on implementation fidelity data, CORI developers estimate that 90% of currently employed teachers can learn how to effectively employ engagement enhancing practices. Those that have trouble can utilize a professional development video series on www.CORILearning.com. Furthermore, detailed method procedures and appendices outlining the program framework contribute to a highly replicable design. Two reasonably well-designed studies suggest that 1) CORI positively affects motivation/engagement and high level comprehension, 2) subsequent benefits are generalizable to multiple contexts, and 3) implementation in a natural context is feasible. However, these studies also include several noteworthy limitations.

CORI LIMITATIONS

Evidentiary support for CORI's efficacy with adolescents is limited for several reasons. First, Guthrie and Klauda's (2012 & 2014) studies are the only two that investigate CORI with children beyond the elementary level. Moreover, only the latter of the two utilizes a strong experimental design that provides support for a causation effect as opposed

to correlation. Second, researcher-developed tests were used to measure comprehension outcomes rather than norm-referenced tests. Meta-analyses from Edmonds et al. (2009) and Scammacca et al. (2007) showed much lower effect sizes for adolescents on norm-referenced measures than researcher developed; therefore, the effect sizes reported by Guthrie and Klauda may be somewhat inflated. Third, the narrow sample populations limit generalizability in multiple respects. For example, both study sample populations were exclusively 7th grade students, so it is not reasonable to conclude that similar results would be seen in high school students who certainly differ in many cognitive-, motivation-, and engagement-related variables. Furthermore, implementation and efficacy conclusions cannot transfer beyond the general education classroom to the special education classroom. The 2014 study excluded students with individualized education plans (IEPs), and within-group analysis of data from Guthrie (2012) revealed that cognitive constraints exhibited by readers substantially below grade level significantly reduced potential gains in comprehension. Effectively, motivation and engagement do not facilitate the same level of comprehension improvements in students with IEPs as they do in adolescents with typical language and cognitive development.

COORDINATION WITH PREVIOUS RECOMMENDATIONS

Prior to this section on motivation and engagement, three evidence-based recommendations to support adolescent reading comprehension were presented: 1) Explicit vocabulary instruction, 2) Explicit strategy instruction, and 3) Extended discussion opportunities. Active participation in all three simultaneously depends on and contributes to growth in self-efficacy. In this respect, the three recommendations are synergistic in nature and somewhat self-supporting once an initial degree of self-efficacy starts the process. The four motivation and engagement promoting practices previously outlined prior to CORI (i.e. 1. emphasize knowledge goals rather than performance goals, 2. allow

for student choice and autonomy, 3. create real-world relevance, and 4. provide competence support to enhance self-efficacy) can function as that “self-efficacy catalyst.” Furthermore, once self-efficacy momentum is established, all 4 of the previously discussed recommendations can potentially collaborate to stimulate maximum comprehension benefits.

CORI is a program that centers on motivation and engagement practices as a means to promote reading comprehension improvements. Additionally, it incorporates explicit vocabulary instruction, explicit strategy instruction, and extended discussion as key complementary components. Thus, it provides one model illustrating how all of the first four EBPs may work in conjunction to positively affect reading comprehension. Limited data suggests that CORI may be feasibly implemented within the general classroom setting and significantly enhance adolescents’ history and social studies text comprehension. However, more studies are warranted to further validate these results, particularly within the LD population, for which significant comprehension benefits have not been observed.

