

CHAPTER 4

Strategies to Promote Student Discourse

INTRODUCTION AND LEARNING OBJECTIVES

The importance of social interaction as a way of promoting thinking and discussion during cooperative learning is well recognized and has been the focus of a number of studies over the past 20 years as researchers have sought to identify the types of help that are beneficial to student learning. One of the first researchers to investigate help-giving behaviors and their effects on student learning was Noreen Webb, who, in a series of studies (Webb, 1985, 1991, 1992), examined children's verbal interactions as they worked together in small groups and found that explanations or detailed help received in response to requests for help was related to achievement gains for both the giver and the receiver. In contrast, help that was unelaborated or minimal did not contribute to students' achievement outcomes. Webb proposed that when students give elaborated help to each other, they are forced to reorganize and restructure their own understandings and, in so doing, often construct more elaborate cognitive understandings than they had previously. However, giving non-elaborated help does not involve as much cognitive restructuring and, hence, is not strongly related to achievement gains for the explainer or the recipient.

Recently, Webb and colleagues (Webb & Mastergeorge, 2003; Webb, Troper, & Fall, 1995) have focused on the conditions that must exist for help to be fully understood and useful for those requesting it. These conditions are that the help given must be relevant to the student's need for help, and it must be timely, correct, and sufficiently detailed to enable the student to correct his

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or her misunderstanding. In addition, Webb and colleagues have argued that the help received is beneficial only if the student requesting it understands the explanation given and has the opportunity to apply it to solve the problem at hand. When students have the opportunity to apply the explanations they have received, it may help them not only to generate their own internal understandings and principles for solving the problem, but it may also make them more conscious of the need to monitor their own problem-solving skills. Furthermore, when students attempt to solve problems, it may raise the group's awareness of their lack of understanding or the need to provide them with additional help. Students are often more aware than their teachers of what others do not understand, are able to focus attention on the relevant aspect of the problem, and can provide explanations that can be readily understood.

In short, it is apparent that children can help each other to learn; however, it is important that they provide high-quality help and that this help is provided at an appropriate time so the student who needs it is able to use it. Meloth and Deering (1999) maintain that high-quality talk emerges with only low frequency when left to emerge naturally or as the by-product of cooperative learning. Teaching children to dialogue together so they can provide high-quality help when it is requested is very important if the help is to be effective in facilitating students' learning. For help seekers, this involves teaching students to be active in the learning process, to ask questions, and to persist in asking them until the help required is received. For help givers, this involves giving help that is detailed and ensuring that the help given is understood (Webb & Mastergeorge, 2003).

When You Have Finished This Chapter You Will Know:

- The different dialoguing scripts that can enhance students' interactions in small groups
 - How students can be taught specific interaction strategies to enhance their dialoguing and reasoning during small group learning
 - How different dialoguing scripts can be used to elicit different types of thinking and learning
 - The theories of personal and social constructivism and situated and generative learning that can be used to help understand how children learn in social contexts
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STRATEGIES FOR HELPING STUDENTS TO DIALOGUE TOGETHER

Reciprocal Teaching

Reciprocal teaching, developed by Ann Brown and Annemarie Palincsar (1988), was designed to help students learn to generate questions to assist their comprehension of written text. During reciprocal teaching, students work in small cooperative groups with each member having the opportunity of leading the group and employing a number of specific strategies to assist comprehension. These strategies are as follows:

- Predicting (What do you think this story is about?)
- Questioning (What are these characters doing?)
- Clarifying (What do you mean by that? I'm not sure I understand what you're trying to say.)
- Summarizing (Let me see if this is what you have been saying . . . ?)

The purpose of these strategies is to help the children think about the text and direct the discussion to assist comprehension. For example, the purpose of predicting is to get the children to try and see if they can hypothesize what the text is about. Then, as the children listen to the predictions of others, they learn that others' perspectives may differ from their own. This forces them to *decenter* to consider these perspectives, and, in so doing, they are forced to accommodate the conflicting information and recognize that others have ideas that may be valid. The leader (each student has a turn at this role) then reads the text, which allows the students' predictions to be confirmed or challenged. If challenged, the student is forced either to justify his or her original prediction or reconcile it to the passage as it is read. As each section of text is discussed, the leader generates a question to which the group members respond with possible explanations or further questions as they seek to clarify their understandings of the text.

As the group works through each section of the text, the leader summarizes the main issues and provides opportunities for others to talk about the summary. Word meanings and confusing text are clarified before the students predict what might happen in the next paragraph. This process is repeated as each new section of the text is read. While reciprocal teaching was originally developed to assist students who had difficulties reading, it has been used widely to assist students to develop skills needed to comprehend text.



Case Study 4.1

An Example of the Four Reciprocal Teaching Strategies

Whale Calf Stranded in Rough Conditions

Rescuers struggled for over 10 hours yesterday to return a newborn humpback whale calf to the sea from an island off the coast of Maine. The calf had become separated from its mother and beached itself on the eastern side of the island. Local wildlife services were alerted and a frantic rescue operation swung into action. Rough seas and blustery conditions made the effort more difficult as each time the calf was pushed back to sea, it was beached by the rough conditions. Finally, with a break in the rough weather, rescuers managed to push it back out to sea where it was reunited with its mother. At last report, mother and calf had rejoined a whale pod heading north along the coast.

Teacher (T): Look at the title of this passage. What do you think this passage is about? (*T. asks the children to try to predict what the passage is about*)

Student (S): It's about a whale rescue.

T: Yes. How do you know that?

S: Well, it talks about the whale being stranded. That's stuck on the beach.

T: Does anyone else want to add anything to that? (*T. seeks additional information that may help to strengthen the prediction*)

S. (*reads the passage*).

T: What do you know about the weather conditions?

S: Rough.

T: Yes, is there anything else that you can add to that?

S: Currents—strong and rough. Kept blowing the baby whale back in.

T: Are there any questions you'd like to ask about the passage?

S: Why did it take so long to rescue the baby whale?

T: That's a good question. Does anyone want to answer that question? (*T. encourages the children to clarify the concern*)

S: You got to get the people together . . . the sea was rough . . . it was hard

S: The baby whale kept getting blown back in.

