Annual Review of Applied Linguistics (2004) **24**, 44–69. Printed in the USA.
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DOI: DOI: 10.1017/S0267190504000030

3. RESEARCH ON TEACHING READING

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This chapter builds on prior reviews of reading theory, research, and assessment published in the *Annual Review of Applied Linguistics* and uses them and additional current research to develop a set of 10 instructional implications for second language reading. The review draws upon both L1 and L2 research to demonstrate support for instructional approaches that (1) ensure fluency in word recognition; (2) emphasize the learning of vocabulary; (3) activate background knowledge; (4) ensure acquisition of linguistic knowledge and general comprehension; (5) teach recognition of text structures and discourse organization; (6) promote development of strategic readers rather than mechanical application of strategy checklists; (7) build reading fluency and rate; (8) promote extensive reading; (9) develop intrinsic motivation for reading; and (10) contribute to a coherent curriculum for student learning. There is empirical support for each of these implications, although at the same time, additional research related to many is needed to further identify aspects of effective L2 reading instruction in particular settings. While further research alone does not guarantee improved reading pedagogy, it provides one means of identifying specific aspects of reading abilities and testing alternative instructional practices and is thus a crucial component in the search for more effective outcomes.

This review of research on teaching reading has two primary purposes. It will extend the three reviews of second language reading that appeared in Volume 18 of *ARAL* on reading theory (Hudson, 1998), reading assessment (Perkins, 1998), and reading instruction (with an emphasis on extensive reading) (Bamford & Day, 1998). It will also focus specifically on research that supports instructional practices to improve second language (L2) reading comprehension and highlights areas where further research is needed.[1]

Much as with any language skill, the teaching of reading is a complex matter. Obvious variables such as student proficiency, age, L1/L2 relations, motivation, cognitive processing factors, teacher factors, curriculum and materials resources, instructional setting, and institutional factors all impact the degree of success of reading instruction. One could easily come to the conclusion that reading

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is too complex a process for straightforward connections between research and instructional practices. Nevertheless, there are good reasons for optimism in writing an overview of research on teaching reading.

One reason for optimism is that research on English L1 reading has made remarkable advances in the past 15 years, and it is possible to synthesize this research in ways that generate major implications for reading instruction. Second, research on reading instruction in L2 settings has provided additional insights that often converge with the L1 reading research literature. Third, the real distinctions between L1 reading and L2 reading (e.g., Bernhardt, 2003; Grabe & Stoller, 2002; Koda, 2004) do not prevent researchers and practitioners from drawing major implications from L1 research findings in general, and especially from research on instructional issues. At the same time, it is essential to recognize that instruction will need to vary in important ways for L2 learners depending on context, learner needs, and language proficiency levels.

In this overview, several issues will not be covered. First, it is not possible to consider every variation of L2 (or L1) student type in relation to reading instruction. To maintain a reasonable focus on the key issues of reading instruction for applied linguists, this overview will focus on students who need to develop academic reading abilities in school settings. Separate reviews would be required for adult literacy training for nonacademic purposes (e.g., see Comings, Garner, & Smith, 2000–2002; Curtis & Longo, 1999; Davidson & Strucker, 2002; Wagner & Venezky, 1999), for reading disability instruction (Shaywitz, 2003; Torgesen, 2002; Torgeson et al., 2001; Wolf, 2001), and for elementary literacy skills, particularly issues surrounding phonological awareness, sound–letter correspondences, print readiness, and the emergence of reading abilities (Carver, 2000; Geva & Siegal, 2000; Muter & Diethelm, 2001; National Reading Panel, 2000; Snow, Burns, & Griffin,1998; Verhoeven, 2000).

Second, to maintain the focus on reading instruction, this review also will not directly address research for purposes of theory building. There will be no overview of theoretical perspectives on L1 or L2 reading (but see Alderson, 2000; Bernhardt, 2000; Geva & Siegal, 2000; Geva & Verhoeven, 2000; Geva & Wang, 2001; Grabe & Stoller, 2002; Kamil, Mosenthal, Pearson, & Barr, 2000; Koda, 2004; National Reading Panel, 2000; Noordman & Vonk, 1999; Perfetti, 1999, 2003; Perfetti, Van Dyke, & Hart, 2001; Pressley, 2002c; Stanovich, 2000). The research reviewed below will focus specifically on the extent to which implications for instruction are supportable and strong enough to be persuasive even if the research does not provide direct experimental tests of specific teaching practices, very difficult to do in any case (see Shanahan, 2002) .

Third, this review will not cover theoretical issues that have specific relevance to L2 reading contexts. For example, it will not discuss the impact of transfer effects from the L1 to the L2, issues of linguistic distance between L1 and L2, or the orthographic depth hypothesis (cf. Koda, 2004). Nor will it review recent studies relevant to the linguistic threshold hypothesis (cf. Bernhardt, 2000; Pichette,

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Segalowitz, & Connors, 2003) or research specifically on working memory, automaticity, or attention and awareness (cf. Robinson, 2001; Segalowitz, 2000, 2003; Segalowitz & Hulstijn, in press).

As a way to organize the potentially overwhelming available information, I will state a set of implications for reading instruction that are empirically supportable and then review recent evidence in turn for each implication. This review will not separate L1 research from L2 research with regard to reading instruction, though it will refer specifically to L2 research whenever recent L2 studies apply to instructional practices. For many of the subsections to follow, the review focuses on instructional research in L1 settings because there is so much more empirical research to draw on.

