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ABSTRACT

A study examined the hypothesis that learning strategy coupled with efficacy-building teaching interactions would lead to greater strategic learning than learning strategy instruction alone. A reading comprehension strategy was taught to 184 students from 4 Los Angeles County (California) public and independent schools. Included were 65 fifth-graders, 69 sixth graders, and 50 seventh-graders. Of those, 95 were male and 89 female. Both the control and the experimental groups received 300 minutes of instruction/testing over 5 days. Self-report measures of learning strategy use and efficacy beliefs relative to strategy competency were administered and compared to gains in application of the strategy to reading passages and number of paragraph patterns identified. Multivariate analysis of covariance indicated that students who received the efficacy-building strategy instruction believed that they were more competent in the task than students receiving learning strategy instruction alone. In addition, findings revealed that students in the efficacy-building learning strategy instruction scored higher on two different achievement tests than the students receiving learning strategy instruction alone. The results of the investigation support the importance of students' efficacy beliefs in teaching new strategies. (Four tables of data and a 2-part appendix, containing instructional practices and instructional procedures, are included; contains 44 references.) (Author/CR)

The Effects of Efficacy-Building Instruction on the Use of Learning Strategies

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Paper Presented at the 1996 Annual Meeting of the American Educational Research Association, New York

Abstract

It was hypothesized that learning strategy instruction coupled with efficacy-building teaching interactions would lead to greater strategic learning than learning strategy instruction alone. A reading comprehension strategy was taught to 184 fifth-, sixth-, and seventh-grade students in a field experiment. The control and experimental group received 300 minutes of instruction/testing over five days. Self-report measures of learning strategy use and efficacy beliefs relative to strategy competency were administered and compared to gains in application of the strategy to reading passages and number of paragraph patterns identified. Multivariate analysis of covariance indicated students who received the efficacy-building strategy instruction believed they were more competent in the task than students receiving learning strategy instruction alone. In addition, students in the efficacy-building learning strategy instruction scored higher on two different achievement tests than the students receiving learning strategy instruction alone. The results of the investigation supported the importance of students' efficacy beliefs in teaching new learning strategies.

The Effects of Efficacy-Building Instruction on the Use of Learning Strategies

Cognitive learning strategies are tools that help learners encode information and perform tasks (Pressley, Symons, Snyder & Cariglia-Bull, 1989; Weinstein & Mayer, 1986). Although considerable research has focused on teaching cognitive strategies, such training does not guarantee their use by students (Pressley et al., 1989; Ryan, Short, & Weed, 1986; Schneider, 1985).

There is increasing evidence that self-perceptions of academic efficacy are a critical factor in developing self-regulated learners (Pintrich & Schrauben, 1992; Schunk, 1990). The perception of self-efficacy is the belief that one has the competencies and capabilities needed to complete a task to a desired performance level (Bandura, 1986). Zimmerman and Martinez-Pons (1992) and Thomas and Rohwer (1986) observed that self-efficacy beliefs appear to be more important for predicting the application of learning strategies than instruction in metacognitive monitoring strategies alone. Furthermore, a number of researchers (e.g., Borkowski, Carr, Rellinger, & Pressley, 1990; Pintrich & Schrauben, 1992; Schunk, 1991; Zimmerman and Martinez-Pons, 1992) have noted that there is a need for systematic naturalistic experiments to clarify the relationship between self-efficacy, cognitive engagement, and learning.

Researchers have shown how various instructional practices affect self-efficacy beliefs, self-regulation, and academic achievement motivation in the classroom (Bandura, 1977; Schunk, 1985; Tharp & Gallimore, 1988). Specifically, instruction builds efficacy beliefs among students by: (1) combining explanations with cognitive modeling (Schunk, 1985; Schunk, Hanson & Cox 1987; Schunk & Hanson, 1985, 1989); (2) teaching task analysis and proximal goal-setting (Meece, 1994; Stipek & Kowalski, 1989; Schunk, 1983b, 1991; Zimmerman, 1990); (3) providing explicit performance feedback (Bandura, 1977, 1989; Zimmerman & Ringle, 1981); (4) supplying attribution feedback (Relich, Debus & Walker, 1986; Schunk, 1991, 1987, 1985; 1983a; Schunk & Cox, 1986, Schunk & Gunn, 1986); and (5) teaching strategy self-verbalization combined with self-encouragement (Pintrich & De Groot, 1990; Pintrich & Garcia, 1991; Schunk, 1986, 1987; Schunk, Hanson & Cox, 1987; Zimmerman & Ringle, 1981; Zimmerman & Martinez-Pons, 1990).