T: Now, my summary of this passage is about how a newborn whale calf was reunited with its mother after being washed ashore. (*T. models how to summarize the main theme of the story*)



Case Study 4.1 provides an extract of a class teacher modeling the four reciprocal teaching strategies with her students. Brown and Palincsar (1988) chose these strategies because they represent the types of activities successful readers regularly employ to assist their understanding of text. That is, successful readers predict and hypothesize what might happen, they pose questions and seek clarification on issues they do not understand, and they try to connect information in the text with what they may already know to construct meaning from it.

Initially, the teacher models the process with the children and they practice the strategies with the teacher providing feedback, modeling, and coaching until the children have mastered the strategies and can perform them independently. During this process, children are exposed to multiple ways of processing information as they dialogue among themselves and model ways of talking and reasoning about the passage under discussion. These multidirectional exchanges help students to think about the strategies they are using and learn to comment on them and the content they are learning. Eventually, through repeated exposure to the use of these strategies in their groups, children learn to internalize them and they become part of the repertoire of skills they use to help process text.

Brown and Palincsar (1988) reported teaching reciprocal teaching strategies to junior high school students in remedial classes whose reading comprehension was 2 to 5 years below their grade level. After initial training in the reciprocal teaching strategies and 20 days' practice, the students' comprehension levels improved markedly. Interestingly, the students generalized the strategies to other classes and tasks distinctly different from the original training task, thereby indicating that they had successfully mastered them and felt confident to use them in other contexts to enhance their understanding of text.

These findings led Brown and Palincsar (1988) to propose that the success of this approach could be attributed to the training the children received in how to think, the expert support or scaffolding they received as they learned how to use each skill, and the collaborative context in which the children practiced these skills. In effect, reciprocal teaching helps children learn how to dialogue together to construct meaning and understanding from text. From a Vygotskian perspective, children learn from interacting together using language as a tool to mediate their understandings and scaffold their learning. The concept of the zone of proximal development (i.e., the difference between a child's independent problem-solving level and the level of potential development as determined through problem solving in conjunction with a more capable peer or adult), where more-able students assist less-able students, has a prominent role in the learning that occurs as children use a range of verbal prompts, questions, and probes to clarify misunderstandings and promote learning.

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Reciprocal teaching has also been used successfully in a range of educational settings. Hart and Speece (1998) used reciprocal teaching with college students who were at risk of academic failure and compared them to a group of students who participated in cooperative learning groups where students were not trained to use reciprocal teaching strategies. The reciprocal teaching groups performed significantly better than their peers in the cooperative groups on reading comprehension and strategy acquisition measures. Moreover, the poorer readers in the reciprocal teaching groups performed significantly better than poorer readers in the cooperative groups, in effect demonstrating that this structured approach to dialoguing together can be used effectively with students in the postsecondary school years.

Alfassi (1998) investigated the effects of reciprocal teaching in comparison to traditional methods used in remedial reading in large intact high school remedial reading classes. The results showed that the students who participated in the reciprocal teaching classes obtained higher postintervention comprehension scores than their peers who participated in traditional reading instruction. Similarly, Lederer (2000) found that reciprocal teaching improved the reading comprehension performance of elementary students with learning disabilities in comparison to a control group of students with learning disabilities who were not trained to use reciprocal teaching strategies.

More recently, Palincsar and Herrenkohl (2002) reported on a project they conducted to promote student engagement and collaboration during inquiry-based science instruction where they used reciprocal teaching strategies to help students develop explanations about scientific phenomena. This was followed by a set of audience roles that were designed to promote student interaction during the whole-class reporting stage. During this report-back stage, some students in the audience were responsible for checking the reports for clarity between predictions and theories; others were responsible for reporting on the summary of the findings; and others focused on the relationship among the group's prediction, theory, and findings. Palincsar and Herrenkohl found that the use of these strategies and roles helped to do the following:

- Support classroom discussion
- Advance student theorizing
- Influence student thinking on scientific issues
- Promote conceptual understanding

Moreover, the audience roles that the students undertook contributed to sharing meanings and developing common understandings with the wider classroom group.

In sum, reciprocal teaching involves the explicit teaching of the steps of predicting what a passage of text is about, posing questions to help clarify issues in the text, and summarizing the main points of the group discussion. The process is iterative as members seek to develop a common understanding of the text under discussion. Initially, this process is modeled by the teacher who teaches the *reciprocal teaching* strategies to the students. As the students develop competence with them, they gradually assume leadership of the group and use the strategies as a way of developing a shared understanding of a passage of text (Palincsar, 1999). Reciprocal teaching has been used with a range of students from elementary school to college level to successfully promote discussion and thinking in students.

Practical Activity

Ways of Teaching Reciprocal Teaching Strategies to Students to Enhance Students' Discourse and Develop a Greater Understanding of a Passage of Text

It is important to note that these strategies will need to be introduced over a number of sessions, modeled by the teacher, and practiced by the students if students are to develop proficiency with them. Moreover, while the focus in the examples below is on gaining a better understanding of a text passage, these strategies are very portable and can be used to help students gain a better understanding of a group project, of independent research, or to provide feedback to others on the work they have completed.

Elementary School

★ Predicting

The class teacher discusses with students how we use the clues around us to try to predict what is going to happen next. For example, when we try to predict the weather, we use clues like looking at the cloud cover, feeling the wind speed, and measuring the temperature to try to predict what the weather may be like for the remainder of the day or week. Similarly, when we try to predict what a book is about, we look at the picture on the cover or some of the pictures inside to see if we can predict what the book is about. We also look at the title of the book to see if that provides any clues. This short discussion should then be followed by the presentation of a passage that the students are

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going to read. The teacher reminds the students to use the clues they have discussed to see if they can predict what the passage is about.

★ Questioning

The teacher reminds the class that when they need to find information, they ask questions. For example, if they were unsure about when the next bus might arrive, they could ask the clerk at the bus depot a question such as: “Do you know what time the next bus is due?” In class, the teacher will often ask students questions to check on their understanding of the work. Questions not only help students find out more about a topic, but they also enable them to make sure they have understood what they have read. Questions are used to help focus on important information in a passage rather than focusing on trivial details or unimportant information.

Time may need to be allocated during each reading session to help students learn to become adept at posing and answering questions about the text they have read. Having students work together to read a passage and then ask each other questions is one way to consolidate their understanding of how to ask and answer questions to enhance their comprehension.

