They can read the words, but they can’t understand: Refining comprehension assessment

Mark (all student names are pseudonyms) was a modern Eddie Haskell—the overly ingratiating next-door neighbor who was a friend to Wally Cleaver in the 1950s U.S. television series *Leave It to Beaver*. Mark, like Eddie Haskell, knows just what to say to adults, and on this unctuous charm he skates through school, but he does not do very well in his studies. In the classroom, Mark has difficulty following directions, using his time wisely, listening attentively, working independently, and—most important—understanding what he reads. His grades are poor and he struggles.

Mark’s problems started in the first grade, when teachers reported that he lacked self-control, did not pay attention, and failed to participate in class. These problems persisted into second grade and his teacher recommended that he be retained. During Mark’s second year in second grade, his reading improved and his teacher reported that he was reading at or above grade level with good comprehension. In third and fourth grades Mark’s teachers noted that he was having difficulty with reading comprehension, following directions, listening attentively, and using time wisely.

In the fifth grade, Mark was referred to a child study team for possible psychological assessment leading to special education placement. The school was concerned about his reading comprehension, trouble following directions, and poor task completion.

All these subtle behavioral and learning problems went hand-in-hand with a troubled home life. Mark’s parents were divorced, and he lived with his father and a younger sister, but he saw his mother regularly. He craved adult attention, missed his mother, and wanted to live with her. Early in his school career, Mark’s teachers questioned whether he could distinguish between reality and fantasy.

Assessing Mark’s reading

Mark’s psychological evaluation was unremarkable and revealed little of use to Mark’s teachers. On the Wechsler Intelligence Scale for Children–III, Mark achieved a Verbal IQ of 98, a Performance IQ of 83, and a Full Scale IQ of 90. On the Weschler Individual Achievement Test Mark achieved a standard score of 116 for basic reading skills, a standard score of 96 for reading comprehension, and a total reading score of 108, which put him in the 70th percentile. His decoding skills when reading a list of words or short one- to three-sentence passages were excellent, he made few errors, and he quickly self-corrected. His listening comprehension revealed a bit about his problem—here he scored at the 12th percentile with a standard score of 82.

Because traditional psychological measures revealed little about Mark’s reading comprehension, we decided to take a closer look using...
the Qualitative Reading Inventory 3 (QRI-3). The QRI-3 is an informal reading inventory consisting of a series of graded expository and narrative passages. Before the student reads a passage he or she is asked a few concept questions to assess his or her familiarity with the topic. After reading the selection, the student is asked either to retell what has been read or to answer explicit and implicit comprehension questions.

The QRI-3 was administered following the directions in the test manual. We started testing with the inventory’s sixth-grade word list, and Mark easily achieved instructional level. Next, Mark read a sixth-grade narrative passage and achieved an independent level for reading accuracy, but his comprehension was at frustration level. We then asked Mark to read fifth- and fourth-grade narrative passages, which yielded the same results. Rather than continue assessing at lower grade levels, we reasoned that comprehension is influenced by text type, prior knowledge, and mode of reading as well as passage level. Mark then read fourth- and fifth-grade expository passages, and on each his word recognition was at independent level, but his comprehension was still at frustration level. Finally, Mark read a sixth-grade expository passage and achieved instructional level for word recognition and comprehension. At this point, after two days of psychological and reading assessment, Mark asked to stop reading. He indicated he was tired of the testing, so we decided not to seek his independent level. The only deviation from the test directions was to probe incorrect answers for further information to see if we could learn more about Mark’s comprehension difficulties. These probes were typically nondirective in nature, such as, “Can you tell me more? What else happened?” All of Mark’s results are presented in Table 1.

### How Mark reads

Mark reads with accuracy, fluency, and expression. His oral reading for all passages was at the independent level. He consistently read with 98% accuracy or better with a mean reading rate of 132 words per minute. The few miscues he made were either on function words that were immediately corrected or on low-frequency content words. His silent reading rate averaged 148 words per minute, suggesting fluent reading. It is only when Mark had to answer comprehension questions that his difficulties were revealed.

