Adolescent Literacy: Where We Are – Where We Need to Go

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For years, the majority of federal and state policy initiatives and resources have been directed at younger children. For example, in 2002, federal funding for Head Start was $6.7 billion, and for Title I in grades K-6 it was $10.49 billion. By comparison, federal funding for Title I programs in grades 7-12 was only $1.85 billion (National Center for Educational Statistics; NCES, 2004). Two relatively new federal initiatives, Reading First (for children in grades K-3) and Striving Readers (for students in grades 6-12) reflect a similar pattern of marked inequities in federal expenditures: $1.04 *billion* for Reading First versus $24.8 *million* for Striving Readers.

Among other things, this policy is based on the assumption that by providing intervention at a young age, many of the manifestations of learning problems later on will be avoided or minimized (Deshler, 2002). While early interventions are important, they have often been pursued at the expense of addressing the unique needs and problems manifested by struggling adolescent learners in secondary schools (Strickland & Alvermann, 2004). That is, the heavy emphasis on early intervention may be misinterpreted as indicating that such efforts will address most of the problems presented by young children who are at risk for failure and that, therefore, less attention is required later on. While there is evidence to suggest that early intervention efforts can lead to improved outcomes in adolescence (e.g., Campbell & Ramey, 1995), large numbers of students enter secondary schools ill prepared to respond to the heightened curricular demands of these settings (Kamil, 2003). In short, many of the problems that are encountered in the early years tend to persist into adolescence. Thus, there are reasons for re-examining the wisdom of placing so much of our resources at the early education level.

First, even though a growing list of reading interventions have been developed for younger students (e.g., McCardle & Chhabra, 2004), it is unlikely that these methods (in spite of their effectiveness) will be successfully implemented *to scale* on a national basis given the complexity of successfully implementing educational innovations with fidelity in multiple sites (e.g., Cuban, 1993; Elmore, 1996; Fullan, 1993; Knight, 1998). Because of the enormous chal-

lenges of effecting large-scale implementations, many students will not receive successful, targeted intervention and will move on to later grades with significant, unaddressed deficits. Second, even if children do receive quality interventions during their early years, there is a reasonably good chance that they will encounter additional learning difficulties as the demands of the curriculum become more rigorous in the later grades.

The need for effective intervention strategies for older individuals is as great as the need for interventions for younger children given the fact that almost 40% of high school graduates lack the reading and writing skills that employers value, and nearly 30% of high school graduates who enroll in colleges and universities require remedial assistance (Greene & Winters, 2005). Even more alarming is the fact that almost one quarter of all 8th and 12th graders score at the "below basic" level in reading on the National Assessment of Educational Progress (NAEP) and that only 70% of all high school students graduate from high school (National Center for Educational Statistics, 2005). For African-American and Hispanic adolescents, the graduation rate drops to nearly 50% (Swanson, 2004). As compelling as the case for early intervention can be, if that case is made at the expense of addressing the equally problematic and unique set of problems presented by adolescents, the long-term effects of such policies on adolescents will be detrimental, given the rapidly changing environment in a global economy (Friedman, 2005; Levy & Murnane, 2004; National Academies, 2006).

In his book *The World Is Flat: A Brief History of the Twenty-First Century,* Friedman (2005) describes how making the Internet readily available to a large portion of the world's population has dramatically altered the dynamics among the economy, employment trends, access to resources, and ultimately wealth and power.

> ...the net result has been the creation of a global, web-enabled playing field that allows for multiple forms of collaboration and the sharing of knowl-edge and work...This playing field is open today to more people in more places on more days in more ways than anything like ever before in the history of the world...Billions of people have access to billions of pages of raw information which will ensure that the next generation of innovations will come from all over Plant Flat. The scale of the global community that is soon going to be able to participate in all sorts of discovery and innovation is something the world has simply never seen before. (pp. 262-63)

The implications of these trends for adolescents and young adults who are not proficient in core literacy skills are significant because of the keen competition that is emerging in this global dynamic. For example, by the year 2015 over 3 million service and professional jobs are expected to move out of the United States. This poses a particular problem for Americans in low-skilled jobs that can be easily moved overseas because every 20 low-skilled American workers will be competing with 920 low-skilled non-Westerners who will do the same work for a fifth of the cost (Friedman, 2005). Similarly, Levy and Murnane (2004) argue, based on an analysis of employment demographics, that in an economy heavily influenced by computerization, the workers who will be most successful are those who can engage in "expert thinking" (i.e., identifying and solving uncharted problems for which there are no rule-based solutions) and "complex communications" (i.e., interacting with others to acquire or interpret information, to explain it, or to persuade others of its implications for action). The recently released report by the National Academies (2006) entitled *Rising Above the Gathering Storm* also underscores how important it will be for students in the United States (and the Western world) to significantly increase the number and difficulty level of courses they take in the STEM areas (Science, Technology, Engineering, and Math) in order to be competitive in the changing dynamic created by the global economy. In short, in this new environment, literacy and the abil-

ity to skillfully engage in an information-laden world is the currency that will enable one to have a place at the table where ideas are shaped, solutions are created, and decisions are made. The cost to individuals who are not prepared to do so will be profound.

The remainder of this chapter will (a) present a brief review of existing research on struggling adolescent readers, (b) describe a theory of adolescent reading as a framework for guiding research and instruction, (c) highlight findings from a large descriptive study on struggling adolescent readers, and (d) propose a research agenda to address major gaps in the literature on struggling adolescent readers.

Adolescent Literacy Research

Many adolescents leave elementary school unprepared for the rigors of the secondary school curriculum demands that they encounter (Hock & Deshler 2003). The largest group of struggling adolescent readers are those who have acquired some, but not sufficient, reading skills to enable them to escape the "fourth-grade slump" (Chall, 1983). Specifically, nearly 60% of struggling adolescent readers in poor urban settings fall between the 5th and the 30th percentile in reading performance. That is, they have some decoding skills but not at a level that is sufficient to deal fluently with subject-matter reading demands, and they lack the skills and strategies necessary to meet comprehension expectations (e.g., Curtis, 2002; Snow & Biancarosa, 2003).

Reading comprehension results from proficiency in key reading skills and the acquisition of prior knowledge. That is, while decoding is essential for proficient reading at the secondary level, it is not sufficient (Gersten, Fuchs, Williams, & Baker, 2001; Kamil, 2003; Pressley, 2002; Snow, 2002; Snow & Biancarosa, 2003). Fluent decoding *and* linguistic knowledge (vocabulary and general knowledge of the world) is required for readers to effectively deploy reading strategies that allow them to bring meaning to text (Gersten et al., 2001; Hoover & Gough, 1990; Kamil, 2003; Pressley, 2000; Snow, 2002).