★ Clarifying

Students are reminded that if they are unsure about any aspect of the passage they have read together, they need to ask questions and persist in asking questions until they have clarified their understandings. It is important that students understand that it is OK to ask questions and that their reading partner will try to help clarify their concerns. When students seek clarification on an issue, they often ask the following types of questions: “*I’m not sure I understand that. Can you explain that to me?*” “*I don’t know what they mean. Can you help me with this?*” Students need to understand that it is important to seek clarification on issues they do not understand and that their partner understands the importance of trying to assist.

★ Summarizing

The ability to summarize key information is a very important skill; without it, students will not fully understand what they have read. Summarizing involves picking out the main points or key information and presenting that in one or two sentences. Students will need to be taught how to pick out the main points in a short passage and recount them either orally or in written form.

The strategies of predicting, questioning, clarifying, and summarizing that are used in reciprocal teaching are cyclic and need to be used repetitively as students work their way through the text. Ongoing reminders at the beginning

of each reading lesson and feedback at the end on how they used these strategies will help students to develop automaticity with using them.

Middle School and High School

The reciprocal teaching strategies are the same but they are introduced at a more sophisticated level because of the cognitive maturity of the students. While it is recommended that the four strategies be introduced, described, and modeled by the teacher to the whole class, students will need to have time to consolidate their understandings of how to use them by practicing them in their small groups. It is also suggested that the strategies be introduced in the following order because summarizing in which students write a brief overview of an issue is often viewed as more task appropriate for adolescents than predicting that involves some oral rehearsal and guesswork, which students may be reluctant to do until they feel more confident in what they know and understand about the passage:

★ **Summarizing**

This strategy is introduced first. It focuses on helping students realize that they need to attend only to the key issues and that they must delete minor and unimportant details. Ensure that they understand that they need to state the main idea if the author has stated it or surmise what it is if it has not been provided.

★ **Questioning**

Students are taught that they need to try to think of the types of questions teachers may ask students about the passage. Such questions may include: cause and effect relationships, compare and contrast relationships, questions about key ideas and themes, and questions that require students to draw inferences about the passage they have read. Activities such as asking student to write three or four questions will cover one or two of the different types of questions that they could ask about the passage and will help them to develop a clearer understanding of the importance of asking questions.

★ **Clarifying**

This strategy can be taught by having students identify words or concepts that are difficult to understand and having them highlight them in the text. Students then ask other group members for assistance in clarifying their understandings. Questions such as the following let other group members know that the help seeker does not understand the problem and is seeking assistance from other group members: “*I don’t think I understand . . . Can you help me with this one?*” “*This is a bit confusing. Does anyone know what*

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it means?” Students need to understand that it is important to seek help from others and to persist in seeking such help until they receive it. Other group members also need to understand that they have a responsibility to help clarify any concerns that are raised.

★ Prediction

Students are taught to try to determine what might happen next, based on what they already know about the passage. This strategy requires students to consider what they have learned about the story so far and to use that information to try to predict what may happen in the future.

Practical Activity**Ideas for Establishing Audience Roles During the Report-Back Stage of Each Small Group’s Presentation***Elementary School*

- ★ Teacher instructs the class to listen carefully as each group reports back to the class on its project.
- ★ The students in the class are asked to recall three positive aspects of each group’s report that has been presented and to provide reasons why they identified these aspects. Feedback organizers such as the following may be used to help students present their ideas: *“I liked the information that group presented . . . because . . .”*; *“I think that that was a really good idea because . . .”* Three students each recall one positive aspect of the presentation and their reasons for choosing that aspect.
- ★ The class teacher asks the class to comment on the reasons that different class members have provided. Comments such as the following may be used to lead this discussion: *“What do you think about that point?”* *“Do you think the reason presented is acceptable? Why?”*
- ★ The class teacher then identifies a member from each small group and asks them to reflect on their group’s process. For example, what did they think worked well and what might they need to improve? These children are then asked to present these reflections to the wider class group. The children’s reflections, like the recall, need to be well reasoned.

Middle School and High School

- ★ Assign students audience roles that they need to fulfill during the report-back stage of each group's presentation. These roles may include: checking the reports for clarity with regard to the relationships between hypotheses and theories; ascertaining the clarity of the summary of findings; and determining if the group had discussed the relationships between their hypotheses, theory, and findings. The different roles can be undertaken by individuals or small groups of two or three students who work together to produce a small-group report on the feedback they are going to provide to the group presenting their work to the class.
- ★ Criteria need to be developed so that students who have audience roles are providing constructive feedback on the group's presentation. The following is a suggested format for providing feedback:

<i>Criteria</i>	<i>Needs to Be Clearer</i>	<i>Clear</i>	<i>Very Clear</i>	<i>Questions Raised</i>
Overview of study				
Relevance of hypotheses				
Research questions				
Elaboration of theory that underpins the research				
Presentation of findings (e.g., tables, graphs, illustrations)				
Discussion of findings				
Implications for future research/investigations				

- ★ Debriefing needs to occur so that the group that received the feedback has the opportunity to comment on it. This may involve acknowledging its value, or it may involve clarifying misunderstandings.

Collaborative Strategic Reading

Collaborative strategic reading (CSR) consists of a set of strategies designed to enhance students' understanding of text. In many ways, CSR is not dissimilar to reciprocal teaching where children are taught four basic strategies to assist their comprehension: making predictions prior to reading (preview strategy),

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monitoring reading and learning to enhance vocabulary development (click and clunk strategy), identifying main ideas (get-the-gist strategy), and summarizing key ideas (wrap-up strategy) (Vaughn, Klingner, & Bryant, 2001).

The following outlines each of these strategies and how they are taught:

■ *Preview strategy.* This strategy is designed to help students learn to activate background knowledge so they can make informed predictions about the text. To do this effectively, students are taught to scan the text and search for clues, such as pictures, headings, key words and phrases, to try to predict what the text is about. In fact, Vaughn et al. (2001) maintain that once this strategy is mastered, students can use it across other subject areas prior to instruction to try to predict what the lesson is going to be about.

■ *Click and clunk strategy.* This involves teaching students how to monitor their own reading and to “click” when they recognize material they know and to “clunk” material, words, or concepts they need to find out more about. Students work together in small groups to read a specific passage and discuss their clicks and clunks to help each other enhance their understanding of the passage.

■ *Get-the-gist strategy.* This strategy is designed to help students identify the main idea expressed in the passage by teaching them to focus on identifying the main idea, summarizing it in their own words, and stating it in 10 or fewer words. When students do this, they learn to focus on the most important idea and exclude unnecessary details. Get-the-gist strategy is practiced every two paragraphs as a way of helping students to monitor their understanding of what they are reading.

