

THINKING ALOUD, TALKING, AND LEARNING TO READ:
ESL READING COMPREHENSION TRAINING IN SMALL
COOPERATIVE GROUPS

Yael Bejarano and Esther Klein-Wohl

Introduction

Training students to become independent skillful readers is a major concern of the EFL reading teacher. How can we best train students in selecting and applying reading strategies so that they become more efficient readers? Can we ensure that an increase in students' awareness of the need to use strategies will help them become more skillful readers? These questions served as a trigger for this study.

The aim of this study was to investigate whether verbal articulation of reading behavior in a small group will improve foreign language comprehension. It is our contention that using verbalization in small groups will raise metacognitive awareness which will in turn enhance effective use of skills and strategies and result in improvement in reading comprehension. We assume that the special features that characterize small group interactions can provide an appropriate setting for raising metacognitive awareness.

The study draws on three areas of research:

1. Reading comprehension

Ilha do Desterro	Florianópolis	nº 38	p.057-081	jan./jun. 2000
------------------	---------------	-------	-----------	----------------

2. Metacognitive awareness
3. Cooperative small group interaction

We would like to relate to each of these areas separately and thus set up the theoretical background for the study. We will then describe the training procedures the participants experienced and finally report on some of the findings and their implications.

Theoretical background

Seminal work at the Center for the Study of Reading at the University of Illinois in the early 70s gave new insights into our understanding of reading and the various processes involved in the comprehension of a written text. Thanks to their work and that of reading researchers worldwide, we have been looking at READING for the last quarter of a century as a constructive process of making meaning from a text. Some researchers go so far as to regard reading as a problem-solving process (Sarig, 1987).

This process includes many thinking and learning sub-processes - sensory, perceptual, sequential, experiential, associative, affective and constructive - all working together to attain the product of reading - making meaning of the message via a multitude of interactions between the reader and the writer through the written text. Without the knowledge of how to integrate the various processes noted above, comprehension and communication suffer. As Burns, Roe and Ross (1996) note, "although reading can be broken down into sub-skills, reading takes place only when these sub-skills are put together into an *integrated* whole". Knowing how to put together all these sub-skills will assist the reader in monitoring towards successful meaning building. Good readers constantly monitor their comprehension and take steps to correct the situation when they fail to comprehend. Poor readers, on the other hand, often fail to monitor their understanding of the text. They make fewer spontaneous corrections, and correct miscues that affect meaning less frequently than good readers do. They seem to

regard reading as a decoding process, whereas good readers see it as a comprehension seeking process (Bristow, 1985).

Research in the field of reading has shown that the skillful use of reading strategies, or strategic reading, improves reading comprehension in both L1 and L2 (Devine, 1984; Grabe, 1993; Devine, Carrell & Eskey, 1987). It also indicates that direct instruction in comprehension strategies appears to facilitate textual understanding and contributes to the development of independent and efficient learners (Montague & Tanner, 1987). When instructors teach reading strategies and skills clearly and overtly, they ensure the learners' more effective acquisition of comprehension abilities (Pearson, 1985; Pearson & Gallagher, 1983; Winograd & Hare, 1988).

The terms *strategies* and *skills* have been used interchangeably by different researchers, and that has sometimes led to confusion. Duffy and Roehler (1987, p. 415) have chosen to discriminate between them and offer the following definitions: "a skill is an overlearned procedure for which the achievement of accuracy and speed is the goal". "A strategy [on the other hand] involves a learning plan to be used successfully". In other words, "strategies are skills that are used intentionally, deliberately, and selectively in order to promote the understanding of a text;" that is, knowing *why*, *how*, and *when* a skill should be used (Hayes, 1991). However, the distinction between knowledge based routines—skills—and plans for selecting, accessing and combining these routines—strategies—is sometimes difficult to make. For this reason, in this study, we do not distinguish between the two.

Reading research also demonstrates that there is a connection between strategic reading and metacognitive awareness (Baker & Brown, 1984). We can therefore assume that instruction in reading strategies and in the awareness of their skillful use is likely to produce strategic readers who become better comprehenders.

