



Supporting Struggling Readers in Content Area Learning

Devon Brenner, Ph.D.
Mississippi State University

2015

| Contents | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Contents | 2 |
| Introduction | 3 |
| Adaptive Scaffolding: Depth and Coherence, Online Scaffolds, Engaging with Content in Multiple Modes, and Motivating Content | 6 |
| Depth and Coherence | 6 |
| Online Scaffolds | 6 |
| Engaging with Content in Multiple Modes..... | 7 |
| Motivating Content | 8 |
| Strategic Scaffolding: Active Reading Strategies and Strategies for Actively Building Deeper Understanding | 8 |
| Active Reading Strategies..... | 9 |
| Strategies for Actively Building Deeper Understanding | 11 |
| Apex Learning Comprehensive Courses: Content Area Learning with Adaptive and Strategic Scaffolding | 13 |
| Adaptive Scaffolds..... | 13 |
| Strategic Scaffolds | 14 |
| Conclusion..... | 15 |
| References | 17 |

Introduction

I try to make it make sense, but sometimes I just quit.

Reading textbooks is hard because the words are big and I don't understand them, and it gets boring sometimes.

I can't read at home, and we don't have enough time in my classes to read silently.

I'm good at reading what I want to read. If I don't like it, it's very hard.

When I get to a word I don't know I try to sound it out, but sometimes I just skip the word.

When the text is hard, sometimes I give up.

These are the voices of 14- and 15-year-olds, both boys and girls, who struggle to read the texts they encounter in their content area courses at school. They describe reading and writing in academic classes as “hard” and “boring,” and they “give up” because they have few strategies to help them figure out new words or comprehend texts. And yet, academic learning in content areas requires adolescents to become proficient readers—they must be able to comprehend the texts they read, determine the meanings of unfamiliar words, make connections between ideas, draw conclusions based on the text and read closely to make informed inferences. They must do all these things even when the subject is unfamiliar and the text is difficult. Unfortunately, too many adolescents are unable to read with the proficiency necessary for success in content area learning, particularly in these days of increasingly rigorous standards. In the most recent implementation of the National Assessment of Education Progress (NAEP, see nationsreportcard.gov) one in five adolescents were not even able to read at a basic level. These students could not read with comprehension or make simple inferences. To earn a score of proficient or above on the NAEP reading assessment, students must be able to read not just to recall information but also to interpret and evaluate text. Only 36% of eighth graders scored proficient on the 2013 iteration of the NAEP reading assessment.

As might be expected based on these low levels of literacy, adolescents' content area achievement is also distressingly low, as these statistics from the most recent administrations of NAEP assessments demonstrate:

- 36% of twelfth graders in 2010 and 26% of eighth graders in 2014 scored below-basic on knowledge of civics. These students did not demonstrate even a basic understanding of American constitutional government, their rights and responsibilities as citizens of a democracy, or international issues that affect the United States. Only 24% of twelfth graders and 22% of eighth graders demonstrated proficient or advanced knowledge of civics.
- 35% of eighth graders in 2011 and 40% of twelfth graders in 2009 showed below-basic knowledge of science. Three out of ten adolescents were unable to meet new science standards requiring them to identify and use science principles, engage in scientific inquiry, and use technology to propose or critique solutions to real world problems, and they did not have even basic knowledge of Earth, physical, and life sciences. Only 32% of U.S. eighth graders in 2011 and 21% of twelfth graders in 2009 demonstrated proficient or advanced science achievement.

- 26% of eighth graders demonstrated below-basic mathematics knowledge in 2013. While this number is improving from previous tests, still nearly two thirds of eighth graders did not achieve proficient. Six out of 10 eighth graders were unable to select and use data to solve problems, communicate in mathematics, make inferences from data and graphs, or use abstract thinking to solve problems.
- 35% of twelfth graders demonstrated below-basic mathematics knowledge in 2013. These adolescents were not able to solve mathematical problems that require the direct application of concepts and procedures in familiar mathematical and real-world settings. Only 26% were able to perform at the proficient or advanced level. (NAEP, 2013)
- Only one-fourth of eighth graders and one-fourth of twelfth graders achieved at or above proficiency in writing in 2011. The 2011 writing assessment required students to use a computer to complete two tasks requiring them to persuade, explain, or convey an experience. One in five students in eighth and twelfth grade performed at the below-basic level, and were unable to effectively organize ideas, respond to the prompt, use relevant supporting details or write with appropriate grammar and mechanics.

The impact of low reading ability on content area learning is compounded by other factors that make middle and high school challenging for struggling students. High school classrooms often make use of lecture-based instruction and require students to engage in independent, outside-of-class reading. In middle and high schools, adolescents typically have a different teacher for each subject area for shorter periods of time, so students must be responsible for their own learning. Students who lack independent strategies for learning content and organizing information may struggle with this lack of support.

These challenges are compounded by the fact that many adolescents are disengaged from both school and reading (Conradi & Jang, 2013; Kirsch, DeJong, LaFontaine, McQueen, Mendelovits, & Monseur, 2002). Struggling readers may also be frustrated by the mismatch between their online lives at home—where they increasingly use technology for communication, entertainment, and learning—and the paper-and-pencil learning experiences they encounter at school (Ito, Horst, Bittanti, Boyd, Herr-Stephenson, Lange, Pascoe, & Robinson, 2008).

