
VARIABILITY IN READING COMPREHENSION

In this chapter, we elaborate on our definition of reading comprehension by giving examples of variations in the three reading comprehension elements—reader, text, and activity—and variations in the context in which they occur. Of course, none of these elements operates independently of the others in any authentic act of comprehension. However, we consider each in turn because each has an internal structure that deserves further consideration and that may clarify how we conceptualize these elements of reading comprehension and the interface among them.

It is somewhat difficult to treat context in the same way as reader, text, and activity because context does not simply coexist with the other elements; rather, it interacts with all of them in any part of the reading process. The selection of texts to read, notions about the appropriate purposes for or consequences of the reading activity, and many of the factors that impinge on and differentiate readers are sociocultural in nature; they vary as a function of economic resources, the local community, cultural membership, and family choice. Schools represent particular kinds of sociocultural contexts, which vary greatly for some learners and minimally for others from the contexts of home and community. We can also view classrooms as contexts with their own rules about who should be reading what text and for what purpose. These rules may be implicit or explicit, and they may be formulated to ensure that all children perform at a high level or to pose continued challenges to some children.

Each of the following sections (which deal with reader, text, activity, and context) gives an overview of what we know about variability in each domain. An extended and annotated review of what we know about variability in each element can be found in Appendix A.

VARIABILITY IN READERS

Proficient readers bring to the task of reading an array of capabilities and dispositions. Reader differences in such capabilities as fluency in word recogni-

tion, oral language ability, and domain knowledge, along with differences in such dispositions as the reader's motivation, goals, and purposes, are important sources of variability in reading comprehension. Such variables interact with one another and with the text to which the reader is exposed (the text can be narrative, expository, etc.) as determinants of performance on a given reading task (acquiring knowledge in a domain, performing a comparative analysis, solving a problem, etc.).

The capabilities and dispositions the reader brings to the task of reading, his or her engagement in and responses to given texts, and the quality of the outcomes produced by the act of reading for some purpose are, themselves, shaped by cultural and subcultural influences, socioeconomic status, home and family background, peer influences, classroom culture, and instructional history. These multiple and interacting factors influence both the inter- and intra-individual differences in reading proficiency that we must consider in defining reading comprehension as a field of study. We summarize in this chapter what we know about the dimensions of reader differences or, perhaps more precisely, what we know about the sources of variation in the functioning of the various comprehension processes in service of the various outcomes related to the act of reading for some purpose.

Sociocultural Influences

Reader variability is, to some extent, a product of the fact that children come from and learn to read in varying sociocultural contexts. We view learning and literacy as cultural and historical activities, not just because they are acquired through social interactions, but also because they represent how a specific cultural group or discourse community interprets the world and transmits this information. According to Gee (1990), an awareness of how members of particular discourse communities construct their identities as readers (through their ways of behaving, interacting, valuing, thinking, believing, speaking, reading, and writing) is one important step in understanding variability in readers. "Reading the world" (Freire, 1970), or ideology, also is an inherent characteristic of discourse. As adults, we belong to multiple discourse communities. However, the first discourse community into which children are socialized is their home and the surrounding community.

When discourse communities differ in how they view the world and differ in what social practices guide their children's instruction, conflicts are bound to occur. Schooling in the United States tends to reflect a European-American, middle-class, economically privileged view of what counts as the process and content of learning and literacy (Hernandez, 1989). All students have to learn how to adapt to school norms and mores (e.g., raise your hand to be called on,

ask permission to go to the bathroom); students who are not European-American and middle class may have even more new norms and mores to learn because they typically do not belong to their teachers' primary discourse community (Cazden, 1988).

A sociocultural perspective is often invoked to help explain the poorer literacy performance of students from groups not traditionally well served in U.S. schools. In fact, though, sociocultural factors have to be considered in explaining any act of comprehension and in understanding how all students acquire reading comprehension. Understanding text in ways that satisfy U.S. teachers and the demands of U.S. test writers is an intrinsically sociocultural task. Reading research informed by a sociocultural perspective helps all parties who are interested in teaching and learning to identify and deal with the various tensions that affect the reading comprehension development, engagement, and performance of both younger and older students. Such research is crucial to designing instruction that will be effective for the full range of students in U.S. classrooms and to informing the content of preparation programs for the teachers of those students.