Thus, reading comprehension initiatives must address the complex nature of literacy as content demands increase, vocabulary knowledge becomes essential to understanding various disciplines, and materials become more difficult to read. In short, adolescent readers must be able to decode, read with fluency, understand an increased vocabulary, build background knowledge, and be critical comprehenders of difficult and diverse text and text structures (Snow, 2002). Additionally, they must be motivated to put forth time and energy to improve their reading proficiency (Curtis, 2002; Guthrie, Wigfield, & Perencevich, 2004; Kamil, 2003; National Reading Panel, 2000; Snow, 2002; Wigfield & Guthrie, 1997).

Clearly, the problems that at-risk adolescents face when trying to succeed within the rigorous general education curriculum are great. Unless they have the necessary skills and strategies to respond to the heavy curriculum demands, they will encounter failure and significant frustration. Figure 1 illustrates the dilemma faced by teachers and students in today's secondary schools. The straight, solid line represents the path of "typical" acquisition of knowledge or skills. That is, at the conclusion of one year of instruction, on average, students should have acquired what would deem to be "one year's worth" of knowledge represented by point A on that line. At the end of the second year, they should be performing at the level of point B, and so on (Deshler et al., 2001).

The performance of struggling adolescent learners usually does not follow this line of progress. On average, they perform at the level of point A[1] at the end of one year of schooling and travel a path similar to the one depicted by the dotted, curved line. The area between the solid line (representing typical achievement) and the dotted line (representing underachievement) depicts the "performance gap," the gap between what students are expected to do and what they can do. Over time, this gap grows larger and larger, and is exacerbated in the later grades when the academic growth of at-risk students plateaus. As a result of this performance gap, students are unable to meet

the demands of required courses in the content areas in high school, and their resulting failure leads to discouragement and disengagement in school.

Figure 1. Performance gap.
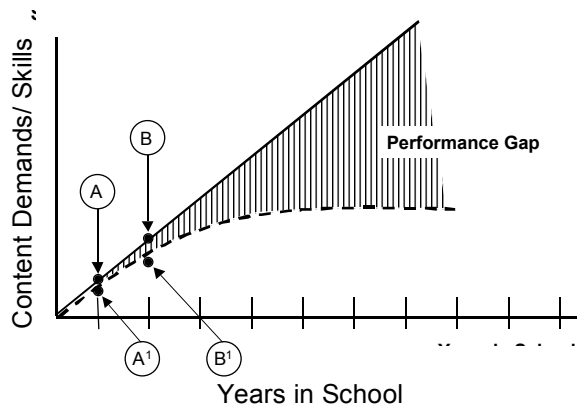
While Figure 1 helps to describe the failure experienced by at-risk adolescents, its greatest value is in determining the focus of interventions to close the performance gap such that students are able to truly access and benefit from the general education curriculum.

A growing number of intervention initiatives aimed at struggling adolescent readers have emerged in the past several years. The instructional approaches described below have been shown to have some efficacy in improving outcomes for struggling adolescent learners. However, for most of these interventions, considerably more research is needed to verify their robustness and broad-scale generalizability.

Reciprocal teaching. Reciprocal teaching (Palincsar & Brown, 1984, 1988) is an instructional model that emphasizes teaching students key cognitive reading comprehension strategies for predicting, clarifying, summarizing, and questioning in the context of authentic text. The strategies are taught explicitly using scaffolded guided practice to engage students in conversations about what they are reading and learning. Discussion gradually moves from teacher-mediated to student-mediated interactions. After a while, students assume the role of teacher as they use the strategies to support comprehension. Thus, instruction is reciprocal between teacher and students.

Numerous evaluation studies have shown that reciprocal teaching is effective in improving reading comprehension (e.g., Lysynchuk, Pressley, & Vye, 1990; Taylor & Frye, 1992). For example, a summary of the major results of 16 studies with experimental and control groups found a median effect size of .32 with standardized test measures, and an effect size of .88 when experimenter-developed measures were used. Adolescent readers in middle and high school benefit from reciprocal teaching (Rosenshine & Meister, 1995).

In particular, the effects of reciprocal teaching in improving reading comprehension in intact high school remedial reading classes has been studied. Fifty-three 9-grade students were taught four reading comprehension strategies using the reciprocal teaching model. These students were compared to 22 ninth-grade students in control classes. Students were administered pre- and posttests using experimenter-developed measures and the Gates-MacGinitie Reading Tests (MacGinitie, MacGinitie, R., Maria, Dreyer, 2000). Instruction in both conditions lasted for about 20 sessions. As in previous studies, no significant differences between groups were found over time on the standardized measure. However, on the experimenter-developed measures, significant differences between experimental and control groups were found (Alfassi, 1998). The approach is widely used with struggling adolescent readers (Westera & Moore, 1995).

Apprenticeship in reading. Using reading apprenticeship as a framework for reading instruction, researchers have developed a ninth-grade course, Academic Literacy (Greenleaf, Schoenbach, Cziko, & Mueller, 2001). In contrast to typical skill-based remedial reading courses, in this course students engage in ongoing, collaborative discussion of text-based information, have scheduled time for independent reading, and access to a variety of engaging materials directly related to content class curricula. Subject area teachers deliver the interventions in their classes.

In one study, three units were developed to help teachers focus on the role and use of reading in the personal, public, and academic arenas. In addition, explicit instruction was provided in reading strategies through the use of reciprocal teaching. Specifically, teachers engaged students in learning and practicing the cognitive strategies associated with reciprocal teaching (questioning, summarizing, clarifying, and predicting) as they read a variety of content texts.

Growth in student reading proficiency was assessed with a standardized measure, the Degrees of Reading Power (DRP; Touchstone Applied Science Associates, 2004), which was administered to students in the Academic Literacy class pre- and post-intervention. There were gains from pre- to posttest. When compared to national norm data in the DRP, these gains were statistically significant, and the students moved from an average of a 7th-grade reading level to an average 9th-grade level at posttest. That is, on average, students made progress in closing the gap in reading achievement (Greenleaf et al., 2001).

Read 180. Read 180 is a comprehensive reading intervention for struggling readers in grades 4 through 12. The program consists of four major components: (a) whole-group instruction (with the teacher modeling fluent reading and the application of various reading strategies); (b) intensive small group instruction; (c) computer instruction designed for building background information, vocabulary, reading comprehension, fluency, and word study; and (d) silent reading in engaging, leveled books supported with audio books. The initial project design for *Read 180* came from research conducted on students with mild disabilities (Hasselbring, 1996; Hasselbring & Bottge, 2000).

