Effects of Active Comprehension Instruction on Attitudes and Motivation in Reading

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Numerous studies have shown that training students in self-questioning enhances comprehension (Andre and Anderson, 1979; Nolte and Singer, 1985; Palincsar, 1984; Singer and Donlan, 1982; Yopp, 1987). As Singer (1978) and Yopp (1988) have argued, the process of self-questioning, or active comprehension, facilitates comprehension because it requires students to use their metacognitive capacities and activates their background knowledge. When asking and seeking answers to their own questions, students establish goals, select means to attain them, and confirm attainment of their goals. In other words, students continually monitor their own reading behavior — an essential activity if students are to learn how to learn independently (Brown, Palincsar, and Armbruster, 1984). Further, the process of generating questions necessitates the tapping of background knowledge because one must know something in order to ask a question (Miyake and Norman, 1979). Because new knowledge is acquired only when a new proposition is stored with related propositions in an existing network (Gagne, 1985), activating background knowledge is crucial to comprehension. Active comprehension allows readers to establish the link between

new and prior knowledge. An additional feature of active comprehension is that the process of generating one's own questions places the locus of control for learning in the students and allows them to satisfy their own curiosity. Singer and Donlan (1989) have asserted that this control over one's own learning is motivating and that achieving answers to one's own questions results in positive feelings.

To date, studies on active comprehension have examined only cognitive outcomes. Nolte and Singer (1985) and Yopp (1988), for example, found that fourth- and fifth-grade students who were trained in active comprehension performed better on comprehension tests of narrative passages than peers who answered teacher-posed questions. Cohen (1983) administered a standardized comprehension test to third graders before and after training in self-questioning and found significant gains for the experimental group. Palincsar (1984) included self-questioning as one component of an instructional strategy to improve the comprehension of expository passages by junior high school students. She found that students participating in this instructional condition outperformed control group students on comprehension tests. Singer and Donlan (1982) tested the short-story comprehension of high school students and found beneficial effects for students trained to generate their own questions based on story schema-general questions. Likewise, in their work with high school students, Andre and Anderson (1979) found that trained questioners outperformed untrained questioners on a test of comprehension. These findings indicate that teaching students active comprehension as a process of reading positively affects their reading performance.

Yet the affective effects of instruction are also critically important. Holmes (1960) described attitudes as "mobilizers" which determine whether a reader will undertake and persevere with a task at hand. Dreher and Singer (1986)

agreed that affective factors may set cognitive actions in motion and facilitate or hinder cognitive processes in learning from text. They have argued, along with Athey (1985) and Mathewson (1985), that affective factors are dynamically involved with the reading process and are critical to text comprehension. Indeed, Dreher and Singer (1986) found that affective factors contribute to the prediction of variance in reading comprehension even in competition with cognitive predictors.

Despite these findings, however, affect has received little attention in the research literature (Athey, 1985; Shapiro, 1992; Shapiro and White, 1991), possibly because it has been difficult to establish the precise nature of the relationship between affect and reading, or because other factors seem to account for more variance in reading performance (Athey, 1985; Dreher and Singer, 1986), or because of socio-political factors that have resulted in an emphasis on finding the best method for achieving high reading scores (Shapiro, 1992). However, Dreher (1990) has argued that "... concerns with both illiteracy and aliteracy make it clear that we must give high priority to affect in reading" (p. 23), and Mikulecky (1987) has maintained that efforts must be made to reverse the increasingly negative attitudes toward reading that children exhibit as they progress through school. Cothern and Collins (1992) have stated that the development of positive attitudes is an important goal in teaching reading, and note that many factors contribute to the development of an attitude, including instructional strategies.

Consequently, this study examined two research questions. First, we investigated whether participating in self-questioning activities promotes a more positive attitude toward reading instruction than answering teacher-posed questions. If students are motivated by self-questioning and if finding answers to their questions results in positive feelings as Singer and Donlan (1989) have suggested, then students

should enjoy classroom activities and experiences that encourage self-questioning. We hypothesized that this positive attitude would be manifested in the comments students made about the instruction. Second, we explored whether students who participate in self-questioning instruction demonstrate a greater motivation to read by actually seeking out books that were excerpted during self-questioning training. Would their questions mobilize them to borrow more target books from the classroom and school libraries than their classmates?

