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ABSTRACT

A study investigated whether reading instruction that emphasizes critical thinking would benefit "learning-disabled" fifth-grade students. Seven students were assigned to an instructional group that participated in a program of 10 dialogical-thinking reading lessons and 7 were assigned to a comparison group that remained with the classroom teacher and completed regular classroom assignments. The instructional group was involved in reading a story and discussing a central issue. Students considered two alternative conclusions regarding the central issue, identified reasons to support each hypothesis, and evaluated the truth and relevance of each reason. Reading comprehension and critical-thinking tests were administered to both groups and both particpated in a base-line and post-dialogical in a base-line and post-dialogical-thinking reading lesson. Results indicated that: (1) on the post-dialogical-thinking reading lessons, the instructional group arrived at proportionately more valid reasons and gave more comprehensive final conclusions regarding the central issue than did the comparison group; (2) there was no evidence of improvement on the paper and pencil tests of reading comprehension and critical thinking for either group; and (3) comparing the students' performance on paper and pencil tests with their performance in discussion settings revealed significantly differing views of competency. Findings suggest that assessing "learning-disabled" students' reading and thinking should be re-examined from a contextualist perspective, and that "learning-disabled" students should receive reading instruction that calls for critical thinking. (Five tables of data, 2 figures representing test items, and a list of answers to one central question are included; 43 references and the coding system for analyzing dialogical-thinking reading lesson transcripts are attached.) (Author/RS)

CENTER FOR THE STUDY OF READING

Technical Report No. 553

DIALOGICAL-THINKING READING LESSONS: PROMOTING CRITICAL THINKING AMONG "LEARNING-DISABLED" STUDENTS

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Abstract

A study investigated whether reading instruction that emphasizes critical thinking would benefit "learning-disabled" fifth-grade students. Seven students were assigned to an instructional group that participated in a program of 10 dialogical-thinking reading lessons and seven were assigned to a comparison group that remained with the classroom teacher and completed regular classroom assignments. The instructional group was involved in reading a story and discussing a central issue. Students were asked to consider two alternative conclusions regarding the central issue and then asked (a) to identify reasons to support each hypothesis, and (b) to evaluate the truth and relevance of each reason. Two reading comprehension tests and one critical-thinking test were administered to both groups. In addition, each group participated in a base-line and post-dialogical-thinking reading lesson. On the post-dialogical-thinking reading lessons, the instructional group arrived at sound defensible evaluations of the reasons they generated to support the two hypothesized conclusions than did the comparison group. They also gave more comprehensive final conclusions regarding the central issue than did the comparison group. There was no evidence of improvement on the paper and pencil tests of reading comprehension and critical thinking for either group. Comparing the students' performance on paper and pencil tests with their performance in discussion settings revealed significantly differing views of competency. The study lends support to two major conclusions: (a) assessing "learning-disabled" students' reading and thinking should be re-examined from a contextualist perspective; and (b) "learning-disabled" students should receive reading instruction that calls for critical thinking.

DIALOGICAL-THINKING READING LESSONS: PROMOTING CRITICAL THINKING IN READING INSTRUCTION

Critical thinking is widely recognized as a desirable educational goal. Students should be engaged in schooling that fosters "reasonable reflective thinking that is focused on deciding what to believe or do" (Ennis, 1987 p. 10). Giving reasons to support conclusions, identifying stated and unstated assumptions, seriously considering divergent points of view developing hypotheses based on available information, and drawing conclusions that are not biased in favor of a particular outcome are instances of critical thinking.

Our present schooling practices are not succeeding in promoting critical thinking in tomorrow's citizens (Applebee, Langer, & Mullis, 1988; Boyer, 1983; Goodlad, 1983). In 1983, *A Nation at Risk* (National Commission on Excellence in Education, 1983) reported that United States schools were not graduating students who could comprehend, interpret, and evaluate what they read. Typically, reading instruction that emphasizes critical thinking instruction is not being provided to those students most in need of it. For example, students in low-ability reading groups are given less intellectually demanding experiences than those in the high-ability groups (Allington, 1980; Barr, 1973-1974; Garcia & Pearson, 1990; Hiebert, 1983; Shavelson, 1983; Winn & Wilson, 1983). A 1988 report on the status of U.S. education announced that poor readers are less likely to receive reading instruction that emphasizes comprehension and critical thinking because they spend their time practicing decoding strategies (Applebee, Langer, & Mullis, 1988).

One possible explanation may be that while there are numerous recommendations and curricula materials available that claim to foster critical thinking, for the most part, they have not been empirically investigated (Cuban, 1984; Nickerson, 1986). In fact, there have only been a handful of studies conducted on ways to teach students how to think critically about written discourse (Crossen, 1948; Lowerre & Scandura, 1973-1974; Patching, Kameenui, Carnine, Gersten, & Colvin, 1983; Wolf, King, & Huck, 1963).

The dearth of knowledge about effective critical thinking instruction and the many students in need of such instruction provided the impetus for the present study. This study was predicated on the belief that students of all abilities should be given reading instruction that incorporates opportunities to engage in critical thinking. Specifically, the study examined the impact of providing a group of 7 learning-disabled fifth-grade students with a program of 10 dialogical-thinking reading lessons. The goal of each lesson is to lead students to engage in critical thinking as they consider a story-specific issue. One way to achieve this is through dialogical thinking (Paul, 1987). Dialogical thinking requires serious consideration of opposing points of view. In each lesson, students were asked to consider seriously the evidence for opposing hypothesized conclusions for a central story issue.

Four research questions were investigated.

1. Do dialogical-thinking reading lessons promote critical thinking?
2. Do dialogical-thinking reading lessons augment reading performance?
3. What is the nature of participation in dialogical-thinking reading lessons?
4. What pedagogical strategies promote critical thinking?

The theoretical support for the dialogical-thinking reading lesson is derived from Vygotskian perspectives on learning and instruction. Central to the dialogical-thinking reading lesson is the discussion method of teaching, which traditionally has been considered the primary means for teaching critical thinking (Ennis, 1985; Lipman, 1985; Passmore, 1972; Taba, 1962). The use of discussion to teach critical thinking is consonant with the Vygotskian perspective that learning is a social endeavor. Vygotsky

(1978) maintained that the development of language and thought resulted from social interaction and internalization. According to Vygotsky's social cognition theory, the route to developing individuals' critical thinking would be to engage them in discussions where critical thinking is called for and occurs. Eventually critical thinking abilities and dispositions will be internalized by the individual participants.

The Instructional Program

The manner in which I[1] set out to study the effect of a program of dialogical-thinking reading lessons was intentionally flexible. The basic structure and purpose of these lessons was established, but I wanted the freedom to explore modifications that would enable learning-disabled students to engage profitably in this new lesson format. Consequently, some of the methods I used changed over the course of the program of lessons. I will present the basic format of dialogical-thinking reading lessons (D-TRL) and provide details regarding the changes that were made to accommodate the 7 students who participated in the instructional program. Transcript excerpts will be used to illustrate the methodology employed and to allow the reader to observe the manner in which these lessons operated.

Students, School, and Setting

The students who participated in this study attended a large elementary school located in an industrial city of 37,000 inhabitants. This city had a high rate of unemployment. Sixty percent of the students in the school qualified for a free or reduced-price lunch. Forty-five percent of the students were members of minority groups.

The 14 students who participated in this study were members of a special class for the learning disabled. They had been placed in this class because they had not benefitted from the extra help they received in previous years in a learning resource room. They were identified as learning disabled because they consistently scored one standard deviation below their peers on measures of school achievement. The participants were 11- and 12-year-olds who read at a first-, second-, or third-grade level. They had great difficulty expressing their ideas in written form and had not attained the literacy skills that are needed for many types of employment.

I asked their teacher to divide the students into two groups, each group to be comprised of students of varying reading ability. One group was the instructional group (Rob, Doug, David, John, Martin, Mike, and Sam)[2] that participated in the D-TRL program. The other group served as the comparison group (Andrew, Bill, Dexter, Jack, Randy, Cindy, and Nancy). This group participated only in the pre- and post-measures of critical thinking and reading comprehension.