Implications for Reading Instruction from Reading Research

Over the past 10 years, a set of implications for L2 reading instruction has emerged from overviews of the research literature (Grabe, 2000; Grabe & Stoller, 2002). This review uses a version of these implications as a way to examine how research supports effective reading-instruction practices, and how teaching, materials development, and curriculum design could be adapted to become more effective.

Based on extensive and still accumulating research, the following implications for academic reading instruction and curriculum design are reasonably well supported. Although stated as instructional implications, all but the last of these goals can also be viewed as component abilities of learners that need to be developed for effective reading comprehension.

1. Ensure word recognition fluency.
2. Emphasize vocabulary learning and create a vocabulary-rich environment.
3. Activate background knowledge in appropriate ways.
4. Ensure effective language knowledge and general comprehension skills.
5. Teach text structures and discourse organization.
6. Promote the strategic reader rather than teach individual strategies.
7. Build reading fluency and rate.
8. Promote extensive reading.
9. Develop intrinsic motivation for reading.
10. Plan a coherent curriculum for student learning.

It should be noted that a long list of important implications does not, in and of itself, amount to any sort of universal curriculum for reading instruction, and such a claim is not being made here. In fact, any instructional setting and any group of curriculum developers must determine priorities based on student needs, institutional expectations, and resource constraints. Therefore, the goal of the sections below is only to show that these implications are all potentially important components of an extended reading curriculum. Many of these implications should be considered, in one form or another, in any effective reading curriculum. However, the choices of

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which factors finally to emphasize rest with local contexts and goals, and with the relevance and persuasiveness of supporting research.

Each subsection below will be divided into two parts. The first part will briefly note L1 and L2 research that supports the instructional implication identified. The second part will consider evidence for teaching the ability and the impact of such instruction on reading comprehension development.

Research On Reading Instruction

Ensure Word Recognition Fluency

Word recognition fluency has been widely recognized in L1 reading research as an important factor in explaining reading comprehension abilities, particularly at earlier stages of reading development (Perfetti, 1985; Stanovich, 2000). Word recognition fluency has not been a major focus of L2 research (cf. Koda, 1996), though in the early 1990s, research by Segalowitz (1991) demonstrated that word recognition automaticity was an important factor in distinguishing proficiency levels of very advanced L2 readers (in terms of overall reading fluency). There are a number of more recent studies that are also suggestive in this regard. For example, Segalowitz, Segalowitz, and Wood (1998) demonstrated that L2 university students who were more fluent readers overall had better word recognition automaticity skills. In addition, they showed that less fluent students improved their L2 word recognition automaticity through L2 instruction over the course of an academic year. Their results argue that increased word recognition automaticity results from incidental exposure to vocabulary through instruction over extended periods of time.

Kroll, Michael, Tokowicz, and Dufour (2002) report on a study in which greater L2 word recognition fluency is associated with higher proficiency levels among university students. L2 students with five years of target-language learning experience were significantly faster on an L2 word naming task than students with less L2 learning experience. The study does not indicate whether increased fluency leads to increased language proficiency, or the reverse, or some reciprocal causality. In a large-scale longitudinal study, Droop and Verhoeven (2003) used a decoding fluency measure and found only moderate to small relations (r = .39 to .46) between decoding fluency and reading comprehension for third- and fourth-grade L2 students. They also used structural equation modeling and found only a small relation between decoding fluency at an earlier assessment time and reading comprehension at a later time. In a recent training study, Fukkink, Hulstijn, and Simis (2003) report fluency gains through word recognition training for eighth-grade EFL students in Holland. Students showed significant gains in word reading fluency with just two training sessions.

The second issue for word recognition fluency is whether or not fluency can be taught in normal instructional settings, and whether or not fluency instruction would also improve reading comprehension. The results of Segalowitz et al. (1998)

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show that academic L2 instruction in general can lead to greater automatization of high frequency words at the same time that students gain in language proficiency. Further research tracking the effects of ongoing word recognition fluency instruction is needed in L2 contexts. It is generally assumed that repeated exposures to high-frequency words through extended print exposure (e.g., extensive reading of level-appropriate texts) would contribute to automatic word recognition and comprehension gains. However, no causal connection between word recognition improvement and reading improvement in L2 settings has yet been demonstrated.

In L1 reading research, such a connection was explored by Tan and Nicholson (1997; Nicholson & Tan, 1999). In their study, they trained below-average grade 3–5 students to develop word recognition automaticity through flash card practice. Results showed that experimental students outperformed a control group not only in fluency but also in passage comprehension. In another study, Levy, Abello, and Kysynchuk (1997) carried out training studies with fourth-grade students and demonstrated that both word recognition training and repeated readings of texts had a positive impact on comprehension of texts that included all the words used in the fluency training. In a second language context, Fukkink et al. (2003) explored speed of processing training and its impact on comprehension with eighth-grade EFL students with 2½ years of English coursework, but they were not able to demonstrate a significant relation between the two. Like Levy et al., they also used comprehension measures that involved words used in the fluency training sessions, and training sessions appeared to be of similar intensity.