Method

Subjects. The subjects were 17 girls and 16 boys from a sixth-grade classroom in a public elementary school located in a middle class neighborhood of southern California. The majority of the students were Caucasian, four were Mexican-American and two were Asian-American. Reading comprehension achievement scores from the previous spring revealed a mean national percentile of 76 on the Comprehensive Test of Basic Skills. Scores ranged from the 15th to the 90th percentile.

Materials. The instructional materials in this study were excerpts from ten novels. These ten novels were chosen from a pool of 100 paperback novels that were placed in the classroom in which the study was conducted. The 100 novels were narrative stories that were selected for their appropriateness for upper-elementary school-aged children. They are all typically found in school libraries and included such books as *Danny Dunn, Scientific Detective* (Williams and Abrashkin, 1977) and *From the Mixed-Up Files of Mrs. Basil E. Frankweiler* (Konigsburg, 1967).

Prior to the study, the teacher conducted a survey to determine which titles the students had read. From the list of books that had not been read by any of the students, 10 novels

were chosen at random from which to take excerpts. The excerpts ranged in length from 1329 to 2945 words. Multiple copies of each of the books from which excerpts were taken were added to the classroom collection. A check-out procedure had been initialed by the classroom teacher earlier in the school year, and the classroom library was easily accessible to students, who engaged in 20 minutes of sustained silent reading every day.

Design and procedure. The students were randomly assigned to the active comprehension and teacher-posed question groups. The classroom teacher examined the group assignment lists and verified that ability groups were equally represented in the two groups.

The first author was introduced to the students as a reading specialist who was going to teach them how to become better readers. She met with each group separately in an empty classroom in the school twice a week for five weeks in 40 minute sessions. Students in the active comprehension group were taught to generate their own questions throughout their reading of the literature excerpts using the phase-in/phase-out procedure described by Nolte and Singer (1985). Students in the teacher-posed question group read the same excerpts, but the teacher, rather than the students, asked the questions. Instruction for each group is described more fully below. At the conclusion of the study, students were asked to respond in writing to the question *How did you like the special reading class?* Data regarding the number and titles of books students borrowed from the class and school libraries were also obtained.

Active comprehension group. Figure 1 outlines the instruction provided to students in the active comprehension group. First, the author discussed the value of generating questions throughout reading, modeled the procedure, and

identified for the students the kinds of questions helpful for enhancing comprehension of narrative text (Beck, Omanson and McKeown, 1982). These are questions that are linked to story grammar; they focus on central story elements such as the setting, the characters, the main character's goal or problem, the character's actions toward the goal, obstacles that intervene, and the resolution. The experimenter modeled the self-questioning procedure by reading a passage aloud and stopping at appropriate points to demonstrate self-questioning.

Next, the students participated in questioning while the experimenter read a story aloud. The experimenter prompted the students by asking questions that required a question in return, such as *What would you like to know about what happens next?* and *What would you like to know about this character?* (Singer, 1978). After two of these sessions, the experimenter divided the students into groups of four or five and appointed group leaders to guide their classmates in posing questions. The students worked in these small groups for several days before they moved into the next phase of the instruction — working with partners. During the final days of the study, students worked independently, asking their own questions as they read. Previous research (Yopp, 1987) indicates that trained students do indeed internalize the questioning process and continue to use it after the instructional period ends while control group students do not spontaneously generate their own questions throughout reading. To confirm that students in the active comprehension groups were actually asking themselves questions as they worked independently, the experimenter initially had students write their own questions in the margins of their papers. Later during the independent work phase, students were individually interrupted and briefly interviewed by the experimenter about the questions they were posing.

