GETTING READY TO READ: GUIDED PROBING FOR POOR COMPREHENDERS

Lorna Idol-Maestas

***Abstract.* An advance organizer, TELLS Fact or Fiction, was used to orient students to stories prior to reading them. The steps represented by the acronym were: (T) study story titles, (E) examine and skim pages for clues as to what stories were about, (L) look for important words, (L) look for hard words, (S) think about the story settings, and (Fact or Fiction) decide whether stories were factual or fictional. Teachers used the probing technique to guide 4 LD elementary students and 2 secondary students from general special education classes.**

Analysis of performance on comprehension questions showed that, in general, students' average performance on factual, sequential, and inferential questions improved when they used the technique. The two older students maintained acceptable performance on inferential questions when the technique was removed; the remainder of the subjects were unable to maintain their improved performance after teacher-guided assistance was removed.

This research centered on (a) identifying reading disabled students who can decode reading material fairly well but who demonstrate little sense of what has been read, and (b) developing teaching techniques that will improve these students' comprehension. Descriptive and intervention work in this area is important for several reasons. First, teachers of students with severe reading disabilities should be aware that their students' difficulties may be due to poor decoding, poor comprehension, or a combination of the two. Thus, diagnostic procedures must be precise enough to differentiate between these three types of reading problems. Based on proper identification of students' problems, reading and special education teachers must ensure that students are taught to read for understanding. In this connection, applied research on efficacious teaching methodologies for improved reading comprehension is essential.

Second, this line of research is important because of evidence suggesting that classroom teachers spend little time on direct instruction of reading comprehension (Duffy & Roehler, 1980; Durkin, 1978-79; Mason & Osborn, 1982). In addition, teacher manuals (Durkin, 1983) and workbooks (Osborn, 1981) of basal reading programs offer little assistance for teaching reading comprehension. If teachers expect students to comprehend without offering direct instruction on how to comprehend, students with comprehension difficulties are likely to flounder. Third, this type of research is warranted due to attempts by reading educators, linguists, and educational and cognitive psychologists to develop theories about the reading comprehension process. For instance, schema theory (Bartlett, 1932)—a theory of human information processing—has led researchers to formulate the reading comprehension process (e.g., Anderson, 1977; Anderson & Pearson, 1984; Pearson & Spiro, 1980; Rumelhart, 1980). The basic unit, *schema*, for

LORNA IDOL-MAESTAS, Ph.D., is Associate Professor, Department of Special Education and Center for the Study of Reading, University of Illinois at Urbana-Champaign.

storing information represents the reader's acquired knowledge. Schemata function as storage units or concepts that lead the reader to interpret new information and assimilate it into the existing knowledge base. As Anderson and Pearson (1984) pointed out, comprehension is the interaction between new information and old knowledge. Two functions may occur during reading comprehension: (a) The reader uses existing schemata and (b) the reader forms new cognitive schemata based on a combination of new and previously acquired information. This article reports on an attempt to implement an advance-organizer strategy which encourages readers to activate existing schemata prior to story reading by guiding them to decide what a story might be about before they read it. This type of guidance may be particularly useful for poor comprehenders.

The massive body of research on advance organizers is heavily influenced by Ausebel's work (e.g., 1963, 1978), which centers on providing readers with an overview of a passage prior to reading. As noted by Pearson and Gallagher (1983), the general finding of research on advance organizers is that they seem to have a positive effect on comprehension, but are susceptible to contextual factors such as student grade level, ability, amount of prior knowledge, as well as mode of presenting the organizer, and text difficulty. Based on a review of 135 studies (Luiten, Ames, & Ackerson, 1979) Pearson and Gallagher (1983) concluded that advance organizers tend to be beneficial to all students although they show greatest benefit for low-aptitude youngsters.

Several means have been devised to help intermediate-level students get ready to read, such as using previewing strategies with fifth graders (Rauch, 1980) and seventh graders (Bean & Pardi, 1979), giving purpose-setting directions to sixth graders (Jones, 1974), and using prereading to teach fourth graders to predict what will happen in stories (Hansen & Pearson, 1983).

Similarly, in three of the studies previously mentioned (Bean & Pardi, 1979; Hansen & Pearson, 1983; Rauch, 1980) some means of activating prior knowledge was employed as a technique for teaching advance organization. Jones (1974), on the other hand, offered students study-type directions without focusing on activating prior knowledge. Results of this approach showed that poor readers' reading comprehension did not improve.