Most studies on Read 180 have employed quasi-experimental pre-/posttest designs. In a large study of low-performing middle school students in Dallas, Houston, and Boston, there was a significant advantage for those instructed with Read 180 on SAT-9 results. Similar trends were found in a study conducted in the Los Angles Unified School District. Scores on both the NCES (2002) and Reading and Language Arts SAT-9 subsections showed significant gains for the experimental groups (Scholastic, 2005). While these findings are encouraging, we are cautious in our interpretations because of a lack of random assignment to instructional conditions or appropriate quasi-experimental matching (Smith, Rissman, & Grek, 2004).

Language! Language! is a comprehensive reading program that integrates reading, spelling, and writing instruction (Greene, 1998). Designed for students who struggle with literacy skills and who are two or more years below grade placement, the program is highly structured and instruction is explicit. Language! was intended be used in general or special education settings and as a mastery-based program with students progressing at their own pace. Instruction is provided to students in small groups and they also engage in independent practice. Specific units of instruction include vocabulary, pre-reading activities, written expression, and questioning techniques related to reading. Specific reading skill units include phonemic awareness, word recognition, and reading comprehension.

Several studies have been conducted with Language!; however, only one included a control and experimental group design. This study was conducted with middle and high school adjudicated youth (Greene, 1996) for 23 weeks. The control group received unstructured whole-group instruction whereas the experimental group received individualized and small-group instruction using the Language! program. The Gray Oral Reading Test-3 (Wiederholt & Bryant, 1982) and the Wide Range Achievement Test (Wilkinson, 1993) were used to measure reading growth. The treatment group gains were statistically and socially significant for both measures. Thus, students in the treatment group gained an average of three grades in word identification and reading comprehension. These findings are encouraging.

SRA Corrective Reading. Corrective Reading is another comprehensive reading intervention program designed to improve word-

level reading and comprehension (Adams & Engelmann, 1996). Intended for students in grades 4-12 who are reading one or more grade levels below grade placement, Corrective Reading may be implemented in general or special education classrooms with small groups of students or in a whole-class format. Corrective Reading is a highly structured, sequenced, and scripted program. Teachers follow a direct instruction model as they teach decoding skills focusing on word attack skills, group reading, and individual mastery. A comprehension strand includes instruction in thinking strategies and oral group exercises (Adams & Engelmann, 1996).

The effectiveness of Corrective Reading is supported by a sizeable research base (Adams & Engelmann, 1996; Borman, Hewes, Overman, & Brown, 2002; Campbell, 1984; Gersten & Keating, 1987; Thorne, 1978). However, to date, the research with adolescents has not been conducted in a random assignment of treatment and control group designs. Thus, while initial findings are encouraging, they are somewhat limited.

In one study, with 7th- and 8th-grade students in remedial reading classes, Campbell (1984), students received either Corrective Reading or regular high school English. Students in the Corrective Reading condition made gains of 2.2 grade levels on the Woodcock-Johnson Reading Mastery Test (Woodcock, 1998) after 6-9 months of instruction. The comparison group made an average gain of 0.4 months after the same period of instruction. Finally, there have been two meta-analyses of multiple studies of Corrective Reading each documenting significant gains for students receiving the Corrective Reading treatment (Adams & Engelmann, 1996; Borman et al., 2002). All that said, to date, there has not been a randomized experimental evaluation of the approach which could better inform about the effectiveness of the intervention that the existing studies.

Strategic Instruction Model (SIM). Since 1978, researchers at the University of Kansas Center for Research on Learning (KU-CRL) have developed a broad array of interventions designed to improve literacy outcomes for struggling adolescent learners (e.g., Deshler et al., 2001; Schumaker & Deshler, 2006). In one line of research, Content Enhancement Routines (CER) enable subject matter teachers in secondary schools to select and present critical content information that is potentially difficult to learn in a way that is understandable and memorable to all students in an academically diverse class regardless of literacy levels.

CERs ensure learning by (a) actively engaging students in the learning process, (b) transforming abstract content into concrete forms, (c) structuring or organizing information to provide clarity, (d) ensuring that the relationships among pieces of information are explicitly discussed, (d) tying new information to prior knowledge, and (e) distinguishing critical information from less critical information (Lenz & Bulgren, 1995. Teacher use of CERs can increase the test scores of all students, including low achievers and students with disabilities, an average of 10-20 percentage points (e.g., Bulgren, Deshler, & Schumaker, 1997; Bulgren, Deshler, Schumaker, & Lenz, 2000; Bulgren, Schumaker, & Deshler, 1988; Bulgren, Schumaker, Deshler, Lenz, & Marquis, 2002). A major function of CERs in enhancing literacy outcomes is to support the instruction of critical vocabulary and critical conceptual knowledge, including background information (Lenz & Deshler, 2004).

In a second line of research, teachers instruct students to use various learning strategies to enable them to successfully negotiate the demands of the curriculum, teaching them how to learn (Lenz, Ehren, & Deshler, 2005). Two major questions have guided this line of programmatic work: (a) Can adolescents be taught to use complex learning strategies? and (b) Does their use of the strategies result in improved performance on academic tasks? Over 20 studies have been completed (e.g., see Schumaker & Deshler, 2006, for a review). Each learning strategy intervention includes the instructional procedures and materials teachers need to teach adolescents to apply a given strategy using an eight-stage explicit instructional methodology (Brownell, Mellard, &

Deshler, 1993; Ellis, Deshler, Lenz, Schumaker, & Clark 1991).

In general, this research has shown that adolescents greatly improve their use of a particular strategy when the eight-stage instructional methodology is implemented. In all of the studies, students generalized their application of the strategy across stimulus materials. In the studies focusing on reading strategies (Clark, Deshler, Schumaker, Alley, & Warner, 1984; Lenz & Hughes, 1990; Schumaker, Deshler, Alley, Warner, & Denton, 1982) generalization occurred across materials written at varying reading (i.e., grade) levels. Several studies showed that student performance on academic tasks also improved when they used the strategy. In particular, when an array of reading comprehension strategies (e.g., para-

phrasing, questioning, imaging) are taught in semester-long high school classes of approximately 12-15 students showed nearly two years' growth in one semester of instruction using the Gates-MacGinitie as the pre-/postmeasure, (Deshler, Schumaker, & Woodruff, 2004). Inasmuch as the foundational research on learning strategies conducted by the KU-CRL targeted adolescents with LD, these interventions can be characterized as being relatively structured and explicit in nature (Deshler, 2003). Table 1 show effect sizes of studies testing these reading interventions (Schumaker & Deshler, 2006). (*Note:* These effect sizes are calculated from single-subject design studies, which usually result in higher effect sizes that experimental designs.)