Starting in the early 1980s, much attention was given to students' use of metacognitive strategies during reading. Research in

METACOGNITION points to the fact that the effective use of metacognitive techniques appears to have a positive effect on comprehension, and that the development of metacognitive awareness is likely to result in improved reading comprehension.

Metacognition refers to people's knowledge of their own mind and their conscious effort to monitor and control its functioning. It involves analyzing the way thinking takes place. In reading, the reader who displays metacognitive awareness attempts to select strategies and skills that fit the particular reading task or purpose (Babbs & Moe, 1983).

Metacognitive awareness in reading focuses on the reader's cognition of reading strategies and the regulation of that cognition (Flavell, 1979; Garner, 1981; Paris & Lindauer, 1982; Brown, Bransford, Ferrara & Campione, 1983). Carrell (1989) has shown that a reader's metacognitive awareness can be developed with training. This training aims at developing self-monitoring strategies which guide and control the on-going cognitive processes while reading. Monteiro (1992), in her analysis of strategy use reported in think aloud protocols, confirms that strategy use is directly related to reading proficiency levels. When students have been explicitly taught and made aware of the reasoning involved in the reading processes, they are better able to regulate and apply that reasoning to future reading situations (Duffy, Roehler & Hermann, 1988; Brown, Campione & Day, 1981; Brown, Palinscar & Armbruster, 1984; Carrell, 1985; Sarig & Folman, 1987; Day, 1986; Bereiter & Bird, 1985; Miller, 1987).

Reutzel and Cooter (1996) stress the fact that "the ability to plan, check, monitor, revise, and evaluate one's unfolding comprehension is of particular importance in reading". If readers are unable to monitor their comprehension, they will be unable to detect errors, will not take steps to correct misinterpretations and will arrive, therefore, at poor comprehension.

Carr (1996) speaks of the "click or clunk approach" which suggests to readers to stop and reflect on what message they have been able to

gain from the text at the end of each paragraph or at the end of a section. If the message has been understood, the content “clicked”; if there is confusion, it “clunked”. At “clunking” time, readers have to ask themselves what is wrong and what they have to do in order to correct the situation. Not only is it important to be aware of clunks - problems in reading comprehension - but also to have a series of repair strategies readily available to deal with comprehension failures.

Among the many remediating strategies for dealing with “clunks”, Collins and Smith (1980) stress the following ones:

- ignoring the difficulty and continuing to read
- suspending judgment and continuing to read
- developing a tentative hypothesis utilizing information in the text and continuing to read to check this hypothesis
- re-reading previous sentences
- asking for help

To assist students in developing their metacognitive awareness and their monitoring of the reading process, many educators recommend using a think aloud method (Cohen, 1983). A think aloud is a verbal articulation of what has transpired in the reader’s mind while reading: hypotheses formed, difficulties, thoughts on the text, strategies planned, skills applied, etc. Baumann et al. (1993) note that “think alouds involve the overt, verbal expression of the normally covert mental processes readers engage in when constructing meaning from a text.” They advocate using think alouds to enhance the monitoring of comprehension.

In this study we encouraged our participants to talk about and describe their mental processes while dealing with a particular reading task in small cooperative groups. This collaborative setting, we thought, was likely to provide them with the appropriate social support to learn about their own metacognitive processes and enable them to become aware of other participants’ strategies and approaches in tackling comprehension and comprehension difficulties. When students are actively involved in think-alouds, they are modeling for themselves

and for the listeners their understanding of what they know and don't know, and the extent of their remedial abilities to repair the situation and move forward. This mental exercise involves analyzing their own thinking and that of the other participants in the group. Thus each one in turn, as a reader and as a listener, shares his/her understanding and knowledge with others in the small cooperative group and benefits from these think alouds.

