DEFINING COMPREHENSION

We define reading comprehension as the process of simultaneously extracting and constructing meaning through interaction and involvement with written language. We use the words *extracting* and *constructing* to emphasize both the importance and the insufficiency of the text as a determinant of reading comprehension. Comprehension entails three elements:[1]

- The *reader* who is doing the comprehending

- The *text* that is to be comprehended

- The *activity* in which comprehension is a part.

In considering the reader, we include all the capacities, abilities, knowledge, and experiences that a person brings to the act of reading. Text is broadly construed to include any printed text or electronic text. In considering activity, we include the purposes, processes, and consequences associated with the act of reading.

These three dimensions define a phenomenon that occurs within a larger *sociocultural context* (see Figure 1) that shapes and is shaped by the reader and that interacts with each of the three elements. The identities and capacities of

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[1]It should be noted that we are using terms that others have also used in defining reading comprehension, sometimes in similar and sometimes in slightly different ways. Galda and Beach (2001), for example, define context in a way that is not dissimilar from ours, whereas Spiro and Myers (1984) use context in a way that emphasizes culture less and task or purpose more. Many authors identify much the same list of attributes (purpose, interest, text, knowledge, strategy use, etc.) as we do, but Blachowicz and Ogle (2001), for example, distribute these attributes over the categories of individual and social processes rather than group them as we do. Pearson (2001) and Alexander and Jetton (2000) identify reader (learner), text, and context as key dimensions, without including activity as a separate dimension at the same level of analysis. The National Reading Panel report focuses on text and reader as sources of variability (NRP, 2000). Gaskins, in analyses with a variety of colleagues (e.g., Gaskins, 1998; Gaskins et al., 1993; Gaskins & Elliot, 1991), has identified comprehension as requiring the reader to take charge of text, task, and context variables, presumably an implicit acknowledgment that text, task, and context are all important in defining reading comprehension and can be obstacles to comprehension, while at the same time the reader is seen as the most central element.

readers, the texts that are available and valued, and the activities in which readers are engaged with those texts are all influenced by, and in some cases determined by, the sociocultural context. The sociocultural context mediates students' experiences, just as students' experiences influence the context. We elaborate on each element in subsequent sections.

Reader, text, and activity are also interrelated in dynamic ways that vary across pre-reading, reading, and post-reading. We consider each of these three "microperiods" in reading because it is important to distinguish between what the reader brings to reading and what the reader takes from reading. Each act of reading is potentially a microdevelopmental process. For example, in the pre-reading microperiod, the reader arrives with a host of characteristics, including cognitive, motivational, language, and non-linguistic capabilities, along with a particular level of fluency. During the reading microperiod, some of these reader characteristics may change. Likewise, during the post-reading micro-period of the same reading event, some of these same reader characteristics, or
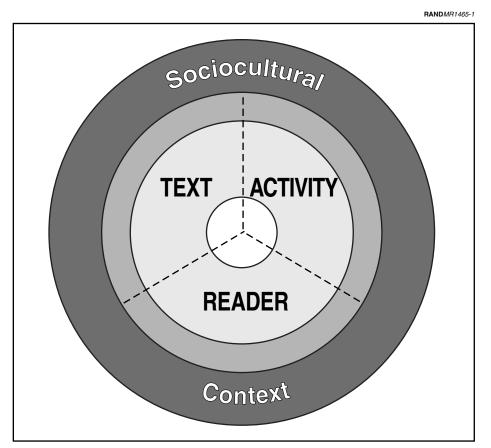
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Figure 2.1—A Heuristic for Thinking About Reading Comprehension

other reader characteristics, may change again. Much research related to reading comprehension has focused on specific factors (e.g., vocabulary knowledge) without specifying either that the effect of that factor reflects a relationship among reader, text, and activity or that the factor may change from pre-reading to reading to post-reading.

The process of comprehension also has a macrodevelopmental aspect. It changes over time, as the reader matures and develops cognitively, as the reader gains increasing experience with more challenging texts, and as the reader benefits from instruction. From among the many factors influencing the macrodevelopment of comprehension, we have selected instruction, particularly classroom instruction, for special attention as we sketch the research agenda needed to improve comprehension outcomes.

