Reading Comprehension: Reading for Learning

C E Snow, Harvard Graduate School of Education, Cambridge, MA, USA

Defining Reading Comprehension

The challenge of understanding reading comprehension derives, in part, from the difficulty of defining its borders. Comprehension was defined by the Research and Development (RAND) Reading Study Group (RRSG, 2002) as "the process of simultaneously constructing and extracting meaning through interaction and engagement with print." This definition was intended to signal the importance of a number of key features of comprehension: the accurate decoding of print, a process of meaning construction through which inferences and information not available from the print are incorporated into the meaning representation, and active, motivated engagement from the reader. This definition works well for prototypical cases: the 10-year-old laughing while reading a joke book, the 15-year-old engrossed in a science fiction novel, and the 25-year-old being guided by a manual to install and run a new piece of software. The processes that occur during these prototypical comprehension events have been the subject of considerable research (see RRSG, 2002 for more detailed information about those processes), which has made clear that the success of any reading comprehension event is determined by variation on three dimensions: the text, the reader, and the task, all defined within a sociocultural context. The RRSG characterized successful comprehension as what occurs when the demands of the text, the challenges of the task, and the skills and proclivities of the reader are all well aligned, as exemplified by the prototypical cases listed above. Any pair of these dimensions can be the site of a mismatch that causes comprehension to fail and, as is described below, each introduces some ambiguity about where real reading comprehension begins and ends.

Texts

Consider a candidate text that might be found in a first grade reader:

> Alex and Ali ran to the swings and jumped on.

What constitutes comprehension for this text? At a minimum, a mental representation of two individuals moving quickly toward and using some playground equipment should be conjured up, but is the inference that Alex and Ali are probably children part of the comprehension process or does that go beyond basic comprehension? Is it required that the comprehender assign genders to Alex and Ali, or that gender assignment be postponed, recognizing that Alex could be short for either Alexandra or Alexander, that Ali could be a boy's name or a nickname for Alison? If Ali is provisionally classified as a boy, is it part of comprehension processing to infer that he comes from a Muslim family, or is that an inference that goes well beyond basic comprehension? If the reader has, for example, just arrived from China and has never encountered these first names before, has that reader fulfilled expectations with the inference that these are animate creatures – perhaps as likely to be cats as children? Must the reader infer that Alex and Ali actually started swinging, or does that go beyond comprehension into the realm of prediction? Does an inference that Alex and Ali were enjoying themselves belong to the realm of comprehending this sentence or comprehending the world? In other words, what is a sufficiently elaborated representation of this simple sentence to qualify as comprehension?

The dilemmas posed by considering different levels of processing of this brief text are, of course, greatly expanded if we consider the comprehension of longer and more complex texts, from paragraphs to newspaper reports or scientific articles to entire novels, let alone trying to establish what constitutes comprehension when reading an array of texts – reports of a political speech in right-wing versus left-wing newspapers, or scientific articles reporting conflicting results, or the entire oeuvre of a novelist – in conjunction with one another. At some point between the simple sentence above and the several volumes of *Remembrance of Things Past*, the definition of comprehension shape-shifts from a simple representation of an event to deep understanding of a worldview, but fixing the boundary between those activities is not easy.

Readers

Considering students at different points in development also dictates emphasis on different aspects and levels of comprehension, whether one is motivated to design instruction, select assessments, or investigate the underlying comprehension processes. For example, researchers and practitioners focused on reading to learn for students in secondary grades must take into account the overwhelmingly important contribution to successful comprehension of students' access to relevant background knowledge. Thus, in science, social studies, and math classes, there is often considerable emphasis on ensuring that students know something about a topic (using

lectures, videos, diagrams, hands-on demonstrations, or other nonliterate means) prior and as a support to their reading a text about that topic. On the other hand, researchers and practitioners more interested in early reading instruction and/or in remediation for struggling readers tend to emphasize issues related to reading and understanding the words in the text because that is where beginning readers encounter comprehension challenges, and it is often (though not always) the reason struggling readers do not comprehend well. In between these extremes of teaching beginning and struggling readers and teaching reading for learning, there is instructional emphasis on what might be thought of as simple comprehension – comprehension by students who have mastered word reading, reading texts which only make limited demands on background knowledge, but which do require (1) building and continually revising/expanding a text representation while reading, (2) making some inferences about connections among sentences and about connections to real world situations, and (3) perhaps some comprehension monitoring and comprehension repair mechanisms.

These differences related to developmental stage are also reflected in comprehension assessments, which for younger readers typically include items testing literal comprehension or basic inferencing, while items for older readers may require inferences that go farther beyond the text or draw more deeply on background knowledge (Snow, 2003). In other words, the definition of successful comprehension must be made conditional on at least the age and stage of development of the reader as well as the level and complexity of the text being read.