Research on the effects of word recognition fluency training on comprehension development is a relatively new area and multiple studies are needed. It will take time for the real impact of fluency on comprehension to be sorted out (a) for different groups of L2 (and L1) students, (b) in different settings, (c) with different amounts of training, (d) with different training tasks, (e) with different assessment measures, and (f) with differing amounts of overall exposure to the L2. Based on the conflicting results to date, it may be the case that word recognition fluency is an enabling skill for comprehension rather than a required skill (cf. discussions in Fukkink et al., 2003; Levy et al., 1997). For example, a lack of word recognition fluency may impede comprehension, but above a certain fluency threshold, the differing rates of word recognition fluency may not have a major impact on comprehension, particularly if comprehension is measured with tests that do not impose time pressure on performance. Further L2 research on the role of word recognition fluency on comprehension is an area that deserves more attention and additional research studies.

A final issue involves how best to teach word recognition fluency effectively as part of a reading curriculum (e.g., through timed word recognition practice, greater phonological awareness, morphological awareness training, extended reading practice, assisted reading activities). Instructional recommendations have been made along this line by Anderson (1999), Hulstijn, (2001), Nation (2001), and Segalowitz (2000). Research that demonstrates the effectiveness of specific instructional practices for greater fluency in word recognition is needed.

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Emphasize Vocabulary Learning and Create a Vocabulary-Rich Environment

The relation between vocabulary knowledge and reading comprehension has been powerfully demonstrated in both L1 and L2 contexts (also see Halstijn, 1997; Nation, 2002; Read, this volume). In L1 reading research, there have been many studies that demonstrate the strong relationship between vocabulary and reading. In an early large-scale study, Thorndike (1973) surveyed reading in 15 countries (with over 100,000 students) and reported median correlations across countries and age groups of between $r = .66$ and $r = .75$ for reading and vocabulary. Stanovich (2000) reported on research that supports this relationship, noting strong correlations between vocabulary and reading for third- through seventh-grade L1 students ($r = .64$ to .76). In a set of unusual research studies, Carver (2003) has argued that the relationship between reading comprehension and vocabulary knowledge is so strong that research can produce perfect correlations. When reliable vocabulary tests are converted to grade-level equivalent scores, and when reliable reading comprehension measures are also converted to grade-level equivalent scores, Carver predicts that the corrected correlations between the two measures will be almost perfect. While the argument is almost startling in its assertion, Carver presents extensive evidence from multiple sources of assessment data to support his position. For purposes of this review, it is safe to claim that there is a strong and reliable relationship between L1 vocabulary knowledge and reading comprehension.

In L2 settings, Droop and Verhoeven (2003) demonstrate a powerful relation between vocabulary knowledge and later reading ability with third- and fourth-grade language minority children in Holland. Similarly, Schoonen, Hulstijn, and Bossers (1998) reported that L2 vocabulary knowledge was a very strong predictor of L2 reading ability for eighth-grade EFL students in Holland ($r^2 = .71$). In research on L2 language assessment, there are many reports of strong relationships between vocabulary and reading comprehension. Pike (1979) reported corrected correlations between vocabulary and reading on a TOEFL administration on the order of .84 to .95. Laufer (1997) cited several assessment studies with strong correlations between reading and vocabulary knowledge (.50 to .75). Qian (2002) found strong correlations, from .68 to .82, between TOEFL reading subsection scores and three vocabulary measures.

The related question is whether or not instruction in vocabulary will improve reading comprehension abilities in any direct and immediate way.[2] This relationship has been an important issue in L1 research, and it has been difficult to demonstrate. In the 1980s, Beck and her colleagues showed that intense vocabulary instruction led to improved reading comprehension for fourth-grade elementary L1 students (Beck, Perfetti, & McKeown, 1982; McKeown, Beck, Omanson, & Pople, 1985). There has been little research in this area since then, in both L1 and L2 contexts, to support the instructional connection between vocabulary knowledge and comprehension.

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Activate Background Knowledge in Appropriate Ways

Almost all reading researchers agree that background knowledge plays an important role in reading comprehension. It is well documented that readers comprehend texts better when texts are culturally familiar or when they relate to well-developed disciplinary knowledge of a reader. More generally, background knowledge is essential for all manner of inferences and text model construction during comprehension. It is also important for disambiguating lexical meanings and syntactic ambiguities. The complications appear to arise with texts that present relatively new information or information from fields for which readers have no special expertise. In many cases, these are informational texts requiring the learning of new information by students. The limited role of background knowledge for comprehending new topics was clearly documented by Bernhardt (1991), and additional studies reviewed in Alderson (2000) present conflicting evidence on the role of background knowledge on reading assessment. Nonetheless, background knowledge appears to provide strong support for comprehension in many contexts.

From an instructional perspective, the issue becomes whether or not there are specific benefits for promoting appropriate background knowledge for students encountering new information in instructional texts. Will the activation of background knowledge lead to better comprehension? Chen and Graves (1995) conducted one of the few L2 studies to pursue this issue directly. They demonstrated that the use of text previewing led to significantly better comprehension in comparison with both a control group and a group that activated general background knowledge. The finding can be interpreted straightforwardly as support for the activation of specific information that is relevant to the text as opposed to activating more general background knowledge. Additional studies of this type would help clarify more precisely the role of background knowledge for text comprehension in learning contexts.

Ensure Effective Language Knowledge and General Comprehension Skills

Text comprehension requires both (a) language knowledge and (b) recognition of key ideas and their relationships (through various comprehension strategies). The role of both of these factors in comprehension is reviewed here. Language knowledge, for purposes of this review, primarily involves vocabulary knowledge (see above) and grammar knowledge. There is a range of research that argues for a strong relation between grammar knowledge and reading. Furthermore, research on syntactic processing, or word integration processes (integrating lexical and syntactic information into clause-level meaning units), also suggests significant relations between syntactic parsing abilities and comprehension abilities (Fender, 2001, 2003).