Table 1

Effect-Size Information for Example Strategy studies

Author	Date	Effect Size	N
Beals	1985	1.50	28
Bulgren, Hock, Schumaker, & Deshler	1995	1.77	12
Ellis, Deshler, & Schumaker	1989	1.48	13
Lenz & Hughes	1990	.64	12
Scanlon, Deshler, & Schumaker	1996	.80	17

In a second line of research, teachers instruct students to use various learning strategies to enable them to successfully negotiate the demands of the curriculum, teaching them how to learn (Lenz, Ehren, & Deshler, 2005). In particular, an array of reading comprehension strategies (e.g., paraphrasing, questioning, imaging) are taught in semester-long high school classes of approximately 12-15 students. Using the Gates-MacGinitie as the pre-/postmeasure, students showed nearly two years' growth in one semester of instruction (Deshler, Schumaker, & Woodruff, 2004).

In summary, a partial but still sketchy profile is emerging of the characteristics of adolescents who struggle with literacy problems and

the kinds of interventions that hold promise for this population of students. Because few programmatic studies have been conducted, a clear taxonomy of the specific characteristics across critical dimensions of literacy is not available. Similarly, several intervention initiatives have been designed and evaluated in middle and high school settings, but few studies have been conducted with random assignment to conditions. Without controlling for the critical factors that may influence outcomes, conclusions should be drawn cautiously. In short, a great deal remains to be done before teachers and administrators can answer the following question with confidence: "What interventions works best for which stu-

dents under what conditions?"

To begin the journey toward the answer to that question, we will describe a theory of adolescent reading that can guide the field's search for answers.

A Theory of Adolescent Reading: A Simple View of a Complex Process

Our research uses a conceptual model of adolescent reading based on a global view of the reading process. The framework for this view is captured, in part, by the Simple View of Reading (Gough & Tunmer, 1986; Hoover & Gough, 1990). At the core of the Simple View of Reading is the notion that while the act of reading is complex, proficient reading consists of two key components: word recognition and linguistic or language comprehension. The *Word Recognition* component encompasses efficient decoding, accurate sight-word recognition, fluent word reading and access to appropriate words in the reader's mental lexicon that provides semantic information at the word level. Thus, efficient word recognition allows the reader to quickly pronounce a word and triggers recognition of words acquired through language experiences (e.g., prior knowledge). *Linguistic comprehension* is defined as knowledge of facts and concepts, vocabulary, language and text structures, and verbal reasoning structures and strategies. Some researchers refer to linguistic comprehension as language comprehension since measures of language comprehension seem to capture that domain (e.g., Catts et al., 2005). The interaction of these two components results in reading comprehension.

The Simple View of Reading recognizes that these two overarching components are equally important and mutually inclusive. That is, both components are necessary for reading success. The interdependent nature of these key components increases as students move from the early to the later grades. For example, multiple regression studies have shown that by the time students are in the 5th and 6th grade, decoding accounts for up to 13% and linguistic comprehension for up to 35% of the variability among readers (Hoover & Gough,

1990). Further, the importance of these components shifts developmentally, which has implications for instruction. For example, word recognition accounted for 27% of the unique variance at the second grade but only 2% at the eighth grade (Catts, Hogan, & Adolf, 2005). In short, the Simple View of Reading provides a framework for thinking about reading and holds that instruction in either decoding or linguistic comprehension improves reading so long as neither component is nil (Hoover & Gough, 1990).

A Closer look at Word-level factors. Some reading theorists hold that if the learner cannot decode, he or she cannot comprehend text effectively and efficiently (Hoover & Gough, 1990; LeBerge & Samuels, 1974). For example, about 65% to 85% of the variance in reading comprehension is accounted for by word recognition and listening comprehension (Aaron, Joshi, & Williams, 1999; Hoover & Gough; 1990). Thus, word recognition plays a critical role in reading comprehension, and, therefore, requires attention beyond the assumption that students are proficient in recognizing words in text.

The word-level skills that seem to support comprehension include accuracy, rate, and prosody (National Reading Panel, 2000). Of those elements, reading rate seems most important; accuracy alone does not predict comprehension (Stahl & Hiebert, 2004; Torgesen, Rashotte, & Alexander, 2001). Thus, fluent reading of words matters a great deal in proficient reading, and there is a strong correlation between word recognition and comprehension (Adams, Treiman, & Pressley, 1998; Catts et al., 2004; Stahl & Hiebert, 2004; Torgesen et al., 2001). In short, "comprehension is built on a foundation of words" (Stahl & Hiebert, 2004, p. 182).

Comprehension factors. Walter Kintsch's (1994) theory of reading, while complementing the language comprehension component of the Simple View, takes reading to a deeper level. In essence, Kintsch expands the domain of language comprehension to include deep processing of textual information and prior knowledge and adds depth to the Simple View of Reading

framework by defining the importance and focus of reading comprehension strategies. Kintsch suggests that these cognitive and metacognitive strategies (executive processes) can and must be taught to struggling readers, especially when they encounter unfriendly texts (i.e., poorly written or difficult vocabulary), to help them compensate for lack of prior knowledge. In what he calls Construction Integration (CI), Kintsch (1998) emphasizes the bottom-up construction of incomplete propositions followed by an activation process that moves toward coherent understanding. Thus, a balance between basic reading skill and language comprehension strategy knowledge supports learning in general.

Kintsch's model draws a clear distinction between reading for understanding and learning from text. Reading for understanding allows the reader to answer typical comprehension questions such as those found at the end of reading selections. At this level of understanding, we are able to determine if the reader remembers and can retell what he or she just read. While helpful, retelling is limited to memory for text, however. In contrast, learning *from* text requires the reader to draw upon information from the text and use prior knowledge to make inferences (highlighting the critical role of prior knowledge in comprehension). This, in turn, allows the reader to use the information in new and novel situations. Learning of this type is much deeper, and is referred to as situational learning (Kintsch, 1994, 1998; Kintsch, E., 2005).

Text comprehension holds that comprehension can have a text-base surface learning focus or it can be situational in focus with learning that is applicable to novel situations, and hence more useful. The challenge presented by this theory is that struggling readers who lack the word-level skills and prior knowledge necessary to make learning happen need specific strategies that account for these deficiencies, particularly when reading texts that are poorly written. Kintsch calls this gap between what the learner already knows and what is presented in text as the "learnability zone." If the learnability zone is beyond the

reader's skills and knowledge, less than proficient reading results. Thus, word-level theory (e.g., Catts et al., 2004; Hoover & Gough, 1990; Torgesen et al., 2001; Stahl & Hiebert, 2004) and Kintsch's reading comprehension theory seem compatible and necessary for "deep" reading comprehension. Further, these theories support interventions that teach students a series of rules or cognitive and metacognitive strategies to apply as they process text and learn from reading (Adams et al., 1998).