Group Differences

We include group differences as a focus of our interest even though they are to some extent coterminous with sociocultural and linguistic sources of variability. Indeed, a fairly large body of work has considered group membership (e.g., income-based group, racial group, ethnic group, native language group) without relating the findings to cultural factors. Further, some identified groups (e.g., children growing up in impoverished neighborhoods) or group-related factors (e.g., the smaller English vocabulary of children who speak English as a second language) cannot be defined as cultural or culture-related, and some highly influential factors (e.g., family income, attendance at good versus poor schools) are likely not only to be correlated with group membership but also to cross-cut cultural differences. For example, in research conducted with young children, Whitehurst and Lonigan (1998) reported that children from low-income homes had less experience with books, writing, rhymes, and other school-based literacy-promoting activities than did children from higher-income homes. Similarly, NAEP statistics from 1992 to the present indicate that more than 60 percent of African-American, Latino, and Native-American students scored below national normative standards for grades 4, 8, and 12.

As another example, second-language learning differentially affects literacy development depending on such factors as the age at which second-language learning is initiated, the language in which exposure to print and early literacy instruction is initiated, and the degree of support for first- and second-language

learning and literacy development in both the home and school environments (Snow, Burns, & Griffin, Eds., 1998; Tabors & Snow, 2001). Thus, the relationship between reading comprehension and membership in social class and racial, ethnic, and second-language groups is a topic that merits further study. Effective instruction for ethnic and racial groups who are traditionally ill served in U.S. schools must be based on a new research effort to understand these differences in achievement, and it must be informed by newly developed assessments that better identify the capacities that children in these groups bring to the task of learning to read proficiently.

Inter-Individual Differences

Individual children vary in their reading comprehension abilities, and variability in reader characteristics may partially account for these differences. Thus, the differential development of a variety of capabilities and dispositions supporting reading comprehension may lead to patterns of relative strengths and weaknesses that are directly related to variations in reading comprehension outcomes. For example, we know from research done over the past two decades that accurate and fluent (automatic) word recognition is associated with adequate reading comprehension. We also know that language comprehension processes and higher-level processes affecting language comprehension (the application of world knowledge, reasoning, etc.) do not become fully operative in comprehending text until the child has acquired reasonable fluency (Adams, 1990; Gough & Tunmer, 1986; Hoover & Gough, 1990; Perfetti, 1985; Stanovich, 1991; Sticht & James, 1984; Vellutino et al., 1991; Vellutino, Scanlon, & Tanzman, 1994). However, we also know that fluent word recognition is not a sufficient condition for successful reading comprehension and that other variables that directly or indirectly influence language comprehension are also critically important determinants of variability in reading comprehension. These variables include (1) vocabulary and linguistic knowledge, including oral language skills and an awareness of language structures; (2) non-linguistic abilities and processes (attention, visualization, inferencing, reasoning, critical analysis, working memory, etc.); (3) engagement and motivation; (4) an understanding of the purposes and goals of reading; (5) discourse knowledge; (6) domain knowledge; and (7) cognitive and metacognitive strategy development.

Still another important determinant of variability in reading comprehension is a reader's perceptions of how competent she or he is as a reader. For both younger and older students, it is the belief in oneself (or the lack thereof) that makes a difference in how competent they feel (Pajares, 1996). Providing students who are experiencing reading difficulties with clear goals for a comprehension task and then giving them feedback on the progress they are making can lead to increased self-efficacy and a greater use of comprehension strate-

gies (Dillon, 1989; Schunk & Rice, 1993). The degree to which these components develop in a younger or an older student may account, in part, for individual differences in the development of reading comprehension abilities.