Another area of research related to strategic learning and the development of efficacy beliefs is scaffolded instruction. Rosenshine and Meister (1992) reviewed 48 studies and found that successful teachers of cognitive learning strategies employed "scaffolds" in their teaching. Scaffolds can be behaviors such as verbal bridges and

teacher modeling, or they can be tools, such as cue cards provided by the instructor to help students move from a lower to a higher level of functioning (Palincsar & Brown, 1984). Scaffolds are particularly useful when teaching higher level learning strategies, where many of the steps and procedures necessary to implement strategies are so complex that they cannot be directly specified. Furthermore, Rosenshine and Meister (1992; 1994) noted that instructional dialogue or "reciprocal teaching" plays an important role in scaffolded instruction and developing cognitive learning strategies. Reciprocal teaching is the dialogue between teacher and student, or student and student, where individuals take turns assuming the role of teacher, questioning, reorganizing, commenting and exchanging information about the text or learning objective. Research on the development of self-regulated readers indicates that reciprocal teaching practices in scaffolded instruction increase student competence and confidence (Palincsar & Brown, 1984; Palincsar, 1986).

The present investigation was developed in response to the need for naturalistic investigations examining the relationship between self-efficacy, strategic learning, and instructional practice. It was hypothesized that learning strategy instruction coupled with efficacy-building teaching interactions would lead to greater strategic learning than learning strategy instruction alone.

Method

Participants

The students were 184 fifth-, sixth-, and seventh-grade students from four Los Angeles County public and independent schools. Entire classrooms of students were utilized in administration of the experiment unless parents were unwilling to allow a child to participate in the experiment.

The students ranged in age from 10 years 5 months to 13 years 11 months with a mean age of 11 years 11 months. There were 65 fifth-graders, 69 sixth-graders, 50 seventh-graders; including 95 male and 89 female participants. Lower-middle class to upper-middle class socioeconomic levels were nearly evenly represented, and there were several representatives from lower- and upper-socioeconomic groups. Ethnic background was primarily mixed European, Hispanic, and Asian, typifying the ethnic diversity of Los Angeles County. No subjects were known to be gifted, developmentally delayed, or learning disabled.

Procedures

Table 1 summarizes the instructional practices and conditions in the investigation. In the first step of a two-step procedure, a reading comprehension strategy was taught to all students. Students learned that reading passages have structural characteristics, or patterns, that give the reader clues to the main ideas of the passage and the author's purpose for writing it. Five patterns were taught (Marzano & Arredondo, 1986): concept, generalization, sequence, process, and likeness/difference (See Appendix for a detailed description). A procedural strategy, called OCTOPUS, was devised to teach students the method for finding a pattern in a passage. The instruction was identical for both groups with the exception that the experimental group was taught a self-talk strategy to help them maintain efficacy beliefs.

Insert Table 1 About Here

Step two was the practice and feedback portion of instruction where students worked on the exercises from the handbook and trainers helped students on a one-to-one basis. The control group received five kinds of feedback: repetition, re-explanations, modeling, praise, and performance accuracy. The experimental group received the same feedback as the control group did, but each category of feedback was modified with teacher-student interactions known to build efficacy beliefs: task analysis, proximal goal-setting, reciprocal teaching, attribution training, and self-verbalizations with positive self-talk reminders (See Appendix). All instruction took place in three sixty-minute periods.

Variability in trainer efficacy and competence was addressed first by selecting trainers who scored high on a measure of teacher efficacy (Gibson & Dembo, 1984). Second, the instructors were provided four hours of pre-training and nine hours of "debriefing" during the pilot studies. Third, random tape recording of trainer-subject interaction combined with session-by-session trainer feedback by one of the investigators was used. Fourth, treatment variation was monitored by scripted instruction, scheduling identical amounts of time for one-to-one feedback for both conditions and the use of individual coded tallies to record the number and kind of feedback each subject received.