Mark’s answers to comprehension questions were poor across almost all passages. There was no relationship between grade level and reading comprehension; he did just as poorly on a
fourth-grade passage as he did on a sixth-grade passage. Reading silently versus orally did not affect his comprehension. Similarly, there was no relationship between passage type and comprehension. He answered 33% of the questions correctly on the expository passages and 20% of the questions correctly on the narrative passages. On the QRI-3 the narrative passages are all biographies—information in a narrative structure. Mark answered 48% of the explicit questions correctly and only 24% of the implicit questions. Answering explicit questions was difficult for Mark; inferential questions proved to be even more challenging. On only one of the six passages did he achieve the instructional-level criteria, with 75% of the comprehension questions answered correctly.

Mark’s scores on the prior knowledge measures shed some insight on his comprehension problems. On four of the passages Mark demonstrated high prior knowledge of or familiarity with the concepts according to the scoring guidelines. But on only one of those four passages did Mark achieve an instructional-level score. On the other three passages he failed to achieve instructional level. On two of the six passages his prior knowledge was low, and for both of those he also failed to achieve an instructional-level score on the comprehension questions. We concluded that prior knowledge was necessary for Mark to score well on comprehension but not enough in itself. This assessment of Mark did not bring us closer to knowing why he had comprehension difficulties or, more important, what to do about it other than work on answering implicit comprehension questions and on developing prior knowledge.

Analyzing responses to comprehension questions

Stalled but not yet stumped, we decided to look closer at Mark’s answers to the comprehension questions, especially his wrong answers. We proceeded in this analysis by following our noses and asking what the answers revealed about Mark’s thinking or lack thereof. We were inspired by the assumption behind miscue analysis (Goodman, 1969; Goodman & Burke, 1972) that erroneous responses might be a window on the reading process and, in this case, on the process of meaning construction.

First, we noted that correct responses revealed little about Mark’s thinking; he simply restated ideas in the text. However, the incorrect responses might lead to the source or nature of Mark’s reasoning. For each question we tried to determine what type of reasoning Mark used to arrive at his answer, examining the source of knowledge or the reasoning behind each answer. We were treating reading, or at least question answering, as reasoning, much as Thorndike (1917/1971) did many years ago.

Understanding a paragraph is like solving a problem in mathematics. It consists in selecting the right elements of the situation and putting them together in the right relations and also with the right amount of influence or force for each. The mind is assailed as it were by every word in the paragraph. It must select, repress, soften, emphasize, correlate and organize, all under the influence of the right mental set or purpose or demand. (p. 431)

In some ways we were looking at question-answer relationships (QAR; Raphael & Wonnocutt, 1985), but we also went beyond them to explore a variety of responses to inferential and literal questions. QAR looks at the source of the answer, but we also looked at the type of inferences Mark made or failed to make. Our analysis followed the process of emerging categories (Glaser & Strauss, 1967); we tried to group Mark’s responses by the thinking they revealed or failed to reveal. If two answers seemed to reflect the same type of thinking we gave the new category a label, and slowly the following distinct categories emerged that could be described from the thinking that took place or that should have taken place but did not (see Tables 2 and 3).

- Failure to link ideas across a passage— making relational inferences
- Failure to make causal inferences
- Failure to properly parse syntax
- Excessive elaboration or overreliance on prior knowledge
- Failure to know a key vocabulary word
- No response— did not answer

Relational inferences. Mark answered only 6 out of 25 inferential questions correctly. (One question that the test labeled explicit, we felt was implicit, requiring a linking inference across three sentences.) Mark had particular difficulty
with questions that required him to make connections within the passage and across sentences or paragraph segments—what van den Broek and Kremer (2000) called relational inferences. Consider the excerpt in Figure 1.