While relatively few research studies of reading development include grammar measures, a recent L2 study by van Gelderen, et al. (2002) examined the relations between linguistic knowledge, metacognitive knowledge (what we know about how we use language and how we read), and word processing speed, on the

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one hand, and reading comprehension on the other. The students, both Dutch and Turkish, were tested in their L1 (Dutch native speakers), L2 (Dutch EFL students, Turkish speakers of L2 Dutch), and L3 (Turkish EFL students in Holland). Van Gelderen et al. (2002) report a very strong correlation (r = .73) between Dutch L1 and EFL L2 grammar knowledge and reading abilities and an even stronger correlation (r = .78) between Dutch L2 and EFL L3 (Turkish students in Holland) grammar knowledge and reading.

L2 assessment research on the relationship between grammar and reading has also demonstrated surprisingly strong relations. Alderson (1993), discussing research for the development of IELTS, reported correlations between reading and grammar of .80. Similarly strong correlations have been reported for the TOEFL on a regular basis (comparing the reading and grammar subsections). Pike (1979) reported corrected correlations among subsections of a TOEFL test of (.80 to .85). Recently, Enright, et al. (2002), presenting on TOEFL research involving the development of the New TOEFL, reported a very strong relationship between the structure and reading subsections of the current TOEFL (r = .91) and a strong relationship between the structure section of the current TOEFL and the piloted reading section of the New TOEFL (r = .83). Similarly very strong correlations have been reported recently in research with Dutch, Turkish, and Moroccan students in Holland (Droop & Verhoeven, 2003).

The strong relationship between grammar and reading has not led to a call for extended grammar instruction as a direct support for L2 reading comprehension. Instead, grammar is better seen as an indirect support system that is developed through comprehension instruction and strategy training (e.g., establishing the main idea, summarizing information, recognizing discourse structure, and monitoring comprehension). Some of the strategies that are important for comprehension involve grammatical knowledge while others focus on processing skills and background knowledge.

A number of individual comprehension strategies have been shown to have a significant impact on reading comprehension abilities. In L1 settings, the report of the National Reading Panel (2000) and the follow-up overview by Trabasso and Bouchard (2002) have identified the following individual reading strategies as having a significant influence on reading comprehension:

- Prior knowledge activation
- Mental imagery
- Graphic organizers
- Text structure awareness
- Comprehension monitoring
- Question answering
- Question generating
- Mnemonic support practice
- Summarization

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Similar discussions of effective instructional strategies in L1 settings are reviewed by Duke and Pearson (2002) and Vacca (2002). There is little equivalent recent L2 research demonstrating the effectiveness of specific comprehension strategies or synthesizing prior research, although earlier work by Carrell (e.g., 1984; Carrell, Pharis, & Liberto, 1989) has demonstrated the importance of text structure awareness, semantic mapping, and prior knowledge activation in L2 studies.

Teach Text Structures and Discourse Organization

In L1 settings, multiple studies demonstrated the importance of text structure awareness in the 1980s, focusing primarily on comprehension and learning from expository texts (see Goldman & Rakestraw, 2000; Trabasso & Bouchard, 2002). In many L2 settings, when considering older students and more advanced L2 students, a similar emphasis is typically placed on expository prose processing for learning purposes. These students need to understand the more abstract patterns of text structuring in expository prose that support readers' efforts at comprehension. While advanced learning texts are typically denser and present more complex information than more general texts, they are, nevertheless, assumed to be understandable with relatively little ambiguity when assigned in school settings. (This assumption is often mistaken, however.)

Texts have numerous signaling systems that help a reader to interpret the information being presented (e.g., pronominal systems, other antecedent referencing, given before new information, thematic signaling, transition words and structures, and syntactic mechanisms for foregrounding and backgrounding). Most important, texts incorporate discourse structures, sometimes understood as knowledge structures or basic rhetorical patterns in texts (see Grabe, 1997; Meyer & Poon, 2001; Mohan, 1986). Discourse structures have functional purposes and these purposes are recognized by good readers and writers, if only implicitly in some cases. These functional purposes are supported by well-recognized conventions and systems that lead a reader to preferred interpretations (see Grabe, 2003; Tang, 1992). Moreover, these discourse mechanisms extend to the level of genre and larger frames of discourse that organize textual information for the reader. In a recent study, Chu, Swaffar, and Charney (2002) demonstrated the importance of larger frames of discourse in a study of text recall based on text organization differences. They tested 120 Taiwanese university students on four English passages using Chinese rhetorical patterns and four English passages using English rhetorical patterns. The students recalled more information from the passages following Chinese rhetorical patterns.

A major issue concerning the influence of text structure is the extent to which such knowledge can be directly taught to students so that it will lead to improved comprehension. There are three major lines of research (mostly L1) on the effect of text structure instruction. One line of research involves the impact of direct instruction that explicitly raises student awareness of specific text structuring. This research emphasizes the uses of transition words; explanations for rhetorical patterns in texts, topic sentences, sentence-initial phrases, anaphoric linkages, and definite reference to prior text ideas; and awareness of the role of various grammatical

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structures to build coherence in text interpretation (Duke & Pearson, 2002; Goldman & Rakestraw, 2000). A recent study by Meyer and Poon (2001) demonstrated that structure strategy training significantly improved recall from texts for both younger adults and older adults. Experimental subjects were trained over six sessions (90 minutes each) to read texts and recognize various structural patterns in texts (e.g., comparison and contrast, problem/solution, cause and effect). The experimental group recalled significantly more information in recalls after each training period than did a control group.