Content area learning is essential. Even students with below-proficient levels of literacy must be afforded opportunities to learn the same content—the same math, science, English, and social studies—as their peers who read more proficiently. The content cannot be watered down if students are to pass required graduation exams and become prepared for post-secondary learning and the workplace. Knowledge of facts, concepts and strategies for learning and understanding across content areas are important for active participation as citizens in our complex society.

Content area learning has become an increasing focus as states have adopted rigorous new learning standards that focus on understanding and solving problems and preparing for a lifetime of learning. Across the US, students are increasingly expected to engage in reading and writing of multiple genres for multiple purposes across the content areas, including a greater emphasis on reading and writing informational texts and in science, social studies and mathematics. Standards in many states require that instruction and assessment be based on grade level texts that make use of academic vocabulary to convey complex ideas. These standards require students to read to draw conclusions and evaluate ideas and to write to synthesize learning and make evidence-based arguments across the content areas. These standards are intended to help all students develop the thought processes and literacy

proficiency they need to become engaged citizens and to continue in postsecondary education and the workplace with success. These greater literacy demands can present challenges for students who struggle with reading and writing. Schools are increasingly searching for ways to adapt instruction so that adolescents who struggle with reading and writing have access to the content of grade-level text and the important content area learning they need.

There is no cookie-cutter answer to the dilemma of content area students with low literacy achievement. Not all students struggle with reading and writing for the same reasons (Buly & Valencia, 2002; Valencia & Buly, 2004). Some have difficulty because they have limited vocabulary knowledge. Others struggle with comprehension processes such as making inferences and synthesizing across multiple sources. Motivation and difficulty decoding can also contribute to limited literacy proficiency.

Because students bring individual challenges to the classroom, it is important to differentiate instruction. Differentiating instruction means changing the pace, format, or content of instruction on the basis of a student's strengths, weaknesses, needs, and interests (Heacox, 2001). By differentiating instruction, schools provide carefully designed instruction tailored to students' particular needs. Differentiation also means that the supports are provided to assist students who struggle with reading and writing do not hinder more accomplished students who may not need them. One model for differentiating instruction is Response to Intervention (Fuchs & Fuchs, 2006). With the Response to Intervention model (RTI), schools first carefully monitor students' academic progress in regular classroom instruction. Specific, individualized interventions of increasing duration and explicitness are developed for those students who do not make adequate progress. These interventions should be based on careful assessment of students' particular learning needs and lead to differentiation of instruction.

Online learning, in particular, can provide support for struggling readers and allow schools to provide instruction in flexible, differentiated ways. Online learning contexts can also provide resources for RTI interventions. In a review of research, Hiebert, Menon, Martin, and Bach (2009) showed that online contexts support adolescents' learning, including the learning of students who struggle with literacy, because they can be designed to be more engaging, accessible, and connected than many traditional learning contexts.

In particular, online contexts can provide scaffolds for learners that allow for differentiation of instruction based on students' learning needs. Scaffolds are supports that are provided to help students learn content, and scaffolds help students to acquire cognitive strategies that support future learning (Wood, Bruner, & Ross, 1976). As students work toward mastery, the level of scaffolding can be gradually reduced. Online contexts can provide two types of scaffolding: adaptive and strategic (Hiebert, Menon, Martin, & Bach, 2009).

Adaptive scaffolds are changes to content or texts that make them more accessible, such as, for example, when texts are designed to be more readable through the number of ideas presented on each page. Adaptive scaffolds can also take the form of features of the learning environment that students are able to manipulate as needed in order to access learning, such as text-to-speech support that allows students to hear texts they would otherwise be unable to read or graphic organizers to guide their reading.

Strategic scaffolds support students in acquiring and using strategies to support their own learning, both in the immediate context and in learning situations far beyond. Proficient learners integrate and apply a variety of reading and learning strategies, such as asking

themselves questions, summarizing as they read, and rereading to clarify meaning. Strategic scaffolding teaches students how and when to use these mental strategies and supports learners' use of strategies as they engage with the materials.

While both adaptive and strategic scaffolds may be provided in traditional learning contexts, online contexts allow scaffolds to be designed for and built into the learning context and for scaffolds to be flexibly utilized in order to differentiate instruction (Hiebert, Menon, Martin, & Bach, 2009). This white paper describes adaptive and strategic scaffolds that research has shown to support the academic content area learning of adolescents who struggle with reading.

Adaptive Scaffolding: Depth and Coherence, Online Scaffolds, Engaging with Content in Multiple Modes, and Motivating Content

While it is imperative that struggling readers and writers learn the same standards-based content as their peers, they cannot learn that content if the texts they are required to read are far beyond their capabilities. Adaptive scaffolding provides students with access to the content and skills they are supposed to be learning and the grade-level texts they need to be reading. Adaptive scaffolding does not mean watering down the content, but rather designing supports for reading those texts so that readers can access the content and concepts they need. Adaptive scaffolds described here include creating depth and coherence, providing online scaffolds to support learning, engaging with content in multiple modes, and providing motivating contexts that engage students in reading and learning.

Depth and Coherence

Pick up nearly any secondary textbook, and you find that the text attempts to be all things for all people, covering not only the major concepts, but also providing a wide variety of nonessential information, some of it quite trivial. Struggling readers have difficulty sorting out the essential from the less important information. If an equal number of words are given to George Washington's wooden teeth and to the First Congressional Congress, struggling adolescents may not be able to determine which of these ideas is most important to remember.

