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ABSTRACT

To determine what effect the elimination of all literal questioning would have on students' literal comprehension abilities as well as inferential abilities, a five-month study was conducted with four groups of third and fourth grade students (n=33) who were reading on grade level in their school's adopted basal series. Two different third and fourth grade reading groups were divided into experimental and control groups and were pretested and posttested using the Stanford Diagnostic Reading Test, comprehension subtest. The comprehension subtest provides separate scores for literal, inferential, and total comprehension. The control group received regular basal instruction for the duration of the study, and the experimental groups received a variation of typical basal instruction. The variation consisted of allowing the two teachers with experimental groups to pose only inferential or higher level questions following basal selections. Results showed that in the whole group comparison, the experimental group performed significantly better on the inferential comprehension subtest as compared to the control group. There were no significant differences on literal comprehension between the two groups. However, the experimental group did perform better on literal comprehension and the difference in mean scores approached significance. When compared by grade levels, there was no significant difference between literal and inferential scores, but inferential scores approached significance as indicated by the mean figures. (HOD)

READING COMPREHENSION: OUT OF THE IVORY TOWER AND INTO THE CLASSROOM

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LITERAL COMPREHENSION: THE COGNITIVE CABOOSE?

What would happen if reading teachers stopped asking students the literal comprehension questions associated with basal reader selections? Would students' literal comprehension abilities be pulled along like a locomotive pulling along its caboose or would their literal abilities be side-tracked because of inattention? If, as it is commonly assumed, a student has to know the facts in order to generate an answer to an inferential or evaluative question, it would seem that the literal level of understanding has to be present in order for students to respond to higher level questions.

Surely asking questions of students following their reading of a basal selection is an integral part of basal reader instruction. Indeed, it is the primary means by which teachers determine whether students understand what the author has said. With the current emphasis on developing independent comprehension abilities, it is generally suggested in reading methodology texts as well as college level reading courses that reading teachers should use a blend of questions. That is, teachers should ask some literal, inferential, and evaluative questions associated with a particular reading selection to promote thinking at all levels. But should we spend valuable class time teaching literal comprehension skills when attention to higher levels of comprehension could pull along literal skills indirectly? During the 1983-84 academic year we conducted a research experiment in an attempt to begin answering this important question.

Comprehension and the Cognitive Caboose

In order for us to better understand the framework underlying this study, we should briefly discuss recent contributions to the field that summarize how children understand what they read.

Several years ago, Barrett (1974) developed a taxonomy of skills in comprehension which has been widely utilized by basal series and describes three levels of understanding (literal, inferential and evaluative) along with their various subskills. Literal skills are considered most basic or "textually explicit" (Pearson and Johnson, 1978). That is, questions are answerable with information specifically stated in the story or text.

Inferential and evaluative level questions on the other hand are more textually implicit. Here information is derivable from the story or text, but these bits of information are not specifically stated (Pearson and Johnson, 1978). Laymen often refer to these levels as "reading between the lines," and "reading beyond the lines." A basic assumption that seems to underlie most of what has been written concerning these higher levels of comprehension is that children must understand most of the basic or literal points in a story if they are to be successful in reacting on higher levels. In other words, before students can think about what has been read at inferential and evaluative levels students must first understand the literal information that has been presented by the author.

Hansen (1981) conducted a study which demonstrated effectively that when making inferences about a story children rely on literal information in the text. In her study, a group of second-grade

students were taught using two different techinques that emphasized inferential comprehension and excluded literal skill development. Even though no literal skills were practiced during the experiment, these skills continued to be developed or "pulled along" with the higher comprehension skills that were being taught. This seemed to give credence to the cognitive caboose theory mentioned above.

If the cognitive caboose theory is accurate, then it becomes all the more important that teachers emphasize higher levels of comprehension in the classroom. Studies by Durkin (1978-79; 1981) have strongly suggested that what publishers of basal readers include in their series for comprehension instruction will be used as the primary curriculum source. Therefore, a large number of inferential and evaluational level activities and questions could be viewed as a positive feature for optimal comprehension development.

When Banton (1977) analyzed the cognitive level of questions in basal reader teachers' manuals to see what percentage of questions asked were on higher levels the results were somewhat surprising. Seventy-five percent of the questions were on the literal level, requiring short and explicit answers, or predictable yes/no responses. Hawkins (1982) in a similar study found that fifty percent of the comprehension questions occurred at the literal level. These studies suggest that we do have higher levels of questions available to classroom teachers but because of a preponderance of literal questions teachers may spend more time than is warranted developing literal skills.