The world is not fed to us which we then passively ingest: rather, we ingest it through actively reaching out and taking it in . . . we build a conception of our reality through our experience with it. . . . Participation and engagement in the event are the active bases from which a construction of the particular is developed and from which meaning is extracted, a meaning shared in part with others (Sigel & Cocking, 1977, p.226)

It is in this active experience of sharing with others, exchanging information and learning from each other in a positive social atmosphere, that COOPERATIVE LEARNING focuses. Research has shown that small group cooperative learning provides an appropriate social context for strategic interaction during learning tasks and fosters communication and comprehension (Mayer, 1993). Small groups also provide experiential learning and acquisition of knowledge in a way similar to that claimed by constructivist psychology (Sharan & Sharan, 1992). A similar approach to constructivist knowledge acquisition was developed by John Dewey, as well as by Jean Piaget and his disciples (Sigel & Cocking, 1997). They assert that individuals gradually build their own knowledge on the basis of their experience.

Small group learning provides a suitable platform for such experiences. It provides the appropriate social setting for multifaceted analysis, discussion, and synthesis of ideas which can lead to the participants' use and acquisition of higher order thinking skills and

improved understanding (Sharan et al., 1984). Such interactions are necessary for the process of constructing meaning from text, which is basically a problem solving process. The study of Derry et al. (1993) confirms that collaboration has an effect on problem solving, as well as on metacognitive monitoring.

Mason (1995) reveals that learners negotiate meanings and ideas to share new common knowledge through the following interaction procedures: dialogue and negotiation, critical opposition and co-construction in small group discussions, collaborative reasoning and arguing over individual analogies. That knowledge has an effect on their understanding of the meaning and structure of the material studied (Oaks, 1995).

Thus, by learning through “thought and talk”, cooperative learning situations significantly improve students’ abilities to solve problems and to think critically and creatively (Adger, et al., 1995). Working with peers to explore an issue or solve a problem exposes learners to new ideas, perspectives and specific approaches. It helps students clarify in their own minds what they have already learned and what they have yet to learn (Sharan, 1990). It provides the appropriate set-up for thinking aloud and talking to learn. It offers multiple avenues of access to learning material, to the exchange of knowledge and ideas with peers, and to the clarification of knowledge, all of which facilitate gains in academic achievement (Aronson et al., 1978; Bejarano, 1987; Johnson & Johnson, 1986; McGroarty, 1989; Sharan, 1990; Slavin, 1980, 1983). It requires that students articulate and justify their own points of view, and at the same time listen to others. This process of discussing, questioning, interpreting information, organizing and applying this information and experience with peers, facilitates comprehension, learning and retention of critical lesson concepts and academic language (Bejarano, 1994; McGroarty, 1992, Sharan & Sharan, 1992). Collaborative group work, when the participants have been shown how, when, where and why to operate with various communication strategies, is indeed an ideal setting for peer scaffolding in literacy (Wohl & Klein-Wohl, 1994).

A number of cooperative groupwork and peer-tutoring studies in reading comprehension strategy training have been conducted. Palinscar, Brown and Martin, in their study of "Peer Interaction in Reading Comprehension Instruction" (1987), found that verbalization of reading strategies resulted in improved comprehension of text. A two year study administered by Stevens and Slavin (1995), as well as several other studies (Melothe & Deering 1994, Deering et al., 1994), highlight the effect of a comprehensive cooperative learning approach to reading and language arts instruction on students' achievement, attitudes, and metacognitive awareness. However, all these studies were conducted with L1 learners; no studies known to the researchers have yet been done in L2 strategy training in small cooperative groups. Therefore we designed a study which gave all members of the group equal opportunity to participate in the text processing operation, to exchange metacognitive information and, thus, to help each other share, learn from each other, internalize and control the use of reading strategies.

This study is therefore designed to address the following two research questions: Does the verbalization, in small groups, of reading comprehension strategies used to process texts (a) increase metacognitive awareness? (b) improve reading comprehension performance?

The study

Subjects

The subjects of this study were adult English as a Foreign Language (EFL) students studying academic reading. They were chosen at random among students enrolled in the intermediate level EFL courses at the Open University of Israel (OUI). All university students in Israel are placed in appropriate EFL reading comprehension levels on the basis of a national placement test. Subjects in this study were either

placed in the intermediate level directly after having taken this test or they came into this level from a lower level course at the OUI.