Kintsch (1994) recognizes the importance of executive process in his situational model and describes the strategic action required on the part of the learner to learn from reading. Strategic readers use executive process to self-monitor their reading success and deploy repair strategies when necessary (Hacker, 2004). These executive process, while complementary to the language comprehension component of the Simple View, move beyond background knowledge, syntax and semantics, vocabulary, and text structures and may be considered a separate and important theoretical element (Kamhi, 2005; Kintsch, 2004, Pressley, 2000; Pressley & Hilden, 2004).

A theory-based adolescent reading model. The reading interventions developed as part of the Strategic Instruction Model (SIM) target the key reading components and theory discussed above. We believe that a balanced combination of word-level, comprehension, and executive process theories should define the nature of adolescent reading interventions and the process of reading to learn.

The Adolescent Reading Model depicted in Figure 2 provides the conceptual framework that guides the design and implementation of reading interventions. This model recognizes and builds upon, in part, the significant body of reading research conducted on younger populations under the auspices of the National Institute for Child Health and Human Development (NICHD) (e.g., Lyon, Alexander, & Yafee, 1997; McCardle & Chhabara, 2004). As a result of this work, a growing convergence of research findings has been outlined with regard to how to improve reading instruction for younger children, including those with dis-
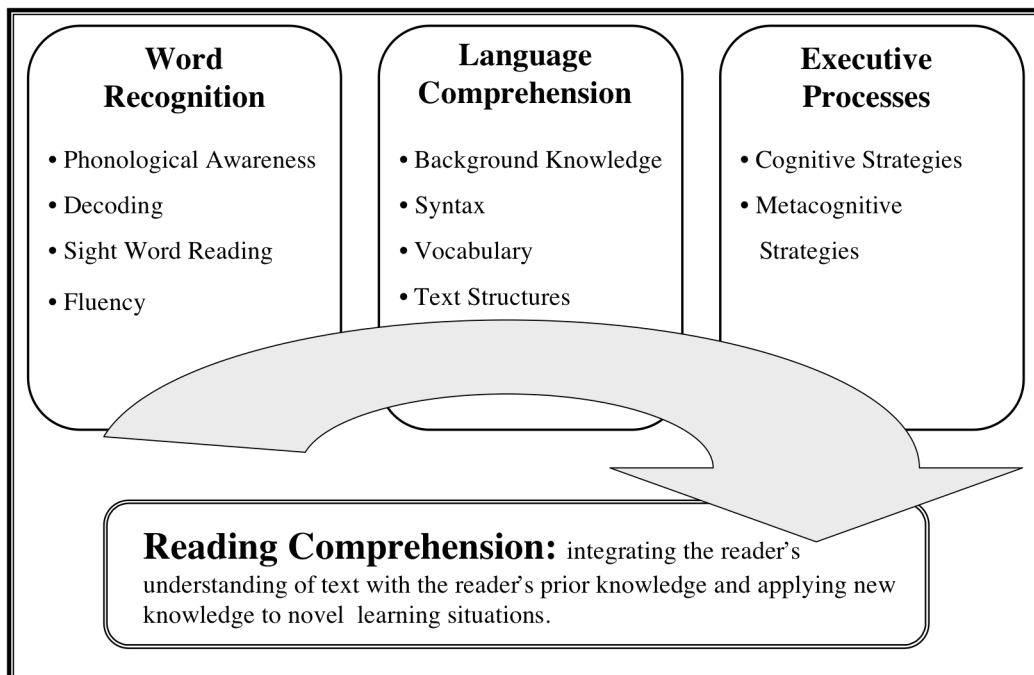
abilities (NICHD, 2000; Swanson & Hoskyn, 1999; Vaughn, Gersten, & Chard, 2000). The Adolescent Reading Model is a framework for testing the generalizability of the findings for younger readers with an adolescent population and seeks to determine the unique power of specific components of reading for older learners.

An initial assumption underlying the model is that although most adolescents have acquired the foundational word recognition and decoding skills associated with early reading instruction depicted in the left portion of Figure 2 (i.e., phonemic awareness, decoding, sight word reading, and fluency) in materials written at the 3rd-grade level, some struggling readers still need intervention in this area. Thus, instruction for adolescents should include a "Bridging Strategy" that provides explicit instruction and scaffolded support to help struggling readers with word-level interventions that improve word recognition and fluency. At the same time, and in conjunction with word-level interventions, explicit instruction in language comprehension and reasoning

(background knowledge, syntax, vocabulary) should be provided. This is depicted in the middle portion of Figure 2. Since the role of self-regulating or executive processes is considered a key component of language comprehension in Kintsch's situational learning model, we have included a third component in our reading theory (see the right side of Figure 2) that highlights this important element. Integration of cognitive and metacognitive strategies requires that the reader take strategic action and put forth effort to make meaning of the integration of text material and prior knowledge. Thus, reading is an active process requiring word level, language comprehension, and the conscious use of executive processes associated with reading for meaning and learning. The intended outcome of this balanced, interactive model is a significant increase in the reader's ability to integrate and fuse his or her understanding of text with prior knowledge and apply that new knowledge to novel learning situations (see the bottom portion of Figure 2).

Figure 2. Adolescent reading model.

Adolescent Reading Theoretical Model

Word Recognition

• Phonological Awareness

• Decoding

• Sight Word Reading

• Fluency

Language Comprehension

• Background Knowledge

• Syntax

• Vocabulary

• Text Structures

Executive Processes

• Cognitive Strategies

• Metacognitive Strategies

Reading Comprehension: integrating the reader's understanding of text with the reader's prior knowledge and applying new knowledge to novel learning situations.

The SIM Reading Program (see Figure 3) and supporting interventions described in this chapter are directly tied to the Adolescent Reading Model (Catts et al., 2004; Hoover & Gough, 1990; Kintsch, 1998; Stahl & Hiebert, 2004; Torgesen et al., 2001). At the heart of this program is reading instruction. The reading core (shown in the box on the left side of Figure 3) includes decoding, sight word reading, and fluency instruction. Instruction in these areas provides the reader access to accurate word recognition and increased reading accuracy, rate, and prosody. The other major component of the model is language comprehension instruction, which provides the reader with the skills, strategies, and executive processes necessary to integrate text information with prior knowledge, monitor understanding, and bring meaning to what is being read.