Intensive and Individualized Therapy

When a combination of the first 4 recommendations, applied in the general classroom setting, insufficiently promotes reading comprehension in adolescents, an SLP or reading specialist should provide supplemental, intensive and individualized literacy therapy. “Individualized” indicates that the structure and content of instruction should be tailored to reflect the students’ reading strengths and deficits as identified from comprehensive assessment measures. “Intensive” means that the student should receive more opportunities for practice. This is often achieved by increasing the educator-to-student ratio via small group instruction or even one-on-one when feasible. Multiple meta-analyses have examined the efficacy of such supplemental reading interventions that include intensive instruction in decoding, fluency, vocabulary training, extended discussion and/or comprehension strategy instruction (Edmonds, Vaughn, Wexler, Reutbach, Cable, Tackett, et al., 2009; Flynn, Zheng, & Swanson, 2012; Scammacca, Roberts, Vaughn, Edmonds, Wexler, Reutebuch, et al., 2007; Solis, Ciullo, Vaughn, Pyle, Hassaram, & Leroux, 2011). All four meta-analysis cited in this paper reported small to medium effect sizes on norm-referenced (i.e. far-transfer) reading comprehension measures. While middle school students consistently showed greater improvements than those in high school, struggling readers of all ages, with or without LD, can benefit from intensive and individualized intervention.

INTENSIVE READING INTERVENTION RESEARCH

Researchers have not identified a single, optimal intensive intervention due to the large variety of reading difficulties exhibited by adolescents; however, they have found a series of features common to many effective intervention programs. First, some evidence suggests that multi-component therapy is more effective than single component (Edmonds et al., 2009; Scammacca et al., 2007). For example, therapy centered solely on decoding or

fluency has been found unlikely to have a significant effect on standardized reading comprehension scores. Treatments that use some combination of comprehension strategies, extended discussion, vocabulary training, decoding, and fluency have shown greater benefits. Furthermore, the limited available evidence suggests that of the five components mentioned, explicit comprehension strategies instruction may contribute the most to gains in standardized assessment (Edmonds et al., 2009), and therefore should regularly be included in therapy to some degree. The optimal number, sequence, intensity, and combination of these 5 components have not been pinpointed as they are likely dependent on the reading profile of the child receiving services; thus, the term “individualized.” The SLP and/or reading specialist will play an important role in developing a reader profile based on strengths and weaknesses that will guide an ideal individualized therapy plan.

Although there are several research limitations within the intensive, individualized literacy therapy domain, a recent long-term, randomized control trial has addressed a few of the most glaring deficits (Vaughn et al., 2012). First, many of the studies have been relatively short-term lasting only a month or two. In contrast, Vaughn and colleagues reported effect sizes following an entire year of daily small-group, intensive intervention sessions provided to 8th grade students who had demonstrated low response to RTI in both 6th and 7th grade. Second, while many interventions require teachers and administration to drastically adapt several aspects of their educational schedule and organization, instructors in the current study were able to apply this intervention within the context of the widely-used RTI structure. This demonstrates feasible application of treatment beyond the unnatural research context. Third, a majority of studies reported effect sizes based on researcher-developed measures. Vaughn and colleagues utilized only standardized reading assessments which more accurately represent growth. Fourth, Vaughn et al. is one of few studies that attempts to tailor instruction based on the reading profiles of participating

students. Each week, students with who exhibited difficulty with decoding received 100 to 110 minutes of word-level instruction, 35 to 45 minutes of vocabulary and morphosyntax, 70 to 80 minutes of comprehension and text reading, and 15 to 25 minutes of motivational support. Students with adequate decoding did not spend any time reading at the word level. Instead this time was reallocated, so that the students received 170 to 180 minutes of comprehension and text reading instruction. It should be noted that in accordance with previous evidence, the text comprehension instruction centered on teachers utilizing a scaffolding approach to explicitly teach strategies such as main idea summarization, text previewing, using graphic semantic organizers, and predicting. Furthermore, a variety of text types (i.e. narrative versus informational) and contexts (i.e. social studies and science) were used. Additionally, students and teachers participated in vocabulary instruction that included regular discussions about definitions and word characteristics and associations. Students in the control group participated in an elective course such as P.E. or art rather than the 50-minute intensive instruction periods, and thus received zero of the five recommended EBP comprehension supports.

Results showed that both treatment groups significantly outperformed students in the control group. Effect sizes from standardized assessments were large for comprehension (1.20) and moderate for word identification (0.49). It should be noted however, that although the students in treatment groups considerably outperformed those in control group, most continued to fall below grade-level proficiency. Therefore, even 50-minutes of intensive intervention is not sufficient for persistently struggling readers to close the reading gap with their TD peers. Consequently, it is critical that intensive interventions are supported by EBP practices in the general education classrooms, so maintenance and generalization can occur. This study illustrates that even students with persistently severe

reading difficulties can benefit from therapy, if it is intensive and personalized to match their reading profile.