Research Design

Two groups participated in the experiment: a control group and an experimental group. At the beginning of the experiment, the groups consisted of 14 and 15 students respectively. Data included in the final analysis consists of information gathered from 6 students in each group. The drop-out rate was due to the absence of some of the students at one stage or another of the experiment, or to lack of clarity in the recorded protocols. The experiment was carried out over a period of seven weeks (Appendix 1). During that time the students met once a week for three hours. The instruments used in this study were (a) a reading comprehension pre-test and post-test, and (b) audio recorded think aloud protocols of the pre- and post-tests.

The students took the tests in the OUI language laboratory and were asked to voice aloud their thinking processes, which were being recorded. The pre-test was taken in the second week of the experiment and the post-test in the seventh week. In the first week of the experiment the students were trained in reporting their thinking processes. In the third, fourth, fifth and sixth weeks, each group received training, pertinent to its experimental condition, in two strategies for finding the main idea of a text and training in metacognitive awareness (Appendix A).

Training procedures

1. Training in reporting

In order to ensure adequate reporting for the purpose of collecting think aloud protocols, students received training in reporting skills.

The students in both the experimental and the control groups were trained to verbalize their thinking processes first while carrying out a pragmatic task (such as folding a shirt or brushing their teeth) and then while reading and processing written messages.

The training was carried out in four stages:

Stage 1 - The trainer demonstrated the think-aloud and verbalizing of her own thinking processes while planning and executing a familiar and automatic task, in this case the folding of a shirt. The purpose of this exercise was to raise students' consciousness to mental processes that have become automatic.

Stage 2 - The students were each asked to write down the thinking processes involved in brushing their teeth, and two students in each group were asked to report these processes orally.

Stage 3 - The trainer demonstrated her own thinking processes while answering three questions that tested the comprehension (literal and inferential) of the following short sentences:

Suzan walked into the Casino at 22.00. She rushed to the bank as soon as it opened.

By answering the following questions, the trainer modeled eliciting inferential information.

- Why did she go to the casino? - to gamble, to work, etc.
 - What happened there? - she won/lost/got a lot of money
 - What time was it when she rushed to the bank? - 8.30 or 9 am
 - What did she do in the bank? - deposited/withdrew money
- And so on.

Stage 4 - The students were first given a very short text, and then a longer text to individually practice the verbalization of their own thinking processes when answering literal and inferential comprehension questions. They were first asked to briefly write down their thinking processes. Then, the trainer encouraged and prompted the students to talk about the mental processes they had experienced while working out the answers to the questions. A few students reported their thinking processes aloud to the whole class.

2. Training in reading strategies

Both the experimental and the control groups received the same training in two reading strategies for finding the main idea.

Strategy 1: Prediction and confirmation (or refutation) of main idea using first and last sentence and markers in the text.

Strategy 2: Prediction and confirmation (or refutation) of main idea using key words.

The training in both of the groups was carried out by two experienced teachers, who each focused on one strategy. Each teacher taught the same strategy to both classes in order to control for teacher effect. The strategy training was carried out over a period of four weeks in two stages: the modeling stage and the practice stage. The modeling stage was similar for both the experimental and the control groups: the practice stage, however, differed. In order to develop their metacognitive awareness, both groups were asked to focus on their thinking processes while practicing.

The students in the control group practiced each strategy individually, and this was followed by a whole class discussion about the strategies used. The experimental group practiced each strategy in small groups, verbalizing their thinking processes, and then each group reported the process to the whole class.

The purpose of verbalization in small groups was to reinforce the use of reading strategies and to develop awareness of the cognitive principles underlying the construction of meaning.

3. Training in small group interaction.

In order to maximize efficient small group verbal exchanges, the students in the experimental group were trained in small group interaction.

The experimental class was divided into two groups for the purpose of training in small group interaction. Group 1 (5 students) was given a set of guidelines especially developed for this study to enhance skilled group interaction. (Appendix B). They were asked to apply these guidelines as they were reading a text silently, and at the same time discuss with their peers their thinking processes while answering comprehension questions.

Group 2 (10 students) was asked to observe the interactions in group 1, and to fill out an observation sheet concerning the group

behavior (Appendix C). Group 2 reported their findings, and this was followed by a whole class discussion on skilled group interaction.