■ *Wrap-up strategy.* This occurs at the end of the text when students are taught to think of the types of questions a teacher would ask about what they have read. The purpose of this strategy is to teach students to focus on the main ideas that emerged from the text and to assist with comprehension.

The following questions are adapted from Vaughn et al. (2001) and are designed to assist students to wrap up their ideas more readily: *How are . . . and . . . the same and how are they different? What is your understanding of what happened . . . ? What do you think might happen if . . . ? How would you compare . . . with . . . ? What did you notice when . . . ?*

The above four strategies (preview, click and clunk, get-the-gist, and wrap-up) are introduced one at a time and modeled by the teacher before students practice them in their small groups. When students have mastered the preview strategy, the click and clunk strategy is introduced, modeled, and again

practiced in small groups. This process continues until the students have learned all four strategies.

Bryant and colleagues (2000) reported using collaborative strategic reading as part of a multicomponent reading intervention strategy with students with reading disabilities, low-achieving students, and average-achieving students in the middle years and found that all students' reading outcomes (i.e., word identification, fluency, and comprehension) increased significantly as a result of the intervention, although a subgroup of very poor readers made little progress. Moreover, teachers reported that the percentage of their students who passed high-stakes tests increased from the previous year as a result of their participation in the intervention (Vaughn et al., 2001).

Klinger, Vaughn, Arguelles, Hughes, and Leftwich (2004) examined teachers' yearlong implementation of CSR in five elementary classrooms and found that students in the CSR classrooms improved significantly in reading comprehension when compared with students in the control classrooms. Furthermore, when students were compared by achievement level (i.e., high/average, low, or learning disabled), all students, irrespective of achievement level, outperformed their peers in the control condition. Moreover, those students in classrooms where teachers implemented CSR with high integrity (i.e., the teachers explicitly taught the students the strategies and ensured the students modeled them with each other) outperformed those children in classrooms where teachers implemented CSR with low integrity (i.e., the teachers taught the strategies to the students but were not consistent in ensuring the students modeled them with each other).

In short, Bryant et al. (2000) and Klinger et al. (2004) demonstrate that CSR has the potential to benefit all students, irrespective of achievement level. Moreover, these benefits are likely to be additive when teachers ensure that students are explicitly taught the four CSR strategies and are given the opportunity of practicing them in their small groups.

Practical Activity

Ways of Introducing CSR to Students to Enhance Their Understanding of Text

Elementary School

- ★ Place students in groups of two and give each pair a short passage to read. Instruct students to look at the passage to see if they can guess what it is

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about. Remind students to scan the passage for clues such as: *What does the picture tell you about the story? Look at the title to see if there are some key words that provide some clues?* The teacher will need to remind the students to work with their partner to see how many clues they can find. Discuss these clues with the wider class.

- ★ Get students to read the passage and identify what parts click; that is, what information do they understand or do they remember from their past experiences? Remind students that when this happens, the information is clicking and they are beginning to make links to what they already know or understand. However, when they read words or ideas that do not click, they will need to clunk them. Clunking involves identifying those words or ideas that they do not understand. Students can underline them or use a highlighter to draw attention to them. The clunks need to be discussed with their partners to see if they can work out what they mean; if not, they need to discuss them with the wider class. The class teacher will need to monitor students to check on how they are using this strategy and determine if there are any aspects that need to be clarified.
- ★ After the students have read one or two paragraphs, they sum up in their own words what the gist of the passage is. Each partner then comments on whether he or she agrees with this short summary. If not, each partner outlines what he or she thinks the gist of the passage is until they are able to reach agreement. This strategy is repeated throughout the reading until they have finished the passage. It may be appropriate for the class teacher to ask different groups to share what they identified as the gist of different sections of the passages they read so others can hear how it is done.
- ★ At the end of the passage, the students are encouraged to generate a list of questions they could be asked about the passage they have read. This is called the wrap-up strategy, and it is designed to help students focus on the key ideas that emerged and in so doing develop a clearer understanding of the text. Once all of the groups have generated their questions, they could then share them with the wider class group.

Middle School and High School

- ★ Discuss with the class the importance of using preview clues to try to determine what the passage is about. These clues include not only reading the title but also the abstract or introductory paragraph if the passage is lengthy. If it

is a book, previewing will include scanning the table of contents and reading any reviews of the text on the front or back cover. The teacher may need to discuss how different disciplines (i.e., math, science, English, social studies) have different ways of helping readers understand what a passage or text is about. For example, in science, readers will often preview the article by reading the abstract and glancing at the tables or figures. In contrast, when previewing a social studies text, readers will often glance at the pictures and the headings and subheadings to predict what it is about.

- ★ Demonstrate how students can reflect on what they have read and link any ideas or concepts to previous knowledge and understandings. For example, statements such as: “*I know what that means*” or, “*I’ve read about that before*” are ways in which students can let their partner know that the information has clicked. When they are unsure of any words, ideas, or concepts, however, they need to identify them as clunks that require help from their partner. Statements such as: “*I’m not sure what that means. Do you know what it is?*” or, “*I think you’ll need to give me a hand with this one. It doesn’t make sense to me*” are ways of letting their partner know that they will need help to work it out. It is important that all group members understand that they are expected to work with each other on solving clunks. The class teacher will need to monitor the groups’ activities and provide assistance when needed.
- ★ Students are taught how to identify the gist of the passage by summarizing it in 10 or fewer words. Examples of how this is done need to be provided so students can see how this strategy can be used as an effective way to develop an ongoing summary of the material they are reading. Examples of different groups’ summaries can be shared with the class.
- ★ Once the students have completed reading the text, they need to see if they can identify some questions that someone who had not read the text would ask. This will involve students in recounting the summaries they had previously made, thereby testing their comprehension of the text. Moreover, when students have to consider the other person’s perspective, they are forced to cognitively restructure their thinking, which often helps them to get a better understanding of it. Students should be encouraged to share their questions with the wider class so everyone has the opportunity to comment on them.