A second line of research develops student awareness of text structure through graphic organizers, semantic maps, outline grids, tree diagrams, and hierarchical summaries (e.g., Dymock, 1999; Tang, 1992; Trabasso & Bouchard, 2002). This research demonstrates that students comprehend texts better when they are shown visually how text information is organized (along with the linguistic clues that signal this organization). A third line of instructional training follows from instruction in reading strategies. Because a number of reading strategy training approaches include attention to structure, main idea identification, and text study skills, this line of instructional research is also a source of studies supporting text structure instruction. Thus, strategy training which includes summarizing, semantic mapping, predicting, forming questions from headings and subheadings, and using adjunct questions appears to improve awareness of text structure and text comprehension (Duke & Pearson, 2002; Trabasso & Bouchard, 2002).

Overall, however, there is relatively little recent L2 research on this area of text structure and comprehension. Much more research is needed in L2 contexts to determine the extent to which different types of text structure knowledge support comprehension and in which contexts, and what types of instruction will be most effective.

Promote the Strategic Reader Rather Than Teach Individual Strategies

In L1 settings, reading comprehension instruction today is equated with strategic reading development. There is now considerable research to show that reading comprehension is strongly influenced by reading instruction that emphasizes the coordinated use of multiple strategies while students actively seek to comprehend texts (Block & Pressley, 2002; National Reading Panel, 2000; Pearson & Duke, 2002; Pressley, 2002b, 2002c; Trabasso & Bouchard, 2002). Such instruction combines direct teaching of several strategies while students are reading and comprehending a text. The teacher and students engage in discussions about the text while also learning to use key strategies in effective combinations. Students learn to engage with texts strategically through a process of teacher modeling, teacher scaffolding and support, and gradual independent use of strategies to comprehend the text better. There is general agreement among L1 researchers that instruction that focuses on student learning repertoires of strategies is more effective than individual strategy instruction (Baker, 2002; Brown, 2002; Duke & Pearson, 2002; Pressley, 2002a, 2002b).

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Many approaches involving multiple strategies tend to focus on four to eight major strategies, though other approaches may incorporate up to 20 to 30 distinct strategies over a longer period of time. The following 10 approaches are commonly referenced as effective combined-strategies instruction that improves reading comprehension:

1. KWL: Know, Want to know, Learned
2. ETR: Experience – Text – Relate
3. QAR: Question – Answer – Response
4. DR-TA: Directed Reading and Thinking Activities
5. Reciprocal Teaching
6. Collaborative Strategic Reading (CSR)
7. Direct Explanation
8. Questioning the Author
9. Transactional Strategies Instruction (TSI)
10. Concept-Oriented Reading Instruction (CORI)

The first four instructional approaches—KWL, ETR, QAR, DR-TA—have in common a narrow focus based on a well-specified instructional technique or template. These approaches generally have not been supported directly by empirical research. Instead, they draw their support from research on effective strategies that are incorporated into the approach (such as those listed above in the section on comprehension instruction; e.g., questioning, comprehension monitoring, summarizing) (see Trabasso & Bouchard, 2002).

The second set of instructional approaches—Reciprocal Teaching, Collaborative Strategic Reading, Direct Explanation, Questioning the Author—presents a more open framework for instruction in which multiple types of tasks and activities are included. In these approaches, there is a shift from a specific technique to a more complex set of tasks that interact in potentially unpredictable and unscripted ways, depending on how a given lesson proceeds. In these four approaches, there is an equal emphasis on comprehension and on learning from the text while developing strategic reading abilities. Reciprocal Teaching has been validated in numerous studies and in three different meta-analyses (see Trabasso & Bouchard, 2002). The other approaches have support that draws primarily on related research (e.g., Collaborative Strategic Reading draws on the Reciprocal Teaching research) as well as a few studies specific to each approach.

The last two comprehension-strategies approaches—Transactional Strategies Instruction (TSI) and Concept-Oriented Reading Instruction (CORI)—provide yet larger curricular frameworks for strategic comprehension instruction, but they also incorporate comprehension instruction activities that go beyond strategy development (e.g., vocabulary development, fluency practice, extensive reading). Both have been validated through multiple studies and both represent approaches that fully engage students in all aspects of strategic reading instruction (El-Dinary, 2002; Guthrie & Ozgungor, 2002; Guthrie and collaborators, 1996, 1998, 1999, 2000; Pressley, 2002c).

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L2 reading research has not been developed extensively in the direction of strategic engagement with texts. Janzen (1996, 2001; Janzen & Stoller, 1998) reports results of L2 adaptations of Transactional Strategies Instruction and provides instructional descriptions. Klingner and Vaughn (2000) report on Collaborative Strategies Instruction specifically in an L2 context. Kern (2000) reports on applications of DR-TA to university foreign language instruction. Anderson (1999) and Cohen (1998) both discuss the effectiveness of direct teacher modeling of strategies for reading. Two L2 strategy-instruction approaches, Cognitive Academic Language Learning Approach, (CALLA; Chamot & O'Malley, 1994), and Strategy-Based Instruction (SBI; Cohen, 1998), could be adapted more specifically to an extended academic reading curriculum. Most of the L2 efforts to develop strategic engagement with texts have yet to be researched carefully for their effectiveness in promoting reading comprehension skills.