THE READER

To comprehend, a reader must have a wide range of capacities and abilities. These include cognitive capacities (e.g., attention, memory, critical analytic ability, inferencing, visualization ability), motivation (a purpose for reading, an interest in the content being read, self-efficacy as a reader), and various types of knowledge (vocabulary, domain and topic knowledge, linguistic and discourse knowledge, knowledge of specific comprehension strategies). Of course, the specific cognitive, motivational, and linguistic capacities and the knowledge base called on in any act of reading comprehension depend on the texts in use and the specific activity in which one is engaged.

Fluency can be conceptualized as both an antecedent to and a consequence of comprehension. Some aspects of fluent, expressive reading may depend on a thorough understanding of a text. However, some components of fluency—quick and efficient recognition of words and at least some aspects of syntactic parsing—appear to be prerequisites for comprehension.

As a reader begins to read and completes whatever activity is at hand, some of the knowledge and capabilities of the reader change. For example, a reader might increase domain knowledge during reading. Similarly, vocabulary, linguistic, or discourse knowledge might increase. Fluency could also increase as a function of the additional practice in reading. Motivational factors, such as self-concept or interest in the topic, might change in either a positive or a negative direction during a successful or an unsuccessful reading experience.

Another important source of changes in knowledge and capacities is the instruction that a reader receives. Appropriate instruction will foster reading comprehension, which is defined in two ways—the comprehension of the text under current consideration and comprehension capacities more generally.

Thus, although teachers may focus their content area instruction on helping students understand the material, an important concurrent goal is helping students learn how to become self-regulated, active readers who have a variety of strategies to help them comprehend. Effective teachers incorporate both goals into their comprehension instruction. They have a clear understanding of which students need which type of instruction for which texts, and they give students the instruction they need to meet both short-term and long-term comprehension goals.

THE TEXT

The features of text have a large effect on comprehension. Comprehension does not occur by simply extracting meaning from text. During reading, the reader constructs different representations of the text that are important for comprehension. These representations include, for example, the surface code (the exact wording of the text), the text base (idea units representing the meaning), and a representation of the mental models embedded in the text. The proliferation of computers and electronic text has led us to broaden the definition of text to include electronic text and multimedia documents in addition to conventional print. Electronic text can present particular challenges to comprehension, such as dealing with the non-linear nature of hypertext, but it also offers the potential for supporting the comprehension of complex texts, for example, through hyperlinks to definitions or translations of difficult words or to paraphrasing of complex sentences.

Texts can be difficult or easy, depending on factors inherent in the text, on the relationship between the text and the knowledge and abilities of the reader, and on the activities in which the reader is engaged. For example, the content presented in the text has a critical bearing on reading comprehension. A reader's domain knowledge interacts with the content of the text in comprehension. In addition to content, the vocabulary load of the text and its linguistic structure, discourse style, and genre also interact with the reader's knowledge. When too many of these factors are not matched to a reader's knowledge and experience, the text may be too difficult for optimal comprehension to occur. Further, various activities are better suited to some texts than to others. For example, electronic texts that are the product of Internet searches typically need to be scanned for relevance and for reliability, unlike assigned texts that are meant to be studied more deeply. Electronic texts that incorporate hyperlinks and hypermedia introduce some complications in defining comprehension because they require skills and abilities beyond those required for the comprehension of conventional, linear print.

The challenge of teaching reading comprehension is heightened in the current educational era because all students are expected to read more text and more complex texts. Schools can no longer track students so that only those with highly developed reading skills take the more reading-intensive courses. All students now need to read high-level texts with comprehension to pass high-stakes exams and to make themselves employable.