Dependent Measures

Learning strategy usage was measured in two ways. The Paragraph Pattern Identification Test measured the number of paragraph pattern types the subject could identify correctly. Second, the Process Application Assessment evaluated the students' employment of the key steps in the OCTOPUS strategy. Finally, gains in self-efficacy

beliefs relative to the employment of the learning strategy taught were measured by the Learning Efficacy Scale, a self-report scale that ranged in 1-unit intervals from one to seven, modeled on self-efficacy scales used in early efficacy experiments (Bandura & Schunk, 1981; Schunk, 1981; 1983a; 1984a).

Results

Table 2 summarizes the students' scores on the three dependent measures. Preliminary analyses indicated that the control group scored higher on the pre-tests for the two learning strategy achievement measures. Therefore, the test results were subjected to a multivariate analysis of covariance (MANCOVA) using pre-test achievement as the covariate for the analysis of post-test means. The experimental group gain (Ms = 1.06 vs. 7.87) was significantly higher than the control group (Ms = 1.54 vs. 6.05) on the Paragraph Pattern Identification Test, $F(1, 181) = 28.52$, $p < .001$. Further analysis indicated that the adjusted control vs. experimental post-test means were significantly different, $t = 5.34$, $p < .001$. On the Process Application Assessment, the MANCOVA also yielded a significant difference between experimental (Ms = 1.06 vs. 7.87) and control group (Ms = 1.54 vs. 6.05), $F(1, 181) = 5.81$ $p < .017$. Further analysis indicated that the adjusted control vs. experimental post-test means were significantly different, $t = 2.41$, $p < .017$.

Since the control group was found to have significantly higher reading comprehension ability scores than the treatment group, a separate MANCOVA was performed on both achievement post-tests, using reading comprehension as the covariate and treatment conditions as the factors. Neither post-test measure of learning strategy use was found to be significantly effected by reading ability.

Insert Table 2 About H

Analysis of students' efficacy beliefs indicated that the students in the experimental group significantly increased their scores (M = 19.01 vs. 22.96) during the instruction as compared to the students in the control group (M = 18.99 vs. 21.33), $t = -2.82$, $p < .005$. There were no pre-test differences on this measure. Students in the experimental groups reported higher efficacy scores relative to utilizing the learning strategies for all grade levels.

Effects by Reading Comprehension Stanine Group

Further analysis of the data was conducted by reading ability groups. The standardized reading comprehension test results were reported by stanines, which divide the normal curve into nine parts. The first three stanine groups, students performing in the 33rd percentile and below in a nationally normed sample of reading comprehension ability were labeled Group 1; the second three stanines, students performing in the 34th through the 77th percentile, were labeled Group 2; and the top three stanines, students performing in the 78th through 99th percentile, were labeled Group 3.

Only 14 students were in the lowest stanine (5 in the control and 9 in the experimental group). Therefore, analyses were only conducted for Groups 2 and 3. The means and standard deviations are presented by reading comprehension group in Table 3.

Insert Table 3 About Here

Group 2 preliminary comparisons yielded significant differences between pre-test and post-test means for the Learning Efficacy Scale and both measures of achievement, the Paragraph Pattern Identification Test and the Process Analysis Appraisal. The experimental group gain (Ms = 21.30 vs. 23.21) was significantly higher than the control group (Ms = 18.34 vs. 19.62) on the Learning Efficacy Scale. The experimental group gain (Ms = 1.09 vs. 7.50) also was significantly higher than the control group (Ms = 1.43 vs. 5.23) on the Process Application Assessment. The experimental group gain (Ms = 3.68 vs. 10.65) was significantly higher than the control group (Ms = 5.10 vs. 7.53) on the Paragraph Pattern Identification Test. The multivariate analysis of covariance (MANCOVA), using the pre-test as covariant for Group 2, yielded a significant difference for the treatment on the Learning Efficacy Scale, $F(1, 71) = 44.36$, $p < .001$. Further analysis indicated that the adjusted control vs. experimental post-test means were significantly different, $t = 6.66$, $p < .001$. In addition, a significant difference for the treatment was revealed on the Paragraph Pattern Identification posttest, $F(1, 71) = 3.97$, $p < .05$. Further analysis indicated that the adjusted control vs. experimental post-test means were significantly different, $t = 1.99$, $p < .05$. No significant differences were found for the adjusted post-test means on the Process Analysis Appraisal.