To summarize the current research on strategic reading instruction, most contemporary discussions among L1 researchers center on the use of and training in multiple strategies to achieve comprehension (commonly including summarizing, clarifying, predicting, imaging, forming questions, using prior knowledge, monitoring, and evaluating). As the multiple strategies research suggests, most researchers now see the real value in teaching strategies as combined-strategies instruction rather than as independent processes or as processes taught independently of basic comprehension with instructional texts (Baker, 2002; Duke & Pearson, 2002; Guthrie & Ozgungor, 2002; Pearson & Duke, 2002; Pressley 2000, 2002a, 2002b).

Build Reading Fluency and Rate

The importance of reading fluency has taken on much greater prominence in the past few years, particularly in L1 settings. Because reading fluency, as opposed to automatic word recognition, is not a commonly discussed factor in reading development, it is useful to provide a careful definition. Reading fluency involves both word recognition accuracy and automaticity; it requires a rapid speed of processing across extended text (i.e., reading efficiency); it makes appropriate use of prosodic and syntactic structures; it can be carried out for extended periods of time; and it takes a long time to develop (following Kuhn & Stahl, 2003; National Reading Panel, 2000; Segalowitz 2000).

The National Reading Panel (2000) devoted a major section of its report to research on fluency development and fluency instruction. Its meta-analysis demonstrates that fluency can be taught and that it has a positive impact on reading comprehension abilities. Kuhn and Stahl (2003), reporting on a more inclusive meta-analysis, come to similar conclusions. Almost any kind of independent or assisted repeated reading program, done carefully and appropriately, will have a direct positive effect on reading fluency and an indirect positive effect on comprehension improvement. There are many ways to develop re-reading instruction for fluency purposes, and they are well reviewed in Kuhn and Stahl (2003), National Reading Panel (2000), and Samuels (2002). Fluency instruction is

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also sometimes combined with other effective instructional practices. Stahl, Henbach, and Cramond (1996) reported on a combined curriculum of reading fluency, comprehension instruction, and extensive reading that demonstrated powerful positive effects for 14 second-grade L1 classrooms with low-proficiency readers (cf. Elley, 2000, below).

A further line of fluency research involves efforts to have students read under some amount of time pressure. Breznitz (1997; Breznitz & Share, 1992) has shown that with low-level grade 1 students, reading under mild time pressure increased reading efficiency and led to better text comprehension. Similar enhanced comprehension performance has been demonstrated by Walczyk, Kelly, Meche, and Braud (1999) with university freshmen students reading under mild time pressure. In this latter research, Walzcyk demonstrated both that fluency processes show a stronger relation to reading abilities when students read under time pressure and that their reading comprehension scores improved (cf. Meyer, Talbot, and Florencio, 1999, for potentially contradictory findings).

There is little L2 reading research on reading fluency training, though this issue has recently emerged as a goal for instructional practices in L2 settings (Anderson, 1999; Hulstijn, 2001; Nation, 2001). L2 reading research should explore the best conditions and the best instructional practices that would support reading fluency development and at least provide indirect support for reading comprehension improvement.

Promote Extensive Reading

The true experimental research on extensive reading is seemingly contradictory, but the preponderance of nonexperimental research is overwhelmingly in favor of extensive reading as a support for both reading comprehension development and reading fluency (as well as incidental learning of a large recognition vocabulary and word recognition fluency). The L1 research reviewed by the National Reading Panel (2000) did not find a single experimental study (i.e., pre- and postmeasures for an experimental and control group) that demonstrated significantly better reading comprehension abilities for an extensive reading group. However, Kuhn and Stahl (2003), among others, have pointed out that the limited range of studies reviewed by the National Reading Panel ruled out much persuasive research. In fact, it is difficult to create experimental conditions in real educational settings that would control enough other variables for a sufficiently long period of time to ascertain the true independent influence of extensive reading on comprehension abilities.

Kuhn and Stahl point out that there is good evidence for a strong relationship between reading comprehension abilities and extensive reading over a long period of time. This view is strongly supported by two specific research programs. Over a decade from 1990 to 2000, Stanovich (see Stanovich, 2000) and his colleagues have demonstrated in multiple studies that the amount of people's overall exposure to print has a direct relation to vocabulary knowledge and comprehension abilities. Strong

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arguments have also been made by Guthrie, et al. (1999). In an important study, they demonstrated that, for students from grades 3 to 10 (grades 3, 5, 8, and 10), amount of reading significantly predicted text comprehension.

In L2 settings, Elley (2000) provides the strongest ongoing evidence for the effect of extensive reading (and fluency training), although he reviews book flood approaches that also include a range of additional instructional practices, and not just the effect of extensive reading. Reporting on a series of large-scale curricular research studies, he has demonstrated that modified book floods—along with careful attention to training teachers to use the books effectively in class—lead consistently to significant results in comprehension development (reporting on major studies in Niue, Fiji, Singapore, Sri Lanka, South Africa, and Solomon Islands, 1977–1998). There are a number of additional brief reports and small-scale studies on the effectiveness of extensive reading, but there are no other major research studies that provide strong evidence for the influence of extensive reading on reading comprehension abilities (see Day & Bamford, 1998). Further research in this area would be welcome.