Task

A further complicating factor in defining successful reading comprehension has to do with the task being undertaken. There are important cultural, educational, and individual differences in the conceptualization of comprehension. In some literary and religious traditions, for example, literal memory for text is valued above interpretation of the text, whereas in others, attention to the actual words of the original text is much less important than coming to a justifiable interpretation of it, making connections to it, and even perhaps critiquing it.

Stark differences in task can be observed within cultures across disciplinary boundaries as well. For example, a science textbook is meant to be read for information, and comprehension can be said to occur when the reader expands and/or revises his/her understanding of some phenomenon by reading the information in the book; all too often, of course, the science textbook reader simply remembers the new information long enough to pass a test on it, without actually revising his/her enduring understanding. Therefore, the question that then arises is

whether this is a failure of comprehension or a failure of science learning.

In contrast, though successful comprehension of a novel read in a language arts or literature class does require learning the basics of characters, setting, and plot, just acquiring that information is not considered successful learning unless some appreciation is also engendered of the mood, the characters' and author's perspectives, the theme, the author's goal in writing the book, and other such ineffable features. One might well, in the course of reading some literary works, incidentally pick up information about scientific or historical or interpersonal topics treated in the book, and that would signal comprehension in one sense, but a literary reading would demand much more from the reader. Therefore, in literature classes, the question arises whether the dutiful student who can write an accurate plot summary of a novel, but fails to recognize, for example, that the narrator has taken an ironic stance or that the plot is a modern reenactment of the Odyssey, has failed at reading comprehension or at literary analysis.

Integrating Information about Reader, Text, and Task

Predicting comprehension success requires calculating information about the reader's stage of development, the complexity of the text being read, and the task being engaged in (see RRSG (2002) for further elaboration of each of these three aspects of any comprehension experience; Figure 1, reproduced from the RAND report, is a visual representation of this model). Successful comprehension occurs when these three dimensions are well

A heuristic for thinking about reading comprehension
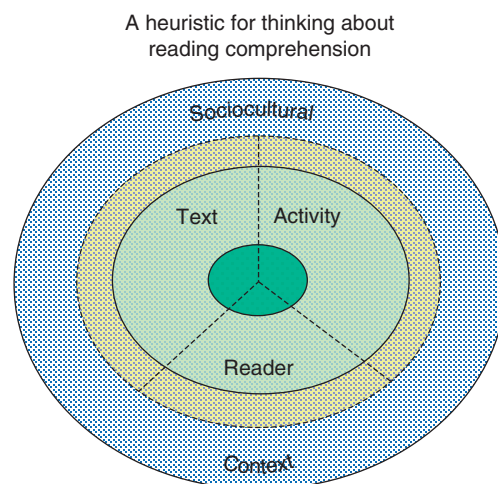
Figure 1 A heuristic for thinking about reading comprehensions devised by the Research and Development (RAND) Reading Study Group (2002) to depict the interaction of text, reader, and activity (or task) on reading comprehension.

aligned. For each of these dimensions of comprehension, though, there are simple cases and more marginal, gray areas where comprehension shades into learning or interpreting or functioning disciplinarily. The vast differences in what we would call successful comprehension across different levels of reader skill, text challenge, and task definition pose a challenge in summarizing what we know about reading comprehension, and in integrating or even providing a road map to the extensive research literature on comprehension development, assessment, instruction, and intervention.

A Taxonomy for Comprehension

For the purposes of this overview, we argue that identifying exactly where the boundary between reading comprehension and some other activity occurs is, to some extent, the individual's prerogative; even experts in the field achieve better agreement on identifying prototypical comprehension events than on placement of the boundaries. Furthermore, while the difficulty of deciding when a reading activity incorporates too many additional demands to be considered real comprehension may be obvious, there are also difficulties in deciding where comprehension begins at the bottom end, considering young readers and simple texts. What about the Jewish American or Muslim Turkish child who learns to read a sacred text, following the print faithfully while accurately pronouncing words that neither understands? It may seem obvious that this does not count as comprehension; however, what if that child has been told what the text is about, or has even been given a careful and complete translation of it? If the child is thinking of the translation while reading, is that comprehension? What if the child can understand a few of the words in the text, but has no understanding of the grammar of the written language? What if the child understands that verse, but none of the others in the book? When does reciting stop and real reading comprehension begin?

Reading comprehension might be thought of, then, as located on the radius of a set of concentric circles (see Figure 2). In the center circle are the basic reading processes that must be in place in order to access the text and form a mental representation of it: accurate word recognition, fluent access to word meaning, recognition of syntactic cues to sentence meaning, and short-term phonological memory. Variations of skill on these dimensions are clearly related to reading comprehension success – the reader who misidentifies words, who does not know the meaning of words in the text, who cannot parse the syntax of utterances, and who forgets the first sentence in a paragraph while reading the second will have difficulty comprehending (RRSG, 2002; Vellutino, 2003).