Preliminary comparisons of Group 3 indicated that there were significant differences between pre- and post-test means on the Learning Efficacy Scale and the Paragraph Pattern Identification Test. The experimental group gain (Ms = 19.63 vs. 24.26) was significantly higher than the control group (Ms = 19.56 vs. 21.85) on the Learning Efficacy Scale. The experimental group gain (Ms = 5.42 vs. 11.95) was significantly higher than the control group (Ms = 6.09 vs. 7.76) on the Paragraph Pattern Identification Test. Multivariate analysis of covariance (MANCOVA) of Group 3 using the pre-test as covariate yielded a significant difference for the treatment condition on both measures. The gains on the Learning Efficacy Scale was significant, $F(1,61) = 40.22$, $p < .001$. Further analysis indicated that the adjusted control vs. experimental post-test means were significantly different, $t = 6.34$, $p < .000$. The Paragraph Pattern Identification Test analysis for Group 3 also yielded a significant difference between conditions, $F(1,61) = 5.24$, $p < .026$. Further analysis indicated that the adjusted control vs. experimental post-test means were significantly different, $t = .29$, $p < ..05$. Again, no significant difference were found for the adjusted post-test means for the Process Analysis Appraisal.

Teacher Effects

Finally, an analysis of the transactions of 184 subjects was undertaken to determine: (1) how transactions differed between conditions and (2) if one condition received different "Feedback" than the other. It was found that there were 1567 one-to-one "Feedback" transactions in the control condition with 95 subjects, or 15.83 transactions per subject in the three hours of instruction. There were 942 one-to-one "Feedback" transactions in the experimental condition with 89 subjects or 11.09 transactions per subject in the three hours of instruction. Tallies indicate that the trainers were able to integrate the efficacy-building feedback into 860 or 91% of the transactions. The results indicated that the control group had more frequent, short transactions with the trainers, while the experimental group had less frequent, but longer transactions.

Discussion

We developed a program of efficacy-building feedback for learning strategy instruction based on factors that are known to increase a sense of efficacy among students: cognitive modeling, task analysis, proximal goal-setting, explicit performance feedback, attribution training, verbalizations with positive self-talk, scaffolding, and reciprocal teaching. We found that these instructional practices enhanced efficacy beliefs, improved the application of learning strategies, and increased reading comprehension.

To progress in our understanding of the relationship among efficacy beliefs, cognitive engagement, and strategic learning, we need to investigate a number of topics. First, although the field experiment successfully increased students' application of the reading comprehension strategy, we do not know how the separate components of the efficacy-building feedback interact with each other to affect student beliefs. We also don't know how the combination of types of feedback affect efficacy beliefs. Furthermore, we do not know if all of the components are needed to obtain the same results for students. These concerns are consistent with the recent conclusions of Brown and Pressley (1994) who state that to progress in our understanding of self-regulated use of strategies, it is necessary to understand how learning strategy application is affected by self-efficacy beliefs. The key to this understanding is to focus on classroom interactions.

Second, we need to study how the efficacy-building feedback affected the model of reciprocal teaching that was used in the investigation. What is the relationship between the kinds of feedback utilized in the study and the effectiveness of reciprocal teaching? Perhaps some elements of the feedback improve reciprocal teaching results more dramatically than other elements. Does the timing of feedback change the effectiveness of reciprocal teaching? Perhaps, it would have been more effective to utilize the feedback method during instruction rather than during practice.

Lastly, we need to consider how to train teachers to use efficacy-building feedback more effectively in the classroom. Our training program took 13 hours of demonstration, practice, feedback, and discussion, and still teachers had difficulty learning and applying the procedures. Future studies should investigate more efficient and effective training for teachers.