Depth of coverage may make texts more accessible. When the text is focused on central issues and ideas, students begin to build depth of understanding that allows them to make inferences and analyze ideas, which in turn makes the text more engaging. Depth can also be present when key ideas or concepts are repeated across multiple contexts and with increasing complexity so that understanding grows over time (Bransford, Brown, & Cocking, 2000).

Coherence also supports students' reading. When all of the concepts on a page are related to one another in a concise, cohesive text, struggling readers may have an easier time comprehending the material (McNamara & Shapiro, 2005). Struggling readers can be easily distracted by extraneous information that is not central to the key ideas being presented. In online contexts, limiting the number of links per page can affect comprehension (Dee-Lucas & Larkin, 1999).

Online Scaffolds

Online contexts offer a variety of tools that provide adaptive scaffolds for struggling readers. Users can access these features on an as-needed basis in order to support comprehension and learning. Online scaffolds include text-to-speech voiceovers, vocabulary rollovers, links and connections, graphic organizers, and the presentation of information through multiple modes.

Vocabulary rollovers

Rollovers can provide definitions, examples, and pronunciations of unfamiliar vocabulary words that support struggling readers (Reinking & Rickman, 1990). Putting the definition right there on the page might be distracting (think of all those footnotes or margin notes that many struggling readers ignore when they are reading Shakespeare). Rollovers provide a tidy technological solution. Students can roll the cursor over just those words that they need defined without losing their place in the text.

Links and connections

Hypertext links and connections between pages and between ideas, including rollovers that provide additional information, can also provide support for struggling readers. Links and connections can provide any knowledge students need to comprehend a particular passage. Connections can allow users to jump back to previously presented information or to present background information they may lack. Links can also help learners build connections between ideas. Students learn more and are more engaged when they see and are helped to make connections between ideas (Hiebert, Menon, Martin, & Bach, 2009).

Graphic organizers

Graphic organizers serve several functions that can support reading comprehension and content area learning (Frey & Fisher, 2007). Graphic organizers can provide a visual representation of the content that helps students to organize learning in their minds. Students can complete graphic organizers as a way of organizing information, taking notes, and synthesizing information from multiple sources. Students can also use graphic organizers for pre-writing and for multi-step mathematical computations. While graphic organizers can be used in paper-based contexts, online contexts allow for interaction, feedback, and prompting that can support students' use of graphic organizers.

Engaging with Content in Multiple Modes

Struggling readers are supported when they engage with content in multiple modes. This includes both encountering content in multiple genres and formats that are mutually reinforcing, and communicating about content area learning orally and in writing to help clarify and deepen learning.

Content Presentation

When carefully, simply, and coherently designed, multiple modes of presenting content can support struggling readers' learning and comprehension (Hiebert, Menon, Martin, & Bach, 2009). Representing content with multiple formats of text (e.g., story, narrative, discussion, case) and in multiple modes (e.g. text, images, graphs and tables, video) can support deeper comprehension. Online contexts can combine text, sounds, visual images, video, voiceovers, and other ways of representing key concepts to support student learning. Each of these modes of representation highlights different aspects of the content and therefore may provide a richer, deeper explanation of the ideas. Multiple modes of presenting ideas can provide support for English language learners, in particular, because they use non-linguistic cues to support concept and vocabulary building.

Writing and Discussing to Learn

Students who struggle with literacy can benefit from engaging with content through multiple modes including discussion and writing. Engaging in discussion about content can

provides students with opportunities to represent their understanding and support students in asking questions and clarifying meaning and (Rivard & Straw, 2000). Students who write about what they read develop a deeper understanding of the text and remember more about the content (Graham & Herbert, 2010). A variety of modes of writing support learning. Shorter, informal writing tasks such as summaries, responses, notes and written answers to questions can provide learners with opportunities to engage with ideas and clarify understanding that support comprehension and recall. More formal writing assignments such as essays, arguments or papers that require synthesis across multiple texts and representations and application of knowledge support meaningful learning (Bransford, Brown, & Cocking, 2000).

Motivating Content

Motivation refers to a willingness to take on a particular task or activity (Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008). Adolescents, particularly struggling readers, may become less motivated over time, particularly if they have repeated failures in school (Harter, Whitesell, & Kowalski, 1992). When the task is perceived as overwhelming, adolescents with a history of school failure may be unwilling to engage in the hard work of trying to learn academic subjects (Alvermann, 2004). External incentives and admonitions to achieve rarely motivate students (Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008). Instead of external influences, what adolescents find motivating is engagement (Guthrie, 2008).

Struggling adolescents are more likely to engage in reading and learning when the content is shown to be related to their own lives, when the text makes a real-world connection to their concerns and interest, or when they are interested in the content (Guthrie, 2008; Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008). Agency supports engagement as well. When they feel that they have some control over their own learning and some likelihood of success in the task, they are more likely to persevere.

Early success and meaningful feedback can provide students with ongoing motivation to engage with the learning task. This is especially true when that feedback focuses on things students have control over, such as achievement and the process of learning, as opposed to intrinsic qualities that students do not control, such as intelligence, or to focusing solely on the outcome (getting the answer correct) (Alvermann, 2004; Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008).

Students also feel a greater sense of agency when they have some choice in the task. When students have some power to make decisions about their learning, they may have a greater sense of ownership and responsibility and may therefore be more engaged (Deci & Ryan, 1985; Guthrie & McCann, 1997).

Strategic Scaffolding: Active Reading Strategies and Strategies for Actively Building Deeper Understanding

Proficient readers are active readers. They actively work before, during, and after reading to make sense of the text, using mental strategies to comprehend and learn. Unfortunately, too many adolescents are passive readers; they run their eyes over the letters on the page just hoping some of the meaning will make itself known, and they skip over unfamiliar words, hoping they can scrape by.