The second circle can be thought of as core comprehension processes – the ability to construct a mental representation of the ideas presented textually (Kintsch, 1998; Kintsch and Kintsch, 2005). Core comprehension requires text memory, making text-based inferences (e.g., tracing anaphors back to referents, keeping track of the order of events, and understanding implicit causal links), and making text-world links (e.g., bringing information about real dogs to bear in understanding what is strange and funny about a talking dog). Much early comprehension instruction focuses on helping learners activate relevant background knowledge before confronting text, on the theory that even children who have the required knowledge may not automatically access it while reading or integrate it with new information in the text. Another aspect of comprehension instruction for younger readers is a focus on self-monitoring, to ensure that the process of reading remains focused on building mental representations, and not just on reading the words.

The third circle comprises more elaborated comprehension processes, the processes involved in going beyond creating an unadorned text representation to a deeper understanding of the text. Many of the comprehension strategies that are recommended as part of comprehension instruction, for example, visualization, noting questions that arise while reading, and making text-to-text connections, are focused on these somewhat more elaborated comprehension processes. These processes also shade into ones that might be identified and taught as part of inquiry learning, such as figuring out how claims in one text relate to claims in another text, identifying the point of view a text presents, critiquing the argument in a text, and so on. In other words, rather than inquiry being a process applied to real-world phenomena, it is taken as a process to be applied to text itself. This is the theory underlying approaches to comprehension instruction such approaches to comprehension instruction as reciprocal teaching (Palincsar, 2003), questioning the author (Beck and McKeown, 2002), and reading apprenticeship (Shoenbach et al., 1999).

An outer circle comprises highly elaborated comprehension processes that overlap with disciplinary studies or deep learning from text. Whereas ordinary readers might be expected to engage in moderately elaborated comprehension for purposes of understanding murder mysteries, psychological novels, columnists' political opinion pieces, or popular science articles, highly elaborated comprehension processes can only be expected of readers operating within domains where they have developed deep background knowledge and have had disciplinary training in how to read. These would encompass the processes involved, for example, in reading for purposes of literary criticism, historiography, constructing an intellectual history, or producing a parody.

The representation of these four kinds of reading in Figure 2 as concentric circles with clear boundaries
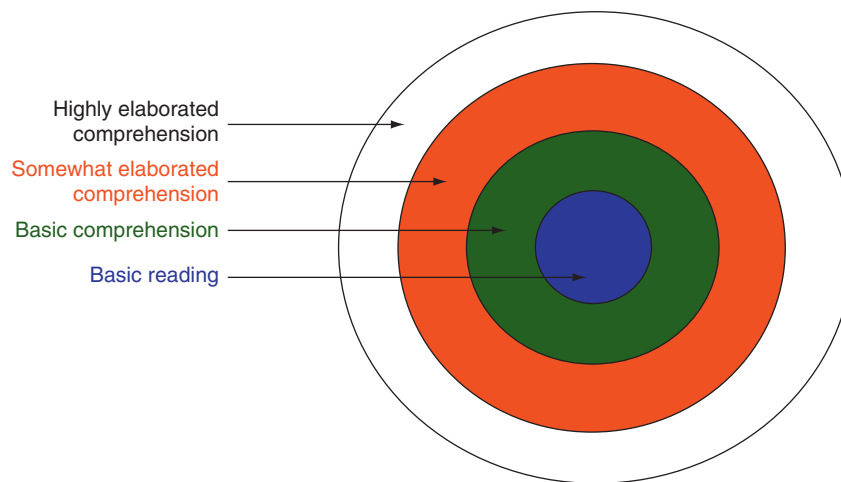
Figure 2 Basic reading processes, basic comprehension processes, and elaborated and highly elaborated comprehension processes represented as concentric circles, with reading comprehension located somewhere on a radius depending on the reader, text, and task.

between them should be viewed cautiously. First, there is no strong basis for placing a particular reading comprehension event on either side of the boundaries between central, elaborated, and highly elaborated comprehension processes. Second, this depiction is not meant to license an approach to reading instruction that starts in the middle and moves slowly outward; meaning construction, new learning, and interpretation should be part of the earliest literacy instruction, though these activities may be engaged in while reading texts aloud to children who are still mastering the code. Furthermore, the degree to which more sophisticated and elaborated comprehension might be expected of a lay literate versus a disciplinary literate depends, to a large extent, on the decisions a society makes about educational goals. Nonetheless, it may be useful in categorizing research, analyzing comprehension assessments, and understanding the challenges facing teachers of reading and of content areas to at least stipulate that reading comprehension is quite different when it occurs during code-focused reading as compared to reading for new learning and intellectual development.