Develop Intrinsic Motivation for Reading

In L1 settings, the strongest evidence of the direct impact of positive motivation on reading comes from Guthrie and his colleagues. In two studies, they demonstrated the impact of reading engagement on both reading amount (reading extensively) and reading comprehension. First, Wigfield and Guthrie (1997) demonstrated that motivation and engagement with reading were significantly related to amount of reading. More highly motivated fourth- and fifth-grade students engaged in significantly more reading. In a further study, Guthrie et al. (1999) demonstrated that higher motivation among third- and fifth-grade students significantly increased their amount of reading and their text comprehension. In examining related questions of whether or not motivation (defined as reading engagement) could be taught directly through classroom instruction, Guthrie and colleagues (1996, 1998) have demonstrated that Concept-Oriented Reading Instruction (CORI) developed significantly higher levels of student motivation than control classes among third- and fifth-grade students.

Schiefele (1999), focusing more specifically on the concept of reader interest, demonstrated that personal interest (long-term intrinsic interest), as opposed to situation interest (temporary curiosity), is a significant predictor of comprehension and learning from texts. In a review of 22 studies, she demonstrates a moderate but consistent influence of personal interest on text learning. She relates her work to motivation as a more general construct and argues persuasively that motivation is a major independent factor influencing reading abilities.

In L2 settings, there is little research specifically on the relation between motivational variables and reading comprehension. Most L2 motivation research focuses more generally on language abilities. Dörnyei (2001) provides an excellent overview of motivational factors and their influences on L2 learning. In addition to

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covering L2 motivation research for the past decade, he devotes serious attention to motivation instruction and teacher motivation (see also Guthrie & McCann, 1997; Ruddell & Unrau, 1997, for L1 views on teaching for reading motivation).

Plan a Coherent Curriculum for Student Learning

In both L1 and L2 settings, there are many discussions of how to develop a coherent effective curriculum for improving reading comprehension. However, there are few research studies carried out to support the stronger claims of various instructional approaches. This mismatch is not surprising. It is very difficult to control enough of the possible confounding variables in quasi-experimental studies of sufficient duration to assess curricular effectiveness. In L1 settings, many researchers have been stressing the importance of coherent integrated curricula that combine content and comprehension instruction (Block & Pressley, 2002; Guthrie, 2003; Pressley, 2002c).

In L1 settings, there are two general curricular approaches that have demonstrated significant improvement in reading comprehension in comparison to control groups. Transactional Strategies Instruction (TSI), noted earlier, provides a general curricular approach to content and reading learning (for grades 1–6), emphasizing strategic engagement with text for improved comprehension. A carefully designed study (Brown, Pressley, Van Meter, & Schuder, 1996) provides direct support for this approach. The extensive research on CORI (Content-Oriented Reading Instruction) successes (in grades 3–6) represents the most powerful case for the effectiveness of a coherent integrated curriculum that teaches content and reading comprehension in major thematic units throughout the school year (e.g., Guthrie, 2003).

In L2 settings, there are not yet any comparable large-scale studies that demonstrate empirically the effectiveness of content and reading curricula. The limited research on effective integrated content and language curricula to date is reviewed in Stoller (this volume). Despite the limited evidence for a coherent integrated reading curriculum, the logic of the evidence reviewed in this chapter makes a compelling case for the development of coherent L2 curricula. How else can a student efficiently develop all the appropriate skills, strategies, metacognitive awareness, and knowledge integration that will lead to major gains in reading comprehension abilities?

From Research to Instruction

In reviewing the research that supports instructional practices for reading comprehension, three issues deserve mention. First, L1 and L2 reading abilities are similar enough in terms of cognitive processing skills that L2 researchers and practitioners can draw on—but not accept wholesale—L1 instructional research when it seems appropriate to do so. At the same time, there are enough specific differences between L1 and L2 reading for this linkage to be a debatable issue (cf. Bernhardt, 2003; Koda, 2004). Differences in L2 language proficiency, orthographic

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systems, fluency, and processing abilities, as well as L1 transfer and interference factors, all suggest that L2 reading can be a distinct cognitive activity (particularly for older L2 students and EFL students). However, there is also sufficient evidence to suggest that many, if not most, of the effective instructional practices in L1 settings will also be effective in L2 settings (with reasonable adaptations). Whether L1 and L2 readers are actually engaging in cognitive processing in the same ways, or with the same combinations of component-skills strengths, while reading is an issue that requires its own review article (see Akamatsu, 2002, 2003; Bernhardt, 2000; Chiappe, Siegal, & Wade-Woolley, 2002; Droop & Verhoeven, 2003; Geva & Wang, 2001; Koda, 2004; Segalowitz, 2003; Verhoeven, 2000; Wade-Woolley, 1999).

A second issue that arises when research suggests the influence of specific skills and abilities on reading is whether these specific abilities develop first or overall good reading comprehension develops first. There are enough true experimental studies that involve training to reach a general conclusion that being a good reader often follows after early component abilities develop. However, it is also highly likely that overall reading abilities and specific component abilities have reciprocally causal relationships (e.g., vocabulary, phonological awareness, reading fluency). The key for establishing causal importance for component abilities is that specific instructional practices can then be supported in a reading curriculum. In several cases, the causal evidence is available from training studies; in other cases, such as vocabulary knowledge, the lack of direct causal evidence does not diminish the obvious reciprocal causality between comprehension and vocabulary development.

A final issue for a review of instructional practices is the need to establish that important specific components of reading comprehension can be taught in effective ways as part of a coherent curriculum. There is more to the art of teaching and curriculum development than a useful list of objectives for a curriculum. How one progresses from a list of goals and objectives to an effective curriculum requires a different review entirely, though the research on CORI points out one strong path for reading instruction in an academic English environment (see also Stoller, this volume).