Figure 3. SIM reading program.
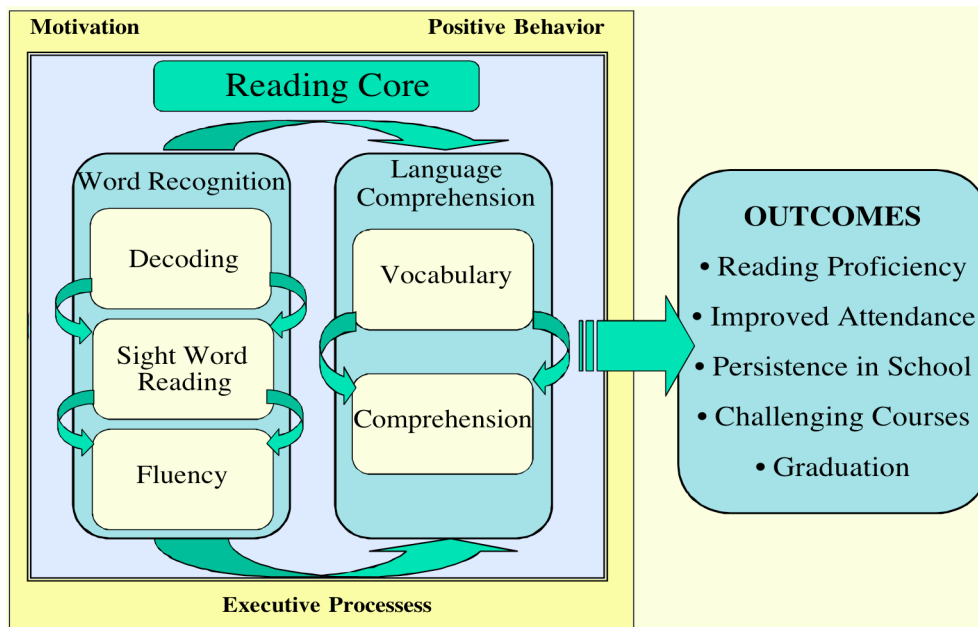
Comprehension instruction also includes vocabulary instruction and instruction in the strategic processes involved in comprehending a variety of written text structures. As depicted in Figure 3, the interaction of the word-level reading and language comprehension instruction creates a synergistic or additive effect that results in learning outcomes that are greater than those that can be generated by either word-level reading or comprehension instruction alone.

Also, as depicted in Figure 3, reading instruction is surrounded by an environment that promotes and motivates learning. For example, personal reflection and goal setting and highly engaging literature are used to enhance student motivation. A final instructional element designed to increase motivation and engagement in learning is structuring classroom activities around the principles of positive classroom management techniques and cooperative learning experiences (Sprick, 2005). Finally,

The SIM Reading Program is designed to result in enhanced outcomes. Specifically, students learn the reading skills that enable them to succeed in challenging courses, to become proficient on state AYP (Adequate Yearly Progress) measures and graduate from high school, and to enroll and succeed in future education and training situations.

Against this background we will now provide a brief description of a study that describes the reading component skills of a population of urban adolescent learners. This study was conducted with the support of an Institute of Educational Sciences grant and was designed to measure adolescent reading skills in alphabetics, fluency, vocabulary, and reading comprehension.

What Do We Know About the Reading Skills of Adolescent Readers?

To test elements of the theory described above

and to verify previous hypotheses about the attributes that characterize struggling adolescent readers, a descriptive study was conducted with over 350 adolescent readers in an urban district. Specifically, the goal was to develop a profile of (a) the reading component skills adolescents have mastered, (b) which skills they have not mastered, or (c) which skills they have not mastered at a level of automaticity that enables them to deal successfully with high school reading demands (Hock, Deshler, Marquis, & Brasseur, 2005).

As an advance organizer, what we have found is that struggling adolescent readers need intensive word-level interventions. In addition, highly proficient adolescent readers have acquired both word-level and comprehension skills. Consequently, it seems likely that some struggling adolescent readers may require word-level interventions in order to make it over the fourth-grade hump (Chall, 1983; Pressley, 2002). Additionally, the application of reading comprehension strategies (e.g., vocabulary, summarization, prediction, questioning, clarifying) to a variety of text structures and types seems warranted for adolescents reading at higher levels but below what might be considered an optimal level. We believe the case for balanced instruction is strengthened by this initial analysis of the descriptive data set, particularly for adolescents who struggle with reading comprehension. A more detailed presentation of the data and the results from the preliminary descriptive study follows.

Procedures. Three hundred and fifty adolescents were recruited and administered a battery of reading skill assessments. Specifically, students were given a battery of reading assessments to determine their reading proficiency in rate, accuracy, fluency, comprehension, sight word decoding, phonemic decoding, vocabulary, motivation for reading, level of hope, listening comprehension, letter-word identification, and word attack skills.

An initial pool of 200 of these students, representing five levels of reading achievement, was analyzed: Unsatisfactory, Basic, Proficient, Advanced, and Exemplary. These five levels correspond to the proficiency levels associated with the Kansas reading Assessment, a measure of state AYP. Student placement in these Kansas Department of Education-derived categories (Kansas Department of Education, 2005) allowed us to conduct a descriptive analysis of the reading skills of different groups of readers.

Students attended two urban high schools and were in the 8.9 or 9.0 (end of 8th grade or beginning of 9th grade) grade levels at the time of assessment. The school population was made up of 52% males and 48% females. An average of the two participating high schools showed that about 70% of the students were from economically disadvantaged homes. The racial and ethnic make-up the group was as follows: 62% African-American, 7% Hispanic, 18% White, and 13% Other. Sixty-three percent of the students attending these schools were categorized as either Unsatisfactory or Basic readers. Students in the Unsatisfactory and Basic levels read at about the 850 lexile score and below.

Article I. *Measures and instruments.* Reading predictors are measures that are aligned with a reading-component framework identified in the literature as essential to the reading success of younger and adolescent readers (see Table 2). Specific measures and instruments are described below.

Table 2

Reading Predictors Aligned with Reading-Component Framework

Assessment Area	Measure
Alphabetics	
• Decoding	WLPT-R: Word Attack subtest
• Word identification	WLPT-R: Word Identification subtest
Fluency	
• Pace	Test of Word Reading Efficiency (TOWRE)
• Accuracy	Qualitative Reading Inventory (QRI)
Vocabulary	
• Expressive	PPVT III
• Reading	WLPT-R Reading Vocabulary subtest
Comprehension	
• Reading	WLPT-R Passage Comprehension subtest
• Listening	Gray Oral Reading Tests-4 (GORT-4)
	WLPT-R Listening comprehension subtest
The Learner	
• Motivation	The Motivation for Reading Questionnaire (MQR)
• Hope	The Hope Scale for Motivation
• Achievement	Scholastic Reading Inventory [1]
	Kansas State Assessment (KSA)-Reading Subtest [1]

Initial analysis of descriptive study. As expected, they were a diverse group of readers. Two assessments were used to determine overall performance on component reading skills, The Gray Oral Reading Tests-4 (Gort-4) and the Woodcock-Johnson Learning Proficiency Battery (WLPB).