Theories of Reading Comprehension

A few theories of reading comprehension have been particularly useful in guiding research and informing instruction. The simple view of reading (Gough and Tunmer, 1986) conceptualizes comprehension as the product of two capacities: the capacity to decode and the capacity to understand spoken language. The simple view claims, then, that comprehension is limited not only by speed and accuracy of word reading, but also by oral comprehension ability, and that if either of these abilities

is zero, then comprehension does not occur. Children following a normal developmental trajectory are subject to comprehension limitations stemming from constraints on word reading during the early years of schooling, and stemming from the limits on oral language skills thereafter. Under this view, it is clear that building oral language skills (vocabulary, comprehension of complex syntax, and comprehension of extended discourse forms) constitutes a key contribution to reading comprehension.

The simple view underemphasizes, though, the role of background knowledge and of motivation. The theory formulated by Kintsch introduces background knowledge by articulating how the textbase (the product of core comprehension processes) interacts with the mental model (the meaning representation constructed from the textbase and world knowledge; Kintsch, 1998; Kintsch and Kintsch, 2005). Kintsch (1998) also notes the importance of attending to the genre and the rules of reader–writer communication within the genre. Key in understanding the textbase and its links to the mental model, the genre, and the larger communicative act are various signals at the sentence level (e.g., after, same, and but) and the larger discourse level (e.g., headers and lists) of how the bits of information in the text are meant to be related to and integrated with one another (see also Graesser *et al.*, 2003; RRSG, 2002).

The role of motivation is emphasized in the work of Guthrie (2003), who points out that background knowledge is likely to be richer in areas of personal interest, and that readers are more likely to persist in wrestling with text if (1) they are interested in the topic and (2) they experience self-efficacy as readers. Reader self-efficacy grows with comprehension skill, which in turn supports reading engagement, which in turn further builds comprehension skills and background knowledge.

Instruction in Reading Comprehension

Instruction in reading comprehension is much less emphasized than instruction in basic reading skills or instruction focused on content areas without attention to the challenges of reading in these areas. Given the importance of background knowledge and vocabulary to successful comprehension, young children should have access to oral language-focused instruction, in which comprehension is modeled and vocabulary and background knowledge are taught by reading aloud from both fiction and nonfiction books.

The most frequent form of comprehension-focused instruction involves teaching comprehension strategies (National Reading Panel, 2000). While strategies such as monitoring one's own comprehension, stopping to note questions that one has, and visualizing can be supportive, it is important that instruction in these strategies focus on when to use them and why they can be helpful in creating meaning representations. A focus on content teaching creates a context for introducing comprehension strategies as targeted learning tools, as happens in Guthrie's program called Concept-oriented Reading Instruction (2002) and in Reading Apprenticeship (Shoenbach *et al.*, 1999), rather than teaching them as all-purpose comprehension aides.

Intervention with Struggling Comprehenders

Providing intervention to help struggling comprehenders before they fall far behind is a key responsibility in light of the overwhelming evidence that poor comprehension is associated with reduced opportunities to learn vocabulary and general knowledge (Stanovich, 1986), difficulties in learning across academic areas (RRSG, 2002), and ultimately, frustration with schooling and a higher likelihood of failure to graduate from high school or to achieve access to higher education. A challenge in providing comprehension intervention is that poor comprehension can be a product of a breakdown in any of a wide variety of reader skills (word reading accuracy, fluency, vocabulary, background knowledge, text memory, deployment of appropriate strategies, and engagement in reading), and effective intervention requires identifying the challenge and responding to it. For adolescent learners struggling with comprehension because of difficulties with word reading or fluency, it is often difficult to access instructional materials that offer minimal textual challenge, but are engaging and of appropriate cognitive level.

Deshler *et al.* (2007) provide an extensive review of interventions for struggling comprehenders, indexed by target of the intervention as well as developmental level and type of learner (e.g., vocabulary focus for intermediate second-language learners). Unfortunately, very few of the programs they review, many of which have solid theoretical foundations, have been extensively evaluated or analyzed to determine under which circumstances and for which subgroups of learners they are most useful.

Summary

Reading comprehension is a complex topic. Predicting success in comprehension requires knowing about the reader, about the text being read, about the task being undertaken, and about the sociocultural context in which the reading is occurring. Since reading comprehension shades into learning, constructing a worldview, and discipline-specific literacy practices, it is difficult to establish firm boundaries around comprehension; nonetheless, it is clear that more attention to comprehension is needed across the grades. In preschool and primary grades, opportunities for building vocabulary and background knowledge and practicing oral comprehension should be provided while children are learning to decode. In later grades, students need explicit instruction in how texts are constructed and how language cues signal meaning at sentential and discourse levels, as well as practice and support in wrestling with content-rich texts for well-defined and engaging purposes.

See also: An Overview of Language and Literacy in Educational Settings; First Language Acquisition; Learning as Inquiry; Learning to Read.

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