Data were gathered from January through April. In the first weeks, all 14 students were pretested on measures of critical thinking and reading comprehension. After the pretesting, I met with the instructional group exclusively. It was during this time that the D-TRL program occurred. Twice a week the students and I met for 30 to 45 minutes in a music room that was located across the hall from their classroom. During each lesson, we sat around a rectangular table in front of a chalkboard. A tape recorder and microphone were on the table. A video camera was in the corner of the room, aimed at the spot where the lessons took place. The final two weeks of the study were used to administer post-assessment measures to both groups of students.

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[1]Throughout this report, "I" refers to the first author, whose dissertation is the basis of the report.

[2] All proper names are pseudonyms.

Format of the Dialogical-Thinking Reading Lesson

Each D-TRL began with a story. Following the reading, I led the students to consider evidence for two hypothesized conclusions regarding an important question related to the story. I selected the stories and generated the question and hypothesized conclusions for each discussion. Thus, there were two distinct phases for each lesson: the reading phase and the discussion phase.

The reading phase. The purpose of the reading phase was to prepare the students for the discussion phase. In the first seven lessons, I had the students read silently, one page at a time, followed by informal discussion after each page. I asked them to share their understanding of the text, and I tried to ensure that they understood the most significant aspects of the story to prepare them for the discussion. One of the ways in which they contributed to constructing meaning was by finding a sentence or phrase they could read and to share it with the group. Less often, they would summarize or paraphrase what they had read. The following example is typical of what occurred in many of the lessons.

In Lesson 1, we read *My Daddy Don't Go to Work* by Madeena Spray Nolan (1978). It is a short contemporary story that contains dialogue among three members of a family facing the possibility that the father will leave home temporarily to find work. Notice in the transcript that David shared what happened on that page of text by trying to read us a portion of it. I tried to get him to tell us what happened in his own words. Martin and Sam were able to use their own words to tell us about the story.

Teacher: What do you think is happening now?

David: He's crying.

Teacher: Do you know why he's crying?

David: He be discouraged.

Teacher: Yeah -- Right! Do you (Martin) want to add to that?

Martin: He said -- All right -- His mother said why should we go out and get jobs cause it will split up our family. And (reading from text) I don't want (abandons reading from text). Wait a minute -- She wants her family together. She don't want like (inaudible)

Teacher: What's the father thinking of doing?

Martin: Going out and getting a job

Teacher: Where?

Martin: Out of town

Teacher: Yes! That's important.

Sam: She feels sad for the way they talkin.

Teacher: Yeah -- Well they're upset too -- right?

Together we were successful in cooperatively constructing a meaningful interpretation for this story and for the stories used in subsequent lessons.

Early on the morning of Lesson 8, I was thinking about the difficulties the students were having reading the longer stories. The stories I had selected for the lessons varied in length from 383 to 1,137 words. I had ordered the stories according to length so the stories read at the end of the program were longer than those read at the beginning. It was becoming apparent that the boys were unaccustomed to doing so much reading. I was searching for a way to make the reading phase a more pleasant experience for them without actually reading to them. I was committed to having them do some reading in each lesson because they needed the practice. The solution that occurred to me that morning was to rewrite the story for Lesson 8 as a play.

It was not difficult to rewrite *Me Day* by Joan Lexau (1971) as a play. The content of the story was virtually unchanged. We negotiated how to divide up the roles. When one student had trouble reading, the student sitting next to him helped. When necessary, I also helped. Despite the difficulties they had reading aloud, the students were enthusiastic about reading the story as a play. During our discussion, the students frequently offered text-based reasons as we talked about whether Rafer, the main character, had a good birthday. Their responses suggested that reading the story as a play did not interfere with their comprehension.

The stories for Lessons 9 and 10 were rewritten also as plays in response to the students enthusiastic request to continue reading the stories as plays. Thus, we shifted from silent to oral reading.

The discussion phase. The discussion phase consumed more time than the reading phase in each D-TRL and conceptually was the most important part. The following sequence of tasks represents the basic framework for the discussion phase.

1. The discussion's central question and two hypothesized explanatory conclusions were posted on the chalkboard, and read aloud by the students or myself.

2. The students were asked if they had a preference for either hypothesized conclusion.

3. Reasons to support one of the hypothesized explanatory conclusions (side A) were recorded on the chalkboard. The same was done for the other hypothesized explanatory conclusion (side B).

4. The reasons given for side A and B to determine their truth and relevance were evaluated.

5. A final decision was sought from each student regarding the central question.

The procedures used during the discussion phase were modified over the course of the program of 10 lessons to meet the students' needs. Two major changes were made: (a) the number of reasons recorded were limited to three for each hypothesized conclusion to ensure that there would be sufficient time to engage in evaluating the truth and relevance of each reason, and (b) the task of evaluating the reasons was shifted to the students in Lesson 4 to provide variety and give them more responsibility.

The following vignette illustrates the features of the discussion phase as well as the changes that occurred. In Lesson 4, we read "The Sack of Diamonds" by Helen Olson (1985). This is a fable about an old woman who receives a sack of diamonds from the king on her 100th birthday. She hurries home with the diamonds because she is afraid to be out in the dark and starless night. She decides to do something useful with them. After a series of misadventures, she makes a slingshot and shoots the diamonds into the sky so the nighttime will be full of twinkling lights.

During the discussion phase of the lesson, we explored two hypothesized conclusions. We listed three reasons to support the belief that the old woman was foolish and three reasons to support the belief that she was wise (see Figure 1).

[Insert Figure 1 about here]

After recording the reasons on the chalkboard, the students divided themselves into two groups. Mike, John, and David evaluated the truth and relevance of the reasons offered in support of the conclusion that the old woman was foolish. Rob, Doug, and Martin evaluated the reasons for the conclusion that she was wise. When we reconvened, I asked each group to select a spokesperson to explain what the group had decided. The following transcript illustrates how this modification in the lesson format functioned for the first time.

Teacher: Listen to Martin explain what they did.

Martin: Because well she was wise (reading from chalkboard) "because she got rid of the diamonds." We got one for "false" and we have two for "don't know." And (reading from chalkboard) "because she helped make the sky pretty." We had three for "true." Yeah all of us had for "true." Down here "because she went -- (reading from chalkboard) she used the slingshot to put the diamonds in the sky."

Rob: And the one we thought was the best was number two (Because she helped make the sky pretty).

Teacher: Will you tell us why?

Rob: Well, because, see, she made the sky pretty, cause they told us in the story. And when she fling them up from the ground, cause the moon shines on them and makes pretty colors for the town, so that we thought it is a strong reason.

The students did quite well with this new feature. Martin was poised and methodical in the manner in which he reported what his group had done. His reporting included reading the reasons listed on the chalkboard, which provided for additional reading during the lesson. This feature was included in subsequent lessons.

Looking Across the Program of Dialogical-Thinking Reading Lessons

Transcripts of the instructional program provide data that inform the four research questions that guided this study. In transcribing the taped materials, I recorded each speaker's comments verbatim. However, in the following excerpts, many of the hesitations, ahs, ums, and interruptions that do not affect meaning have been deleted to allow the students' thinking to come through more clearly.

These transcripts were imported into *Ethnograph* (Seidel, 1988), a computer program designed to be used in conducting qualitative analyses, which allows for computerized coding and searches. In short, it can do what an individual can do with color codes, stacks, sorts, and clear reasoning. The first phase of analysis involved reading the lesson transcripts numerous times to get ideas for a coding system. The process of developing a coding system involved a series of trials during which I applied codes to one of the transcripts, then revised the categories by eliminating or adding additional codes. The coding system I eventually adopted was comprised of categories that emerged from the data, as well as categories that were imposed on the data (See Appendix A). Once the coding system had been applied to the 10 lesson transcripts, *Ethnograph* was used to search for instances of each code across the lessons. The results of these searches provided information about frequency and location of occurence.