The Oral Reading Quotient (ORQ) is the best measure of overall reading ability on the GORT-4. The ORQ has a standard score of 100 and a standard deviation of 15. There was the expected progression and increase of reading percentile scores from Unsatisfactory to Exemplary. For example, the Unsatisfactory category had a mean ORQ percentile score at the 1st percentile compared to a mean percentile score at the 86th percentile score for the exemplary group. While the percentile scores increased as expected, the degree of poor reading skill exhibited by the lower-skilled groups is striking. The Unsatisfactory reading group was found to read more than two standard deviations below the expected mean for adolescent readers. In addition, the word-level skills of the Basic reading group was also low. The percentile scores for rate (5th), accuracy (2nd), fluency (<1st), and comprehension (9th) suggest that students in these categories lack component reading skills across the board. That is, these students have attained proficiency in none of the reading component skills thought to be essential for successful reading. Further, while the Exemplary group had a standard score of 116 (above average) and a percentile score of 86, the ORQ for the entire group of students was at the 30th percentile, indicating that many of the students were at or near the minimal category cut points and that many of these urban youth were poor readers. Thus, as a group, the readers assessed in this descriptive study of urban adolescent readers were found to be significantly below the standard and percentile score of national norms.

In contrast, the reading subtest scores for Proficient, Advanced, and Exemplary readers reflected more balance in reading component skills. For example, their scores for rate, accuracy, and fluency were at least average (50th percentile), and often extremely high (98th percentile). Thus, for this group of adolescent readers, word-level skills in rate, accuracy, and fluency were strong. However, their comprehension scores were not as robust, ranging from the 25th percentile for the Proficient reader group to the 63rd percentile for the Exemplary group.

Performance on the Woodcock-Johnson Learning Proficiency Battery subtests for reading comprehension, listening comprehension, letter/word identification, word attack, and vocabulary confirmed the general reading profile of the adolescents assessed in this study. That is, while reading skills increased from level to level as expected, the standard scores of the Unsatisfactory and Basic level readers were significantly below expected mean scores, generally more than one standard deviation and about one standard deviation below the expected mean, respectively. These standard scores place the readers in the 8th to 19th percentile across all reading component skills assessed. These students will require a markedly different instructional focus, intensity, and balance than students in the Proficient and above groups if they are to become good readers.

A closer look at word-level skills. The results of the TOWRE assessments (designed to assess ability to decode non-words accurately and fluently) indicate that the phonemic decoding standard score for the Unsatisfactory reader group was 70.71, or two standard deviations below the expected mean standard score. The sight word efficiency standard score of 82.79 was slightly better but still more than one standard deviation below the expected mean standard score. Overall, the combined sight word efficiency and phonemic decoding standard score was 72 (3rd percentile). The Basic reading skill group's combined standard score was 80, with a percentile score at the 9th percentile. In sum, the Unsatisfactory and Basic level readers scored significantly below expected standard scores and percentile norms in word reading efficiency. If Proficient reading requires sufficient skill in word level reading, as characterized in the Adolescent Reading Model, these skill deficits must be addressed if reading comprehension achievement gaps are

to be significantly narrowed

Instructional implications: The case for responsive balanced instruction. As outlined earlier, our adolescent reading theory proposes that there are two key components of reading, word recognition and listening comprehension. Additionally, this theory stresses the complex nature of the interaction between text and reader that leads to deep understanding as described by Kintsch (1998). Since word recognition and linguistic comprehension are largely independent of each other but correlated with reading comprehension, both components must be part of a comprehensive reading program (Hoover & Gough, 1990; Stanovich, Cunningham, & Freeman, 1984). Together, these components account for much of the variance in reading proficiency in younger readers.

A key question is whether or not adolescent readers are skilled in one or both of these components. In particular, (a) are struggling adolescent readers efficient at word recognition and, therefore, need comprehension interventions to close the literacy gap; or (b) have struggling adolescent readers not acquired sufficient word-level skills and, therefore, need instruction in both word recognition and comprehension? Based on data from this descriptive study, we support the view that struggling adolescent readers from urban environments require a balanced approach to reading instruction. That is, many of these students score significantly below expected norms in both word-level skills (i.e., word reading accuracy, reading rate, decoding skills) and comprehension (vocabulary, passage comprehension, general knowledge) (Hock et al., 2005).

The adolescent reading theory defines key instructional components central to a comprehensive reading program. The next step is to determine the nature of the instruction provided to adolescents and to whether one size fits all. While the case for balanced reading is convincing (e.g., see Pressley, 2002; Pressley & Fingeret, 2005), different strategies may be used to reach this goal.

A metaphor for balanced reading. While growing up in a Western Montana mining town, the authors of this chapter had an opportunity to experience the importance of balance and to use strategies to reach balance while playing on a teeter-totter! In a wonderfully spacious and entertaining community park, the local mining company created a theme park for miners, their families, and the community at large. One of the more popular pieces of playground equipment was the teeter-totter. The teeter-totters were very large (made of 16-foot long boards) and centered over a fulcrum. In order to successfully "ride" the teeter-totter, children had to attain a certain level of balance on each end of the board. Balance was attained by distributing the same amount of weight the equidistance from the fulcrum. This required that the two riders be of equal weight and be seated at the same distance from the fulcrum on the teeter-totter. If the riders did not weigh the same, they had to alter the conditions to enable the teeter-totter to work. Because the board was not static, its position over the fulcrum could be adjusted. That is, the board could be moved so that one end of the teeter-totter was longer than the other (and therefore weighed more). The rider who weighed less would ride on the long end of the teeter-totter, allowing the extra weight of the board to compensate for his or her smaller size. Thus, individuals of different sizes and weights could use the teeter-totter without finding themselves stuck at the top of the arch with no chance of returning to the ground without jumping six feet!

Similarly, when teaching struggling adolescent readers, we must be sensitive to achieving the right kind of balance in our instruction – or, using the teeter-totter metaphor, to place the fulcrum at the right point on the board. Reading interventions, like teeter-totters, have tipping points and have to be adjusted to accommodate the varying needs of adolescent readers. That is, a reader who becomes "stuck" in the air because he or she does not have the required "weight" in a reading component can be helped and supported by shifting the fulcrum or tipping point of reading. In a sense, the "board" can be shifted to the word-level side (decoding, word recognition, fluency) for

some students while for others it needs to be shifted so the focus is on the comprehension side of the board. Struggling readers must be involved in all dimensions of reading component skill instruction to the extent that it is necessary to maintain individual balance in reading. Thus, shifting instructional balance based on individual needs allows instruction in all essential reading skills but at different levels of intensity at different times. The diverse needs of struggling adolescent readers call for varying the nature of the interventions and the intensity of the instruction (conditions) to ensure they are optimally responsive to the reading profile of the learner.