Testing the Cognitive Caboose Theory

To ascertain the answers to the aforementioned question, namely

"What effect would eliminating all literal questioning have on students' literal comprehension abilites as well as inferential abilities?," a simple straightforward five month study was conducted with four groups of third and fourth grade students (N=33) who were reading on grade level in their school's adopted basal series. Two different third and fourth grade reading groups were divided into experimental and control groups. All four groups were pre- and post-tested using the Stanford Diagnostic Reading Test (Green Level) comprehension subtest. The SDRT comprehension subtest provides three separate scores--literal comprehension, inferential comprehension and total comprehension.

The control group received regular basal instruction for the duration of the study. The experimental groups received a variation of typical basal instruction. The variation consisted of allowing the two teachers with experimental groups to pose only inferential or higher level questions following basal selections. To ensure that the treatment groups received only inferential or higher level questions we removed the teachers' manual and substituted copies in which we had masked-out (with tape) all questions and activities that were of a literal nature. In addition, the experimental groups were observed twice a week during the study to verify compliance with the program and to gain insights into how teachers and students were responding to the treatment.

At the end of the five month period, the alternate form of the Stanford Diagnositc Reading Test's comprehension subtest was administered in order to determine if there were significant differences between the treatment and control groups in literal and inferential comprehension achievement.

Was There a Difference?

The students involved in the study were never informed that they were participating in an experiment, yet some seemed to notice a difference very quickly. Teachers reported that several students complained that the work was more difficult, while others felt that the reading class was more stimulating. One teacher of an experimental group indicated that not only were her students seemingly thinking deeper in the reading class, but that similar results were occurring in science and social studies.

The statistical procedure known as analysis of covariance was used to determine whether or not a significant difference existed between the control and experimental groups. The third and fourth graders were compared first by grade and then as a whole group, distinguishing in each case between experimental and control treatments. Again, we were wanting to know if literal skills would be pulled along as higher comprehension levels were developed. We also hoped that this increased attention to higher comprehension skills would result in improved inferential comprehension as had been seen in a previous experiment (Hansen, 1981).

Success could be measured in several ways. If literal and inferential levels for the experimental group improved significantly over the contrl group, then the experiment could be viewed as having important implications for classroom teachers and basal publishers alike. Another relative point of importance would be if the experimental group's skills were improved significantly over the control group's and their literal comprehension was at least as good as the control group. Again the cognitive caboose theory would be demonstrated.

Only if there was a significant decline in literal and/or inferential comprehension would the cognitive caboose theory be rejected.

Tables 1 and 2 suggest that the cognitive caboose theory is both reasonable and demonstrable. In the whole group comparison between control and experimental groups, the experimental group performed significantly better on the inferential comprehension subtest of the Stanford Diagnostic Reading Test as compared to the control group. Table 2 reveals no significant difference on literal comprehension between the two groups. However, the experimental group did perform better on literal comprehension and the difference in mean scores approached significance.

When comparing the groups by grade levels, there was no significant difference between literal and inferential scores. However, inferential scores approached significance as indicated by the mean figures. We feel that two factors may have prevented the data from showing significance when, in fact, significance may exist. First, the number of students in the study was small (N=33). Secondly, for this group of students the Stanford Diagnostic Reading Test was apparently not sensitive enough to register the gains of participants in the experimental group. Specifically, many students scored a perfect thirty out of thirty on the inferential subtest. This was especially the case with the fourth graders. Nevertheless, when looking at the total sample, notwithstanding its smallness, the cognitive caboose effect was clearly deomonstrated and the implications

Table 1

Comparison of control and experimental groups on the inferential comprehension subtest of the Stanford Diagnostic Reading Test

Treatment	Mean*	F	PR > F
Control	27.3125	3.33	P< .0492
Experimental	29.3529		

*Subtest ceiling of 30

Table 2

Comparison of control and experimental group on the literal comprehension subtest of the Stanford Diagnostic Reading Test.

Treatment	Mean*	F	PR > F
Control	28	1.94	P < .1619
Experimental	29.47058		

*Subtest ceiling of 30

to teachers and producers of commercial materials are worth explicating.

Discussion

For many years teachers have spent much of their time during comprehension instruction asking questions on the literal level. However, as a result of this study, we have been able to demonstrate that concentrating on higher levels of questioning and thinking skills during the directed reading lesson results in improved inferential and evaluative performance by students, while also facilitating continued growth in literal skills. Therefore, we encourage classroom teachers to conduct their own action research to determine if their students' literal comprehension abilities will be side-tracked, or pulled along if literal tasks and questions are de-emphasized. Likewise, producers of commercial materials should examine the degree of stress being placed on literal level questions and tasks within their materials. If educators ask, "How may we best serve our clientele?," which is students not teachers, then reducing the large number of low-level comprehension questions and activities may be warranted. Through an examination and modification of classroom practices and teaching materials perhaps students can become more fascile at interpreting and evaluating the messages that they read, thus becoming more attuned to thinking and reacting as opposed to "just" remembering what was said.

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