The effect of prior knowledge on reading comprehension is well established in the research literature (i.e., Anderson, Reynolds, Schallert, & Goetz, 1977; Anderson, Spiro, & Anderson, 1978; Bransford & Johnson, 1973; Bransford & McCarrell, 1974). Specifically, Pearson, Hansen, and Gordon (1979) demonstrated that children comprehend implied questions better if they have background knowledge. More recently, it has been demonstrated that training in why and how to use prior knowledge when making inferences is better suited to poor readers in intermediate grades than to able readers (Hansen & Pearson, 1983). In addition, unlike Bean and Pardi (1979), Hansen and Pearson (1983), and Rauch (1980), Jones (1974) did not incorporate teacher guidance. Based on the findings of existing research, poor comprehenders appear to benefit from advance-organizer activities that encourage them to attend, activate prior knowledge, and involve teacher guidance.

The present study was designed to address these areas by asking very poor comprehenders to complete a set of preliminary exercises with their teacher prior to story reading. The strategy included guessing general story context from the story title, scanning the material for clues to general context as well as difficult and/or important words, determining the setting, and deciding whether the story was fact or fiction. The guided probes were fitted within the context of an acronym, which spelled out the meaning of each of the required tasks. Reports from researchers at the Kansas Research Institute on Learning Disabilities and others have shown that using acronyms to remind students of required tasks has been effective for teaching learning disabled adolescent students to monitor errors (Schumaker, Deshler, Denton, Alley, Clark, & Warner, 1981), take tests (Lee & Alley, 1980; Ritter, 1984; Ritter & Idol-Maestas, 1983), recall reading passages (Warner & Alley, 1981), and improve reading comprehension (Schumaker, Deshler, Nolan, Clark, Alley, & Warner, 1981).

EXPERIMENT 1
METHOD

Subjects

Subjects were 4 elementary-school students, selected by a learning disabilities (LD) resource teacher as demonstrating serious comprehension problems both in the LD resource program and in their grade-level classrooms. Subjects included one Afro-American sixth-grade girl and three Anglo-American fourth-grade boys. At the beginning of the study their respective ages were 12.6, 9.9, 9.7, and 8.6 years.

Teachers

Two subjects were randomly assigned to each of two teachers. Teachers were master's level students with teaching experience, enrolled for studies in the Resource/Consulting Teacher (R/CT) Program at the University of Illinois. Other research staff included a doctoral student, who visited the classrooms once a week to ensure that all procedures were being followed correctly.

Materials

The subjects were randomly assigned to either of two editions of the Ginn basal reading series (Ginn, 1976, 1982). The 1976 edition was chosen as it was a recent edition prior to the revision of the Ginn Series to focus on comprehension. Ginn (1982) centers on teaching comprehension.

Curricular Placement Procedure

The students were tested using a systematic method for assessing differential reading performance for reading accuracy, speed, and comprehension (Idol-Maestas, 1983; Idol-Maestas, Lloyd, & Ritter, 1982; Jenkins & Jenkins, 1983; Lovitt & Hansen, 1976). Such a methodology, which enables the researcher to place students at difficulty levels where materials are being accurately read and poorly understood, was used in order to empirically test the effects of using a teaching technique to improve poor comprehension.

Depending on their random assignment to the two Ginn editions, students were each given a curriculum-based assessment in the respective series. Subjects were tested from each level of the series up through their grade level on 3 separate days. Using the procedures described in Idol-Maestas (1983), students were required to orally read three randomly selected passages from the first quarter of each level of the series. Sample passages were at least 100 words in length—sometimes slightly longer to facilitate asking questions for comprehension.

During the first 100 words of each passage students were timed for reading speed (correct words per minute); word accuracy errors were also recorded. Accuracy errors included omissions, substitutions, teacher assists, additions, and pauses of more than 5 seconds. Repetitions and self-corrections did not count as errors. These error definitions (see Idol-Maestas, 1983, pp. 198-199) have been adapted from those offered by Haring, Lovitt, Eaton, and Hansen (1978, p. 53).

After each passage, five comprehension questions were asked, two factual, one sequential, and two inferential. Exceptionally detailed questions were avoided. The factual questions were of five types: who, what, where, how, and why. Sequential questions contained one of the following words: *when, before,* or *after*; answers to both factual and sequential questions were explicitly stated in the passage. In contrast, the inferential questions were derived from information implied within the text but not explicitly stated. Correct responses depended on students' background information, vocabulary mastery, and ability to relate two or more explicitly stated ideas to form an implicit conclusion.

Subjects were placed at the highest level in the reading series where they were able to meet performance criteria (i.e., student must orally read at least 95% accurately, at a rate of at least 50 correct words per minute [cwpm], with 50% or less correct comprehension). The criteria were applied to the median scores across 3 days of testing for each book level.

The first subject (using subject order as it appears in Figure 1) was placed in Ginn (1976), level 7. His median performance at this level was 100% accuracy, at 86 cwpm, with zero percent correct for comprehension. The second subject, also placed in Ginn (1976), level 7, read with 96% accuracy at 78 cwpm with 20% correct comprehension. The third subject was placed in Ginn (1982), level 12; her reading performance was 97% accuracy at 116 cwpm with 40% correct comprehension. The fourth subject, placed in Ginn (1982), level 10, read with 98% accuracy at 73 cwpm with 20% correct comprehension.