Passive readers can become active readers by being taught to engage in strategies that support active reading and the development of deeper understanding (Duffy, 2002; NICHD, 2000; Pressley, 2000). These strategies can be taught through a process often called “guided release of responsibility” (Pearson & Gallagher, 1983). The first step of strategy instruction is the explanation and modeling of the strategy. Modeling is often done through a think-aloud exercise or a demonstration of the strategy being used in the reading of real text. The next step is for the student to try using the strategy through guided practice with feedback. Once the student can flexibly apply the strategy independently during reading, the supports and feedback are removed (Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008).

Active Reading Strategies

Eight active reading strategies have been shown to be powerful strategic scaffolds for increasing students’ comprehension and learning.

Accessing prior knowledge

In order to comprehend, readers must access their prior knowledge; that is, they must make connections between what they already know and what they are reading (Rumelhart, 1980). When readers associate new knowledge with something they already know, it becomes easier to learn and retrieve the knowledge again in different contexts. Students comprehend more when, as they read the text, they call up in their minds the concepts and vocabulary they already know (Spires & Donley, 1998). During reading, readers should continue to make connections between the content of what is read and their life experiences and knowledge of the subject.

Making connections to prior knowledge during reading helps readers to understand the text and to know what to focus on while reading; it can also motivate and support engagement in the text—which keeps us reading on (Armbruster, Lehr, & Osborn, 2001; Harvey & Goudvis, 2000). In classrooms, teachers often do this for students, asking questions that require students to think about relevant background knowledge. However, active and proficient readers must learn to activate and access prior knowledge on their own every time they read.

Making and revising predictions

Active readers make predictions both before and during reading. Predictions support comprehension because they get readers actively thinking about what they are reading and foster engagement in the text, encouraging readers to read on to find out if their predictions are confirmed (Gunning, 2006). Predictions do not always have to be correct. Proficient readers constantly revise their predictions based on continued reading. Predictions, however, are not just guesses; proficient readers make predictions based on background knowledge and evidence from the text.

Using text features and visual cues

Text features and visual cues are items on the page that active readers use to gain access to the ideas in the text and to support comprehension (Kerper, 1998). Content area texts, in particular, are rife with visual cues that authors place on the page in order to support meaningful reading.

Headings and subheadings can provide readers with a sense of the organization of a passage before and during reading. Bolded text and italics help readers know what terms

to pay attention to and which ideas are most important. Captions explain more about the photographs and illustrations, which are included to provide visual information that cannot be conveyed by written text. Graphs, charts, text boxes, timelines, and other visual cues all provide information that can be presented more concisely in a visual form than in text.

Struggling readers often do not attend to these visual cues (Strickland, Ganske, & Monroe, 2002) and may need explicit support in learning to use visual clues to assist in reading and learning.

Making inferences

Struggling readers are often very literal readers. They pay close attention to the literal meanings of words (Westby, 1999) but may fail to draw conclusions, read between the lines, or think critically about what they read. Active readers, however, read more deeply because they make inferences as they read, blending together the information on the page and the background knowledge they possess in order to draw conclusions or to “read between the lines” (Gunning, 2006). No text can be 100% transparent, and much of the meaning in any text is implied. Making inferences is essential to meaningful comprehension of content area text. Struggling readers can become more proficient at making inferences through explicit modeling and instruction in inference-making (Hanson & Pearson, 1982).

Asking questions

One of the most powerful strategies that support reading comprehension is asking (and answering) questions (Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008). Asking questions serves several purposes (Harvey & Goudvis, 2000). Asking questions engages the reader, encourages continued reading, and helps students to pay attention to whether they are comprehending the text and to gain a deeper understanding of the text.

Typically in school, teachers ask students questions about the text. When those questions are well-crafted and focus on higher-order thinking, having students answer questions can support comprehension by helping them attend to key ideas and inferences (Strickland, Ganske, & Monroe, 2002; Allington, 1983). However, students also need to be taught how to ask and answer their own questions in order to become independent active readers who can comprehend on their own, and who think about the text as they read (Harvey & Goudvis, 2000).

Making mental images

Active readers make mental images as they read, that is, they construct visual and other sensual images in their minds that are evoked by the text, picturing the sights, sounds, and situations being described. For some passages, making mental images is the best way to understand the text, such as a description of a particular battle or a math problem about perimeter (Gunning, 2006). Making mental images fosters engagement by making the text more interesting and helps students make predictions, develop inferences, and summarize the text, thereby increasing comprehension (Gambrell & Javitz, 1993).

Monitoring (and repairing meaning)

Active readers actively monitor their own comprehension when they pay attention to whether the text makes sense as they read. If the text stops making sense, active readers deliberately apply fix-up strategies that help them repair meaning (Gunning, 2006). They

may slow down, go back to the last place the text made sense and re-read, ask themselves questions in order to figure out the meaning of what they are reading, or keep reading to see if the text explains what does not yet make sense.

Struggling readers often do not monitor for comprehension or know when or how to apply fix-up strategies. However, monitoring and fix-up strategies can be taught through instruction that focuses on the metacognition (thinking about thinking) that good readers use (Armbruster, Lehr, & Osborn, 2001; Duffy et al., 1987).