Scripted Cooperation

Scripted cooperation, developed by Donald Dansereau and elaborated further by Angela O’Donnell (see O’Donnell, Dansereau, & Rocklin, 1987),

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involves children's working in pairs on an academic task. In scripted cooperation, each partner is asked to play a specified role, such as listener or recaller, and to play these roles in a specific order. O'Donnell (1999) argues that the scripted role plays are very important because they help to prompt the use of *cognitive processes* that may not necessarily occur otherwise. Furthermore, they can limit negative social interactions as the children focus on the cognitive requirements of the scripted roles they are asked to perform.

In *scripted cooperation*, the children work together to acquire information about the task. This may involve reading a particular passage and discussing it or seeking background information from a text. The children work collaboratively to obtain the information and to promote each other's understandings of it. Once this is achieved, they put their notes aside and one partner assumes the role of the recaller while the other acts as the listener. The recaller then summarizes the information that both students have collected, while the listener's role is to try to detect any misinformation and seek clarification on any aspects of the recall that are unclear. Both students then work together to elaborate on the material under discussion until they arrive at a common understanding of what they have been reading and discussing. The children then change roles so the recaller is now the listener and vice versa. The process of reading, recalling, listening, and elaborating is repeated many times as the children work their way through the task. The opportunity for the children to engage in the role of the listener, where they have to actively monitor the recall for accuracy and understanding, and the role of the recaller, where they have to reorganize and restructure their thoughts in order to explain them to their partner, ensures that the children engage in a range of metacognitive activities. These activities are known to enhance student comprehension of text and facilitate learning (O'Donnell, 1999).

Scripted cooperation has been used with students in elementary, high school, and college/university settings in a range of lessons involving text comprehension through to the retention of procedural and technical information required in university courses. While the original research into scripted cooperation was conducted with university students to test the viability of different scripted and nonscripted dyads in dealing with learning procedural information (see O'Donnell et al., 1990), research in recent years has focused on how this approach works in elementary, middle, and high school settings to enhance students' acquisition of information in specific subject or content areas, including text comprehension.

Meisinger, Schwanenflugel, Bradley, and Stahl (2004) investigated interactions in Grade 2 students during partner reading sessions and found that being provided with basic partner-reading script instruction was associated with better

social cooperation during reading sessions. During partner reading, students alternated roles of reader and supporter throughout the reading, with each role requiring a specific cognitive activity such as taking turns, reading along, staying on task, and providing help to their partners. In this context, the children were asked to play certain roles in a particular order, which imposed a script on how they interacted about the passage. The authors found that the script helped to promote high-quality interactions among partners and enhanced thinking and meaning-making.

Rahm (2004) reported on a case study of how meaning-making occurred among seven 14-year-old students and a museum guide through their participation in a science exhibit. Individual students' meaning-making and forms of participation in the dialogue during their visit were examined. This included an analysis of the students' articulations, their manipulations of the exhibit, and the concordance between their talk and exhibit manipulations. The discourses that emerged from interactions among group members, between different members and the exhibit, and between the group and the museum guide and the exhibit were also examined. This examination included the role of talk, gestures, and gaze as well as the way in which talk and manipulation of the exhibit contributed to meaning-making for the students. His examination of the data led Rahm to conclude that meaning-making occurred as the students engaged in conversations with others, manipulated the exhibit, and had opportunities to observe others manipulating it. The challenges the students confronted as they tried to understand how to manipulate the exhibit forced them to deconstruct and reconstruct their understandings and link them to prior knowledge and learning in order to be able to observe the lighted display that the exhibit could be used to create. Although the students in this study did not engage in formal scripted dialogues, they nevertheless did engage in dialogic exchanges that were critical to helping enhance their thinking and meaning-making of the phenomena under investigation.

In a study of college students that examined the role of different types of scripts to help students dialogue together as they worked on a computer-based activity, Weinberger, Ertl, Fischer, and Mandl (2005) found that social scripts rather than epistemic scripts, which specified how students work on a given task, were substantially more beneficial with respect to the individual acquisition of knowledge. In fact, epistemic scripts can at times impede knowledge acquisition. The authors proposed that social scripts may serve to reinforce collaborative learning mechanisms where students learn to contribute and discuss divergent perspectives and to refine and restructure their own ideas in order to evaluate and eventually integrate the various perspectives. In contrast,

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epistemic scripts appear to function more as checklists, so students do not need to integrate divergent perspectives but only focus on the strategy they have been given for solving the problem at hand.

In sum, scripted cooperation involves children's working together to acquire information on a task. Each partner alternatively plays a specified role such as listener or recaller where they each have opportunities to read, recall, listen, and elaborate on the task at hand. The listener has the job of monitoring the other's recall for accuracy and understanding, while the recaller is often forced to reorganize and restructure his or her thoughts in order to explain them to a partner. Each of these roles involves a range of metacognitive activities known to enhance student understanding and contribute to learning. Scripted cooperation is a structured way of dialoguing together to enhance understanding of a task.

Guided Reciprocal Peer Questioning

Guided reciprocal peer questioning was originally developed by Alison King (1990) to assist college students' learning of expository materials presented in classroom lectures. In order to enhance peer interaction and learning, King provided students with a *generic* list of questions designed to guide them in generating their own task-specific questions on the lecture materials. Initially, the students worked individually on compiling their list of questions and then used them to ask and answer each other's questions on the lecture materials as they worked together in small cooperative groups.

The following is the list of generic questions King (1990, p. 669) provided:

- How would you use . . . to . . . ?
- What is a new example of . . . ?
- Explain why . . . ?
- What do you think would happen if . . . ?
- What is the difference between . . . and . . . ?
- How are . . . and . . . similar?
- What is a possible solution to the problem of . . . ?
- What conclusions can you draw about . . . ?
- How does . . . affect . . . ?
- In your opinion, which is best, . . . or . . . ? Why?
- What are the strengths and weaknesses of . . . ?
- Do you agree or disagree with the statement . . . ? Support your answer.
- How is . . . related to . . . that we studied earlier?

King (1990) found that students using this guided reciprocal questioning procedure asked more critical thinking questions, gave more detailed explanations, and demonstrated higher *achievement* with the material under discussion than students who just discussed the lecture material with each other or who used an unguided reciprocal peer questioning approach (i.e., students were trained to ask and answer question but were not provided with the list of generic question stems to guide their generation of questions). King argued that the generic question stems helped students generate their own list of critical thinking questions designed to elicit elaborated explanations. To be able to answer these questions, students had to think extensively about the material, organize it, and integrate it into their own existing understandings, and it was this process of reorganization and restructuring and connecting to existing knowledge that promoted comprehension and learning.