Thus, such inter-individual differences may be usefully targeted in research evaluating the relative contributions made by individual capabilities and dispositions to variability in reading comprehension outcomes. Although these relationships between individual capacities and comprehension outcomes have been extensively studied, almost all of the work has been limited to monolingual learners; we have little idea whether the same pattern of relationships holds for second-language readers. Research that can inform better instruction in the various capacities and dispositions related to proficient reading, that can inform better assessments of these capacities and dispositions, and that can help us understand what teachers need to know about inter-individual variation across the full array of students in their classrooms is sorely needed.

Intra-Individual Differences

Students differ from one another in how diverse their reading competencies and interests are. For example, some students read stories frequently and are expert in story comprehension, whereas they rarely read electronic text and are not highly competent with computers. However, other students may be competent in reading for information on the Internet but not in interpreting linear narrative texts. Moreover, intra-individual variability in the acquisition of reading competencies can be observed during each phase of reading development, and it is sometimes manifested in the uneven development of important skills and subskills that underlie proficient reading. For example, during the beginning phases of reading development, when children are acquiring basic word-recognition, phonological-decoding (letter-sound), and text-processing skills, it is not uncommon to find a significant imbalance in the acquisition of one or another of these skills in a given child, to the detriment of that child's progress in becoming a proficient, motivated, and independent reader (Vellutino et al., 1996; Vellutino & Scanlon, in press). Similarly, the child with limited vocabulary knowledge, limited world knowledge, or both, will have difficulty comprehending texts that presuppose such knowledge, despite an adequate development of word-recognition and phonological-decoding skills.

Further, the child who does little independent reading, and who is not motivated to read extensively and diversely, may have difficulty engaging and profiting from the broad array of expository and technical texts encountered in school learning, even if he or she has no basic intellectual deficits or basic deficits in reading or oral language development. At the same time, the child who has not acquired the cognitive and metacognitive strategies and study

skills necessary to use reading as an instrument of learning will undoubtedly profit less from reading in a given domain than the child who has acquired these skills, along with the disposition and tenacity to use them, even if the two children have comparable reading and oral language skills (Palincsar & Brown, 1984; Pearson & Fielding, 1991; Pressley, 2000; Tierney & Cunningham, 1984). And the child who is not motivated to acquire knowledge or to engage with the school curriculum and school learning at large risks falling behind age-mates in developing the reading comprehension capacities needed for progress in school or for employability.

Thus, patterns of strength or weakness in the domains of word-reading accuracy, fluency, comprehension strategies, vocabulary, domain knowledge, interest, and motivation can lead to performances that vary as a function of the characteristics of the text and of the task being engaged in. Little research directly addresses the issue of intra-individual differences in young and older readers. Such research could help teachers use their students' particular strengths and reading preferences to build wide-ranging reading proficiency and could inform the design of more sensitive assessments as well.

VARIABILITY IN TEXT

It has long been recognized that texts should become more complex as readers' capacities grow and that the characteristics of various genres and subject matters create varying challenges for readers. Here we consider the characteristics of text that challenge various readers, recognizing of course that ultimately it is the match or mismatch between these characteristics and a reader's capabilities that determines the likelihood of successful comprehension.

The texts that children read in today's schools are substantially more diverse than those in use several decades ago. Thirty years ago, children were assigned specific readings that were crafted for instructional purposes, or they were exposed to a select group of books in the narrative, descriptive, expository, and persuasive genres. The reading materials that made it into the "canon" did not come close to representing the array of cultures, socioeconomic classes, and perspectives of the wider society. We now live in a world that is experiencing an explosion of alternative texts that vary in content, readability levels, and genre. They incorporate multimedia and electronic options and pertain to a variety of cultures and groups. This variety makes it much more difficult for teachers to select appropriate texts for individual readers.