Summarizing

Summarization also supports comprehension. Active readers summarize during and after reading by determining the main idea and supporting details (Hidi & Anderson, 1986; Pressley, Johnson, Symons, McGoldrick, & Kurtia, 1989). Summarizing allows students to determine the relative importance of ideas as they read and to attend to only the most important concepts. Summarization also supports monitoring for comprehension—when readers briefly summarize at the end of a page or section, they know that the text is making sense and make stronger connections between ideas.

These eight active reading strategies support reading comprehension in any content area. All eight active reading strategies can help students understand and learn from the texts they encounter in science, social studies, English, and mathematics. However, there are some differences in the types of texts and the ways in which active reading strategies get applied in each domain. Students are more likely to read a timeline or a primary source in social studies, to read stories and poems in English, to need to interpret a pie chart or a research report in science, or to read word problems in mathematics. Teaching students how to read the particular texts of each domain can support both literacy achievement and content area learning. Literacy strategy instruction should continue throughout middle and high school and should be embedded in the instruction in all content areas (Dieker & Little, 2005).

Strategies for Actively Building Deeper Understanding

In addition to active reading strategies, students can be taught to engage in practices that help them to actively build deeper understanding of the text and be more thoughtful about what they read (Allington, 2011). These include strategies for figuring out the meanings of academic vocabulary, engaging in close reading of complex texts, and developing understanding through composing arguments.

Vocabulary Strategies

One of the most challenging aspects of content area learning is the vocabulary that is written in content area texts. Many struggling readers possess limited vocabularies and so are challenged by grade level and content area reading—it is difficult to learn a new concept when you do not already know the meanings of the words being used to define it. This may be particularly true for English language learners who are learning both new concepts in their content area courses and English words for concepts they already know in their first language (Carlo, 2007; Klingner & Vaughn, 2004).

From grades 3 through 9, students encounter approximately 88,500 unique words in the texts that they read at school (Carroll, Davies, & Richman, 1971; Nagy & Anderson, 1984). Out of that vast number of unique words, however, is a relatively manageable corpus of high-frequency, often-repeated words that comprise the bulk of academic texts (Zeno,

Ivens, Millard, & Duvvuri, 1995; Hiebert, 2007). Slightly fewer than 1,000 words make up the majority of words that students are expected to read at school, accounting for 62%-69% of texts read in grades 9-10. Slightly fewer than 1,000 words make up the majority of words that students are expected to read at school, accounting for 62%-69% of texts read in grades 9-10. Struggling adolescents can be supported by direct instruction in these core academic words, by repeated opportunities to read these key words in context, and by learning to actively make use context to determine what meaning is appropriate for a particular text (Hiebert, 2007; Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008). If students can become proficient with these high-frequency words, they can often use semantic knowledge and context to figure out the unfamiliar and more rare words they encounter. One of the most powerful vocabulary strategies for struggling readers is to learn to use context to determine word meanings (Kamil, Borman, Dole, Kral, Salinger, & Torgeson, 2008).

Context can mean both the text that surrounds the word and visual cues such as illustrations and other graphics. Active, proficient readers use context to figure out the general meaning of a word, to determine which of multiple possible meanings of a word is the right one, and to comprehend the passage being read. Explicit instruction in how to use context to determine word meaning can boost students' vocabulary knowledge and comprehension (Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003).

Close reading

Readers engage in close reading when they engage in sustained, careful reading of relatively shorter, denser text in order to understand the text in a more complex way. Close reading generally involves the use of multiple active reading strategies. When students engage in close reading tasks, they read and reread the text multiple times for a particular purpose or focus on different aspects of text (getting the gist, drawing conclusions, reading for evidence, considering the way the text is written and its impact, etc.) in order to make more informed inferences about what they are reading (Beers & Probst, 2012). Close reading activities ask readers to use both evidence from the text and prior knowledge to make better, more informed inferences and to examine the text from multiple points of view. As they engage in close reading, students generally monitor their understanding and develop a deeper understanding both of the text and the power of the reading process to foster deeper comprehension. In these ways, close reading reinforces the use of active reading strategies and also becomes an active strategy for constructing deeper meaning of text, particularly dense text or text that is open to interpretation. Tasks that scaffold students' close, repeated reading can help them learn to be more thoughtful and critical independent readers.

Constructing arguments

As has already been discussed, writing about text can support comprehension. In particular, many states' new standards require students to engage in writing to use evidence to support an argument (Monte-Sano, De La Paz, & Felton, 2014). Assignments that focus on developing arguments foster critical thinking necessary to actively build deeper understanding of text and at the same time help students understand the structure of texts and develop ways to think about the discipline they are learning (Kuhn, 2010). Assignments that focus on argument require students to read and reread texts and understand concepts. Students must compare and contrast ideas and to synthesize

information from multiple sources in order to develop a point of view. Students learn to use evidence to support a claim and read texts in order to evaluate the quality of information and argument they have presented. Teaching argument can also help students understand the structure of the disciplines and to understand how claims are made and supported. In these ways, teaching students to engage in argument can support the use of active reading strategies and writing to construct deeper understanding of texts and to engage as active thinkers and learners beyond the immediate context.

Apex Learning Comprehensive Courses: Content Area Learning with Adaptive and Strategic Scaffolding

Apex Learning’s comprehensive courses have been designed to provide adolescents who struggle with reading with the scaffolding they need in order to master rigorous academic content and become active learners. They teach all of the standards-based content required in English, mathematics, social studies, and science using grade-level texts. However, to meet the needs of struggling adolescents, the courses provide opt-in adaptive scaffolding that makes the content accessible, as well as opt-in strategic scaffolding to support adolescents in becoming active readers and learners. These scaffolds can be flexibly utilized to differentiate instruction, so that more advanced students can accelerate through the courses, and students who master active learning and reading strategies can make less frequent use of scaffolds and supports as they are ready. Students who engage in these courses will learn the content and master the standards required in new state standards. They will also learn strategies to support independent learning long after the course is complete.