THE ACTIVITY

Reading does not occur in a vacuum. It is done for a purpose, to achieve some end. Activity refers to this dimension of reading. A reading activity involves one or more purposes, some operations to process the text at hand, and the consequences of performing the activity. Prior to reading, a reader has a purpose, which can be either externally imposed (e.g., completing a class assignment) or internally generated (wanting to program a VCR). The purpose is influenced by a cluster of motivational variables, including interest and prior knowledge. The initial purposes can change as the reader reads. That is, a reader might encounter information that raises new questions that make the original purpose either incomplete or irrelevant. When the purpose is externally mandated, as in instruction, the reader might accept the purpose and complete the activity; for example, if the assignment is "read a paragraph in order to write a summary," the compliant student will accept that purpose and engage in reading operations designed to address it. If the reader does not fully accept the mandated purpose, internally generated purposes may conflict with the externally mandated purpose. Such conflicts may lead to incomplete comprehension. For example, if students fail to see the relevance of an assignment, they may not read purposively, thus compromising their comprehension of the text.

During reading, the reader processes the text with regard to the purpose. Processing the text involves, beyond decoding, higher-level linguistic and semantic processing and monitoring. Each process is more or less important in different types of reading, including skimming (getting only the gist of text) and studying (reading text with the intent of retaining the information for a period of time).

Finally, the consequences of reading are part of the activity. Some reading activities lead to an increase in the *knowledge* a reader has. For example, reading the historical novel *Andersonville* may increase the reader's knowledge about the U.S. Civil War, even though the reader's initial purpose may have been enjoyment. The American history major who reads an assigned text about the Civil War may experience similar consequences, although the reading activity was undertaken for the explicit purpose of learning. Another consequence of reading activities is finding out how to do something. These *application* conse-

quences are often related to the goal of the reader. Repairing a bicycle or preparing bouillabaisse from a recipe are examples of applications. As with knowledge consequences, application consequences may or may not be related to the original purposes. Finally, other reading activities have *engagement* as their consequences. Reading the latest Tom Clancy novel might keep the reader involved while on vacation at the beach. We are not suggesting, however, that engagement occurs only with fiction. Good comprehenders can be engaged in many different types of text.

Knowledge, application, and engagement can be viewed as direct consequences of the reading activity. Activities may also have other, longer-term consequences. Any knowledge (or application) acquired during reading for enjoyment also becomes part of the knowledge that a reader brings to the next reading experience. Learning new vocabulary, acquiring incidental knowledge about Civil War battles or bouillabaisse ingredients, or discovering a new interest might all be consequences of reading with comprehension.

THE CONTEXT

One important set of reading activities occurs in the context of instruction. Understanding how the reader's purpose for reading and operations are shaped by instruction, and how short- and long-term consequences are influenced by instruction, constitutes a major issue within the research agenda we propose.

When we think about the context of learning to read, we think mostly of classrooms. Of course, children bring to their classrooms vastly varying capacities and understandings about reading, which are in turn influenced, or in some cases determined, by their experiences in their homes and neighborhoods. Further, classrooms and schools themselves reflect the neighborhood context and the economic disparities of the larger society. The differences in instruction and in the availability of texts, computers, and other instructional resources between schools serving low-income neighborhoods and those serving middle-income neighborhoods are well documented.

Sociocultural and sociohistorical theories of learning and literacy describe how children acquire literacy through social interactions with more expert peers and adults. According to Vygotsky (1978), with the guidance and support of an expert, children are able to perform tasks that are slightly beyond their own independent knowledge and capability. As they become more knowledgeable and experienced with the task, the support is withdrawn, and the children internalize the new knowledge and experiences they have acquired, which results in learning. From a sociocultural perspective, both the process (the ways the instruction is delivered and the social interactions that contextualize the learning experience) and the content (the focus of instruction) are of major importance.

Tharp and Gallimore (1988) explain that children's acquisition of knowledge (and literacy) is influenced by five characteristics of the sociocultural context, which they call activity settings: the identity of the participants, how the activity is defined or executed, the timing of the activity, where it occurs, and why children should participate in the activity, or the motivation for the activity. Clearly, all five characteristics are likely to vary as a function of both economic and cultural factors.

The effects of contextual factors, including economic resources, class membership, ethnicity, neighborhood, and school culture, can be seen in oral language practices, in students' self-concepts, in the types of literacy activities in which individuals engage, in instructional history, and, of course, in the likelihood of successful outcomes. The classroom-learning environment (such as organizational grouping, inclusion of technology, or availability of materials) is an important aspect of the context that can affect the development of comprehension abilities.