One place to start in understanding variability in texts is to look at all the categories of texts and the dimensions on which they vary. These categories and dimensions include the following:

- Discourse genre, such as narration, description, exposition, and persuasion.
- Discourse structure, including rhetorical composition and coherence.
- Media forms, such as textbooks, multimedia, advertisements, hypertext, and the Internet.
- Sentence difficulty, including vocabulary, syntax, and the propositional text base (the explicit meaning of the text's content drawn from propositions in the text, i.e., statements or idea units, but without more-subtle details about verb tense and deictic references [*here, there, now, then, this, that*]).
- Content, including different types of mental models, cultures, and socio-economic strata; age-appropriate selection of subject matter; and the practices that are prominent in the culture.
- Texts with varying degrees of engagement for particular classes of readers.

The assignment of texts to specific readers becomes more difficult as alternative texts grow in number and diversity. The assignment of texts should strategically balance a student's interest in the subject matter, the student's level of development, the particular challenges faced by the student, the pedagogical goals in the curriculum, and the availability of texts. Teachers will need an enhanced knowledge of the texts that are available and access to computer technologies to help them manage the complex task of text assignment that will be expected in schools of the future.

One salient challenge is assigning texts to children at different grade levels when curricula are developed on a broad institutional scale and do not include detailed implementation instructions. We know that the assignments need to be diverse, but beyond that widespread consensus, we need an incisive plan that reflects scientific and pedagogical, rather than purely political, agendas. A large gap needs to be filled between the available electronic and multimedia materials and teachers' understanding of how the materials should be integrated with the reading curriculum. There currently is a paucity of well-written textbooks that promote understanding at a deep conceptual level, as opposed to the shallow knowledge that has pervaded our school systems. The texts selected for a child need to be sufficiently challenging and engaging in addition to being appropriate for expanding his or her comprehension proficiency. Otherwise, the child will not be intrinsically motivated to continue literacy development throughout his or her lifetime.

Contextual factors influence variability in access to texts and in the perceived difficulty and appropriateness of texts. Duke (2000) has documented that children who attend schools in poor districts have many fewer texts available than do children who attend schools in richer areas; the availability of texts in homes

and libraries varies similarly. Texts that treat certain social issues or that require an interpretation and appreciation of alternative perspectives may be considered inappropriate by parents from some cultural or religious groups. Texts at an appropriate instructional level may be rejected as too babyish by older learners; paradoxically, texts that seem too difficult may be read successfully if the topic is sufficiently interesting and relevant to the learner. Text factors thus interact with reader, activity, and context in determining the difficulty of comprehension.

The importance of research on text factors to the design of effective instruction and informative assessments is obvious. A more robust research basis for preparing teachers to select and use texts optimally is also clearly needed.

VARIABILITY IN ACTIVITY

We know that many instructional activities can improve comprehension. Yet, a major and persistent issue of concern in U.S. schooling is how infrequent and ineffective the instructional activities focused on teaching comprehension are (Durkin, 1978–79). Our goal in this section is to elaborate on the definition of reading comprehension we provided in Chapter Two by identifying some dimensions along which activities included in reading comprehension instruction may vary.

We discuss instruction under the heading “activity” even though activity is a larger category than instruction. Activity refers to the acts a reader engages in with a text, and it encompasses purpose, operations, and consequences. Given the focus of this document on research to improve reading outcomes, we concentrate on the instructional contexts for reading activity. For many school-aged children, little reading activity occurs outside the classroom context; for them, instructional activities represent the only opportunity for them to read.

Variability in activity is generated by the various purposes for reading. Some purposes are self-generated, such as reading for pleasure, reading to assemble a piece of furniture, or reading to learn about dinosaurs. Other purposes may be teacher imposed: reading to answer some questions, reading to write a book report, or reading to prepare for Friday’s test. When the teacher-imposed purpose is unclear to the learner, or in conflict with the learner’s purpose, comprehension may well be disrupted.