Instructional Procedure

Design. The design was ABA with multiple baseline across 4 subjects, randomly assigned to length of baseline condition.

Baseline conditions. Students read a new story each day. (see Idol-Maestas [1983, p. 166] or Idol-Maestas et al [in press]). A 100-word

T	Title	What is the title? Does it give a clue as to what the story is about?
E	Examine	Look through each page of the story. Skim for clues.
L	Look	Look for important words. Talk about what they mean.
L	Look	Look for hard words. Practice saying them and talk about what they mean.
S	Setting	What is the setting of the story? When did it take place? Where did it take place?
FACT or FICTION		Is this a true story? (fact) Or is this a pretend story (fiction)

Figure 1. TELLS Fact or Fiction: a guided comprehension probe used to facilitate story comprehension.

timed sample of the students' oral reading was collected to monitor reading accuracy and rate. After students finished reading the story, the teacher asked 10 comprehension questions. Incorrect responses were not corrected. Reading errors that occurred during the timed sample were corrected at the end of the lesson using a specific procedure (see Idol-Maestas [1983, p. 166] or Idol-Maestas et al. [in press]).

Intervention conditions. Each story was read in the manner described for baseline conditions. In addition, the student completed a previewing exercise prior to reading each story. This exercise consisted of guided comprehension probing, exemplified by an acronym plus some words that contained a message (TELLS Fact or Fiction) to remind the student of the substeps included in the exercise. (Explanation of the substeps of TELLS Fact or Fiction appears in Figure 1.) For each substep the student first read the probe (e.g., "T = Title - What is the title? Does it give a clue as to what the story is about?"), and was then encouraged to respond independently and orally. Teacher assistance and guidance was offered only if the student could not respond independently. Teachers were instructed to fit the lesson within the following approximate time frame:

15 min.	Do comprehension probing—TELLS Fact or Fiction
20 min.	Read story orally
2 min.	Take timed sample
5 min.	Ask oral comprehension questions
3 min.	Correct any reading errors from timed sample
2 min.	Record data

Return to baseline. Once a stable comprehension performance pattern of 80% correct or better was established, subjects were returned to initial baseline conditions, with one exception (a student whose average performance was 78% correct). A paper listing the TELLS Fact or Fiction technique was placed before the students, who were told to use the technique if they wanted to.

Independent measures. The primary independent measure was the effect of a guided comprehension-probing strategy (TELLS Fact or Fiction). The second independent measure was subjects' Ginn series placement, that is, whether they read in the 1976 or the 1982 edition. The latter places more emphasis on comprehension.

Dependent measures. The primary dependent measure was subjects' percentage of correct responses to the 10 comprehension questions asked after each story was read (five factual, two sequential, and three inferential). Question types were derived in the manner described for curricular assessment. The factual questions contained one of each of the five categories: who, what, where, how, and why, while sequential questions included both before/after and when questions. Student performance on the three types of questions and each of the individual categories was analyzed.

The second dependent measure related to performance on the *Gray Oral Reading Tests* (1967). This instrument was used because it requires the reader to orally read timed passages of various difficulty levels, followed by five comprehension questions. Unfortunately, the *Gray* scoring procedures and standardization data are only provided for reading accuracy and speed. For this reason, grade-equivalent scores using accuracy and rate as the performance determinants constituted the second dependent measure. The third dependent measure was a proportion score reflecting the total percentage of correct responses to five comprehension questions for all tested levels, over the total possible percentage score across all tested levels. Students were tested before and after the study (3-month interval), using different forms for pre- and posttesting.

A fourth dependent variable measured how well the subjects comprehended a passage by merely listening to the teacher read it. For this task, six 100-word samples were randomly selected from the final quarter of the book in which the student had been placed for instruction, but which represented stories the student had not previously read. Question categories were the same as those used for the curricular assessment; scores reflected percentage of correct responses. Three tests were given on 3 separate days at the beginning of the study; three more were administered at the end of the study. Averaged pre- and posttest scores were calculated.

Monitored measures. Daily measures for accuracy and reading rate were collected to ensure that students were maintaining critical levels of accuracy (95% correct) and rate (50 cwpm).

Reliability of Scoring Procedures

Question construction. All questions were developed by the teachers as part of a training component of a graduate level reading course. Questions were checked by the principal investigator, and approximately 20% of them were also checked by another instructor in the R/CT program.