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Table 1
Treatment Conditions and Practices

Treatment	Conditions: Learning Strategies Only	Conditions: Learning Strategies With Efficacy
Learning Strategy Instruction:		
——Orientation and Review	X	X
1) Textbook of learning strategy procedures	X	X
2) Large-group verbal explanation of strategies	X	X
3) Modeling of strategy procedures	-	X
4) Self-Talk Instruction		
Pattern Application Practice	X	X
1) Exercises using learning strategy procedures	X	X
2) Training in use of cue cards		
Control Group Feedback	X	-
1) Repetition of strategy procedures	X	-
2) Re-explanation of strategy procedures	X	-
3) Modeling	X	-
4) Performance Feedback		
5) Praise		
Efficacy-Building Feedback and Dialogue	-	X
1) Repetition with Task Analysis	-	X
2) Re-explanation with Task Analysis and Proximal Goal-setting	-	X
3) Modeling with Reciprocal Teaching	-	X
4) Praise with Attribution Training	-	X
5) Performance Feedback with Attribution Training or Self-talk Reminders		
Self-Monitoring	X	X
Octopus Process cue card	X	X
Concept cue card	X	X
What-When-How check list	-	X
Positive Self-Talk cue card		

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Treatment	Conditions: Learning Strategies Only	Conditions: Learning Strategies With Efficacy
Learning Strategy Instruction:		
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1) Textbook of learning strategy procedures	X	X
2) Large-group verbal explanation of strategies	X	X
3) Modeling of strategy procedures	-	X
4) Self-Talk Instruction		
Pattern Application Practice	X	X
1) Exercises using learning strategy procedures	X	X
2) Training in use of cue cards		
Control Group Feedback	X	-
1) Repetition of strategy procedures	X	-
2) Re-explanation of strategy procedures	X	-
3) Modeling	X	-
4) Performance Feedback		
5) Praise		
Efficacy-Building Feedback and Dialogue	-	X
1) Repetition with Task Analysis	-	X
2) Re-explanation with Task Analysis and Proximal Goal-setting	-	X
3) Modeling with Reciprocal Teaching	-	X
4) Praise with Attribution Training	-	X
5) Performance Feedback with Attribution Training or Self-talk Reminders		
Self-Monitoring	X	X
Octopus Process cue card	X	X
Concept cue card	X	X
What-When-How check list	-	X
Positive Self-Talk cue card		

Table 2

Means and Standard Deviations with MANCOVA Analysis on Pretest and Posttest Results for Dependent Variables by Condition

		Efficacy Beliefs		Process Applic.		Paragraph Ident.	
Treatment	N	M	SD	M	SD	M	SD
LS only	99						
Pretest		18.89	3.88	1.54	1.14	5.53	3.22
Posttest		21.33	4.15	6.05	3.51	7.73	2.54
LSEF	85						
Pretest		19.01	3.86	1.06	1.54	4.2	3.23
Posttest		22.96	3.69	7.87**	2.88	10.60*	2.66

* $p < .05$ ** $p < .01$

Table 3

Means and Standard Deviations with MANCOVA Analysis on Pretest and Posttest Results by Reading Comprehension Ability

		Efficacy Beliefs for Strategy Use		Process Appl.. Assessment		ParagraphPattern Identification	
Treatment Condition	n	M	SD	M	SD	M	SD
GROUP 2:							
LS only	40						
Pretest		18.34	4.09	1.43	1.24	5.10	3.15
Posttest		19.62	3.41	5.23	2.38	7.53	2.52
LSEF	34						
Pretest		21.30	4.15	1.09	2.00	3.68	3.13
Posttest		23.21*	3.76	7.50	2.78	10.65***a	2.91
GROUP 3:							
LS only	45						
Pretest		19.56	3.72	1.67	1.02	6.09	3.13
Posttest		21.85	4.05	7.00	4.24	7.76	2.54
LSEF	19						
Pretest		19.63	3.50	1.89	1.07	5.42	3.44
Posttest		24.26**	2.89	8.53	2.80	11.95***	1.39

* $p < .05$ ** $p < .01$ *** $p < .005$

Appendix

This Appendix has two parts: (1) Instructional Practices, which contain descriptions of the reading comprehension learning strategy utilized in the study, the procedural strategy, and the feedback practices, and (2) Instructional Procedures, which provide a detailed description of the two steps of the instructional program.

Instructional Practices

Pattern Identification Reading Comprehension Learning Strategy

"Pattern Identification" was the reading comprehension learning strategy for identifying main ideas taught in this study. It was taught for three reasons: (1) it helps students organize and comprehend information; (2) it helps students store and retrieve information efficiently; and (3) it can be used in many academic situations. In "Pattern Identification" students are taught that reading passages have structural characteristics that give the reader clues to the main idea of the passage and the author's purpose for writing it. There were five "patterns" taught: concept, generalization, sequence, process, and likeness/difference.