Adaptive Scaffolds

Depth and Coherence

Apex Learning’s Comprehensive Courses provide depth and coherence. The courses are structured so that key ideas and concepts are repeated and reinforced. Major ideas are represented in multiple times in multiple modes (e.g., print, video) and in different contexts so that students are provided with multiple opportunities to engage with key content in order to clarify, extend understanding, and apply their learning. Coherence is supported across multiple courses by providing a structure that supports learning. Within each single course and across all of Apex Learning’s comprehensive courses, lessons and units are structured in similar ways. This structure allows students to focus on learning content and strategies rather than navigation of the online environment.

Online Scaffolds

Comprehensive courses provide opt-in adaptive scaffolds that make the content accessible and all students can opt into scaffolds and supports that are built directly into the instruction. These scaffolds help students to be able to read the text and learn the material. Learning supports that provide access to the text include text-to-speech voiceovers allow students to choose to listen to the text when they need to and vocabulary rollovers that provide meanings of words. Support Cards are links to available support that appear throughout each course and that provide scaffolding in a number of ways. Reading Support Cards reinforce strategy learning and help with comprehension of each page by coaching students in applying appropriate active reading strategies. Rediscover Support Cards provide remediation, if students need it, to help learners be successful on a particular page. This can include reminding students about what they have already learned or providing

necessary background information that students need in order to comprehend the current page. Check It Out Support Cards provide interesting facts related to the content. Graphic organizers, including study sheets, writing prompts, and interactive pages, provide support for note taking and for organizing and understanding the relationships between ideas. These online scaffolds are flexible and adaptable—students can access these features only if and when they need them.

Engaging with Content in Multiple Modes

Comprehensive Courses present key content in multiple modes. Key content is presented in multiple modes with video clips, animations, sound, and graphics to enhance and support the written text. Interactive media allow students to engage with concepts at their own rate and to revisit ideas in multiple forms. Writing to learn activities are woven into courses in multiple ways. Students are provided with opportunities to engage in both formal and informal writing about key concepts. These include journals, study guides, formal writing assignments.

Motivating Content

Special care has been taken to present content in an engaging way. Connections to real-world issues and students' lives are made throughout each course, helping students understand the relevance of the content. The content itself is rich and intriguing. In addition, frequent feedback that focuses on both learning and learning processes also support student engagement

Strategic Scaffolds

Strategic scaffolding takes the form of explicit instruction in active reading strategies including both modeling of strategy use and reminders to use particular strategies that are appropriate for given texts and tasks. These strategies are built into each course to support success within the individual course, but they serve a greater purpose as well. As the courses foster active reading strategies, they help students to develop independent strategies for reading with comprehension that they can use to enhance learning in future courses, both online and in face-to-face classrooms.

Active reading strategies

Comprehensive Courses provide support to help students develop active reading strategies and model and support students' development of ways of thinking and approaching texts. The eight research-based active reading strategies are explicitly taught: accessing prior knowledge, making and revising predictions, using text features and visual cues, making inferences, asking questions, making mental images, monitoring (and fixing up), and summarizing. The active reading strategies are also reinforced throughout each course in a number of ways. The strategies are modeled multiple times so that students can learn how the strategies are used in each particular domain. Study guides coach students in applying active reading strategies. Reading Support Cards already discussed prompt students to apply appropriate reading strategies throughout the direct instruction.

Fostering the Development of Deeper Understanding

Comprehensive courses are designed to help students master content area learning and to meet more rigorous state standards that focus on both teaching content and teaching students to become active learners who can construct deeper understanding of texts.

Standards adopted by many states ask students to develop the strategies of the active learner who can engage independently with complex texts of multiple modes and multiple genres and build understanding within and across texts. Comprehensive courses work to foster several strategies that help students engage in the development of deeper understanding, including fostering strategies for learning vocabulary, supporting the close reading of texts, and understanding and engaging in argument.

Vocabulary strategies

Comprehensive courses explicitly teach vocabulary strategies so that students can become independent readers who know many words and who can figure out the meanings of unfamiliar words. Repetition and explicit teaching of academic words and key content area terms support word learning. Students are also taught to determine the meanings of academic words by using reference tools, such as online dictionaries, and are explicitly taught to use context to determine word meanings or the right definition of multiple-meaning words. Less-frequent academic words and key terms are written in a colored font. Students can use this color-coding to decide when and how often to use the rollover feature for support with definitions and pronunciation of these words.

Close reading

Comprehensive courses teach students to engage in close reading in order to construct deeper understanding of complex texts. Units build in opportunities to revisit select passages at regular intervals so that students are directed to read and reread particular passages or selections and are directed to read for a particular purpose. Analytical and research writing assignments direct students to give texts close readings, for example, in order to make inferences or to evaluate the credibility of a researched source. Students engage in close reading in mathematics when they are asked to reread problems and to highlight key words that help them focus on the problem and develop an approach to its solution. In these ways, comprehensive courses both require close reading and teach students the analytical process that close readings support so they can engage in these strategies beyond the immediate course.