The results of coding and analyzing the lesson transcripts provides information about the instructional group's critical thinking, reading, participation in D-TRLs, and pedagogical strategies central to D-TRLs.

Critical Thinking Exhibited

These analyses were undertaken to determine the critical thinking the students exhibited during the program of D-TRLs. The focus of these analyses was on the disposition to seek reasons and clarification, the ability to provide clarification, and the use of critical-thinking terminology.

Seeking reasons and clarification. Critical-thinking dispositions are as important as critical-thinking abilities. Seeking reasons and clarification are two dispositions that are central to critical thinking. During the discussion phase of the lessons, there were 30 instances of students seeking reasons or clarification.

Throughout the lessons, the students sought reasons on a variety of topics. Sometimes they sought the reasons for events that occurred in the stories. In Lesson 7, Mike asked a very pertinent question during our discussion of "The Brass Chest" (Rasmussen & Goldberg, 1970a), a folktale about an old man who comes to a village and tries to sell cheap a brass chest he claims contains something very valuable. Mike wondered about the old man's reasons for doing this seemingly illogical act.

Mike: Why would he want to give them the chest if the thing was valuable?

This was a very good question for which there was no obvious answer in the text.

Through questions, the students sought reasons from each other. This kind of questioning among students first emerged in Lesson 4 and continued to occur throughout the remaining lessons. The first example occurred in Lesson 5 and the second in Lesson 8.

1. David: I want Doug to tell us why he said it's true.

2. Doug: (Looking at Rob) Why do you say "true" for, um (reads from chalkboard) They went on a long walk?

Other times, students asked questions to get information that would help clarify some aspect of the text. Asking questions to seek clarification is also important in critical thinking because it indicates a metacognitive awareness. Students' realize that they need to know more about something before the can proceed. John, who had great difficulty reading the stories, would often ask questions about story details. In our discussion about *Old Henry* (Blos, 1987), John sought clarification regarding Henry's whereabouts after he left his dilapidated home to escape his obtrusive neighbors.

John: Where's he at, in jail?

Teacher: He's in the Dakotas.

Mike: North Dakota, South Dakota.

Students also sought clarification about textual information to inform their reasoning. In Lesson 6, the students sought clarification about the setting and the genre for a fable titled "Silver Kay Taylor" (Rasmussen & Goldberg, 1970b). They were engaged in formulating hypotheses regarding the identity of an odd, stooped man who mysteriously appears in the dining room of a seaside inn on a gray and gloomy day. His dress is reminiscent of pirate days, and he claims that his damaged ship strayed into the bay. Nick, the Greek waiter, finds the man's dress odd and wonders where he came from given that

no ships have sailed into the bay in days. Rob and John's posed questions that were germane to figuring out who this character was supposed to be.

Rob: Excuse me, could you tell us if this is nonfiction?

John: What year was it? What year was that when that thing happened?

The students sought clarification in all but Lesson 1. I have presented a representative sample of the kinds of questions they posed to seek clarification. The quality of their questions indicates that they were using critical thinking to understand textual material and each other's thinking.

Providing clarification. Critical thinking depends on clarity. Critical thinking goes awry when confusion reigns, so one of the essential components of critical thinking is the ability to provide clarification when needed. I coded instances where students made comments that provided clarification by providing information about the text, or about their own or another person's reasoning. Over the course of the lessons, there were 25 instances where students provided needed clarification. Students exhibited this ability throughout the program. It was not an ability that was more evident in later lessons than it was in earlier ones.

Sometimes students provided clarification by reminding the rest of the group about information in the story that was relevant to the issue being discussed. For example, in Lesson 5 we read "Winner Takes All" (Eller & Hester, 1984) which is about two friends, Joe and Benny who are competing in a 60-yard dash for a new bicycle. During our discussion there was some confusion over which boy already owned a bicycle. John provided clarification when he helped Mike understand that it was Benny.

Teacher: Is it true that Joe could have a bike and they could go places together?

Mike: It doesn't make sense.

Teacher: Okay -- explain what's confusing.

Mike: So Joe could have a -- Joe's already got a bike.

John: No, it's Benny. Benny's got the bike and Joe doesn't.

Mike: Ah! Forget it.

David: Joe got his bike in the story.

Using critical-thinking terminology. There is a critical analytic vocabulary (Paul, 1990) that contributes to the ability to communicate one's reasoning and that reflects one's familiarity with the principles of rationality. Critical thinking is facilitated by the ability to appropriately use terms such as *assumes*, *reasons*, *evidence*, *implies*, *contradicts*, and *conclusions*. During the 10 lessons, I used the term *reasons* on average 17 times per lesson. Given the prominence of this critical-thinking term in the program, I decided to see if students were using it and, if so, to what extent. I found that, indeed, they did use the word *reason* in 9 of the 10 lessons. Furthermore, everyone in the group used the term *reason* at least once over the course of the 10 lessons. The students' use of the term was more frequent in the later lessons than in earlier ones. In Lessons 1 through 5, students used the term 15 times, whereas in Lessons 6 through 10 they used it 28 times. Most important is the fact that the students used the word appropriately throughout the program. They employed it to accomplish different communicative acts. In the following example, which is from Lesson 6, John acknowledged the fact that he was offering two reasons to support his hypothesis that the odd, stooped man was the ghost of Silver Kay Taylor.

John: Yeah cause there wasn't no ship at the bay, and when he kicked the pail, the guy came in and he was gone so there's two reasons.

Sometimes students used the term to request opinions from each other when they were evaluating the truth or relevance of the reasons listed on the chalkboard. Martin did this in Lesson 7 when he was asking others to evaluate the reasons listed for one hypothesized conclusion.

Martin: Right here strong reasons. Which reason did you all like?

Reading Opportunities

These analyses were undertaken to determine to what extent the D-TRLs augmented the reading performance of the 7 learning-disabled fifth graders. The transcripts provide evidence that participating in these lessons gave them a variety of opportunities to read naturally. The students read the story at the beginning of each lesson but they also found opportunities to read during the discussion phase of the lesson.

Reading From the Chalkboard

While conducting the program of lessons, I observed that the students were reading the information I had recorded on the chalkboard. I used the transcripts to tabulate the extent to which they were reading this information. The findings are summarized in Table 1.

[Insert Table 1 about here.]

Chalkboard reading increased over the course of the program and was most prevalent in the final two lessons. The increase in chalkboard reading coincided with my decision in Lesson 4 to have students split into two groups to evaluate information written on the chalkboard. A student from each group in Lesson 4 volunteered to report on his group's evaluation. Throughout the lessons, the students typically read reasons written on the chalkboard in making their reports. There was a direct relationship between the amount of responsibility ceded to the students for conducting the discussion and the amount of chalkboard reading they did.

References to the Story

Toward the end of the program, the students began to display two behaviors used by expert readers. First, they began to refer to the text to support their claims. Over the course of the lessons, they increasingly made comments such as the following, which illustrates a recognition of the text as an authoritative source that can be called upon to backup one's interpretations and reasoning:

Sam: Well, it was the book said there were many years ago. I believe he was dressed up as a pirate.

A second behavior that emerged during the final three lessons was reading from the text to substantiate a point or to settle a dispute. In Lesson 9, Rob challenged Doug to provide textual evidence.

Teacher: (reading from chalkboard) She said she can see him on weekends and when school lets out. You put "false" because you don't think it's in the story?

Rob: It's not even in the story. It's a bunch of junk. It's no good.

Doug: Yes, it is.

Rob: Can you show me then? (Rob walks over to where Doug is sitting.)

Doug: I will. (Doug begins leafing through the text.) It's in here I know it is.

Teacher: I think I know what he's talking about.

Rob: I don't know if he's right or wrong.

Teacher: Look at the bottom of page five, Doug. Start reading at the bottom of page five where it says "Jack told his mother."