Mark appears to have picked up information from just one segment of the text and failed to integrate it with other ideas, thus failing to form the generalization that the question required. These relational inferences are critical to effective comprehension and indicate that a reader can track a character, an object, an idea, or a theme across a text, slowly building a more complete understanding. The difficulty Mark has here is similar to the difficulty that young children have remembering goals within a story (van den Broek, 1997). Young children tend to focus on specific events and miss the goals that hold the events together. Six of Mark’s answers reflected an inability to generate relational inferences or to link ideas across a passage, and these problems were more prevalent when he was unfamiliar with the content of the passage because prior knowledge helps to build these connections.

Table 2
Frequency of Mark’s comprehension errors

<table>
<thead>
<tr>
<th></th>
<th>Narrative text</th>
<th>Expository text</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High prior knowledge</td>
<td>Low prior knowledge</td>
</tr>
<tr>
<td>Fails to make relational inferences</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Fails to make causal connections</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Excessive elaboration</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Syntax</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Could not answer</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3
Percentage of Mark’s comprehension and reasoning problems

<table>
<thead>
<tr>
<th></th>
<th>High prior knowledge</th>
<th>Low prior knowledge</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty with relational inferences</td>
<td>30.8</td>
<td>18.7</td>
<td>22.5</td>
</tr>
<tr>
<td>Difficulty with causal inferences</td>
<td>7.7</td>
<td>25.0</td>
<td>20.2</td>
</tr>
<tr>
<td>Excessive elaboration</td>
<td>38.6</td>
<td>26.6</td>
<td>30.3</td>
</tr>
<tr>
<td>Vocabulary problems</td>
<td>7.7</td>
<td>4.7</td>
<td>5.6</td>
</tr>
<tr>
<td>Syntax problems</td>
<td>11.5</td>
<td>15.6</td>
<td>13.5</td>
</tr>
<tr>
<td>No answer</td>
<td>4.0</td>
<td>9.3</td>
<td>7.8</td>
</tr>
</tbody>
</table>
Causal inferences. Mark also had difficulty making causal inferences, inferring the antecedent of an action or determining the consequence of an action. The text segment, questions, and answers in Figure 2 illustrate the difficulty that Mark had with generating causal inferences.

These answers required that Mark link three ideas in three sentences, completing a causal chain of events. Mark’s answers demonstrated that he could relate the first two ideas but could not complete the inference to connect the third sentence. Perhaps Mark lacked knowledge of the monetary pressure that boycotts can exert on the law, and that lack made the last step in this causal chain difficult to complete. Failure to make causal inferences accounted for five of Mark’s incorrect answers to implicit questions. Failure to make causal inferences required readers to infer the consequence of an action and not the antecedent of the action. Because events occur in a chronological sequence, it is easier to determine links to the past than to anticipate the future. Graesser and Bertus (1998) presented evidence that causal consequences are more difficult to infer than causal antecedents. Mark’s responses are consistent with this finding.

Excessive elaborations. Mark’s most common response was to insert or invent knowledge that was not in the passage. If he could not recall explicit information or if he could not generate an inference, he constructed his own plausible answer of excessive elaboration from his prior knowledge and experiences. At times Mark seemed to invent the knowledge, and sometimes he answered questions just to keep the testing dialogue going. He rarely reverted to the simple “I don’t know.” This may be an outgrowth of his difficulty distinguishing between fantasy and reality and his desire to please. The example in Figure 3 presents a text segment, the question, and Mark’s response.

In this example Mark’s answer was plausible but not a reasonable inference based on the information in the passage and the demands of the question. The inference is drawn only from prior knowledge and excludes text information. Neuman (1990) has called this pattern assigning default values. There is research evidence that prior knowledge can distort comprehension when the reader’s schema overrides the information in the text (Lipson, 1983). When readers elaborate on knowledge and experiences that are
not germane to the text, comprehension is disrupted (Strang, 1967; Trabasso & Suh, 1993). These default strategies are common during the act of reading (Neuman, 1990) or, in Mark’s case, while answering questions. Excessive elaborations were common across the six passages that Mark read and accounted for 30% of his answers. Excessive elaborations were more likely to occur on narrative passages and passages where he had high prior knowledge. Mark appeared to draw upon a wide set of knowledge stores to complete his answers, and at times he simply invented the information.