SLP IN READING INSTRUCTION

SLPs and/or reading specialists will be vital to the success of intensive and individualized reading instruction. In addition to their role as interventionist, they will likely be responsible for identifying students for services through screeners and state reading assessments. Once students are qualified for services, SLPs will have the opportunity to assist in individualizing therapy based information gained from subsequent comprehensive reading, language, and cognitive assessment batteries. As noted in the introduction, SLPs are becoming increasingly involved with Common Core State Standards assessments and literacy programs such as Response to Intervention. Additionally, over 60% of school based SLPs reported in 2014 that they conduct screenings, provide consultation, and offer strategies to classroom teachers. Furthermore, 41% reported providing direct services within general education classrooms. These percentages represent an approximate 10% increase since 2010 (ASHA, 2014). More than ever, SLPs have the opportunity not only to act as interventionist, but also to work with students and teachers in the general classroom to facilitate maintenance and generalization through repeated practice opportunities and dynamic goal monitoring. When intensive and individualized intervention is utilized in conjunction with the application of the first 4 recommendations outlined in this paper, students with LD have the greatest opportunity to achieve significant gains in reading comprehension.

Conclusion

This paper outlines five evidence-based practice recommendations that educators and SLPs can use to help a staggering number of struggling adolescent readers improve their reading comprehension. The first four, 1) explicit vocabulary instruction, 2) explicit strategy instruction, 3) extended discussion, and 4) motivation/engagement, can and should be utilized with all adolescents within the context of content courses such as history and science. The fifth recommendation, the use of intensive and individualized instruction, is beneficial for students who exhibit a learning disorder and/or require support beyond the classroom environment. These recommendations function in coordination; therefore, maximum effects are realized when all are applied. Current research has not addressed what the proper weighting should be for each recommendation. This may be a consequence of the large variability in students' comprehension strengths and weaknesses. Moreover, it may be difficult to conduct studies that adequately isolate each of recommendations given that they are inherently interrelated. If variables cannot be separated, determining which deserve more emphasis than others is not a practical study objective. Given this limitation in the current evidence, it is vital that SLPs utilize their expertise to evaluate students' literacy strengths and weaknesses and create individualized reading profiles. Subsequently, goals and treatment plans should be constructed in accordance with this profile and the best available efficacy evidence.

An expanding role for SLPs in the school setting is providing them the opportunity to have a significant impact on the reading and academic outcomes of middle and high school students, with and without LD. Although there are still considerable gaps in adolescent comprehension EBP literature, a recent surge of research has created a foundation based largely on the five recommendations outlined and supported in this paper. Currently, researchers need to build upon this foundation by discerning optimal treatment

combinations, weights, and intensities. In pursuit of this objective, it may be advantageous for researchers to follow the model of Vaughn and colleagues (2012) by categorizing groups of students based on similar reading profiles and testing the effects of various treatment variables within each subpopulation. Despite recent efforts of researchers, there remains a substantial proportion of adolescents that continue to significantly struggle with the comprehension of academic reading materials. In order to alleviate this problem, researchers, administrators, and educators should work to build upon current EBPs, disseminate best available practices knowledge through literature and professional development opportunities, and determine feasible ways to apply such EBPs on large scale.