Next Steps: A Proposed Research Agenda

The list of research needs for older struggling learners is extensive. Others have outlined proposed topics for study (e.g., Curtis, 2002; Partnership for Reading, 2002; Snow, 2001; Snow and Biancarosa, 2003). Drawing upon those recommendations, we suggest the following four areas as foundational to advancing the knowledge base in this area and to enhancing the quality of practice in the classroom.

1. Conduct *descriptive and predictive studies* of struggling readers from varying populations. The Hock et al. (2005) report mentioned in this chapter focused on a poor urban environment. Descriptive studies are needed on adolescents in other environments (e.g., rural and suburban settings, predominant English Language Learner [ELL] settings, out-of-school environments) to study the effects of language and other environmental conditions on reading characteristics. Predictive studies, on the other hand, are needed to determine which reading components (e.g., fluency, vocabulary) in the theory of adolescent reading are most predictive of good reading comprehension and with which subgroups of readers. Given the size of the performance gap that needs to be closed, the escalating demands of high school curricula, and the shortage of instructional time available to bring students to a level of proficiency in core literacy skills, it is imperative that instruction be in-

formed and driven by the unique learning characteristics of the students. For this to happen, additional studies are needed to explicate the underlying reasons why students struggle in learning. While two students may score at a an equally low level on a particular scale, knowing how to instructionally best meet the needs of each can be determined by knowing the pattern of underlying skill sets that are present/lacking in each student. Well-designed descriptive studies will address the current paucity of available information on older students. These descriptive studies should not only be conducted on cognitive and attributes of adolescents but on behavioral, social, and motivational factors. Among the challenges of conducting descriptive studies on adolescent learners are the following: (a) lack of instrumentation with sufficient conceptual and technical strength to use with adolescent populations; (b) difficulty conducting longitudinal studies because of transient nature of students (especially in urban settings); and (c) a reluctance of schools to participate in research that involves additional testing of their students because of the large amounts of instructional time currently taken from students to conduct state assessments.

2. Conduct *intervention studies* to determine what combination of theory-driven reading components (e.g., decoding + prediction; questioning + summarizing + vocabulary) are needed and most effective in achieving optimal outcomes. While research suggests the merit of teaching multiple strategies (Pressley & Block, 2002), it is unclear what combination of multiple strategies should be matched with what type of learner. In addition to identifying *what* reading components should be taught to struggling learners, it is important to determine the *how* these components should be taught. In particular, the effects of various instructional methodologies and instructional conditions (e.g., amount of scaffolding, group size, opportunities for student responding, etc.) on student rates of growth

and ultimate outcomes need to be determined. Finally, a broad array of questions remain to be answered relative to how to best ensure generalization and maintenance of learned skills and strategies, how to effectively move from teacher- to student-mediated instruction, and how to engage (or re-engage) struggling adolescent learners who may find learning to read to be an aversive activity after years of failure and who question the importance or relevance of academic achievement. Among the challenges of conducting intervention studies on adolescent learners are the following: (a) finding opportunities to teach literacy skills within the structure of secondary schools – that is, many middle schools and most high schools do not have specific classes designated for literacy instruction; (b) convincing students and their parents to give informed consent to participate in research studies that are not directly related to fulfilling course requirements for graduation; and (c) having sufficient reading materials available that are highly motivating, culturally sensitive, and leveled to enable students to systematically progress from one reading level to the next as they work toward proficiency.

3. Conduct studies on *alternative literacies* (e.g., Moje, Ciechanowski, Ellis, Carrillo, & Collazo, 2004) outside of classroom and text environments to determine the effects on student outcomes. Many of the literacy demands that students encounter in school are print-based texts; whereas, out-of-school literacies are often non-print texts, media and technology-based texts. Alvermann & Heron (2001) argue that "reading comprehension is a meaning-making process involving both print and non-print texts" (p.119). Further, they suggest that "what might be easily dismissed as 'frivolous' actually involves multiple literacies embedded in complex communication practices" (p.122). These multiple literacies are seldom found in school practices, but their use in classrooms would help connect students to the world beyond the class-

room. Given that many adolescents do not see the relevance of school, alternative literacies may represent a way for teachers to make connections between things students read outside of school to their schoolwork. Some have argued that use of alternative literacies can influence student attitudes toward traditional literacies and school in general (e.g., Tannock, 2001; Witkin, 1994). In short, to compete in the global world that Friedman (2005) and others describe, adolescents must be prepared to fluently and skillfully engage in and navigate a broad array literacy forms and formats. Among the challenges of conducting studies on alternative literacies adolescent learners are the following: (a) gaining access to and maintaining contact with students involved in studies in out-of-school settings; (b) specifying operational definitions for what constitutes alternative literacies and controlling exposure to the targeted stimuli being studied; and (c) lack of instrumentation with sufficient conceptual and technical strength to use in alternative contexts.

4. Conduct *studies on assessment* to determine ways to efficiently and more precisely identify deficit areas for intervention and ways of taking formative assessment probes to monitor responsiveness to intervention. Currently, the primary source of assessment data available to secondary teachers are student results from state assessments. Clearly, such data lack the necessary specificity to guide well-informed instructional decision-making. There is a need to build and norm screening instruments that could be administered as students enter secondary school to identify the various reading needs that students have. At a minimum, such screening should give a basic measure of word analysis skills, fluency, and comprehension (the latter may not be necessary since the vast majority of students will struggle with comprehension). Further, decision rules for interpreting screening results should be clearly defined and adhered to so students get as-

signed to the kind of instruction that best matches their needs. After instruction begins, it is teachers need well-designed formative assessments that can provide efficient and reliable measurement probes that can be used to assess student responsiveness to instruction and to adjust the content and methodology of instruction. Advances are needed in this area because of the limited instructional time available to teachers to address the large number and magnitude of deficits faced by struggling readers. That is, time cannot be wasted using interventions that are not directly aligned with student needs or using interventions that are not yielding optimal gains. Well-designed assessment tools will address these needs. Among the challenges of conducting assessment studies on adolescent learners are the following: (a) articulating the conceptual framework that will serve as the basis of the assessment model; (b) designing measures that are appropriate for application in subject matter classes; and (c) designing assessments that are sensitive to and measure the unique needs of sub-populations of struggling adolescent learners (e.g., English Language Learners; disengaged learners, etc.).

The research agenda outlined above is extensive and challenging. The stakes are high from both individual quality of life and national economic competitiveness perspectives. The overriding goal we must keep in mind as we think about an adolescent research and development agenda is that adolescents must be prepared to read and to read critically so that new knowledge can be attained and creative thinking nurtured. We believe that goal is perfectly captured in the following observation about reading:

> "I'm reading a lot of poetry these days. It's about the right length. Also, poetry means thinking more than reading."

<div align="right">Michael Pressley,
September, 27, 2004</div>

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