The test

A reading comprehension test was developed to measure students' achievements as a result of the training and to record their thinking processes as they were reading a text. The test included thirteen short expository texts covering a variety of subjects and a range of rhetorical structures. The test was piloted in four classes: in two parallel intermediate classes which didn't participate in the experiment, and in one lower level and one higher level class. The test was also validated by teachers who had experience in teaching that level.

The students' tasks in the pre- and post-tests were (a) to write, in Hebrew, the main idea of each of the thirteen short texts, and (b) to verbalize their thinking processes, which were being recorded as they were taking the test. These taped protocols were then transcribed for analysis.

The same test was used for both pre- and post-testing in order to assure that the two tests were comparable. The six-week interval between the pre- and the post-testing was considered long enough to avoid memory effect; in addition, since subjects were not provided with the correct answers after the pre-test, even if they did remember some of the texts, they had no additional clues to the correct answers.

Scoring Procedures

1. Scoring the test for measuring achievement

Two reading teachers were asked to write the main ideas of the thirteen texts in the test. These served as criterion answers. Each pre- and post-test was scored by two independent judges. Interrater reliability was .91. Discrepancies were discussed until a consensus was reached. The thirteen questions were then scored as "correct" or "wrong", with a possible maximum total score of 13.

2. Scoring the think-aloud protocols for measuring metacognitive awareness.

The students' metacognitive awareness was measured by the selection and monitoring of strategies. For the purposes of protocol-recording the students were given the following instruction: "While reading the text and attempting to find the main idea, you are thinking and planning your answer. Describe aloud, step by step, your thinking processes. Report on any problems, doubts or hesitations that you have."

Two independent readers read the transcripts of the protocols and identified and marked independently the strategies selected and used by each student for each text. The identification of the strategies for categorization purposes was then cross checked and discrepancies were discussed until a consensus was reached. A list of selected strategies was drawn and coded for scoring purposes. All protocols, both pre- and post, were then scored. Interrater reliability of .85 was recorded.

Analysis

From the protocols we gathered data about (a) the number of strategies used by the experimental and the control group in answering the pre- and post-tests per question, in total, and by category; and (b) the students' achievements in the pre- and post-tests in the control group and in the experimental group.

Results and Discussion

Does the verbalization in small groups of reading comprehension strategies used to process texts increase metacognitive awareness and improve reading comprehension performance?

In order to answer this question, the total number of strategies used by each of the two groups as reported in the pre- and post-protocols, was counted. Table 1 presents the number of strategies used per question by the experimental and the control groups in the pre- and

post-tests. A quick glance at the table shows that the gains in strategy use of the experimental group were higher than those of the control group for almost all the questions. The experimental group used a total of 171 strategies more in the post-test than they did in the pre-test, which represents a gain of 264% in total use of strategies. The control group, on the other hand, shows an increase of 68 strategies, which represents a gain of 221%. The difference in the gain of the experimental group compared to that of the control group is 43%.

Table 1. The Number of Strategies Used for Each Question by the Experimental and Control Groups in the Pre- and Post-tests and Gains.

Question	Experimental			Control		
	Pre	Post	Gain	Pre	Post	Gain
1	7	17	10	1	9	8
2	11	23	12	8	10	2
3	10	21	11	3	7	4
4	5	16	11	5	5	0
5	12	27	15	7	11	4
6	12	20	8	8	14	6
7	9	23	14	6	14	8
8	14	19	5	2	11	9
9	4	19	15	5	7	2
10	4	24	20	6	9	3
11	7	25	18	5	12	7
12	5	21	16	0	9	9
13	4	20	16	0	6	6
Total	104	275	171	56	124	68
			(264%)			(221%)

In order to determine the effect of the training in metacognitive awareness and strategy use, all strategies used were divided into 8 categories as presented in Table 2. It was found that 5 of the 8 categories

were those included in the training. The other 3 categories were not treated. A count of strategies used within each category was performed for each of the groups in both the pre- and post-tests.