References

- American Speech-Language-Hearing Association. (2014). Schools Survey report: Caseload characteristics trends, 1995–2014. Available from www.asha.org.
- Anstrom, K. (Ed.). (2009). What Content-Area Teachers Should Know about Adolescent Literacy. DIANE Publishing.
- Applebee, A. N., Langer, J. A., Nystrand, M., & Gamoran, A. (2003). Discussion-based approaches to developing understanding: Classroom instruction and student performance in middle and high school English. *American Educational Research Journal*, 40(3), 685-730.
- Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teacher behaviours predicting students' engagement in schoolwork. *British Journal of Educational Psychology*, 72(2), 261-278.
- Astington, J. W., & Olson, D. R. (1995). The cognitive revolution in children's understanding of mind. *HUMAN DEVELOPMENT-BASEL-*, 38, 179-179.
- Ausubel, D. P., & Youssef, M. (1965). The effect of spaced repetition on meaningful retention. *The Journal of General Psychology*, 73(1), 147-150.
- Bandura, A. (1997). Self-efficacy: The exercise of control.
- Baumann, J. F., Edwards, E. C., Boland, E. M., Olejnik, S., & Kame'enui, E. J. (2003). Vocabulary tricks: Effects of instruction in morphology and context on fifth-grade students' ability to derive and infer word meanings. *American Educational Research Journal*, 40(2), 447-494.
- Booth, J. R., & Hall, W. S. (1994). Role of the cognitive internal state lexicon in reading comprehension. *Journal of Educational Psychology*, 86(3), 413.
- Bryant, D. P., Goodwin, M., Bryant, B. R., & Higgins, K. (2003). Vocabulary instruction for students with learning disabilities: A review of the research. *Learning Disability Quarterly*, 26(2), 117-128.
- Cantrell, S. C., Almasi, J. F., Carter, J. C., Rintamaa, M., & Madden, A. (2010). The impact of a strategy-based intervention on the comprehension and strategy use of struggling adolescent readers. *Journal of Educational Psychology*, 102(2), 257.

- Dewitz, P., Carr, E. M., & Patberg, J. P. (1987). Effects of inference training on comprehension and comprehension monitoring. *Reading Research Quarterly*, 99-121.
- Edmonds, M. S., Vaughn, S., Wexler, J., Reutbach, C., Cable, A., Tackett, K. K., et al. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research*, 79(1), 262-300.
- Flynn, L. J., Zheng, X., & Swanson, H. L. (2012). Instructing struggling older readers: a selective meta-analysis of intervention research. *Learning Disabilities Research & Practice*, 27(1), 21-32.
- Fogarty, M., Oslund, E., Simmons, D., Davis, J., Simmons, L., Anderson, L., & Roberts, G. (2014). Examining the effectiveness of a multicomponent reading comprehension intervention in middle schools: a focus on treatment fidelity. *Educational Psychology Review*, 26(3), 425-449.
- Guthrie, J. T. (Ed.). (2007). *Engaging adolescents in reading*. Corwin Press.
- Guthrie, J. T., & Klauda, S. L. (2014). Effects of Classroom Practices on Reading Comprehension, Engagement, and Motivations for Adolescents. *Reading research quarterly*, 49(4), 387-416.
- Guthrie, J. T., McRae, A., & Klauda, S. L. (2007). Contributions of concept-oriented reading instruction to knowledge about interventions for motivations in reading. *Educational Psychologist*, 42(4), 237-250.
- Guthrie, J. T., Wigfield, A., & Klauda, S. L. (2012). *Adolescents' engagement in academic literacy*. Adolescents' engagement in academic literacy. Sharjah: UAE: Bentham Science Publishers.
- Guyatt, G. H., Sackett, D. L., Sinclair, J. C., Hayward, R., Cook, D. J., Cook, R. J., & Wilson, M. (1995). Users' guides to the medical literature: IX. A method for grading health care recommendations. *Jama*, 274(22), 1800-1804.
- Hagaman, J. L., & Reid, R. (2008). The effects of the paraphrasing strategy on the reading comprehension of middle school students at risk for failure in reading. *Remedial and Special Education*, 29(4), 222-234.
- Hansen, J., & Pearson, P. D. (1983). An instructional study: Improving the inferential comprehension of good and poor fourth-grade readers. *Journal of Educational Psychology*, 75(6), 821.