OCTOPUS Procedural Scaffold

Teaching students that passages have patterns only provides them with declarative knowledge. It does not show them how to identify a passage. Therefore, the OCTOPUS method was devised as a procedural strategy so that students had a method for finding a pattern in a passage. This method instructed the students to: (a) read the passage; (b) identify a one word subject for the passage; (c) circle five important words relating to the subject; (d) cross out unimportant words; and (e) test these words to see which pattern they matched. A Learning Strategy Handbook and a set of cue cards were written to be used by all trainers in both experimental conditions to teach "Pattern Identification" and the use of the OCTOPUS method.

Feedback Teaching Practice

Students in the control condition received five different kinds of feedback: (1) repetition, (2) re-explanation, (3) modeling, (4) praise, and (5) performance feedback. Definitions of the terms are as follows:

Repeating is simply saying exactly what was taught by the Lead Teacher in situations when the subject is hesitant about a certain step in the paragraph pattern identification process or can not remember one of the six patterns. The trainer may point to the large chart in the classroom, indicate the location in the handbook, or use a cue card as he/she repeats the definition of a term or repeats the steps of the learning strategy procedure.

Re-explanation has two definitions--or types--of re-explanation. Type 1 involves restating the explanation in the Lead Teacher Guide using different words. For example, a re-explanation of the steps for finding patterns in paragraphs might be: "Read the whole paragraph to yourself and think about each sentence as you read it. Now, think about the meaning of each sentence and decide what is the main idea of the paragraph. Ask yourself what kind of paragraph this is. Use the cue cards to help you. Put circles around the words that prove that it is the type of paragraph you believe it to be. Cross out words that are unimportant to the main idea or pattern identification." Type 2 re-explanation, on the other hand, includes modeling and more direct help through each step of the process being taught. The following example demonstrates how trainers can use this type of re-explanation: (1) "Let's read the paragraph aloud together. You read it to me" and (2) "Let's identify the main idea: What is the paragraph about mainly?"

Modeling occurs when the instructor says, "Let me do one for you," and he/she repeats exactly one of the steps in the Process with an example from the student workbook rather than with the teaching model that the Lead Teacher used. The instructor does not follow the modeling with "Now you do one for me," as is done in reciprocal teaching in the experimental condition.

Praise is confined to using one of six phrases: (1) Good for you, (2) Nice Work, (3) Excellent! (4) Great! (5) Super! (6) Very good!

Performance feedback in the control, as well as the experimental condition, provides feedback which lets the student know that he/she is acquiring skills and knowledge. It is required that instructors utilize explicit feedback in transactions. For example, say, "That's correct (pointing to specific item)." You might tell the subject, "You're doing much better on this paragraph" or "You're circling the right kinds of words for a concept (generalization, etc.) pattern." You are also allowed to provide feedback on subject use of the cue cards: "You are using the What-When-How cue card correctly." When giving negative feedback, follow with a positive statement, such as "That's not correct, but you're circling the right kinds of words for a concept pattern."

You are prohibited from using comparative feedback: "Kevin, see how well Shawn is doing."

The experimental group receives the same five kinds of "Feedback" as the control group; however, feedback practices are to be modified by adding: (1) "Task Analysis," (2) "Proximal Goal-Setting," (3) "Reciprocal Teaching," (4) "Attribution Training," and (5) "Self-talk Reminders." Definitions of the terms follow.

Task analysis consists of two types of task analysis. The instructional procedure for Type 1 has four parts: (1) Read the entire paragraph: The instructor says to the student, "This means reading each sentence and asking yourself, 'What one thing does this sentence mainly tell about the paragraph? Now how does the next sentence change my opinion about what this paragraph is about? The next sentence?'" (2) Identify the main idea of the paragraph: The instructor tells the student to think, "Now that I have read the paragraph sentence by sentence, can I tell the main point?" (3) Decide what type of paragraph it is: Next, the instructor tells the student, "Now you think to yourself, 'Let's see when I ask myself the questions on the What-When-How card, which one is answered by the main idea of this paragraph? Does the main idea answer the What question only? (Concept). Or does it provide a thought about something as in a Generalization? Maybe it just tells a sequence of events and answers the question, When. Or does the sequence do more than that? Does it have a result or outcome?" (4) Circle key words to support your pattern choice. Cross out others: The instructor helps the student learn task analysis by saying, "Ask yourself, does this word provide direct evidence that my pattern is right? Is it an important word? If not, cross it out." Type 2 Task analysis is exactly like Type 1 except that the instructor integrates four cue cards into the task analysis transactions, demonstrating how these cards will help the student with the task analysis strategy.