One frequent teacher goal is to help students understand a particular text, either to enjoy it or to learn from it. Since the text is potentially difficult for students, teachers employ various instructional techniques that support reading. These instructional techniques target particular operations that are part of the reading activity. For example, teachers may build prerequisite background

knowledge or present students with key concepts and vocabulary critical to an upcoming text (Dole et al., 1991; Graves, Cooke, & LaBerge, 1983; Langer, 1984). Content-area teachers may provide specific instructional scaffolds for their poor comprehenders who are trying to understand and learn from their difficult science and history textbooks. Another possible goal of comprehension instruction is to help students learn how to become self-regulated, active readers who use various strategies for comprehension. These comprehension strategies are procedures and routines that readers themselves apply across a number of different texts (NRP, 2000). For example, teachers may teach students to activate their own background knowledge, to draw inferences as they read, or to restate information in the text (Chan, Cole, & Barfett, 1987; Idol-Maestas, 1985; Schumaker et al., 1982). The difference between the two goals of comprehension instruction lies in the intended outcome—immediate understanding versus long-term improvement of comprehension capacity. Ideally, of course, instruction addresses both goals.

Successful comprehension can be characterized by considerable variability in a reader's reliance on the various operations involved in reading: concentrating on the task at hand, reading words, reading fluently, parsing syntactically, constructing a propositional text base, constructing mental models, generating inferences, monitoring comprehension, and using deep comprehension strategies. Each operation reflects specific reader capacities and, at the same time, is facilitated or impeded by the features of the text being read. Although some level of success at concentrating on the task of reading, reading words, and parsing sentences is a prerequisite to any success at comprehension, the degree of ease with and reliance on the other operations is evidently highly variable. Some instructional activities target specific operations, whereas successful readers evidently engage spontaneously in other activities. We know very little about the degree and sources of variation in the functioning of these operations across the full range of readers. Until we know more, we cannot help teachers to design effective instruction for students with widely varying capacities or to assess their students' instructional needs.

Of course, it is the variation in consequences that is of the greatest ultimate importance. Some classroom-structured reading activities generate important changes in the reader's capacity to comprehend an array of texts and to function as a self-regulated reader. Others, as noted above, may focus more exclusively on improving students' comprehension of the specific text under consideration. Exploring the instructional techniques that generate long-term improvements in learners' capacities to read with comprehension for the purposes of learning, applying knowledge, and being engaged is the highest priority identified for the research agenda we propose here.

VARIABILITY IN THE CONTEXT

In the previous sections on variability in the reader, text, and activity, we suggested how contextual factors ranging from economic circumstances to social group membership to classroom organization can influence reading comprehension, so we do not reiterate those differences here. We underscore the fact that contextual factors operate at many levels to influence the reader, the text, and the activity in profound ways. For example, the availability and the variability of resources matter greatly when one considers the surrounding community, the school district, the school building, and the classroom and how each varies singly and in combination as a function of context.

Perhaps the most alarming aspect of the variability in context is the degree to which the quality of instruction in reading varies between schools serving economically secure, English-speaking, European-American families and those serving economically marginalized families and families from other ethnic and linguistic groups. Not surprisingly, outcomes vary just as radically. Reading comprehension, like instruction and learning, is inextricably linked to and affected by larger sociocultural contexts. Understanding the full complexity of reading comprehension requires acknowledging that it is a cognitive, linguistic, and cultural activity.

It is possible to present a fairly extensive overview of the dimensions of variability associated primarily with the reader; our somewhat briefer discussions of variability deriving from text or from activity reflect the relative weight of available research evidence (see Appendix A). Previously articulated models of reading (Jenkins, 1976; see Alexander & Jetton, 2000; Graves & Graves, 1994; Graves, Graves, & Braaten, 1996, for discussions of the tetrahedral model) have certainly pointed to reader, task, and text as three elements of interest. Nonetheless, research has focused primarily on the reader, locating explanations for failure and targeting procedures for improvement there. We argue that creatively designing an instructional activity is just as important to improving reading comprehension as selecting appropriate texts. The role and challenge of the text expand, furthermore, as novel electronic and multimedia texts become increasingly important domains for reading.

In the next chapter, we turn to a more explicit consideration of our proposed research agenda. The overarching goal of this agenda is improving reading comprehension outcomes. The subtopics we discuss are instruction and classroom practices, teacher preparation, and assessment.