Scoring reliability. All standardized test protocols and curriculum-based assessments were checked by two independent scorers. A doctoral level student collected reliability data for accuracy, rate, and comprehension during administration of the curriculum-based assessment and weekly during baseline and intervention conditions. Overall, interrater reliabilities were consistently high and statistically significant at $p < .001$ for all three reading behaviors (accuracy, $r = .96$; rate, $r = 1.00$; comprehension, $r = .98$). For the first teacher and the supervisor, Pearson coefficients were .95 for accuracy, 1.00 for rate, and .97 for comprehension ($p < .001$). Reliability coefficients for the second teacher and the supervisor were .95 for accuracy, 1.00 for rate, and 1.00 for comprehension ($p < .001$).

RESULTS

The TELLS Fact or Fiction intervention was found to improve all 4 subjects' baseline performance. The progress data (percent of correct comprehension) across baseline 1, intervention, and maintenance conditions are displayed in Figure 2. For all subjects, average performance improved considerably, as illustrated by the mean scores for each of the phases. Baseline reversal phases were usually initiated when subjects mastered lessons with 80% correct comprehension. Subjects 1, 3, and 4 exhibited a substantial decrease in performance when the intervention was removed, thus demonstrating the effectiveness. Although removal of intervention had no initial effect on the second subject for the first 4 days, a 1-day school suspension followed by an additional day of instruction produced a rapidly declining performance. This subject achieved the highest baseline performance, demonstrating a milder comprehension problem than the other 3 subjects.

Standardized Test Performance

All students achieved improved grade-equivalency scores on the *Grey Oral Reading*

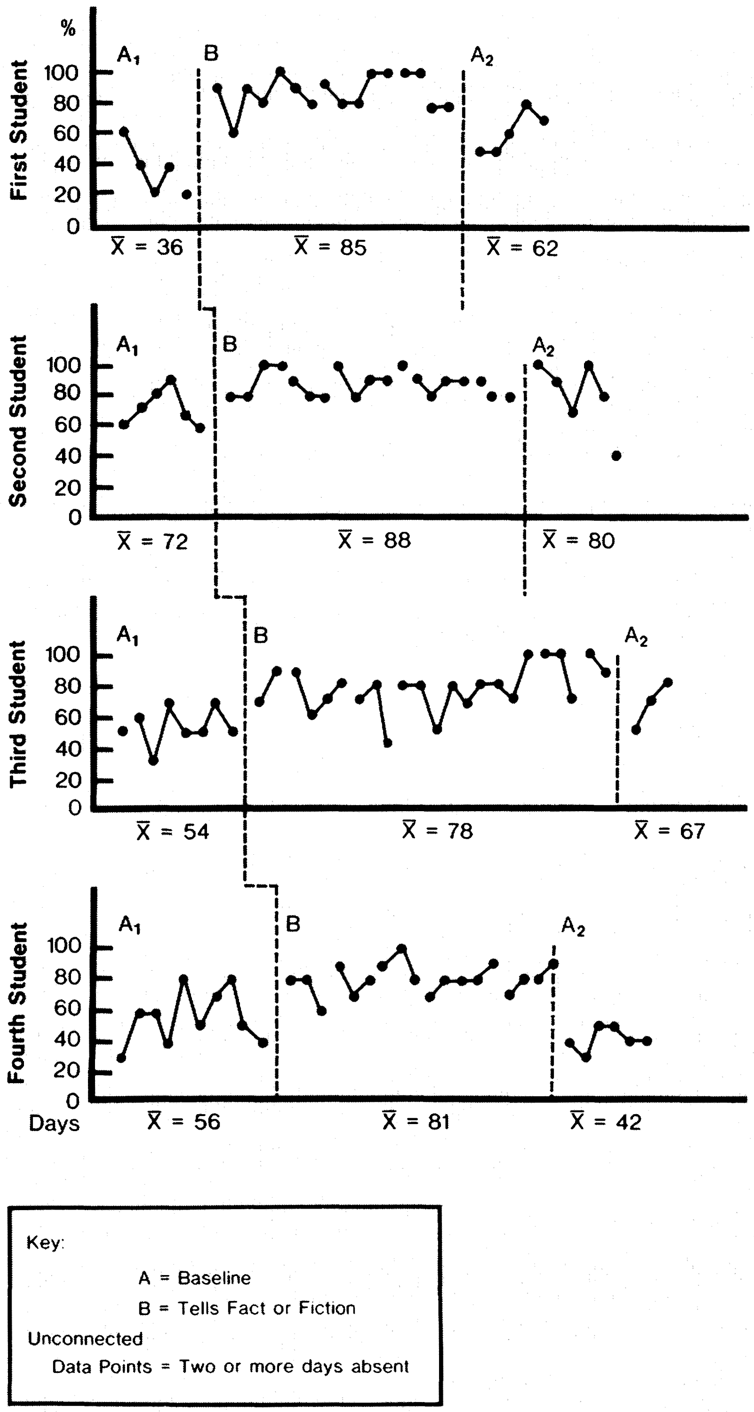

Figure 2. Percent of correct comprehension across phases with multiple baseline for 4 elementary students.