In a follow-up study with pairs of fourth- and fifth-grade students who were taught to ask and answer each other's self-generated questions, King (1994) found that students who had been taught to ask and answer self-generated questions and link their responses to prior knowledge or experience outside the immediate context of the class lesson engaged in more complex knowledge construction than their peers who had been taught to engage in lesson-based questioning only or those who were only trained to provide elaborated responses to questions from their partners. King concluded that although self-generated questions help promote complex knowledge construction, questions designed to access prior knowledge and experience are more effective in enhancing learning than lesson-based questioning only.

The following question stems were given to the children in the experience-based and lesson-based groups to help them generate their own list of questions about the teacher-presented class lesson:

Comprehension Questions

- Describe . . . in your own words.
- What does . . . mean?
- Why is . . . important?

Connection Questions

- Explain why . . .
- Explain how . . .
- How are . . . and . . . similar?
- What is the difference between . . . and . . . ?

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The following connection questions are different and designed to draw upon experience-based knowledge or lesson-based knowledge:

Experience-Based Connection Questions:

- How could . . . be used to . . . ?
- What would happen if . . . ?
- How does . . . tie in with . . . that we learned before?

Lesson-Based Connection Questions:

- How does . . . affect . . . ?
- What are the strengths and weaknesses of . . . ?
- What causes . . . ?

(King, 1994, p. 345)

ASK to THINK-TEL WHY Strategy

In a more recent extension of her work, King (1997) has developed the ASK to THINK-TEL WHY strategy, which is an inquiry-based model of peer tutoring. This model builds on her previous work on guided reciprocal peer questioning and is designed to promote higher-level complex learning, or in effect, the construction of new knowledge. The ASK to THINK-TEL WHY strategy involves a tutor and tutee of similar ability and competency engaging in structured reciprocal roles where each partner has the opportunity of using open-ended question starters to prompt his or her partner to think about the topic under discussion. The tutor acts as a *cognitive coach* who, through a series of sequenced questions, scaffolds the tutee's thinking and learning to progressively higher levels.

The five types of questions that King (1997) identified as part of this sequence of questions designed to promote higher-level thinking include the following:

- Review questions (“Describe . . . in your own words.”)
- Probing questions (“Tell me more about . . .”)
- Hint questions (“Have you thought about . . .”)
- Intelligent-thinking questions (“What is the difference between . . . and . . . ?”)
- Self-monitoring questions (“Have I covered all the points I need to?”)

The advantage of this type of sequence is that it encourages children not only to focus on summarizing and elaborating information but it also helps them to ask cognitively challenging questions or questions that encourage children to draw on previous understandings and knowledge and connect it to the issue under discussion. In generating these types of connection questions, King (1999) maintains that questioners need to think about how ideas in the task relate to each other, and responders must be able to generate a response that connects the ideas together or provides rationales or explanations to justify the response. Because responders have been taught to provide elaborated responses such as explanations, justifications, and rationales to the questions they are asked, they realize the importance of explaining, justifying, and rationalizing how they have connected ideas and information to support their responses. In so doing, students often develop new ways of explaining and arguing their points as new knowledge is often generated and the quality of the discourse is enhanced. As partners engage in the question-asking-answering process that is typical of the interactions in the ASK to THINK-TEL WHY strategy, they learn that each question posed is often highly dependent on previous responses that have been given and that these, in turn, help to shape following questions. In this sense, the partners are highly dependent on each other in these reciprocal dialogues for scaffolding and guiding each other's learning. King maintains that this reciprocity of questioning and answering creates a *transactive process* where the partners are equal participants in providing mutual assistance and mutual learning. This transactive process is clearly evident in the dialogue recorded in Case Study 4.2.



Case Study 4.2

Example of Fifth-Grade Students Dialoguing Together Using the ASK to THINK-TEL WHY Questioning Strategies

- Damien: OK. Tell me what you know about the tsunami that hit Indonesia. (review question)
- Shelley: A tsunami is a large wave that was caused by an earthquake in the sea and it created these waves that were very high that hit the coast and destroyed the houses. Lots of people were killed and houses and shops destroyed. A tsunami hit Indonesia on the day after Christmas and caused

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a huge disaster. It was like the Krakatau eruption only not as bad but pretty bad. *(statement showing comprehension)*

Damien: Is there anything else that you need to say about the tsunami and its effects? *(probing question)*

Shelley: 'Cause many people lost their homes and couldn't work, the Red Cross had a big fund-raising appeal to help the people who lost their houses and farms. *(statement showing integration of concepts of cause and effect)*

Damien: Can you tell me more about the tsunami? You said it was a big wave. How big? *(probing question)*

Shelley: It was a very big wave—about 60 feet high and it had a lot of mud and trees and stuff it collected. It looked like liquid mud and it moved very fast. It was moving faster than a train or cars. People got caught up in its power. Everything got swept along in it. *(statement showing integration of concepts of speed and power using the example of train and cars to give a sense of how quickly it moved and the force of its power)*

Damien: You mentioned the Krakatau eruption. What is the difference between the two? *(thinking question)*

Shelley: Krakatau was a volcano that exploded in the 1900s and blew ash and rocks into the air. Lots of people got killed and it caused a tsunami too. *(statement showing comprehension of difference)*

Damien: How were they similar and how were they different? *(thinking question)*

Shelley: I know that they both caused a tsunami and they both caused lots of loss of life. That's how they're the same. They happened in different centuries. That's how they're different. *(statement showing integration of concepts by linking different aspects)*

Damien: Have you thought about how they were different in how they started? *(hint question)*

Shelley: Krakatau was a volcano that exploded and the tsunami—the one on the day after Christmas—was caused by an underwater earthquake. That's how they're different. *(statement showing integration of concepts of difference)*

Damien: Is there anything else that you can think of about how they're the same and different? *(probing question)*

Shelley: They're both natural forces that no one can do anything about. *(statement showing integration of concepts of both being natural events)*

Damien: How did you decide that? *(thinking about thinking)*

Shelley: I realized that you can't stop a tsunami—it's too powerful and you can't stop a volcano exploding. No one can plug it up. *(statement showing integration of concept of power of natural forces)*

Damien: That's good thinking.