**Syntax difficulties.** Mark also had difficulty with information within a sentence (processing the syntax). On five questions, syntax seemed to cause him considerable difficulty (see Figure 4). Probing revealed that this answer and others had their origins in a misunderstanding of the syntax. When the underlined part of the sentence was covered up, Mark was able to answer the questions correctly, which suggested that he misread the dependent clause as the indirect object of the sentence. Work by several researchers has demonstrated that children’s ability to detect and correct syntactic errors is directly related to reading comprehension (Bentin, Deutsch, & Liberman, 1990; Demott & Gombert, 1996; Tunmer, 1989). In a more direct study of syntax and reading, Gaux and Gombert (1999) found that poor comprehenders had more difficulty with explicit syntactic knowledge, specifically word order and phrase knowledge, than did good comprehenders. Mark had difficulty with complex subordinate clauses and may have failed to parse the complex structures of some sentences.

**Vocabulary problems.** In a few cases Mark’s problems stemmed from not knowing the meanings of key words either in the passage or in the question itself. Vocabulary problems only came to light when Mark asked what a word meant, which rarely happened, or when we suspected that a given word might be interfering with his understanding of the passage. So in a few cases when he answered a question incorrectly, we returned to the passage and asked him what a given word meant. Vocabulary problems accounted for only 5.6% of his answers and occurred more often when he was unfamiliar with the content of the passage.

Mark’s answers to comprehension questions revealed a pattern. Beyond his lack of prior knowledge and his difficulty with inferential questions, Mark had difficulty with reasoning skills—the inferences required to build a coherent model of text. His difficulties existed at the sentence, intersentence, and intratext levels. He consistently failed to make relational and causal
inferences to build a coherent understanding of the text. When Mark could not make the necessary inferences, he defaulted to excessive elaboration, relying on prior knowledge, experience, and invented ideas to answer the questions.

**Taking a broader look**

Because we were intrigued by Mark’s responses we decided to apply the same type of analysis to another nine students, building our sample to 10 students in all. (We will return to Mark at the end of this article to discuss how to improve reading comprehension.) All of the students we studied were in fourth or fifth grade, all could read texts at their grade level with instructional-level accuracy (94%), and all had comprehension problems according to their teachers. Each student was assessed as part of a special education evaluation, and during the course of the assessment each read at least three passages from the QRI-3. We hoped that this analysis would support our original categorization of errors or perhaps uncover new types of reasoning problems that we did not see in Mark’s responses.

Table 4 lists the comprehension problems exhibited by each of these students. The most common problem for 8 of the 10 students was overreliance on prior knowledge or, as we have labeled it, excessive elaborations. This was just as likely to happen when answering explicit questions as when answering implicit questions.

Inferences presented difficulty for all 10 students, with causal inferences presenting more problems than relational inferences. The relatively easier time students had with relational inferences may be a product of the QRI-3. Only a few questions tap relational inferences; typically, the first question for each passage asks about the goal, purpose, or main idea. These questions ask readers to link ideas across a text, and students frequently gave incomplete answers that focused on just one section or one idea in the text.

Causal inferences can be divided into two types. Some require that the reader complete or connect a chain of events and establish a causal connection across ideas in the text. The causality must be inferred because it is not directly stated. Other causal questions demand that the reader insert some prior knowledge to complete the causal connection. For example, the passage about Johnny Appleseed required some knowledge of cider to know that it comes without seeds; hence, Johnny could get the seeds from cider makers. An example of a causal inference that requires the linking of text information occurred in the Martin Luther King, Jr., passage. The first two sentences state, “When Martin Luther King, Jr., was a boy many laws would not allow black people to go to the same places as whites. Some people thought blacks were not as good as whites” (p. 264). These two sentences require that causality be inferred, but the use of prior knowledge is less necessary.