Doug: (reads from text) "Jack told his mother what happened at school during the week. His mother told him about the office and what she did here. She invited Jack to come to see her office one day when school had led out for the summer." (Rob and Mike are looking over Doug's shoulder as he reads.)

Student Participation

I studied the transcripts of the discussions to understand the nature of student participation in D-TRLs. I studied the verbal interactions to look for patterns between teacher and students and among the students. In many instances, the pattern of interaction differed from that typically associated with classroom discourse. According to Cazden (1985) and Mehan (1979), classroom discussions typically follow a pattern in which the teacher initiates (I), the student responds (R), and the teacher evaluates (E). In the discussion phase of the D-TRLs, this I-R-E pattern did occur, but other patterns also emerged from the analysis. Below are examples of four interactional patterns that occurred over the course of the lessons.

I-R-E

When the typical I-R-E pattern occurred, it was usually during the time when we read the stories or when we were identifying reasons to support hypothesized conclusions. The following excerpt from Lesson 3 on *Old Henry* (Blos, 1987) is an example of this pattern of interaction.

Teacher: Let's suppose that you are the mayor, and you're thinking should I ask Henry to come back. What reasons would be good reasons to ask Henry to come back? Doug

Doug: Because Henry wanted to have more friends like. For he can like talk too. And have people be friends with him.

Teacher: Okay, because he, Henry, wants friends.

Student Initiated Talk

Many times students initiated an interaction. In Lesson 7 we were discussing whether anyone in the town should have paid a crown for the brass chest. In the sequence that ensued, a student politely bid for the floor. The role I adopted in the exchange involved seeking clarification regarding the student's contribution.

Rob: Wait -- I want to tell you something about the story.

Teacher: All right.

Rob: See if someone wanted -- You know they didn't want to take that chance -- Why don't they get a fake one (crown) to see what was in the in the chest? Except make it look real real and see what's in there and if it was worth it for them. If it was, then that person could give him (old man) a real crown.

Teacher: You mean give him a fake crown?

Rob: And see if it's worth it, then if it is, say here I -- If it was worth it, give him a real crown.

Students also talked directly to other students. In the following example, which occurred in Lesson 2, one student offered an idea and then other students added to it.

Martin: One thing if it was a bomb in there (Mr. Peretz's room), the next building would be blew up.

John: Yeah.

Rob: Plus it would make a lot of noise around the block.

John: Yeah and then they'd call the police.

Student References to Other Students

Another interesting feature of student participation was found in references to each other's thinking. Sometimes this occurred because they agreed with another student, and other times because they mounted a challenge. In Lesson 2, Rob challenged John's view that ghosts do not exist.

Rob: When John said there is no such things as ghosts. He don't know that, cause there's a lot of science, and plus they have -- The army about twenty years ago, there's a UFO that crashed and there was some -- two different bodies there, and like from a different planet. You know?

Student Adopts a Teacher-Like Stance

The fourth noteworthy type of student participation occurred when students adopted a teacher-like stance in the discussion. Sometimes the students' contributions indicated that they were assuming the role of discussion leader. They became proactive as opposed to merely reactive. They took on more responsibility for maintaining discussion. Three examples are presented that represent the different ways in which students adopted teacher-like postures.

In Lesson 7 David explicitly adopted the role of teacher in his efforts to get the other students to make a decision about the truth value of one of the reasons listed on the chalkboard.

David: Well, if I was the teacher around here what would you say?

Doug: Depends.

David: Depends -- All right -- I would change that to a two and make that a one.

In Lesson 10, Mike took on the role of disciplinarian to get Rob back on task.

Mike: Get your mind on teaching, Rob.

Later in the same lesson, Rob was obviously on task when he challenged John to defend his view that a reason was true.

John: Okay, true, true. We both think it's true.

Rob: Well why? Explain that.

The occurrence of students adopting teacher-like stances are more apparent in the final lessons, although they did occur occasionally in earlier lessons. There are only 3 instances of this phenomenon in the first five lessons, whereas it occurred 19 times in the final five lessons.

I have identified four patterns of interaction that differ from the standard I-R-E pattern. There may be other patterns as well, but it is clear that in these 10 lessons, the interactional patterns approximated the concept of a true discussion because everything was not teacher directed.

Pedagogical Strategies

I studied the transcripts to determine what pedagogical strategies facilitated the discussion phase in each lesson. Each facilitative strategy will be described along with examples.

Stimulating Student Involvement

I tried to involve students by encouraging them to listen and react to each other's thinking. For example, I would ask students to assist each other in communicating their thoughts. In Lesson 7, I was having difficulty understanding David's reason to support the conclusion that it would be foolish to pay a crown for the brass chest. After other students offered help, David was able to articulate his thoughts more clearly to me.

Teacher: Does anyone know what he (David) was trying to say?

Martin: That the crown was too expensive or something like that.

Rob: What he means is, maybe he thinks the chest ain't worth more than a crown.

Teacher: (To David) Is that what you mean -- what Rob said?

David: (Looks over at Rob) Tell me again.

Rob: That the chest, the chest, wasn't worth what the crown was.

David: The chest was expensive, and the crown meant more to them -- to the people than the chest did.

Leading Students to Consult the Text

Another facilitative strategy was directing students to consult the text. I noticed that once the story had been read and we were into the discussion, the students were not inclined to use the text in formulating or substantiating their points. They needed to be led to see that the text was a resource that could be

consulted during the discussion phase. I consistently encouraged the students to use the text as a resource. I tried to show them that the text could be used to substantiate their views or to resolve disputes.

In Lesson 5, the students were having a dispute about whether one of the reasons that had been identified was true or false. They were arguing rather ineffectively about the issue. I knew that there was pertinent information in the text that would help them resolve their differences, so I suggested they return to it.

John: It is true.

Doug: It's false.

John: It is true.

Doug: False

Teacher: How can we settle this? It's in the story.

John: Look it up, Doug.

Rob: What page?

Teacher: Show Doug where it is -- the page that we know says it's true.

John: I don't know.

Rob: (Reading from story) "Who knows, who knows," Benny said. "Who knows." Mr. Banks looked at Benny. "I think I know," he said. "I know what that chopper meant to you." Benny smiled slowly but don't say anything.

Teacher: Thanks Rob. That's right.

I found that students were willing to follow my suggestions to consult the text. Most of their disputes during the discussion were settled by returning to the text to get clarification.

Providing Clarification

Seeking and offering clarification were strategies used in every lesson. Sometimes I offered or sought clarification about students' reasoning. Other times I offered clarification about the text when I wanted to check my understanding regarding a student's contribution or when I suspected that the other students did not realize the significance or the relevance of what had been said. For example, providing interpretations of what a student said was one of the ways in which clarification was used. I did this when students were identifying reasons to support a hypothesized conclusion. The following example occurred in lesson three, after Rob gave a reason to support the conclusion that the mayor should tell Henry to stay away.

Rob: Well, it's like sometimes when houses -- they don't get takin care -- like the roof may come in, and he could get killed, cause like, um, houses get real weak after awhile, and they could fall and kill him.

Teacher: So maybe his house isn't fit for living in anymore?

Rob: Yeah, cause they have problems and he could die.

I would also clarify for them what I thought they needed to consider in their reasoning. For example, in Lesson 5 John personalized the situation and neglected to consider the character's motives.

John: I wouldn't feel sorry for him if I was running the race.

Teacher: Yeah, but it's not what you think. It's what you think the kid in the story was thinking.

Rob: You have to act like you're in his shoes.

Teacher: Yeah, right.

Becoming a Participant

Sometimes I shifted from being a facilitator to being a participant. As participant, I described my reasoning and shared my interpretations about the story and the issues we were considering. This would usually happen either when the students were confused, or when they neglected to consider what seemed obvious or important to me. The following example occurred during Lesson 5. The students were having difficulty determining whether one of their identified reasons was acceptable so I offered my interpretation for them to consider.

Teacher: I think Benny decided in the middle of the race that he wanted his friend to have the bike so he blew the race. He made it look like he fell. The reason he did that is because he felt sorry for his buddy because he doesn't have a bike. Doesn't that make sense to you?