Figure 1

Instructor Modeling	Instructor models self-questioning during reading. Looks at title and picture, asks questions. Reads first sentence/paragraph orally. Poses questions. Continues in this manner throughout passage.
Whole group	Instructor reads orally or directs students to read title and look at picture on first page (if any). Asks students: "Does the title make you curious about anything? "What would you like to know about this story?" Calls on individual students to respond. Instructor reads orally or directs students to read first sentence or paragraph. Asks students: "What would you like to know about what happens next?" Calls on students to respond. Praises questions, especially those that highlight story grammar structure. Instructor proceeds through passage, eliciting questions from students in this manner. May contribute to group by generating questions.
Small group	Instructor divides students into groups of 4 or 5 students and assigns group leaders. Group leaders elicit questions from the students in their groups after reading portions of the passage silently or orally. Group leaders identify appropriate points for generating questions and praise group efforts. Leadership of group is rotated.
Pairs	Students select a partner with whom to read or teacher assigns partners. Students read short sections of the passage and ask each other questions at points in story which they deem to be appropriate.
Individuals	Students read silently and generate their own questions before, during and after reading a short passage. Questions may be recorded in writing in margins of paper. Students may be interrupted by instructor and asked to share their questions.

Teacher-posed question group. Students in the teacher-posed question group received instruction that paralleled that of the active comprehension group in all aspects except that students did not participate in question-generation activities. Prior to reading a selection, the experimenter introduced new vocabulary and briefly described the story. Then students progressed from answering teacher-posed questions as a class to answering teacher-posed questions in groups, with partners, and finally individually. The same selections were used in each group and were drawn from target books placed in the classroom library.

Results

The dependent variables in this study were 1) student comments about the special reading class and 2) number of target books borrowed from the class and school libraries. The student comments were analyzed for positive, neutral and negative statements. In addition, the length of these comments was analyzed. Because multiple measures were taken for each student, a multivariate analysis of variance (MANOVA) was used to analyze the data. The analysis revealed a significant difference between groups (Wilks lambda = .53, $F(5,27) = 4.78$, $p < .01$). Univariate analyses of variance were then conducted.

Student comments. The number of positive, neutral and negative responses students made to the question *How did you like the special reading class?* were determined by two independent raters who were blind to group assignment. Interrater reliability was .98. Disagreements were settled through discussion. Table 1 displays group means for number of positive, neutral and negative comments students made about the instructional experience. It can be seen that students in the active comprehension group wrote a significantly greater number of positive comments than did students in

the teacher-posed question group, $F(1,31) = 7.52$, $p < .01$. No significant differences were found for the number of negative comments or the number of neutral comments.

Table 1
Group Means for Positive, Neutral, and Negative Comments and Length of Responses

Group	Comments			
	Positive*	Neutral	Negative	Length** (in words)
Active Comprehension	1.79	.21	.37	19.53
Teacher-Posed Questions	0.86	.14	.57	9.29

* The difference between the obtained means in this column was significant at the $p < .01$ level.
** The difference between the obtained means in this column was significant at the $p < .001$ level.

Six sample comments are listed below, along with the scores they received. The first three comments were written by students in the active comprehension group, and the latter three were written by students in the teacher-posed question group.

It was better asking our own questions instead of having the teacher asking and student answering! I liked the reading class! (2 positive)

I enjoyed the class because I got to participate and not have to just listen to a teacher talk. I enjoyed most of the books that she brought in. I liked working in groups. (3 positive)

It was okay. (1 neutral)

Boring. (1 negative)

I liked the class because most of the stories she gave us I had never read. (1 positive)

I think the books were interesting, but I didn't like the questions. (1 positive, 1 negative)

While scoring student comments, the raters noticed that responses written by students in the active comprehension group appeared lengthier than those written by their peers. The words in each response were counted to determine whether a significant difference in length of comments did exist. In fact, a significant difference was found between groups with students in the active comprehension group writing responses twice as long as those written by students in the teacher-posed question group, $F(1, 31) = 13.41$, $p < .001$. Mean response lengths for each group can be found in Table 1.

Target books. No significant difference was found between the active comprehension and teacher-posed question groups for number of target books borrowed from the class and school libraries during the six-week period beginning with the initiation of the study and ending one week after the final session, $F(1, 31) = .93$, $p > .05$. Students in both groups borrowed few target books: the mean for the active comprehension group was .37, and the mean for the teacher-posed question group was .81.