The QRI-3 passages we used had many more questions that required causal inferences be resolved by making connections across sentences rather than by inserting prior knowledge. Therefore, students exhibited difficulty in making connections across sentences four times more often than they did in using background knowledge to complete a causal inference. Students were more successful with questions that demanded knowledge-based inferences than they were with questions that demanded text-based inferences. Perhaps this was true because
most of the readers were familiar with the content of the passages and had the knowledge to make inferences.

Problems with syntax were rare because we could only score these as problems if a student had difficulty understanding the relationships within a sentence. When the problems did occur, they were within long sentences with one or more dependent clauses. Typically it required a probe, like covering the dependent clause in the sentence with an index card and asking the question again, to determine if syntax was an issue.

Vocabulary problems were rarely coded because, unless the student asked what a given word meant, the examiner did not know if word meanings were hampering a student’s comprehension. Students were more likely to ask about a word’s meaning when it was part of the question than when it was in the text. Like syntax problems, additional probing was necessary to reveal if lack of vocabulary knowledge affected a student’s comprehension.

The comprehension response form (Figure 6) guided our analysis, and it may assist you as well. This form helped us list and categorize the students’ responses to comprehension questions. To the question “What was Martin Luther King’s main goal?” one student responded, “to fight peacefully.” A probe elicited the further idea, “to change the laws.” We coded this as an implicit question with an incorrect answer, which demonstrated a failure to make a relational inference.

Limitations. When we assessed Mark’s comprehension problems, we deviated from the guidelines of the QRI and other informal reading inventories because, as his answers unfolded, we were more interested in exploring what influenced his responses than in determining his independent reading level. Mark tired of the testing, and we chose not to push him. We found Mark’s frustration and instructional levels but not his independent level. We learned that Mark was at an instructional level on a sixth-grade expository passage for which he had a sufficient amount of prior knowledge. He was at a frustration level on sixth-, fifth-, and fourth-grade level passages, whether he was familiar with the content of the passage or not. We suspect that reading levels, using the 75% Informal Reading Inventory comprehension criteria (Betts, 1946), are determined by word recognition skill, text type, background knowledge, and the ability to make inferences—not just by passage grade level.

The scoring of comprehension responses is not a precise process and reflects many of the pitfalls that educators encountered when Reading Miscue Analysis was developed (Goodman & Burke, 1972; Hood, 1975–1976). Incorrect answers to comprehension questions do not always fall into discrete categories. If an answer contained information that was not in the

<table>
<thead>
<tr>
<th></th>
<th>Relational Inferences</th>
<th>Causal Inferences</th>
<th>Excessive Elaboration</th>
<th>Syntax</th>
<th>Vocabulary</th>
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<td>46</td>
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</tr>
</tbody>
</table>
passage at all, we coded it as an excessive elaboration. When a reader's answers to questions that demanded relational inferences were incomplete or included information from the passage that was not germane to the question, we coded the response as reflecting difficulty with relational inferences. When students had difficulty with questions that demanded causal inferences, we tried to determine if causality could be resolved with the information within the passage or if the reader needed to use his or her background knowledge.

Many of the errors we analyzed were made while the students were reading at their frustration level. That is, they read with 94% word-recognition accuracy but less than 70% comprehension. It is possible that the types of comprehension errors change as the texts become more intellectually challenging. But we argue that the failure to make these critical relational and causal inferences and the tendency to rely too much on prior knowledge cause the poor comprehension scores. When we examined the errors made on passages read at the instructional level, we found the same types of comprehension errors, but their frequency was obviously less.

From the data we collected it is not possible to determine whether the students' excessive elaborations interfered with their ability to make relational and causal inferences or whether excessive elaborations were a default strategy—a cognitive habit. Unable to make relational and causal inferences and needing to say something in response to a question, the students likely drew upon what they already knew or simply invented ideas. Our data, like that of Neuman (1990), suggest that these default responses are common when students are answering questions or thinking aloud. In any case, a close examination of types of students' responses sheds more light on their comprehension problems and points to more specific directions for instruction. Now let's return to Mark.
Improving reading comprehension