Test (GORT) (see Table 1). The reader is reminded that these scores reflect accuracy and rate of reading. During the 3-month interval between pre- and posttest scores, 3 students achieved at least a 1-year gain; the fourth subject showed exactly 3 months' gain. Table 1 also contains the pre- and posttest scores for the proportionate percentage of correct comprehension responses on the GORT. Subjects 1, 3, and 4 showed at least 17% improvement, the second subject only 5%.

Listening Comprehension

Listening comprehension improved by at least 30% for subjects 1, 2, and 3. In contrast, the fourth subject performed less well (17% decrease) on listening comprehension at the end of the study compared to pre-study testing.

Effect of Reading Series

No remarkable performance differences were noted between the two subjects who read in the 1976 Ginn series and the subjects who were placed in Ginn, 1982.

EXPERIMENT 2
METHOD

Subjects

The subjects in this experiment were two secondary-school students — a white male, aged 17.3 years, and a black male aged 18.7 years. Again, students were selected by a special education teacher as exhibiting poor test and classroom performance in reading comprehension. Both students were twelfth graders enrolled in special education classes for a portion of the school day.

Teachers

Two other teachers from the group described in Experiment 1 served as instructors, one per subject.

Materials and Curricular Placement

Selection of reading materials was based on texts used in the students' special education programs. Subjects were placed in reading materials using the procedure described in Experiment 1, but with altered criteria levels: they were placed

Table 1
Pre- and Post-Grade Equivalency and Percentage Correct Comprehension Scores (Grey Oral Reading Tests) and Correct Listening Comprehension for Elementary and Secondary Students

	Grey Oral Reading Tests					
	Accuracy and Rate		**Comprehension**		**Listening Comprehension**	
Students	**Pre-**	**Post-**	**Pre-**	**Post-**	**Pre-**	**Post-**
Elementary						
Student 1	2.0	3.4	.41	.61	.47	.80
Student 2	2.0	3.0	.50	.75	.23	.67
Student 3	5.4	5.7	.29	.46	.17	.47
Student 4	3.7	4.8	.56	.61	.47	.30
Secondary						
Student 1	7.4	8.4	.40	.62	.43	.53
Student 2	3.0	4.1	.60	.71	.12	.47

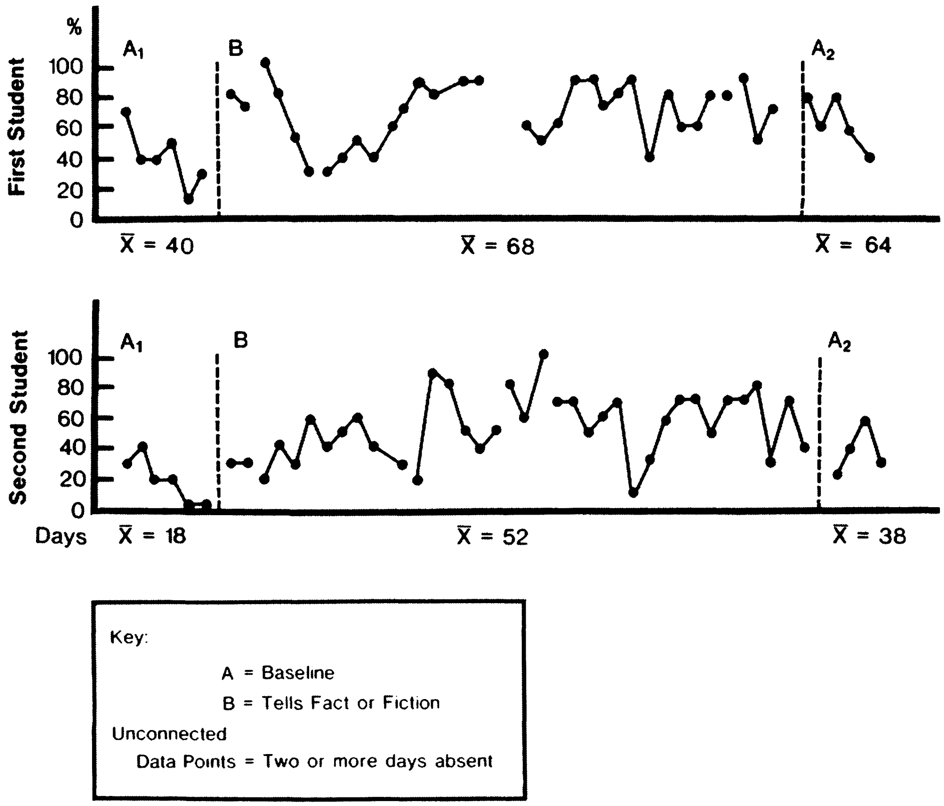

Figure 3. Percent of correct comprehension across phases for 2 secondary students.

at the highest level where they read with at least 95% accuracy at least 80 cwpm with a comprehension of 60% correct or less. One student was placed in *Batter Up* (level 8), Scott Foresman, where he read with 96% accuracy at 128 cwpm with 40% correct comprehension. The second student, placed in *Reading Power* (level 5), Bookmark Reading Programs, read with 97% accuracy at 87 cwpm with 60% correct comprehension.