Comparing the Instructional and Comparison Groups

Measures of reading comprehension and critical thinking were administered to the instructional (n = 7) and comparison (n = 7) groups before and after the instructional program. Reading comprehension was assessed individually with two third-grade reading comprehension tests from the Illinois Goal Assessment Program in Reading (Valencia et al.). The two measures of critical thinking were the Cartoon Critical Thinking Test (Powell, Ennis, & Ennis, N.D.) and baseline and post intervention D-TRLs.

In the following section, the measures and the procedures used to administer each will be described and the students' performance on each assessment reported.

Reading Comprehension Test

Two third-grade reading comprehension tests from the Illinois Goal Assessment Program in Reading (Valencia et al., 1989) were administered to each group of students. One of the tests is about "The Rummage Sale" (Joose, 1955), a story from a children's periodical (hereafter referred to as Rummage Test). The other test is about "Stuck With Arnie," a story taken from a basal reader (Aaron, 1980) (hereafter referred to as Arnie Test). I decided to use these tests because they complement the D-TRL in which there can be more than one reason to support an explanatory conclusion. These reading tests allow for multiple answers that focus on important aspects of the story and call for critical thinking. Students were given the tests on separate days.

The procedures I used to administer the tests were unconventional because I anticipated that some of the students would not be able to read the stories well enough to answer questions about them. I met with each group, the students silently read one page at a time, and then we talked about the content. At the end of the reading, the students were given the 15 comprehension questions and instructed to select one, two, or three correct answers for each item. We practiced with the first item on the test, after which they were asked to complete the remaining 14 items on their own.

Quantitative Results

Neither the instructional group students nor the comparison group students did well on the pretests and posttests (see Table 2). Each group's mean score was below the mean score for all third graders in Illinois (Rummage Test = 11.95, Arnie Test = 12.12). There were a few students who scored as well as the average third grader in Illinois. There were more students who scored at or below chance (7.5). They did slightly better on the Rummage Test than they did on the Arnie Test.

[Insert Table 2 about here.]

A repeated measure of covariance (ANCOVA) using the pretest as the covariate was used to analyze the students' scores on each test. There was a main effect for group (F (1, 10) = 11.79, p = .003) on the Rummage Test. The comparison group's mean posttest performance was significantly lower. The difference was due to a significant drop in scores for the comparison group between their pretest and posttest. There was no main effect for the Arnie Test (F (1, 13) = 9.33, p = .14). There is no evidence that the instructional group made any significant gains in reading comprehension given their scores on these two tests, although their performance did not decline as did that of the comparison group.

Qualitative Results

Another way to look at student performance on the reading comprehension test is to compare their answers on test items with their contributions to subsequent discussions of the stories. The impression one gets of their competency in the discussions is much better than the view one gets by looking at their reading comprehension test scores.

Sam got a score of 6.5 on the post-Arnie Test. In other words he scored below chance level (7.5). I thought Sam understood a lot more about this story then was reflected by his test score, and so I compared his performance on test items with his comments during the post-intervention D-TRL. Sam's response on one of the test items indicated that he thought Arnie's sister was an excellent skater. This is incorrect because in the story the sister says, "I'm not a great skater, but since Arnie learns everything from me, I figured I'd better not look like I was afraid to try." During the lesson Sam contributed information that is relevant to this test item.

> Sam: His sister won, then he got the skates and went out there. She started going--her hands started going back then she loses control over the skates. And then her brother got up there. He started doing what her doing and the people thought he was doing hisself. And they thought he were good so he won a prize. He won some skates, and his sister had won another prize.

Everything Sam said is consistent with the story. His response shows that he understood that the sister had difficulty skating. Perhaps, he thought the sister did an excellent job skating because she inspired her brother to skate like her and also won a prize.

There are more examples like these from both groups of students. In general, the students' scores on the reading comprehension tests would lead to the conclusion that they did not comprehend the story.

However, it was my impression that they did understand most of the important parts of the story as shown by their contributions to the baseline and post-intervention D-TRLs.

Critical-Thinking Test

The Cartoon Critical Thinking Test (Powell et al., N.D) is based on a story about a group of children who have decided to clean up a park. As the story unfolds, the test-taker responds to 22 multiple-choice items. The items assess the following aspects of critical thinking: infer and judge inductive conclusions, identify central issues, identify conclusions, determine the credibility of sources, identify assumptions, determine relevance, deduce and judge deductive validity, identify appropriate questions, identify reasons and recognize inconsistency.

The test was administered to each group of students. I read aloud the captions for each cartoon drawing as well as the question and four alternatives so as not to confound the students' critical-thinking ability with their reading ability. Each student had a copy of the test and was told to select one answer for each item.

Quantitative Results

Individual students' scores varied greatly on the test. They ranged from a low of 4 to a high of 17. In general, individual students' scores were similar for the pretest and posttest (see Table 3). Martin was the only student whose posttest score (14) was much better than his pretest score (5). An analysis of covariance was performed, using pretest score as a covariate. There was no main effect for group, F (1, 13) = 5.36, p = .43.

[Insert Table 3 about here.]

In an effort to seek greater insights regarding the instructional group's performance on the critical thinking test, I compared the responses on the pretest with those selected on the posttest. The results of this comparison revealed that there was a close correspondence between their responses in both test sessions. Except for Doug, who only had 6 matches between the pretest and posttest, the other students had between 10 and 16 matches on the set of 22 items. Sam, who got 6 items correct on the pretest and 4 items correct on the posttest, had 16 matches. This kind of consistency suggests that the student's test responses were not random.

Qualitative Results

To find out more about the students' thinking, I met with the instructional group and asked them to explain the basis for their responses on the posttest. This session was tape-recorded, and each student was given his copy of the critical-thinking posttest. There were no marks on the tests to indicate whether their responses were correct or incorrect. During the discussion, I did not tell them which answers were correct, and they did not ask. I merely asked them to explain to me their reasons for selecting their answers.

The transcript of our discussion of the test provides further insight into the critical thinking of the children in the instructional group. I have undertaken a qualitative analysis to try to identify what accounts for the students' poor performance on this test.

Streetwise critical thinking. On a number of the test items, the students selected incorrect alternatives because they interpreted an item through their understandings about how things operate in real life, which in some instances differs from the way they operated in the test. In other words, they answered a different question than the one posed. In doing so, they were engaged in streetwise critical thinking,

which differs from the kind of thinking that the item was designed to assess. An example is their thinking comes from one of the assumption identification items for the story about kids cleaning up a park.

[Insert Item 25 about here.]

Teacher: Okay, on the next page Linda's talking. She says, "I'd like to clean the park, but all the trash won't fit into the park's trash can so we can't clean up the park." What does Linda assume, but not say?

Rob: I said B, she doesn't want to help clean up the park.

Teacher: You think that's what she's thinking?

Mike: She says, "I'd like to help clean up the park." She doesn't really want to help. She's just saying that.

Martin: She doesn't want to help...She really don't want to do it, but she just saying that so they'll think she'll do it... She was lazy.

Sam: See, the only thing she got to do is just pick out a way to get the trash down there and get the trash in. She could of got all the trash and pile it up by the garbage can. Then the garbage man would have to come around there and get the garbage and put it in the garbage cans. He don't need no bag to get the trash up.

Clearly these students did not know what the word *assume* meant, but they displayed some excellent thinking nonetheless. They believed that when Linda said that she could not help clean up the park because there was only one trash can, she was engaging in a ruse. Linda was just looking for an excuse to get out of doing the dirty work of cleaning up a junk-filled park. The unstated assumption they were supposed to identify was: the only place to put the trash is in the park's trash can. The students' comments may indicate that they recognized it would be ridiculous to think the only place to put trash is in a trash can. They rejected that alternative and sought a more realistic answer.

Valid justifications for incorrect alternatives. Often the students exhibited sound reasoning when they explained the basis for selecting incorrect alternatives. For example, Martin used appropriate criteria to arrive at a conclusion that was keyed incorrect on an item designed to assess the ability to judge the credibility of sources.