Mark exhibited the same types of problems on the QRI-3 that his teachers reported in his regular class work and discussions, but the analysis of his QRI-3 responses leads to a deeper and more specific understanding of his problems. First, Mark needed to attend to the text and use it as the primary starting point for understanding and for answering questions in particular. We have learned that good questions are text dependent; so are good readers. Mark regularly failed to make relational and causal inferences, and he consistently used his prior knowledge or his invented ideas to answer questions. Mark also has difficulty processing some complex syntactic patterns, and, at times, a lack of vocabulary knowledge interfered with his comprehension. These comprehension difficulties, which were evident when Mark attempted to answer questions, may also be problems when Mark constructs meaning during reading. Other comprehension problems, perhaps involving monitoring and strategy selection, may also exist, but questioning may not reveal them. A think-aloud exercise might lead to deeper insights on his thinking, but we know that teachers have limited time to explore students’ problems.

To help Mark, we needed to focus his attention on the text and on the connections that need to be made within a text and to steer him away from his propensity to rely on prior knowledge. The tools to assist Mark are the instructional approaches loosely called comprehension strategy instruction (Harvey & Goudvis, 2001; Pressley et al., 1992). Strategy instruction can be presented as individual strategies, such as teaching students to self-question, summarize, visualize, and so forth, or strategies can be bundled together as they are in Reciprocal Teaching (Palincsar & Brown, 1984) or Transactional Strategy Instruction (Brown, Pressley, Van Meter, & Schuder, 1996). While the collection of individual strategies varies, there is agreement across the literature that students need to predict, self-question, infer, summarize, visualize, and monitor their own comprehension (Dole, Duffy, Roehler, & Pearson, 1991; Pressley & Afflerbach, 1995).

While comprehension strategy instruction has been validated, none of the bundles of strategies appeared to specifically match the problems we noted in Mark’s thinking or in the answers we observed in the other students. While there is evidence that strategy instruction improves reading comprehension (Brown et al., 1996; Rosenshine & Meister, 1994), it may be desirable to modify the bundle of strategies in Reciprocal Teaching or Transactional Strategy Instruction to suit the needs of specific children, something that insightful teachers have always done.

Recent work with adults suggests that the type of strategic processing, whether explaining, predicting, or associating, affects the kinds of inferences readers make and the information they draw upon to make those inferences (Magliano, Trabasso, & Graesser, 1999). Magliano et al. further suggested that some strategies may conflict with other strategies and that it may be difficult to emphasize predicting, which draws upon prior knowledge and text-based information, while the reader is also trying to make explanatory or causal inferences. Trying to think forward and determine what will happen next appears to impede the ability to think back and infer why things did happen. If these trade-offs are present in mature readers with a rich cognitive capacity, they may be even more pronounced in young readers just learning to think strategically. Therefore, we think it is desirable to tailor the strategies being taught to the needs of the students.

The critical problem for Mark and the other students we assessed was the inability to make inferences. These inferential problems exist at the sentence, paragraph, and whole-text levels. In some theoretical views of comprehension the making of inferences is one of many meaning construction strategies that exist alongside strategies for visualizing, monitoring, and evaluating comprehension (Pressley & Afflerbach, 1995). In another view of comprehension, making inferences is the glue that cements the construction of meaning (Suh & Trabasso, 1993). The reader builds meaning by completing causal chains of events, connecting ideas to make generalizations, and linking characters and ideas through pronoun references (Baumann, 1986). Inference making is a critical strategy that deserves extra attention in the bundle of strategies that we teach to students.

It is also possible that the making of inferences operates at a more basic level of cognition. They can read the words, but they can’t understand: Refining comprehension assessment

431
than the individual strategies within Reciprocal Teaching or Transactional Strategy Instruction. If inferences are the forces that bind ideas together as we construct meaning, then strategies may operate to promote (predicting, self-questioning), to direct (visualizing, searching for importance, summarizing), or to evaluate (monitoring) these inferences. But the strategies may not be the inferences themselves. Strategy instruction is a blunt but effective tool that we can hone into an even more effective instructional approach. While strategy instruction may change the thinking process of the reader and promote more engagement with the text, it is unclear how strategy instruction affects the process of making inferences.