Argument

Comprehensive courses teach students to engage in argumentative discourse. Learners are taught to make claims and support those claims with supporting evidence when they write analytical and argumentative essays about the texts they read. They are shown how to develop a thesis and support that thesis with logical arguments based on careful reading of the text. Across the content areas, including in mathematics, students are provided with tasks that require them to explain and elaborate on their reasoning and to support ideas and claims with evidence study guides. These include graphic organizers, journal prompts, and tasks such as constructing hypothetical arguments to support or reject conjectures. These activities encourage students to develop deeper understanding of the content and of the structure of the disciplines of mathematics, science, social studies and English.

Conclusion

Comprehensive courses have been designed to meet the needs of all students, and have a wide variety of features and opt-in scaffolds to support adolescents who may struggle with content area learning. For those students with basic and below-basic literacy achievement, Apex Learning's comprehensive courses provide powerful, research-based adaptive and strategic

scaffolds that allow access to the content and support students in becoming active learners. For these students, the courses provide resources for differentiating learning, for Response to Intervention, and for motivating students who are struggling in content area courses to achieve.

References

- Allington, R. L. (1983). The reading instruction provided readers of differing abilities. *The Elementary School Journal*, 83, 548-559.
- Allington, R. (2011). *What really matters for struggling readers: Designing research based programs* (3rd Ed.). Boston: Allyn and Bacon.
- Alvermann, D. E. (2004). Effective literacy instruction for adolescents. *Journal of Literacy Research*, 34, 189-208.
- Armbruster, B. B., Lehr, F., & Osborn, J. (2001). *Put reading first: The research building blocks for teaching children to read*. Washington, DC: Partnership for Reading, a collaborative effort of the National Institute for Literacy, the National Institute of Child Health and Human Development, and the U.S. Department of Education.
- Beers, K. & Probst, R. (2012). *Notice and Note: Strategies for Close Reading*. Portsmouth, NH: Heinemann.
- Baumann, J. F., Edwards, E. C., Boland, E. M., Olejnik, S., & Kame'enui, E. (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.
- Bransford, J., Brown, A., & Cocking, R. (Eds.). (2000). *How people learn: Brain, mind, experience, and school* (expanded edition). Washington, DC: National Academy Press.
- Buly, M. R., & Valencia, S. W. (2002). Below the bar: Profiles of students who fail state reading assessments. *Educational Evaluation and Policy Analysis*, 24, 219-239.
- Carroll, J. B., Davies, P., & Richman, B. (1971). *The American Heritage word frequency book*. Boston: Houghton Mifflin.
- Carlo, M. (2007). Best practices for literacy instruction for English-language learners. In L. B. Gambrell, L. M. Morrow, & M. Pressley (Eds.), *Best practices in literacy instruction* (3rd Ed.), (pp.104-126). New York: Guilford.
- Conradi, K., Jang, B. G., Bryant, C., Craft, A., & McKenna, M. C. (2013). Measuring adolescents' attitudes toward reading: A classroom survey. *Journal Of Adolescent & Adult Literacy*, 56(7), 565-576. doi:10.1002/JAAL.183
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Springer.
- Dee-Lucas, D., & Larkin, J. H. (1999). Hypertext segmentation and goal compatibility: Effects on study strategies and learning. *Journal of Educational Multimedia and Hypermedia*, 8(3), 279-313.
- Dieker, L. A., Little, M. (2005). Secondary reading: Not just for reading teachers anymore. *Intervention in school and clinic*, 40(5) 276-283.
- Duffy, G. G. (2002). The case for direct explanation of strategies. In C. C. Block & M. Pressley (Eds.), *Comprehension instruction* (pp. 28-41). New York: Guilford Press.
- Duffy, G., Roehler, L., Sivan, E., Rackliffe, G., Book, C., Meloth, M., Vavrus, L., Wesselman, R., Putnam, J., & Bassiri, D. (1987). The effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly*, 22, 347-367.
- Frey, N., & Fisher, D. (2007). *Reading for information in elementary school: Content literacy strategies to build comprehension*. Upper Saddle River, NJ: Pearson.
- Fuchs, D., & Fuchs, L. (2006). Introduction to response to intervention: What, why, and how valid is it? *Reading Research Quarterly*, 41(1), 92-99.
- Gambrell, L. B., & Javitz, P. B. (1993). Mental imagery, text illustrations, and children's story comprehension. *Reading Research Quarterly*, 28, 264-276.