Proximal goal-setting is defined as assisting students identify goals which are close at hand. In proximal goal-setting, students are referred to task analysis to help the student figure out where he/she is in the task analysis and what is the next step. It is particularly emphasized that trainers should never encourage the student to skip steps in the process. Again, there are two types of proximal goal-setting. In Type 1, trainers set short-term goals for the student: 1) "Find the next two examples of the generalization and call me so we can check them together;" 2) "Find, three descriptive words in this Concept paragraph;" or 3) "Let me show you how to use this cue card. Now, why don't you use it to do the next item?"

Type 2 proximal goal-setting is more directive and students are lead through the work. 1) "Let's see if we can figure out what this paragraph is telling us." 2) "Does it

answer the What question? Or, perhaps, the What idea question, etc.? How can we figure out what cue card to use?" In both types of proximal goal-setting, trainers were admonished not to use general goals, such as, "Do your best."

Reciprocal teaching consists of three types. Type 1 is straightforward: "Let me do one for you," as in Modeling, but then, the trainer says to the student, "Now let me listen while you do one for me." Type 2 does not include teacher modeling, but rather the student teaches the trainer how to do one of the tasks he is performing. The subject talks the trainer through what he is doing. If the trainer make corrective comments afterward, this is considered Type 3 reciprocal teaching, which includes correction with attribution to ability. In the third type, the instructor does not to interrupt the student when a mistake is made, but says "I saw this error, but I can tell that you are getting the idea," or another appropriate attribution to ability or effort.

Attribution training is the most rigid efficacy feedback for trainers to follow, because instructors are required to attribute success to ability and failure to effort on the first two days of instruction, while both success and failure are to be attributed to effort on the third day. On all three days, instructors combine attributions with praise and corrective performance feedback. They make statements such as: "You are able to figure out how to identify the main idea. Good for you, you're able to figure out how to find a sequence pattern. That's not correct, but I can tell that you are getting the idea here because you.... Or, you are capable of learning the strategies (patterns or circling methods), and you are working hard."

Self-talk reminders are provided to subjects on the last day of instruction each time instructors interact with a student. Example of reminders include: 1) "When you are having trouble, are you talking yourself through the steps of the Baby OCTOPUS process, instead of just being unhappy with yourself?" 2) "Try to remember how we have just worked together, and work with yourself in the same way. Be patient. Go step by step." 3) "Be sure to compliment yourself when you work hard." 4) "This process takes quite a bit of concentration. Encourage yourself to stick with it." 5) "Remember, everyone can learn!"

Instructional Procedures

Instruction took place in two steps. Step 1, called "Large-group Strategy Instruction," was a group instruction period where the information in the Learning Strategy Handbook and the OCTOPUS method were taught to all students. Each instructional session consisted of four parts: (1) Learning Strategy Orientation and Review, (2) Strategy Application Practice, (3) Feedback, and (4) Self-Monitoring.

Part 1, Learning Strategy Orientation, was comprised of "Introduction" and "Review.". During "Introduction," subjects listened and followed in their Learning Strategy Handbook as the trainer read the explanation of the Paragraph Pattern Identification Strategy. In addition, the trainer completed exercises with the group, calling on students to complete the appropriate steps. At the same time a self-verbalization technique was taught to help students recall the process steps and prepare to self-monitor for errors. "Review" of previously taught strategies was conducted the day following instruction, prior to "Orientation" to new strategies. It consisted of reviewing the definition of the strategy and the procedure for using the strategy, followed by trainer and peer modeling of the use of the strategy in one example. This part of the instructional program was taught by a single trainer--the "Lead Trainer"--in large-group instruction.

Part 2, Pattern Application Practice, immediately followed "Orientation" and "Review." Both Part 3, Feedback, and Part 4, Self-Monitoring were conducted during Pattern Application Practice. The subjects completed the reinforcement examples in the Learning Strategy Handbook independently, while three trainers provided Feedback in one-to-one interactions. Feedback was provided equally to each subject during the practice exercises by student request or teacher initiation to provide a naturalistic classroom atmosphere. All students received the same amount and kind of Feedback, assured by a individual subject tally system, accompanied by teacher scripts, investigator monitoring of all classroom training, and daily team debriefing sessions.