Strategy instruction is an indirect force on cognition—a cognitive catalyst that promotes a disposition to close, careful reading. When we ask readers to self-question, clarify, summarize, and make predictions, we push them to become more purposeful and thoughtful in their thinking—more engaged with the text (Guthrie et al., 1996)—but this may not direct them to make the specific inferences necessary for meaning construction. As readers become more thoughtful, purposeful, and reflective, they make more of the essential inferences that drive meaning construction. Teachers could be more specific in their instruction and focus on the inferences that readers need to make. We can’t literally compel Mark to make causal or relational inferences, but we can model them, walk him through the thinking necessary to make these connections within a text, and shift the responsibility to him. In working with students like Mark and the others we tested, we would use some existing instructional approaches and reformulate others to meet their needs.

**Mark’s program**

The first goal should be to tackle Mark’s propensity to rely on prior knowledge to answer questions. To do this we would reach back to Question Answer Relationships (Raphael, 1982, 1986). QAR allows us to present the idea that sometimes answers are in the text, sometimes we have to search for them, and sometimes the information is in our head. More important, QAR is a short course in the reading process, and by learning to understand and construct different types of questions the reader also learns about sources of information and the type of thinking necessary to answer the questions. It is then easier to see that comprehension involves the search for and the construction of information.

For Mark and students like him we recommend learning to label questions, identify the kind of thinking necessary to answer questions, and then to construct their own questions. These activities are an excellent precursor to the responsibility for leading a classroom discussion. By constructing, labeling, and defending questions, Mark and students like him learn to think about texts and about the sources of information and thinking necessary to answer questions. We also believe that QAR is a good introductory instructional approach before students launch into Reciprocal Teaching or Transactional Strategy Instruction.

To help students make inferences we recommend direct explanation and modeling of the inferential process. The general concept can be introduced using a metaphor, such as the weaving strategy of Hansen (1981) or the cloze model outlined by Dewitz, Carr, and Patberg (1987). In the weaving strategy the teacher first develops students’ prior knowledge of a topic, and the students write down what they know on gray strips of construction paper, which symbolize known information—gray matter. The students then preview the text and write down predictions on colored strips of paper. Then they weave text information together with prior knowledge to symbolize the process of making inferences.

In the cloze process the teacher presents a sentence with a cloze blank and begins a discussion. For example, *The car skidded out of control and plunged over the _______.* Students are encouraged to pose possible answers, and then the teacher asks where these answers or responses come from. Students are lead to understand that we use knowledge from our head or our experiences to answer questions. Then the next sentence is presented: *The car just missed the boat passing underneath.* The teacher shows how text information combined with prior knowledge helps us to narrow choices and make inferences.

Once past this metaphoric or analogous introduction, Mark needs to make inferences and learn about the thinking that underlies them. Harvey and Goudvis (2001) introduced the idea of coding a text to indicate the types of connections necessary to develop understanding. They
concentrated on connections from the text to other texts, to personal experiences, and to the world. We added codes for connections within the text. When the students encounter a causal inference, they code the text with a C, and when they relate ideas in the text to prior knowledge, they code the text with a W for world. The teacher models the process, thinking aloud, and the students gradually take over the task. This idea could be applied to Mark by having him read and code portions of the text to indicate the type of connections or inferences that he needs to make. Figure 7 lists the kind of connections that Mark or any reader should be making. A lesson on connections, like all strategy lessons, should begin with extensive teacher modeling and talk about the types of connections that readers make, why they make these connections, and when they should be made.

To model well it is necessary for the teacher to select texts carefully and read them closely. If we want students to make causal inferences, the texts must have plenty of examples of causal antecedents. When such causal antecedents do not exist, readers rely more on prior knowledge (Magliano et al., 1999; van den Broek, 1990). It is also important to use content-area texts for literature, science, and social studies. Texts specifically created to teach reading comprehension are too obvious and do not train teachers how to anticipate reasoning problems in authentic texts.