In Case Study 4.2, Damien acts as the tutor, posing questions designed to encourage Shelley, the responder, to think about the passage under discussion and provide elaborated or detailed responses. Damien's role is only to ask questions. He does not explain or give answers to any of the questions, while Shelley's role is to explain and not to ask questions. King (1999) maintains that by encouraging the tutor to ask thinking questions only, the responder is more likely to respond with explanations and other elaborations or the kinds of responses that are known to promote learning for the responder.

In the dialogue between Damien and Shelley, Shelley is initially asked to state what she knows about the tsunami, and she responds with a detailed review of the information she has been reading (see Turn 2). Damien follows with a probing question to see if there is anything else she wants to add to her description of the tsunami. His question provides a hint that he'd like her to discuss the effects of the tsunami in more detail (see Turn 3). Shelley responds with more elaboration on the effects of the tsunami on people's livelihoods than she had in her original recount (see Turn 4). Damien continues to scaffold Shelley's responses as he probes her on the size of the tsunami. This probe helps Shelley respond in more elaborate detail as she verbalizes her integration of different concepts on speed and power that help to illustrate how quickly it moved and the force of its power (see Turn 6).

Damien follows this up with a thinking question that seeks to have Shelley identify the difference between the tsunami and the Krakatau eruption. Shelley responds and Damien builds on this response by asking her how these two events were similar and how they were different (see Turn 9)—in effect, asking her a thinking question that involves a compare and contrast assessment. This prompts Shelley to respond with a statement that illustrates she is able to integrate concepts by linking different aspects of the tsunami and the eruption—an elaborative response. Damien decides that he needs to provide Shelley with a hint question to get her to focus on the difference between these natural events (see Turn 11). The response provided by Shelley is a clear statement showing the integration of concepts of difference (see Turn 12) that she had not shown in her first response in Turn 10. Damien continues to probe to see if there is anything else she wants to add (see Turn 13). Shelley makes a statement showing integration of concepts of both being natural events that are uncontrollable (see Turn 14). Damien asks Shelley a metacognitive question on how she arrived at that decision. Shelley's response demonstrates that she has integrated the concepts of power and natural forces and evaluated the evidence and concluded that these events are too powerful to stop.

Self-Regulated Strategy Development

Self-regulated strategy development (SRSD) is an approach to helping students improve their writing performance by teaching them specific strategies

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on how to dialogue together to improve their writing, as well as strategies to help them monitor and self-regulate their performances. SRSD was developed by Steve Graham, Karen Harris, and Linda Mason (2005) and involves students' working in pairs through a five-stage process during which students are taught two genre-specific strategies to enhance writing, the general planning strategy in which these two strategies are embedded, and the self-regulatory strategies needed to monitor the writing process. The five stages in the process are the following.

1. *Develop background knowledge.* The *mnemonic POW*—Pick my ideas (i.e., choose a topic to write about), Organize my notes (i.e., organize ideas into a writing plan), and Write and say more (i.e., change the plan while writing)—is taught to give the students a three-point plan for how to write. This strategy is followed by the teacher's discussing the characteristics of a good story with students, noting that stories are interesting and fun to read and are made up of several parts that must make sense when they are read. Finally, students are taught the mnemonic *WWW* (who, when, where), What = 2, How = 2 (Graham & Harris, 2005) to help them remember the seven key parts of a story:

- Who are the main characters?
- When does the story take place?
- Where does the story take place?
- What do the main characters want to do?
- What happens when the main characters try to do it?
- How does the story end?
- How do the main characters feel?

Students practice using the above strategies until they are memorized.

2. *Discuss it.* Students practice finding the key parts of a story in their own stories and identifying how many parts their stories contain. The idea is to encourage students to realize that their stories need to contain all key parts needed to make sense (i.e., introduction, different key ideas, conclusion). During this stage, students are also introduced to the concept of goal setting where they learn that their goal when writing stories is to include all parts, that each part needs to read well, and that the story must make sense.

3. *Model it.* Students are introduced to the idea of using self-talk to assist them as they plan and write a story. This involves the teacher's modeling the following types of self-talk statements as he or she works through the planning and writing process with the students:

- What do I have here? (problem definition)
- What comes next? (planning)
- Does that make sense? (self-evaluation)
- I really like that part (self-reinforcement)
- I'm almost finished (coping)

Students use these *self-talk strategies* as they work with their teacher on composing a story. Once the story is completed, the teacher and the students discuss whether their story includes all the key parts needed for it to make sense, as well as the relevance of the self-statements that were used to help direct the story's development.

4. *Support it.* Students work in pairs to plan a story incorporating all the key parts. Once this is achieved, each student writes his or her own story. Students then read their stories to each other, examining the parts they have included and discussing the personal self-talk statements that they used.

5. *Independent performance.* Students work on planning and writing stories using the planning and self-monitoring strategies outlined above to help scaffold their performance. During this stage, students reflect on their use of the strategies, particularly the goal they set for themselves to write a story that included all the key parts. The teacher and peers continue to provide support to students as needed.

While the five stages of the SRSD are designed to help struggling elementary students enhance their writing performance, the strategies (with age-appropriate adjustments) can also be used effectively with middle and high school students who experience similar difficulties with writing. Moreover, when students work with peers to support the use of these strategies, there is evidence that the strategies are more likely to be maintained and generalized (Graham & Harris, 2005).

BRINGING IT ALL TOGETHER: UNDERSTANDING THE RESEARCH

In Chapter 3, I discussed how children learn new ways of talking and thinking about issues when they interact with others. This chapter provided an overview of the constructivist perspective on how children learn from their

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experiences and noted that although both personal and social constructivism differ in the emphasis placed on the intrapersonal and interpersonal dimensions of learning, both acknowledge that learning is mediated through interacting with others. When children interact together they are exposed to different cognitive perspectives and ways of using language that challenge them to consider these other ideas and forms of expression so that, eventually, after repeated exposure to these exchanges, these thinking and communication processes become internalized as part of their *mental schemata* or ways of organizing their world.

Wertsch (1979) maintained that internalization occurs as children learn to adjust their understandings to accommodate a shared understanding of a situation. From this perspective, the context or setting within which understanding and learning develop is critical because it recognizes that an individual's reasoning, thinking, and problem solving are not only attributable to the individual but also to the social context, such as the group, within which the individual operates (Gage & Berliner, 1998). Vygotsky (1978) argued that the social context for learning is so strong that higher mental functions appear first at the *inter-psychological* or social level and only later at the *intra-psychological* or individual one. However, to move from other-regulation as occurs at the social level to self-regulation at the individual level, scaffolding by a more competent peer or adult is often needed. This occurs when more competent peers or adults operate within the *child's zone of proximal development* to maximize his or her potential for learning.