[Insert Item 24 about here.]

Martin: There's no way to tell because if he cleaned up a park before -- that park could of been smaller and didn't have that much trash and stuff. This park could be bigger and have more trash than the other park, so there's no way to tell.

Martin's response could be contested on the grounds that Bill said that the park he cleaned up before was <u>like</u> this park. Nonetheless, Martin is exhibiting the kind of critical-thinking ability that the item

was designed to assess. Martin's questions about size and amount of debris are valid in assessing whether the two parks are similar.

Dialogical-Thinking Reading "Test" Lessons

Before the instructional program began, I conducted two baseline D-TRLs; one with the instructional group and one with the comparison group. In the baseline lessons we discussed "Rummage Sale" (Josse, 1955). After the instructional program was completed, both groups participated in a post intervention D-TRL during which we discussed "Stuck With Arnie" (Aaron, 1980). These two stories were selected because they are thematically similar and were used in the reading comprehension assessment. Both stories are about sisters who resent their younger brothers. Selecting stories about a familiar topic (sibling rivalry) was important to avoid confounding students' background knowledge with their critical-thinking ability.

The baseline and post-intervention lessons were transcribed and qualitatively analyzed. I analyzed each group's participation to assess their critical thinking. These analyses focus on students' ability to (a) identify reasons in support of two competing hypothesized conclusions, and (b) to evaluate the truth and relevance of their reasons.

Identifying Reasons

In the discussion phase of each D-TRL, I asked the students to identify reasons supporting two hypothesized conclusions. The similarity between "Rummage Sale" (Josse, 1955) and "Stuck With Arnie" (Aaron, 1980) enabled the same hypothesized conclusions to be used in the baseline and post-intervention lessons. The two conclusions discussed were (a) the girl did not like her brother, and (b) the girl did like her brother. Students' reasons were analyzed by classifying them as either valid, invalid, or as inadequate. Inadequate responses were those that were incoherent or incomplete.

Valid reasons. Reasons were considered to be valid if they were true given the information provided in the story and if they provided support for the conclusion being considered. Interestingly, valid reasons were either explanations or justifications. When students identified reasons the character had for liking or disliking her brother, they were providing explanations. When they identified reasons that the reader might have for believing that the character liked or disliked her brother, they were providing justifications. Consider the difference between two valid reasons offered to support the conclusion that the girl in "Rummage Sale" does like her baby brother.

Rob: She likes how he laughs and plays games.

Mike: She is not going to sell him.

Rob explained why the girl liked her brother, whereas Mike justified his belief that the girl liked her baby brother. The fact that the girl decided not to sell her brother does not account for her liking him. Rather, it resulted from her liking him.

Invalid reasons. Reasons were judged invalid when there was no textual evidence to support believing them. Also, if the reason was false, then it was invalid. The following is an example of an invalid reason:

Andrew: He took her friend away from her.

Andrew's reason was invalid because in "Stuck with Arnie," the sister's friends never appeared at the skating rink so her brother, Arnie could not have taken them away from her.

Inadequate reasons. Some reasons were classified as inadequate because it was not clear what the student meant. The following is an example offered in the post-intervention lesson to support the conclusion that the girl did like her brother.

> Sam: She gave -- Gone skate -- money -- He wanted to jump -- He jumped out there and started along with her.

The results of classifying the students responses on the baseline and post-intervention lessons are presented by group in Table 4.

[Insert Table 4 about here.]

In the post-intervention lesson, the instructional group identified proportionately more valid reasons than did the comparison group. More than half of the reasons they identified were valid, whereas the comparison group offered proportionately more invalid and inadequate reasons than they did valid ones. Yet, the instructional group's post-intervention performance on identifying valid reasons was similar to their baseline performance.

Evaluating Reasons

After reasons were offered and recorded on the chalkboard, the students were asked to evaluate them by sharing their thoughts about whether each reason was true and and whether it supported the conclusion. Following this discussion, which often included debate, the group was polled for a final decision regarding the truth and relevance of a reason. Sometimes the students arrived at appropriate conclusions and other times their evaluations were unfounded. In this analysis, I compared the instances when groups unanimously supported a well-founded reason with the instances when groups were divided. This analysis provides a basis for comparing the baseline and post-intervention lesson performance and for comparing the groups.

Sound evaluations. This first example is an instance of the group arriving at a correct judgment about whether a reason was acceptable. We were considering whether it was true that the sister had to baby sit for Arnie.

> Teacher: How about this -- She had to baby sit. Is that true?
>
> John: No, that's false. She didn't want to baby sit so I don't think she did get to baby sit.
>
> Sam: She did.
>
> David: It depends.
>
> John: Depends.
>
> Martin: She did baby sit.
>
> Mike: She did baby sit for him.
>
> Sam: True.
>
> Teacher: Well, tell us the reasons.
>
> Sam: Because she took the baby with her. She watched the baby that mean she baby sit.

John: I thought she said she didn't want to baby sit so she didn't get to since she didn't want to.

Doug: She did (babysit).

Sam: Her Momma said you got to take the baby.

Teacher: to the skating rink.

Martin: Or you can stay home.

John: Yeah that's baby sitting.

David: All right! True.

Martin: She said you can take him to the skating rink with you or just stay home.

Teacher: So either way, you're baby sitting.

John: Yeah, cause see she gots to watch him while he's skating. That's baby sitting.

At first there was some confusion about whether the girl had to baby sit her brother. The students used their knowledge of the story to establish that it was true, and the whole group arrived at a correct assessment of the reason. In this instance, the group's performance would be classified sound evaluative thinking.

Problematic evaluations. Problematic evaluation was another category. The following example occurred during the post-intervention lesson when the comparison group discussed "Stuck With Arnie." The group was considering whether it was true that Arnie took a friend away from his sister at the skating rink. This reason was discussed because it was offered to support the conclusion that the sister did not like Arnie.

Bill: (Reading from chalkboard) He took her friend -- He took her friend away from her.

Teacher: What do you think?

Group: No.

Teacher: Is that true or false?

Group: False.

Teacher: Why?

Jack: Cause she didn't even have a friend around when he took her.

Teacher: Does anyone think it's true?

Bill: No.

Teacher: Does anyone think we don't know?

Group: False.

Randy: It didn't say in the -- It didn't say in (Picks up a copy of the story)

Teacher: So if it doesn't say in the story then I guess it's false Huh?

Randy: Yeah.

Jack: Yeah or you don't know.

Teacher: Everybody say false?

Jack: I say I don't know.

Randy: Me too.

Teacher: Two don't know.

Cindy: Three.

Teacher: Okay -- I know what? Help me out. Raise your hand if you say false. One. Raise your hand if you say don't know. That's five.

At the beginning of this exchange, group members were correct in noting that Arnie did not take a friend away from his sister. Then the discussion shifted to some ambiguity about whether the reason was true or false. Once Jack changed his conclusion from "false" to "don't know," all but one student agreed with him. I classified this episode as problematic because there is sufficient evidence in the text to conclude that it is false to think that Arnie took his sister's friend away from her. A summary of the number of instances of sound evaluations and problematic evaluations is presented in Table 5.

[Insert Table 5 about here.]

Table 5 shows that the members of the instructional group improved in their ability to arrive at sound evaluations. There was a significant number of episodes of problematic evaluations for the comparison group in both the pre- and post-lesson. When the members of the comparison group were engaged in evaluating reasons they seemed more concerned with being on the side of someone whom they liked and admired and less inclined to engage in independent thinking when considering the worthiness of a reason. They would look around to see how other members of the group were voting and then change their minds. The members of the instructional group seemed more cooperative in their thinking and seemed more intent on getting at the truth. In the post-intervention lesson the instructional group cooperated in identifying reasons and in evaluating those reasons. Members of the comparison group were less focused in their thinking. The instructional group was clearly more successful than the comparison group in evaluating reasons.