Instructional Procedure

All procedures were identical to those in Experiment 1.

Design

An ABA design replicated across 2 subjects was used. Baseline reversal was introduced after 10 weeks of instruction.

Independent Measures

The TELLS Fact or Fiction intervention was identical to that used in Experiment 1.

Dependent and Monitored Measures

The dependent measures were identical to those used in Experiment 1; again, accuracy and rate of reading were monitored to ensure that these variables remained above criterion placement levels.

Reliability of Scoring Procedures

The interrater reliabilities were statistically significant; that is, all were at a probability level of .001, except measurement of comprehension for the second teacher ($p < .05$). Pearson coefficients for the first teacher and the observer were .98 for accuracy, 1.00 for rate, and 1.00 for comprehension. For the second teacher coefficients were .97 for accuracy, 1.00 for rate, and .91 for comprehension.

RESULTS

Daily Comprehension Performance

The TELLS Fact or Fiction intervention also produced improved performance in secondary students, although neither subject reached a consistent comprehension performance level of 80% correct (see Figure 3). Their baseline performances were either descending (subject 1) or descending and low (subject 1). Compared to these initial performances their comprehension improved considerably, with average intervention performances of 67% and 52% correct, respectively. The first subject's performance reached higher levels with an average difference between baseline and intervention of 23%. In contrast, for the second subject, who read at 80% or better on only five occasions during intervention, the average increase from baseline to intervention was 34%. Both subjects' performance dropped immediately when the baseline reversal was initiated, demonstrating the effectiveness of the intervention.

Standardized Test Performance

Both students showed gains of at least one year on GORT grade-equivalency scores (based on accuracy and rate) (see Table 1). They also demonstrated improvement in overall GORT comprehension performance.

Listening Comprehension

While both subjects' listening comprehension improved (see Table 1), a considerable gain (an average of 35%) was noted for the second student, whose daily comprehension during instruction improved greatly although seldom reaching criterion.

Statistical Analysis of Primary Results

An ANOVA with repeated measures across all 6 subjects was used to verify overall improvements in reading comprehension (see Figures 2 and 3). Overall main effects were statistically significant (F =28.54 [df = 7, 199], $p < .001$) with 42% of the variance accounted for ($R^2 = .42$). A posteriori contrasts were tested using Scheffé's tests yielding significant contrasts ($p < .01$) between all three possible comparisons between initial and final baselines and the intervention as well as between the two baselines.

DISCUSSION

The use of a guided comprehension-probing technique generally improved the oral comprehension responses of poor comprehenders. For 3 out of 4 elementary-school students, clear effect changes were demonstrated, whereas such effects on the remaining student were either less clear or only maintained momentarily. For this student, whose comprehension difficulties were less severe than those of the other three subjects for whom effect changes were pronounced, comprehension deteriorated when teacher guidance was removed. The technique also positively affected 2 secondary-school students' comprehension performance. For these subjects, comprehension performance when using the technique continued to be variable and not as high as that of the elementary students; however, the effect of the intervention was again demonstrated via a reversal design.

Regardless of grade level, subjects' comprehension performance improved on a standardized test of reading. Five of the six students also showed improved listening comprehension when they were required to listen to a passage being read and to orally answer comprehension questions. No noticeable effects were observed related to type of reading materials used. This finding was best demonstrated in the first experiment where half the subjects read stories criticized for lack of focus on comprehension while the other half were placed in stories designed to promote comprehension.

As a post hoc analysis, responses to different types and categories of questions were examined across all subjects. Regardless of type or category, responses were most likely to improve as a result of using the probing technique. In turn, performance was also more likely to deteriorate as a result of removing the teacher-guided procedure. Only two clear patterns were observed: (a) one-half of the subjects' average performance on where, how, and before/after questions maintained; (b) secondary students maintained improved inferential comprehension when they were no longer guided in using the technique.

In general, poor comprehenders needed teacher assistance in order to gather advance information about a story. Throughout the intervention the teachers reported that the students continued to need assistance in completing the preliminary review, especially when looking for clues, important words, and words that were difficult to read. In contrast, subjects seemed to be more capable of independently examining the story title for meaning, determining the story setting, and deciding whether the story was factual or fictional. Thus, the distinguishing factor between the steps these students could execute independently and those for which they needed assistance appears to be the amount of structure provided by the probe. The steps the students found to be the easiest either (a) presented a constant place to find clues (the story title), (b) offered a textually stated answer to the probe (the setting of the story), or (c) required them to make a fairly simple inference (is the story factual or fictional?).