Discussion

While no difference was found between groups in the number of target books students borrowed, significant differences were found in the type of comments students made as well as the length of their responses when they were asked how they liked the special reading class. Students who participated in the active comprehension instruction had

more to say about the experience, and what they said was positive.

Why did students in the active comprehension group generate more positive statements about the special class than those in the teacher-question group? Students in both groups left the regular classroom to meet with the experimenter for special instruction. Students in both groups interacted with peers and participated in group activities. The difference between the groups was the role that the students played in their own learning. Activities in which the teacher-posed question group participated emphasized the teacher's authority in the teaching/learning process. Students in the active comprehension group, on the other hand, moved from teacher-directed to self-directed activities. The locus of control for learning was in the students. Cothern and Collins (1992) have stated that making a reading task personally meaningful to students will positively influence attitudes toward reading, and that one way to increase students' personal investment in the reading experience is to allow them a role in decision-making. Teaching students to ask their own questions, to read for their own purposes, gives them a role in decision-making, thus encouraging their personal involvement. The additional finding that students in the active comprehension group generated longer responses when asked what they felt about the class supports the hypothesis that they felt greater involvement in the experience. The results suggest that students in the active comprehension group learned that their ideas and opinions are important, and so they felt more confident, more involved, and were willing to expend more effort expressing their ideas and opinions.

A second explanation for the positive comments made by students in the active comprehension group is the enhanced comprehension that results from self-questioning. As noted earlier, research has demonstrated repeatedly that

students who engage in self-questioning throughout reading earn higher scores on tests of comprehension. They are more successful, and success is motivating. Thus, although we did not measure achievement, previous research suggests that students in the active comprehension group experienced more success in their reading — perhaps this contributed to more positive feelings about the class. The relationship between achievement and attitude, however, is not unidirectional. Singer and Donlan (1989) have stated that "most important for learning and retention are students' attitudes and feelings about what they are learning at the time they are learning it" (p. 92). Similarly, Dreher and Singer (1986) have argued that "affective factors... play an integral part in reading comprehension by facilitating or hindering cognitive processes in learning from text..." (p. 27). In other words, the relationship between affect and cognition is most likely one of mutual facilitation. Indeed, Mathewson's (1985) model of affect in the reading process depicts the cognitive and affective components as dynamically interactive. In spite of these positive feelings about the reading class, however, students in the active comprehension group did not borrow more target books. Perhaps the number of books borrowed is too broad a measure of reading attitudes. Consequently, although the treatment had an impact on specific verbal responses, it may not have been lengthy enough to have had an impact on the behavior measured in this study. Furthermore, perhaps the tone created in the instructional setting did not carry over to the regular classroom where the books were available.

However, we should note that students in the active comprehension group exhibited several behaviors that students in the teacher-posed question group did not. On several occasions students in the active comprehension group made spontaneous comments at the end of the class period indicating their interest in the story, such as "I wonder what happens to the boy" and "I wonder if the house is haunted." These

comments were made as the students were exiting the class and were not part of the instructional requirement to ask questions. Further, they were made to both the experimenter and to classmates. Similarly, the experimenter once overheard a student from the active comprehension group describing a target book to a student from another class; the student from the other class then borrowed the book from the school library. Additionally, a teacher from another class asked the experimenter to share her motivational strategy because students were so excited about a story that they discussed the book with her at recess. (This teacher, by the way, borrowed the book the students were discussing.) Although data on the number of target books borrowed from the libraries indicates that students did not follow up on the interest they expressed, they did demonstrate an enthusiasm for the books. No incidents such as these were observed with students in the teacher-posed question group.

Future research on the effects of active comprehension instruction on reading attitudes should incorporate systematic measurement of behaviors such as those described above. Indeed, Shapiro (1992) has called for more ecologically valid means of measuring attitudes. Since attitudes have been described as having a mobilizing effect (Holmes, 1960), measures of students' reading selections and behaviors seem to be appropriate choices for researchers examining affective dimensions of reading. Rigorous collection and analysis of the types of observational data described here might lend further support for the hypothesis that teaching students active comprehension as a process of reading positively affects attitudes and motivation in reading.

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