Discussion

Findings will be discussed in relation to the four research questions that guided this study.

Can Dialogical-Thinking Reading Lessons Promote Critical Thinking?

There is evidence from the transcripts of the 10 lessons and the post-program lesson to support the conclusion that D-TRLs promote critical thinking. Students engaged in critical thinking by identifying reasons to support alternative hypothesized conclusions, by generating additional plausible conclusions, by evaluating the truth and relevance of reasons, and by clarifying points of confusion. They exhibited

critical-thinking dispositions by seeking clarification and reasons about the text as well as each other's reasoning. After the program of lessons, the instructional group understood that evaluating reasons depended on considering textual evidence and on whether reasons supported the conclusion. They were more successful when they could "pool their reasoning abilities" to make judgments in a group setting.

The results of the Cartoon Critical Thinking Test (Powell, Ennis & Ennis, N.D) are more difficult to interpret. A post hoc analysis of students' justifications for selecting "incorrect" test items revealed greater critical-thinking facility than was indicated by their original test scores. In a number of cases the students' reasoning about the items represented more complex critical thinking than was envisioned by the authors of this test. After analyzing their thinking about the test items, I have come to the conclusion that this test underestimated their critical-thinking ability.

Do Dialogical-Thinking Reading Lessons Augment Reading Performance?

During the program of lessons, students were required to read in order to participate in the discussions and they found opportunities to read during the discussion phase. In the final lessons there were a couple of instances where students, of their own accord, returned to the text to settle disputes about story events. The emergence of this behavior is important instructionally because using text in this manner is characteristic of proficient readers. Students also read from the chalkboard during the lessons. The information that was recorded on the chalkboard represented their own thinking, which made it easier to read.

Students' reading during the program of lessons did not translate into gains on the third-grade reading comprehension tests. There seems to be a discrepancy between their ability to correctly answer multiple-choice test items and their ability to contribute to discussions of stories. On the comprehension tests, they appear to have little comprehension, whereas their discussions of the stories represent adequate comprehension. They seemed to be able to exhibit greater understanding in the socially mediated setting of a D-TRL. Their test performance leaves one with the impression that they have many deficits, while their participation in the D-TRL allowed them to exhibit their reading comprehension.

What is the Nature of Participation in Dialogical-Thinking Reading Lessons?

During the program of ten lessons the students participated in a variety of ways. They helped each other identify reasons for hypothesized conclusions. Sometimes they argued about the truth and relevance of reasons with minimal if any teacher assistance. They made references to each other's ideas when they were engaged in evaluating reasons. They adopted teacher-like stances by acting as discussion leaders, disciplinarians, and posers of questions. They were highly engaged in considering each other's thinking during all 10 lessons. The focus of the discourse in these D-TRLs was on exploring and developing lines of reasoning rather than on correctly answering comprehension questions or practicing decoding strategies.

What Pedagogical Strategies Promote Critical Thinking?

One of the goals of this research was to identify pedagogical strategies utilized in the D-TRLs that promote critical thinking. Several strategies emerged during the lessons; some of which were the result of modifying the format of the lesson to accommodate the needs of the children involved in the intervention. Others emerged from the discourse analysis as it focused on the ways in which I led the students to engage in critical thinking.

Remain Flexible

Teachers should not adhere to the format of the D-TRL too rigidly. The teacher should be prepared to accommodate the needs and abilities of her students by modifying the format of D-TRLs. In working with these students who had been labeled as learning-disabled, I found that limiting the number of reasons students identified for each hypothesized conclusion was necessary because of time constraints and their limited attention to the lesson. When too much time was spent identifying reasons, there was not enough time and interest left for evaluating them. The changes that teachers make should be determined according to an appraisal of students' needs and abilities.

Involve Students by Giving Them Responsibility

I involved the students by dividing them into teams and charging them to evaluate the truth and relevance of each reason. Having a member of each team report to the rest of the group turned out to be another way of ceding responsibility to the students. They seemed to view standing at the chalkboard in front of the group as a privileged position. They seemed to relish the opportunity to be the discussion leader. During this part of each lesson, extended exchanges between students were common.

Promote Student to Student Interactions

One of the goals of the D-TRL is to get students to listen carefully to each other and to challenge and support each other's thinking. The findings from this study suggest several ways in which a teacher can encourage student-to-student interaction. For example, students were invited to react to each other's thinking (Does anyone agree or disagree with David? Why?); students were encouraged to help each other formulate their thoughts (Can anyone help David? or Does anyone know what he's trying to say?); and students were led to compare and contrast their responses to each other. (Is that like what Martin said?).

Provide Scaffolded Help

Sometimes a teacher may need to provide scaffolded help by clarifying aspects of the text or an individual's reasoning to keep the discussion focussed. As discussion leader, it seemed to be effective when I adopted a stance that allowed the participants to do as much as they could on their own, offering clarification only when it appeared no one else would. On other occasions, I modeled how to use the text. It is unlikely that the students would have voluntarily consulted the text to settle disputes if they had not been taught to do so in the earlier lessons.

Share Your Reasoning

In discussions that occur outside the confines of school classrooms, all the participants are expected to contribute their own views. To encourage students to view D-TRLs as similar to everyday discussions, teachers should share their reasoning during the lesson. This may lead the students to realize that what matters is the extent to which one can substantiate ideas with reasons and textual evidence. In this way, teachers can model reasonable, reflective thinking.

Use Critical-Thinking Vocabulary

Students can become familiar with the vocabulary of critical thinking if teachers will incorporate it into the lessons in a natural, as opposed to a didactic, manner. Teachers can naturally incorporate words like *reasons*, *evidence*, *conclusions*, and *assumptions* when communicating their thinking and when responding to the students' thinking. This exposure may help students learn the meaning of terms

associated with critical thinking in the context of activities to which these terms apply. They in turn will demonstrate their knowledge by using these words in their communicative efforts.

Ask Questions to Which You Do Not Know the Answer

I did not have a preconceived notion regarding the answers for most of the questions I asked during each lesson. When posing questions such as "Why do you believe that?" or "Why do you disagree?" I could not have anticipated a particular response from the student. I hoped that students would realize that what mattered to me was the extent to which they could substantiate and articulate their reasoning. This posture was a conscious attempt to help students move out of a mode in which they try to guess what answer the teacher has in mind. Asking honest questions encourages authentic classroom discussions where the teacher tries to understand the students' thinking and they have opportunities to discover what they do think.

Conclusions

The findings reported in this study can be placed within a larger research and theoretical context. The differences in performance exhibited by the students in taking the paper and pencil pre- and post-assessments with their participation in discussions are consistent with Lipson and Wixson's (1986) call for an interactive view of reading disability. They have recommended that research on reading disability move toward specifying the conditions under which different readers can and will learn. They argue for a paradigm shift in reading disability similar to that which has occurred in research on reading (Pearson, 1978). This shift in perspective requires describing how specific populations of students perform on specific texts and tasks in particular settings without characterizing them as able or disabled readers. Thus, disability becomes a fluid concept that takes into consideration the relation between the reader, the text, and the context (Wixson & Lipson, 1991). The seven students in this study were able to use their critical thinking to consider the meaning and significance of stories within the context of D-TRLs, while on the paper and pencil measures they appeared to be unable to do so.

A contextualist orientation (Gavelek & Palincsar, 1988) requires studying learning and cognition from a holistic social and developmental orientation. In the past, research on learning disabilities has adopted a componential perspective. This perspective focused on reducing complex phenomena into manageable and understandable components but does not address the influence of adaptability. According to Cole and Traupmann (1981) learning is the development of compensatory strategies that enable successful performance on tasks presented in educational and noneducational settings. These new views are also consistent with the Vygotskian perspective that the child's developing mind can best be understood by studying the social interactions of teaching and learning.