For the remaining steps (looking for clues, important words, and hard words), answers were dependent upon story format (clues and important words) and individual students' abilities (hard words). The students also had difficulty distinguishing between what was an important word and what was a hard word. For example, some of them appeared to equate the two (i.e., if a word is unknown or hard to read it must be important). All students seemed to rely heavily upon teacher assistance for finding clues and important words.

An important limitation of the results of this study was that overall improved comprehension performances did not maintain well after the probing technique was removed. As Armbruster, Echols, and Brown (1983) pointed out, a technique becomes a strategy only if students possess the metacognitive knowledge of when, where, and how to use it. Teacher guidance and assistance did not teach the students to apply the advance organizer as a strategy to be used independently. Although this type of teaching technique seems substantiated, any consistent pattern of maintained performance was only observed for the secondary students on inferential questions. It is important to note that such maintenance only occurred for inferential questions, which are the most meaningful of the types of questions asked. Further, none of the subjects (elementary or secondary) appeared to be overtly applying the technique during the baseline reversal phase.

The differential maintenance performance for inference questions may suggest that secondary students are more cognitively aware of when to use strategies. This interpretation supports Pearson and Gallagher's (1983) observation that the effectiveness of advance organizers depends somewhat upon grade level. These findings may also indicate that the older students were covertly applying the technique while reading the story even though overt use was not observed. If correct, this assumption implies that covertizing of a technique like this one can improve inferential comprehension. Consequently, a line of research could be developed to question whether metacognitive strategies can be more readily taught to older than to younger learners, and especially to older and younger learning disabled readers with serious comprehension problems.

The findings, in general, imply that very poor comprehenders can be guided to improve their comprehension and that prereading strategies can improve inferencing (Hansen & Pearson, 1983). The technique used in the present experiments encouraged students to attend by using teacher guidance via a type of advance organizer with a meaningful acronym to draw attention to the task. An underlying assumption was that this technique could activate prior knowledge by encouraging students to determine what a story might be about prior to reading. A final implication is that teachers should not presume that once a teacher-guided procedure has improved poor readers' comprehension such improvement will maintain after guidance has been removed.

REFERENCES

Anderson, R.C. (1977). *Schema-directed processes in language comprehension* (Tech. Rep. No. 50). Urbana-Champaign: University of Illinois, Center for the Study of Reading. (ERIC Document Reproduction Service No. ED 142 977)

Anderson, R.C., & Pearson, P.D. (1984). *A schema-theoretic view of basic processes in reading comprehension* (Tech. Rep. No. 36). Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Anderson, R.C., Reynolds, R.E., Schallert, D.L., & Goetz, E.T. (1977). Frameworks for comprehending discourse. *American Educational Research Journal, 14,* 367-382.

Anderson, R.C., Spiro, R.J., & Anderson, J.C. (1978). Schemata as scaffolding for the representation of information in connected discourse. *American Educational Research Journal*, 15, 433-440.

Armbruster, B.B., Echols, C.H., & Brown, A.L. (1983). *The role of metacognition in reading to learn: A developmental perspective* (Reading Education Report No. 40). Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Ausebel, D.P. (1963). *The psychology of meaningful verbal learning*. New York: Grune & Stratton.

Ausebel, D.P. (1978). In defense of advance organizers. A reply to the critics. *Review of Educational Research, 48,* 251-258.

Bartlett, F.C. (1932). *Remembering*. Cambridge, England: Cambridge University Press.

Bean, T., & Pardi, R. (1979). A field test of a guided reading strategy. *Journal of Reading, 23,* 144-147.

Bransford, J.D., & Johnson, M. (1973). Considerations of some problems of comprehension. In W.G. Chase (Ed.), *Visual information processing* (pp. 383-459). New York: Academic Press.

Bransford, J.D., & McCarrell, N.S. (1974). A set sketch of a cognitive approach to comprehension. In W. Weimer & D.S. Palermo (Eds.), *Cognition and the symbolic processes* (pp. 189-229). Hillsdale, NJ: Erlbaum.

Duffy, G., & Roehler, L. (1980). *Classroom teaching is more than opportunity to learn*. Unpublished manuscript, Michigan State University.

Durkin, D. (1978-79). What classroom observations reveal about reading comprehension instruction. *Reading Research Quarterly, 14,* 481-533.

Durkin, D. (1983). *Is there a match between what elementary teachers do and what basal reader manuals recommend?* (Reading Education Report No. 44). Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Hansen, J., & Pearson, P.D. (1983). An instructional study: Improving the inferential comprehension of fourth grade good and poor readers. *Journal of Educational Psychology, 75*(6), 821-829.