Teachers must read texts closely to understand what type of connections need to be made—what Beck, McKeown, Sinatra, and Loxterman (1991) called a text processing perspective. If teachers can’t identify the necessary inferences, then they can’t assist and guide their students. We suggest that teachers read each selection twice, once for understanding and a second time from the perspective of poor comprehenders in their classroom. We have found that this close reading is often the critical difference between planning a successful or an unsuccessful lesson.

When the strategy is first modeled, teachers should use a text sample and physically show where they made specific connections. Teachers should indicate when details were linked to big ideas (MI), where causal connections were made (C), where connections to prior knowledge or the world were made (W), when complex anaphoric relationships (A) had to be resolved (Baumann, 1986), and any other connections that help them construct meaning. As teachers make these connections, they need to think aloud and describe the thinking process behind the reading while revealing the text characteristics that drive the thinking. Talking about text characteristics is essential because teachers and students need to know when to make a specific type of connection.

After the teacher models the process the students should indicate on sticky notes the type of connections they would make while they read. This involves students in the crucial step of determining what inferences need to be made. Postreading discussion should focus on how the inferences were made and how they helped to develop understanding. Gradually, we would phase out the connection code but continue with strategy instruction that borrows from Transactional Strategy Instruction and from Reciprocal Teaching. We like the flexibility of Transactional Strategy Instruction and its ability to focus on what strategies should be made and when. We also like the definite release of responsibility of Reciprocal Teaching when students take turns leading the discussion.

Mark and other students like him did well in this instructional program. Mark was assessed two more times during the school year using the QRI-3. By the end of the school year he was able to read sixth-grade narrative and expository passages at an instructional level with excellent reading accuracy and strong comprehension. The number of excessive elaborations decreased, indicating that Mark was attending more closely to the text, and he made more inferences. The other students also demonstrated significant gains, with 75% of them achieving two or more years of growth in reading ability.

<table>
<thead>
<tr>
<th>Connections made during reading and their codes</th>
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<tbody>
<tr>
<td>Anaphoric relationships</td>
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<td>Sentence connections</td>
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<tr>
<td>Causal connections</td>
</tr>
<tr>
<td>Main idea connections</td>
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<tr>
<td>Connections to other texts</td>
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<tr>
<td>Connections to the world</td>
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<tr>
<td>Connections to personal experience</td>
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Figure 7

They can read the words, but they can’t understand: Refining comprehension assessment
Helping students learn from their mistakes

Our work with reading assessment suggests that we can improve our understanding of students’ comprehension difficulties. Using available tools like the QRI-3 or other informal reading inventories, we can delve into the thinking, or lack thereof, underlying the difficulties that students have in reading comprehension. We can learn how students answer questions, what information they draw upon to answer questions, and what type of inferences they can and cannot make. Often this type of analysis uncovers a default strategy—an overreliance on prior knowledge. Why students rely on prior knowledge is open to speculation. It may be a coping strategy or it may be learned, as teachers have overstressed what students know without directing them back to the text to justify their understandings and their interpretations.

Our system is far from precise, and others will, we hope, suggest additions and modifications. We think that a close analysis of students’ comprehension is possible and desirable any time they answer questions or participate in oral discussions. Capturing students’ reasoning during discussions is more difficult than reading written work or making a one-on-one assessment, but the astute teacher can learn something. In any case, we encourage teachers to note the types of incorrect answers that students make and use these understandings to design comprehension instruction.

It is likely that comprehension instruction can be more tailored to the needs of individual students than it currently is. Strategy instruction allows the teacher to model and assist students to use a range of reading strategies. The emphasis or weight of the strategies should be determined by the demands of the text and the thinking processes used by the students. Students who have difficulty with specific types of inferences can receive instruction that is geared to their needs. Conversely, once teachers understand how their students think, texts can be selected that make specific demands on the students. How effective targeted comprehension strategy instruction can become remains to be researched in the classroom, but the analysis reported here suggests a starting point for such an inquiry.

References