- Graham, S., & Herbert, M. A. (2010). *Writing to read: Evidence for how writign can improve reading: A Carnegie Corporation Time to Act Report*. Washington, DC: Alliance for Excellent Education.
- Gunning, T. G. (2006). *Creating literacy instruction for all students in grades 4-8*. Boston: Pearson.
- Guthrie, J. T. (Ed.). (2008). *Engaging adolescents in reading*. Thousand Oaks, CA: Corwin Press.
- Guthrie, J. T., & McCann, A. D. (1997). Characteristics of classrooms that promote motivations and strategies for learning. In J. T. Guthrie & A. Wigfield (Eds.), *Reading engagement: Motivating readers through integrated instruction* (pp. 128-148). Newark, DE: International Reading Association.
- Hanson, J., & Pearson, P. D. (1982). *Improving the inferential comprehension of good and poor fourth-grade readers* (Report No. CSR-TR-235). Urbana: University of Illinois, Center for the Study of Reading (ERIC Document Reproduction Service No ED 215-312).
- Harter, S., Whitesell, N. R., & Kowalski, P. (1992). Individual differences in the effects of educational transition on young adolescents' perceptions of competence and motivational orientation. *American Educational Research Journal*, 29(4), 777-807.
- Harvey, S., & Goudvis, A. (2000). *Strategies that work: Teaching comprehension to enhance understanding*. Portland, ME: Stenhouse.
- Heacox, D. (2001). *Differentiating instruction in the regular classroom: How to reach and teach all learners, grades 3-12*. Minneapolis, MN: Free Spirit Publishing.
- Hidi, S., & Anderson, V. (1986). Producing written summaries: Task demands, cognitive operations, and implications for instruction. *Review of Educational Research*, 56, 473-493.
- Hiebert, E.H. (2007). The Word Zone Fluency Curriculum: An Alternative Approach. In M. Kuhn & P. Schwanenflugel (Eds.), *Fluency in the Classroom* (pp. 154-170). New York: Guilford.
- Hiebert, E. H., Menon, S., Martin, L. A., & Bach, K. E. (2009). *Online scaffolds that support adolescents' comprehension*. Seattle, WA: Apex Learning.
- Ito, M., Horst, H., Bittanti, M., Boyd, D., Herr-Stephenson, B., Lange, P. G., Pascoe, C. J., & Robinson, L. (2008). *Living and learning with new media: Summary of findings from the digital youth project*. Chicago, IL: The John D. & Catherine T. MacArthur Foundation. Retrieved on March 9 from <http://digitalyouth.ischool.berkeley.edu/report>.
- Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., and Torgeson, J. (2008). *Improving adolescent literacy: Effective classroom and intervention practices: A practice guide* (NCEE #2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from <http://ies.ed.gov/ncee/wwc>.
- Kerper, R. M. (1998). Choosing quality nonfiction literature: Features for accessing and visualizing information. In R. A. Bamford & J. V. Kristo (Eds.), *Making facts come alive* (pp. 55-74). Norwood, MA: Christopher Gordon.
- Kirsch, I., DeJong, J., LaFontaine, D., McQueen, J., Mendelovits, J., & Monseur, C. (2002). *Reading for change: Performance and engagement across countries: Results from PISA 2000* (Publication No. ED474915). Washington, DC: U.S. Government Printing Office.
- Klingner, J. K., & Vaughn, S. (2004), Strategies for struggling second-language readers. In T. L. Jetton & J. A. Dole (Eds.), *Adolescent literacy research and practice* (pp. 183-209). New York: Guilford.
- Kuhn, D. (2010). Teaching and learning science as argument. *Science Education* (94)5, 810-824. DOI: 10.1002/sce.20395
- McNamara, D. S., & Shapiro, A. (2005). Multimedia and hypermedia solutions for promoting metacognitive engagement, coherence, and learning. *Journal of Educational Computing Research*, 33(1), 1-29.

- Monte-Sano, C., De La Paz, S., & Felton, M. (2014). *Reading, Thinking and Writing about History: Teaching Argument Writing to Diverse Learners in the Common Core Classroom, Grades 6-12*. New York: Teachers College Press.
- Nagy, W. E., & Anderson, R. C. (1984). How many words are there in printed school English? *Reading Research Quarterly, 19*, 304-330.
- National Assessment of Education Progress (NAEP). (2015). *The Nation's Report Card*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. <http://www.nationsreportcard.gov>
- National Institute of Child Health and Human Development (NICHD). (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* (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office.
- Pearson, P. D., & Gallagher, M. (1983). The instruction of reading comprehension. *Contemporary Educational Psychology, 8*, 317-344.
- Pressley, M. (2000). What should comprehension instruction be the instruction of? In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. III, pp. 546-561). Mahwah, NJ: Lawrence Erlbaum Associates.
- Pressley, M., Johnson, C. J., Symons, S., McGoldrick, J. A., & Kurita, J. A. (1989). Strategies that improve children's memory and comprehension of what is read. *Elementary School Journal, 90*, 3-32.
- Reinking, D., & Rickman, S. S. (1990). The effects of computer-mediated texts on the vocabulary learning and comprehension of intermediate-grade readers. *Journal of Reading Behavior, 22*, 395-411.
- Rivard, L.P. & Straw, S.B. (2000). The effect of talk and writing on learning science: An exploratory study. *Science Education 84*(5), 566-593.
- Rumelhart, D. E. (1980). Schemata: The basic building blocks of cognition. In R. Spiro, B. Bruce, & W. Brewer (Eds.), *Theoretical issues in reading comprehension*, (pp. 33-58). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Spires, H. A., & Donley, J. (1998). Prior knowledge activation: Inducing engagement with informational texts. *Journal of Educational Psychology, 90*, 249-260.
- Strickland, D. S., Ganske, K., & Monroe, J. K. (2002) *Supporting struggling readers and writers: Strategies for classroom intervention 3-6*. Portland, ME: Stenhouse.
- Valencia, S., & Buly, M. R. (2004). Behind test scores: What struggling readers really need. *The Reading Teacher, 57*(6), 520-531.
- Westby, C. E. (1999). Assessing and facilitating text comprehension problems. In H. W. Catts and A. G. Kamhi (Eds.), *Language and reading disabilities* (pp. 154-223). Boston: Allyn & Bacon.
- Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Psychology and Psychiatry, 17*, 89-100.
- Zeno, S. M., Ivens, S. H., Millard, R. T., & Duvvuri, R. (1995). *The educator's word frequency guide*. New York: Touchstone Applied Science Associates, Inc.