- Heller, R., & Greenleaf, C. L. (2007). Literacy Instruction in the Content Areas: Getting to the Core of Middle and High School Improvement. Alliance for Excellent Education.
- Hirsch, E. D. (2003). Reading comprehension requires knowledge—of words and the world. *American Educator*, 27(1), 10-13.
- Idol, L. (1987). Group Story Mapping A Comprehension Strategy for Both Skilled and Unskilled Readers. *Journal of learning disabilities*, 20(4), 196-205.
- Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., & Torgesen, J. (2008). Improving Adolescent Literacy: Effective Classroom and Intervention Practices. IES Practice Guide. NCEE 2008-4027. National Center for Education Evaluation and Regional Assistance.
- Klauda, S. L., & Guthrie, J. T. (2015). Comparing relations of motivation, engagement, and achievement among struggling and advanced adolescent readers. *Reading and Writing*, 28(2), 239-269.
- Kennedy, M. J., Deshler, D. D., & Lloyd, J. W. (2015). Effects of multimedia vocabulary instruction on adolescents with learning disabilities. *Journal of learning disabilities*, 48(1), 22-38.
- Mathis, W. J. (2010). The “Common Core” standards initiative: An effective reform tool. Boulder and Tempe: Education and the Public Interest Center & Education Policy Research Unit. Retrieved July, 29, 2010.
- Margosein, C. M., Pascarella, E. T., & Pflaum, S. W. (1982). The effects of instruction using semantic mapping on vocabulary and comprehension. *The Journal of early adolescence*, 2(2), 185-194.
- Murphy, P. K., Wilkinson, I. A., Soter, A. O., Hennessey, M. N., & Alexander, J. F. (2009). Examining the effects of classroom discussion on students’ comprehension of text: A meta-analysis. *Journal of Educational Psychology*, 101(3), 740.
- National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). Report of the national reading panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups. National Institute of Child Health and Human Development, National Institutes of Health.

- Peverly, S. T., & Wood, R. (2001). The effects of adjunct questions and feedback on improving the reading comprehension skills of learning-disabled adolescents. *Contemporary Educational Psychology*, 26(1), 25-43.
- Pintrich, P. R. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of educational psychology*, 92(3), 544.
- Raphael, T. E., & McKinney, J. (1983). An examination of fifth-and eighth-grade children's question-answering behavior: An instructional study in metacognition. *Journal of Literacy Research*, 15(3), 67-86.
- Reznitskaya, A., Anderson, R. C., McNurlen, B., Nguyen-Jahiel, K., Archodidou, A., & Kim, S. Y. (2001). Influence of oral discussion on written argument. *Discourse Processes*, 32(2-3), 155-175.
- Sackett DL, Straus SE, Richardson WS, Rosenberg W and Haynes RB (2000): Evidence-Based Medicine: How to Practice and Teach EBM. (2nd ed.) Edinburgh: Churchill Livingstone.
- Scammacca, N., Roberts, G., Vaughn, S., Edmonds, M., Wexler, J., Reutebuch, C. K., et al. (2007). Reading interventions for adolescent struggling readers: A meta-analysis with implications for practice. Portsmouth, NH: RMC Research Corporation, Center on Instruction.
- Schunk, D. H. (2003). Self-efficacy for reading and writing: Influence of modeling, goal setting, and self-evaluation. *Reading & Writing Quarterly*, 19(2), 159-172.
- Sedita, J. (2005). Effective vocabulary instruction. *Insights on Learning Disabilities*, 2(1), 33-45.
- Solis, M., Ciullo, S., Vaughn, S., Pyle, N., Hassaram, B., & Leroux, A. (2011). Reading comprehension interventions for middle school students with learning disabilities: A synthesis of 30 years of research. *Journal of learning disabilities*, 0022219411402691.
- Swanborn, M. S., & De Glopper, K. (1999). Incidental word learning while reading: A meta-analysis. *Review of educational research*, 69(3), 261-285.
- Vaughn, S., Wexler, J., Leroux, A., Roberts, G., Denton, C., Barth, A., & Fletcher, J. (2012). Effects of intensive reading intervention for eighth-grade students with persistently inadequate response to intervention. *Journal of Learning Disabilities*, 45(6), 515-525.