For Part 3, Self-Monitoring, students used cue cards and check lists that repeated the definition of the structural patterns found in paragraphs or demonstrated the thinking process for each strategy. Use of these "Self-Monitoring" devices were taught during Orientation and modeled for the students in the course of "Feedback."

Instruction was identical for both groups with the exception that the experimental group was taught a "Self-Talk" strategy to help them maintain efficacy beliefs at the beginning of the third day of instruction. In "Positive Self-Talk", subjects

in the experimental condition used a cue card that instructed the subjects to start a learning task by acknowledging their ability to learn:

"STEP 1: ENCOURAGE YOURSELF
NEGATIVE: There is no way I do this task! Boy am I dumb!"
Some people are just plain mean to themselves. They do nothing to help themselves feel successful. Instead they make themselves feel bad."
"POSITIVE: O.K. I probably can't do all of this work, but I do know something. In fact, I know a lot since I have been in school 6 (7, 8...) years! Besides even if I do fail this, it does not mean I am stupid. Maybe I just need more knowledge or I need better study strategies. I'll analyze the problem and figure out what to do."

Next, subjects were instructed to "analyze the task" for "how to do it" clues by reading the directions and making a plan for following them (Ellis, 1993).

"STEP 2: TASK ANALYSIS
When you think about a task or test, talk to yourself about HOW TO DO THE TASK, first. This means that you must carefully read DIRECTIONS and then decide on a PLAN to do the work."

Third, they were reminded that we had taught them an organizational system for understanding paragraph organization--the " OCTOPUS System"--that they could use.

"STEP 3: ORGANIZE...WITH O-C-T- O-P-U-S!!!"

Again, just before the subjects needed to activate their skills, they were reminded of their ability to learn.

"STEP 4: MORE ENCOURAGEMENT FOR YOURSELF
O.K.! O.K.! I know the pattern in the paragraph. Good! I've circled all the important words. Now what? Oh yes! I'll make a graphic organizer. Phew! Now, I have this thing under control...I think! Excellent! Stick with it! Don't give up! Nice job, kid!"

In this way, the mode of Feedback used in the experimental condition was systematically transferred to the subject. First, subjects were taught to attribute successful learning to ability. Then, the second part of the attribution training was transferred to the subject: attribute successes to effort.

Lastly, subjects were taught to reward themselves for their efforts, by giving themselves realistic praise for taking concrete actions.

> "STEP 5: REWARD YOURSELF...OFTEN...AND IN A USEFUL WAY
> REWARD: I've got good sense! I know when to get help, but I don't just give up! Good for me!
> REWARD: CONGRATULATIONS! I have the ability to learn and I stick with a hard task. Good for me!

Step 2, called "Individual Feedback Transactions," was the practice and Feedback portion of instruction where students worked on exercises from the handbook and trainers helped students on a one-to-one basis.

All instruction took place in three sixty-minute periods. Introduction/pretesting and posttesting/debriefing took another sixty minutes apiece and occurred the days immediately proceeding and following the experiment. Altogether there were five consecutive hours of classroom contact in the study as shown in Table 4.

Table 4
Classroom Treatment Schedule
Experimental and Control Conditions

DAY 1: Introduction/Screening/Pretesting (60 minutes)

DAY 2, 3, 4: Instruction (60 minutes daily)

Day 2	Day 3	Day 4
Orientation:	**Orientation:**	**Orientation:**
Introduction:	Review of Day 2	Review of Day 2,3
--Concept Pattern	Introduction:	Introduction:
--Generalization Pattern	--Sequence Pattern	--Likeness Pattern
Pattern Application Practice	--Process Pattern	--Difference Pattern
Feedback	**Pattern Application Pract.**	**Pattern App.**
Self-Monitoring	**Feedback**	**Feedback**
--Octopus Process cue card	**Self-Monitoring**	**Self-Monitoring**
	--Octopus-Process cue card	--Octopus Process
	--Pattern cue card	--Pattern cue card
	--What-When-How checklist	--What-When-How checklist
		--Positive Self-Talk cue card