In the study presented here, the interactions that occurred between the teacher and students and among students allowed seven children who have extreme difficulty succeeding in academic settings to engage in critical thinking about stories that they found difficult to read. The support they received from each other and the support I offered them allowed them to achieve that which was not possible on an individual basis. This study illustrates the potential of collaboration versus individual performance in promoting critical thinking. This seemingly obvious insight is important because often children who are classified as having special needs are given instruction based upon their individual performance on tests. Such an approach to instruction leads to an underestimation of what children can do in socially mediated settings. Teachers' interpretations of scores on achievement and diagnostic tests result in a deficit view of learning-disabled students' abilities, which, in turn, leads to reading instruction that focuses on basic skills like decoding. When their reading performance is considered within the supportive environment of cooperative groups, a more enabling view emerges.

The results of this study suggest that additional research is needed to further understand the role critical thinking plays in reading instruction for students of all abilities. The learning-disabled students in this study successfully engaged in reading instruction that focused on promoting critical thinking. Future research might explore other lesson formats designed to foster critical thinking with students who are reluctant readers. More lesson formats that allow students of all abilities to use critical thinking to construct meaningful interpretations of text are needed.

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Table 1

Number of Instances of Chalkboard Reading by Lesson

Lessons	Reading from Chalkboard
One	2
Two	0
Three	0
Four	7
Five	4
Six	0
Seven	7
Eight	5
Nine	10
Ten	10

Table 2

Mean Pre- and Post-Test Scores for the Instructional and Comparison Groups on Two Passages from the Illinois Goal Assessment Program in Reading (15 items per test)

	Rummage Sale		Stuck with Arnie	
Group	Pre ($n = 7$)	Post ($n = 6$)	Pre ($n = 7$)	Post ($n = 7$)
Instructional	9.90 (1.29)	9.63 (.83)	7.44 (.92)	7.29 (1.92)
Comparison	10.13 (.88)	7.65 (.79)	8.23 (.84)	8.91 (1.82)
Illinois Third Graders	11.95 (1.76)		12.12 (1.86)	

Note. One student from each group missed taking the Post Rummage Test.

Table 3

Mean Scores for the Instructional and Comparison Group on the Cartoon Critical Thinking Test

Group	*n*	Pre	Post
Instructional	7	9.43 (4.04)	10.14 (4.14)
Comparison	7	11.00 (3.70)	9.57 (1.81)

Table 4

Percentage of Valid, Invalid, and Inadequate Reasons Offered by the Instructional and Comparison Groups in the Baseline and Post-Intervention Lessons

	Baseline		Post-Intervention	
Groups	Instructional	Comparison	Instructional	Comparison
Valid Reasons	62%	75%	63%	45%
Invalid Reasons	15%	17%	12%	33%
Inadequate Reasons	23%	8%	25%	22%
Total No. of Reasons	13	12	11	9

Table 5

Number of Episodes of Sound Group Evaluations and Problematic Group Evaluations in the Baseline and Post-Intervention Lessons

	Baseline		Post-Intervention	
Groups	Instructional	Comparison	Instructional	Comparison
Sound Evaluations	1	4	5	1
Problematic Evaluations	9	8	1	5

Central Question: Was the old woman foolish or wise?

Side A: The old woman was foolish.

1. Because she threw away the diamonds.

2. Because she found wood for the sling shot.

3. Because she put diamonds in the well.

Side B: The old woman was wise.

1. Because she got rid of the diamonds.

2. Because she helped make the sky pretty.

3. Because she used the slingshot to put the diamonds in the sky.

Figure 1. Reasons recorded on the chalkboard in Lesson 4.

25. What does Linda assume, but not say?

(a) The park should have more than one trash can.
(b) She does not want to help clean the park.
(c) It was silly to try to clean the park.
(d) The only place to put the trash is in the park's trash can.

Figure 2. Item on identifying assumptions.

Note. Test item from Cartoon Critical Thinking Test by Powell, Ennis, & Ennis (N.D.), Unpublished Test.

24. Who is more likely to know how long it would take to clean the park?

(a) Linda
(b) Bill
(c) They are both just as likely to know.
(d) There is no way to tell.

Figure 3. Item on judging the credibility of sources.

Note. Test item from Cartoon Critical Thinking Test by Powell, Ennis, & Ennis (N.D.), Unpublished Test.

APPENDIX A

CODING SYSTEM FOR ANALYZING DIALOGICAL-THINKING READING LESSON TRANSCRIPTS

CODES	DESCRIPTION	EXAMPLES (From Lesson One)
Valid Reason	A reason that supports the hypothesized conclusion and is consistent with textual information.	Hypothesized conclusion: The father should stay with his family. Reason: Because the mother and daughter don't want him to leave.
Invalid Reason	A reason that does not support the hypothesized conclusion or is inconsistent with textual information.	Hypothesized conclusion: The father should leave and go find a job. Reason: If the Dad were to get a job he would be the greatest cook around.
Inadequate Reason	A reason is incompletely articulated or otherwise incomprehensible.	Hypothesized conclusion: The father should leave and go find a job. Reason: Foster parent - it might be a foster parent.
Sound Evaluation	A defensible judgment regarding the truth and relevance of a reason recorded on the chalkboard.	Is it true that in the future it will pay off if he leaves the family to go find a job? Evaluation: It depends on if he can find a job.
Problematic Evaluation	A judgment regarding the truth and relevance of a reason recorded on the chalkboard that is either indefensible or incomprehensible.	Is "he will make more money" a good reason for the father to leave his family to find work? Evaluation: Yes because they want to spend a lot of money. They like to buy things.
Seeking Clarification	Clarification of the text or someone's reasoning is sought.	How is that a reason to show that the father should leave his family and find a job?
Seeking Reasons	Reasons are sought regarding textual information or the basis for someone's reasoning.	Why is the the most convincing thing you could tell the father?
Providing Clarification	Clarification is offered about the text or someone's reasoning.	If the Mom still got a job then she'd still have enough money to buy clothes for them.
Critical Thinking Vocabulary.	Critical thinking terminology like "reason" or "evidence" is used.	One reason why he should leave is to get a better job.

CODES	DESCRIPTION	EXAMPLES
Chalkboard Reading	Student reads from chalkboard.	What I said was (reads a reason recorded on the chalkboard) He can watch the house and take care of his wife.
Text Reading	Student reads from text.	No instances occured in lesson one.
Student Talk	Episodes where there is student to student interaction with little if any teacher talk.	Sam: If the man go away he going to have to pay child support for the kids. Rob: If they get divorced. Martin: Yeah if they get divorced. Sam: The only problem is the man go away but the woman Martin: But he can still send money to keep - to support his wife and stuff. If she don't have enough money he going to be paying child support for the children. He ain't never going to have never going to have enough money to git ahead. Can I do mine?
Student Initiated Talk	Student introduces a new line of thought or bids for a turn to speak.	Well I agree with Sam. I think he should go you know cause you never get nowhere if you don't look or even go out or anything.
Student References another Student	Student directly refers to another student's idea.	No instances occurred in lesson one.
Teacher-like Stance	Student contributes to the discussion in a manner reminiscent of teacher talk.	Teacher: Does anyone have a reason why the father should stay with the family? John
I.R.E.	Teacher initiates, Student responds, then Teacher evaluates	John: Um maybe the wife and kids don't want him to leave. Teacher: That's kind of like "don't split the family up". Should we add it to that?

CODES	DESCRIPTION	EXAMPLES
Participant	Episodes where the teacher participates by sharing her reasons for hypothesized conclusions or evaluations of reasons being considered.	No instances occured in Lesson One.
Stimulating Student Involvement	Episodes where the teacher tries to get the students to help or react to each other's thinking.	Teacher: Can anyone help David? Does anyone know what he's trying to say? Sam: Yeah. Can I help him?
Providing Clarification	Episodes where the teacher attempts to provide clarification.	Student: So they could help em. So they could take care of the house. If you don't usually the bills and stuff. Teacher: So they could pay their bills and keep the house? Student: Yeah
Consulting Text	Episodes where the teacher leads the students to consult the text and/or models how the text can be used to settle disputes.	No instances occured in the first lesson.