Conclusions

It is often the case that teachers, teacher trainers, and materials writers do not refer to research studies to support practices that they have seen "work for them" informally. As a result, there is a significant amount of practitioner knowledge built up in programs and classrooms around the world in support of specific instructional approaches. In many cases, this knowledge works well and supports students' reading development. In fact, many teachers and teacher trainers might say that they already know many of the points made in this review from their own classroom experiences and expertise in teaching reading. There is certainly a need to recognize practitioner knowledge, good teaching ideas, and positive instructional outcomes. Teachers cannot wait for "the definitive research study"; it will never happen in any case. At the same time, the informal notion of "doing what works," by itself, can

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limit progress with, and dissemination of, effective reading instruction. Practitioner knowledge is typically not open to comparisons and competition from new ideas (except fashions and bandwagons), and it is easily abused when teaching practices become fossilized or politicized.

The reasons to look for reliable evidence in support of instructional practices are to minimize some of the negative consequences of informal practitioner lore and be more effective in helping students develop as readers. Research studies do not guarantee such benefits, but they represent important ways to test instructional practices and search for more effective outcomes. The ideal for effective reading instruction, then, is a merging of practitioner knowledge and persuasive research support: Both are needed for effective instruction. It is an obvious cliché to say that more research on reading instruction is needed at this point. However, I have tried to highlight the fact that there is not enough research being done, particularly in L2 contexts, on the effectiveness of instructional practices and the direct effects of specific abilities on reading comprehension development.

Notes

1. I would like to thank Bill Crawford for reading over this manuscript and providing thoughtful comments.

2. The further question of what methods are most effective for vocabulary learning belongs in a review of vocabulary development and instruction (see Read, this volume).

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Bernhardt, E. B. (2000). Second language reading as a case study of reading scholarship in the 20th century. In M. Kamil, P. Mosenthal, P. D. Pearson & R. Barr (Eds.), *Handbook of reading research, Volume III* (pp. 791–811). Mahwah, NJ: Erlbaum.

These two overviews of L2 reading provide a strong foundation for current research agendas in L2 reading and strong insights into the nature of L2 reading development. They also provide interesting complementary perspectives on L2 reading theory.

Block, C., & Pressley, M. (Eds.). (2002). *Comprehension instruction: Research-based best practices*. New York: Guilford Press.

https://doi.org/10.1017/S0267190504000030 Published online by Cambridge University Press

This is a very important edited volume on reading strategies and reading strategy instruction with articles by many of the leading people in L1 reading-education research. Strong arguments for effective reading strategies and combined strategy instruction are presented across multiple chapters. Almost all of the strategies and combined strategy practices mentioned in the present review are discussed in this volume.

Elley, W. (2000). The potential of book flooding for raising literacy levels. *International Review of Education, 46,* 233–255.

This article presents one of the more remarkable reviews of a quarter century of pioneering research. Elley's work on the strong positive effects of book floods and extensive reading on L2 reading and language skills development is documented through major curriculum research projects in the Pacific Islands, Sri Lanka, South Africa, and Singapore. This article provides the strongest evidence to date of the powerful effects of extensive reading for L2 students.

Guthrie, J. (2003). Concept-Oriented Reading Instruction. In A. Sweet & C. Snow (Eds.), *Rethinking reading comprehension* (pp. 115–140). New York: Guilford Press.

This chapter provides a review of almost a decade of work on Concept-Oriented Reading Instruction. In the very areas that it is typically so hard to document improvement empirically—motivation, extensive reading, curriculum innovation—the author has carried out persuasive research studies that should be read and considered carefully by anyone teaching reading or in charge of reading curriculum revisions.

Kuhn, M., & Stahl, S. (2003). Fluency: A review of development and remedial practices. *Journal of Educational Psychology, 95,* 3–21.

This review of research on reading fluency brings together much of the reliable research on fluency instruction and its impact on comprehension. The authors make persuasive arguments that both repeated reading practices and extensive reading are beneficial for reading comprehension development in L1 settings.

National Reading Panel. (2000). *Teaching children to read: An evidence based assessment of the scientific research literature on reading and its implications for reading instruction* (National Institute of Health Pub. No. 00-4769). Washington, DC: National Institute of Child Health and Human Development.

This review volume covers seven major areas of reading research and their impact on reading comprehension and reading instruction. Reviews cover research and instructional practices related to phonological

https://doi.org/10.1017/S0267190504000030 Published online by Cambridge University Press

awareness, phonics instruction, fluency, vocabulary, comprehension strategies, teacher education for reading teachers, and the use of computer technologies. The report has been the source of many subsequent discussions and it raises many important issues for future research, especially for L2 learners. It is also free by ordering on the web through the National Institute of Child Health and Human Development (NICHHD), at least in the United States.

Perfetti, C. (2003). The universal grammar of reading. *Scientific Studies of Reading, 7,* 3–24.

This article succinctly outlines a number of key findings and conclusions on the nature of reading, drawing on his research over the past decade. He presents a compelling argument that reading across all orthographies depends on certain universal processing mechanisms and resources. In particular, he emphasizes the idea that reading in every language involves learning how the writing system corresponds to the spoken language. The ways in which readers in each language employ these universal principles and resources may be a cause of processing differences cross-linguistically (and for L2 readers), but the resources themselves that are available for reading development do not seem to vary in dramatic ways.

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