Idol-Maestas, L. (1983). *Special educators' consultation handbook*. Rockville, MD: Aspen Systems Corp.

Idol-Maestas, L., Lloyd, S., & Ritter, S. (in press). A model for direct, data based reading instruction. *Journal of Special Education Technology*.

Jenkins, J.R., & Jenkins, L.M. (1981). *Cross age and peer tutoring: Help for children with learning problems*. Reston, VA: The Council for Exceptional children.

Jones, M.B. (1974). *Children's reading achievement as a function of varying specificity of purpose setting directions*. Unpublished manuscript, University of Delaware. (ERIC Document Reproduction Service No. ED 112 369)

Lee, P., & Alley, G.R. (1980). *Training junior high school LD students to use a test taking strategy* (IRLD Research Report No. 38). Lawrence, KS: University of Kansas.

Lovitt, T.C., & Hansen, C.L. (1976). Round one — Placing the child in the right reader. *Journal of Learning Disabilities, 9*(6), 18-24.

Luiten, J., Ames, W. S., & Ackerson, G. (1979). *The advance organizer: A review of research using Glass' technique of meta-analysis*. Paper presented at the annual meeting of the National Reading Conference, San Antonio, TX.

Mason, J., & Osborn, J. (1982). *When do children begin "reading to learn?" A survey of classroom reading instruction practices in grades two through five*. Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Osborn, J. (1981). *The purposes, uses, and content of workbooks and some guidelines for teachers and publishers* (Reading Education Report No. 27). Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Pearson, P.D., & Gallagher, M.C. (1983). The instruction of reading comprehension. *Contemporary Educational Psychology, 8,* 317-344.

Pearson, P.D., Hansen, J., & Gordon, C. (1979). The effect of background knowledge on young children's comprehension of explicit and implicit information. *Journal of Reading Behavior, 11,* 201-210.

Pearson, P.D., & Spiro, R.J. (1980). Toward a theory of reading comprehension instruction. *Topics in Language Disorders, 1*(1), 71-88.

Rauch, M. (1980). *The relationships between selected discourse analysis tasks, reviewing strategies, and subsequent fifth grade students' performance in measures of reading comprehension*. Paper presented at the annual meeting of the International Reading Assoc., St. Louis, MO. (ERIC Reproduction Service No. ED 186 880)

Ritter, S.A. (1984). *Teaching middle school students to use a test taking strategy*. Unpublished doctoral dissertation, University of Illinois at Urbana-Champaign.

Ritter, S.A., & Idol-Maestas, L. (1983). *Training senior high school students labeled educable mentally handicapped to use a test-taking strategy*. Unpublished manuscript, University of Illinois at Urbana-Champaign.

Rumelhart, D.E. (1980). Schemata: The building blocks of cognition. In R.J. Spiro, B.C. Bruce, & W.F. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp. 33-58). Hillsdale, NJ: Laurence Erlbaum Assoc.

Schumaker, J.B., Deshler, D.D., Denton, P., Alley, G.R., Clark, F.L., & Warner, M.M. (1981). *Multipass: A learning strategy for improving reading* *comprehension* (IRLD Research Report No. 33). Lawrence, KS: University of Kansas.

Schumaker, J., Deshler, D.D., Nolan, J., Clark, F.L., Alley, G.R., & Warner, M.M. (1981). *Error monitoring: A learning strategy for improving academic performance of LD adolescents* (IRLD Research Report No. 32). Lawrence, KS: University of Kansas.

Warner, M.M., & Alley, G.R. (1981). *Teaching learning disabled junior high students to use visual imagery as a strategy for facilitating recall of reading passages* (IRLD Research Report No. 49). Lawrence, KS: University of Kansas.

READING MATERIALS

Aaron, I.E. et al. (1978). *Batter up (level 8)*. Glenview, IL: Scott Foresman & Co.

Clymer, T., & Venezky, R.L. (1982). *Ten times round (level 10)*. Lexington, MA: Ginn and Co.

Clymer, T., Venezky, R.L., & Indrisan, R. (1982). *Ride the sunrise (level 12)*. Lexington, MA: Ginn and Co.

Early, M. (1974). *Reading power (level 5)* (2nd ed.). New York: Harcourt Brace, Janovich, Inc.

FOOTNOTES

The author acknowledges the assistance of Kim Dicker, Elizabeth Malherbe, Cindy Mast, and Bob Shoda, who served as instructors for this project, and Christina Holler and Shirl Ritter, who conducted reliability checks.

Requests for reprints should be addressed to: Lorna Idol-Maestas, Dept. of Special Education, 288 Education Bldg., 1310 South Sixth St., University of Illinois, Champaign, IL 61820.