The five strategies for enhancing student discourse discussed earlier—reciprocal teaching, collaborative strategic reading, scripted cooperation, guided reciprocal peer questioning, and self-regulated strategy development—are different approaches to scaffolding children's thinking and learning during small-group work. While each strategy adopts a unique set of techniques to promote dialogue and thinking within groups, all are designed to scaffold children's learning by providing a set of roles or questioning techniques that guide students' exploration of the task at hand. For example, some of the strategies encourage questions that promote review, comprehension, and clarification of information that helps to guide respondents to developing a better understanding of the issues under discussion, while others encourage questions that are thought provoking and require respondents to think deeply about the issues and integrate them with prior knowledge to construct new understandings and knowledge (King, 2002).

The ASK to THINK-TEL WHY peer tutoring model (King, 1997) is explicitly designed to promote higher-level complex thinking by having

tutors ask a sequence of questions designed to help tutees link information and knowledge and provide justifications and rationales to support their responses. King (1999) maintains that higher-order thinking takes place only when learners go beyond the factual information presented to generate relationships among those facts and to make inferences and generalizations that are not readily foreseen. In so doing, tutees are often challenged to find new ways of constructing meaning from the task and explaining their responses in ways that others will accept as valid. Moreover, when children are required to defend or elaborate on their solutions to a problem, it forces them to reconsider and reorganize their arguments in the light of others' perspectives or available information. This process often leads to the emergence of a more mature resolution of the problem than had previously been considered (Brown & Palincsar, 1988).

The types of questions the ASK to THINK-TEL WHY peer tutoring model (King, 1997) proposes encourage children to assess their own understanding as well as their thinking processes as they generate their responses. Wittrock (1990) argues that the mind is not a passive consumer of information, but actively constructs its own interpretation of information and draws inferences from that. Furthermore, he believes that children must be taught those metacognitive strategies that will assist them to organize, monitor, and control their *generative thought* processes. Certainly, the ASK to THINK-TEL WHY model of peer tutoring (King, 1997) is designed to teach children to ask questions that require partners to explain or provide reasons for their responses. Moreover, as partners alternatively adopt the role of tutor and tutee, they learn to pose questions that encourage partners to think about their thinking while simultaneously learning to monitor their own responses. In effect, children learn to become more *metacognitively aware* of their own learning and how they must coordinate their contributions to the task they are jointly trying to resolve.

The use of reciprocal tutor and tutee roles promotes interdependence and mutuality as each partner is highly dependent on the other for scaffolding and guiding the other's learning. Learning in this context is situation specific; that is, it is dependent on the social context and the role each partner adopts. It is also dependent on the partners' being prepared to dialogue together using the "script" provided to challenge and scaffold each other's thinking. By making their thinking explicit, children learn to articulate their thoughts, argue their positions, and generate new ways of thinking about issues, and this, in turn, leads to the construction of new knowledge and learning.

CHAPTER SUMMARY

The research on students' discourse suggests

- Children benefit from giving and receiving explanations or detailed help.
- Help is useful if it is relevant to the student's need, timely, and of sufficient detail for the student to be able to use it.
- Children need to be taught to provide high-quality help when it is requested.
- The six strategies that help children dialogue together are: reciprocal teaching, collaborative strategic reading, scripted cooperation, guided reciprocal peer questioning, the ASK to THINK-TEL WHY strategy, and the self-regulated strategy development.
- Different questioning strategies can be used to elicit different types of dialogues during interactions, with some strategies focusing on comprehension and application while others focus on encouraging metacognitive thinking.
- Metacognitive questions prompt students to engage in higher-order thinking by providing explanations, justifications, and rationales that often lead to the construction of new understandings and knowledge.
- All six dialoguing strategies (reciprocal teaching, collaborative strategic reading, scripted cooperation, guided reciprocal peer questioning, the ASK to THINK-TEL WHY strategy, and the self-regulated strategy development) are designed for students to use as they work in small groups on specific tasks.

ACTIVITIES

1. Teach children to ask and answer questions that encourage critical thinking. Give the children a short passage to read as they work in dyads. Each child has a turn to be the questioner and the explainer. The children are given cards to prompt their dialogue. For example, the questioner has a card with five question stems on it that can be used to pose a question, while the explainer has some key phrases to remind him or her that explanations need to be detailed and provide one or more reasons for the response.

Question stems to prompt discussion:

What do you think . . . ?

How do you know that . . . ?

What is a possible solution . . . ?

Do you agree or disagree with . . . ? Think of some reasons to support your answer.

Explanations need to:

Be detailed

Be on time

Provide reason(s)

At the completion of the activity, the teacher debriefs the children on how helpful the question stems and the explanation prompts were. Children need to be encouraged to provide reasons when they respond.

2. Teach children to ask thinking-about-thinking questions. The children pretend they have been to the world premier of a new movie. One child pretends to be a journalist and asks a series of questions about the movie for his or her paper. The types of questions that can be asked to probe a responder to think about the movie are:
 - What did you think of the movie? Describe what you saw . . .
 - Tell me more about the main character(s) and what you noticed.
 - What is the difference between this type of movie and . . . ?
 - How does it compare with others (movies) that you've seen?
 - What advice would you give to others who intend to see the movie? Perhaps you could tell me why you would say that.
3. Students are assigned the task of interviewing a successful gold medalist from the recent Olympics. However, while other journalists have been plying him or her with questions about how it feels to be a successful medalist, your task is to take a unique angle to see if you can identify some other issues that you can conduct your interview on. You will need to brainstorm some ideas, agree on the type of topic for your interview, and then generate a list of questions that will explore and probe the topic with your subject. Role-play the interview with a classmate not in your group so others can provide you with feedback on whether your interview achieved its purpose.

SUGGESTIONS FOR FURTHER READING

- King, A. (2002). Structuring peer-interaction to promote high-level cognitive processing. *Theory Into Practice, 41*, 33–40.
- O'Donnell, A., & King, A. (Eds.). (1999). *Cognitive perspectives on peer learning*. Mahwah, NJ: Lawrence Erlbaum.
- Palincsar, A., & Herrenkohl, L. (2002). Designing collaborative contexts. *Theory Into Practice, 41*, 26–35.