The experimental group yielded a higher gain in percentages in all strategies treated in the experiment and in two out of the three strategies not treated. The control group demonstrated a higher gain in all three strategies not treated and in four of the five treated strategies.

Table 2. Number of Strategies Used in Pre- and Post-Tests by Experimental and Control Groups, and Gains.

Experimental (N = 6)				Control (N = 6)		
Strategy	Pre	Post	Gains	Pre	Post	Gains
Treated strategies						
1. key words	12	57	45	5	22	17
2. predicting	12	20	8	3	8	5
3. first sent	23	42	19	18	31	13
4. markers	10	72	62	0	22	22
5. "click"	14	34	28	8	8	0
Total treated strategies	71	225	154	41	98	57
Percentage of total	(68%)(82%)			(73%)	(79%)	
Non-treated strategies						
6. context clues	16	18	2	7	10	3
7. skimming	7	26	19	4	9	5
8. drawing from prior knowledge	10	6	-4	4	7	3
Total non-treated strategies	33	50	17	15	26	11
Percentage of total	(32%)(18%)			(27%)	(21%)	
Total strategies	104	275	171	56	124	68

Table 2 also shows that in the experimental group, of the total number of strategies used in the post-test, 81% were treated strategies as opposed to only 68% in the pre-test; this indicates a gain of 13% in use of treated strategies. The control group, on the other hand, used 79% treated strategies in the post-test as opposed to 73% treated strategies in the pre-test, which indicates a gain of only 6%. These findings indicate that although both groups increased their metacognitive awareness in strategy use, the experimental group's gains in percentage of treated strategy use were higher than those of the control group, thus indicating a positive effect of verbalization of strategy use in small groups. It seems that the students in the experimental group internalized the treated strategies and showed higher metacognitive awareness of them than did the control group. This data indicates a positive answer to the first question posed in the study: "does the verbalization in small groups of reading comprehension strategies used to process texts increase metacognitive awareness?"

However, the fact that at the onset of the experiment both groups used a higher percentage of treated strategies, 68% and 73% respectively, requires some attention. We suspect that this might be due to the subjects' previous exposure to some or most of the strategies we chose to include in the treatment, and to the halo effect the experiment had on those students: the fact that they were asked to report their thinking processes must have raised the metacognitive awareness of both groups.

Another point that warrants attention is that the control group used considerably fewer strategies at the onset of the experiment than did the experimental group. This was perhaps due to the fact that the students in the control group were more efficient readers to begin with, and that their use of strategies in the processing of text was more automatic and less conscious. The fact that the reading comprehension mean score on the pre-test of the control group was higher than that of the experimental group, as shown in Table 3, supports this explanation. Thus, students in the control group may have been using strategies automatically without reporting them.

Table 3. Mean Scores of Students' Performance on Reading Comprehension Pre- and Post-Tests for Experimental and Control Groups.

	Experimental(N = 6)	Control (N = 6)
Pre-test	7.7	8.7
Post-test	10.4	10.1
Gain	2.7	1.4

Table 3 presents the mean scores of the experimental and control groups in the pre- and post-tests. It shows that the experimental group yielded a gain of 2.7 in the mean score from pre- to post-test as opposed to a gain of 1.4 in the control group. This finding suggests a positive answer to the second question of the study: "does the verbalization in small groups of reading comprehension strategies used to process texts improve reading comprehension achievement?" and thus, the hypothesis of a positive effect of the training on reading comprehension achievement.

Conclusions and Recommendations

The findings from this study indicate that verbalization of reading comprehension strategies in small groups has an effect on metacognitive awareness and on reading comprehension performance. Whereas we knew from previous studies that increased metacognitive awareness is likely to generate improved reading performance, the results in this study seem to lend support to the assumption made regarding the positive effect of verbalization in small groups on metacognitive awareness and skillful reading.

The conclusion we are able to draw, and which can be of particular benefit to the teaching of reading comprehension, is that metacognitive awareness can be raised through the verbalization of reading strategies in small groups. Thus **thinking aloud** and **talking in a small cooperative group** can serve the purpose of **learning to read**.

Although the results reported here are important for the teaching of reading to speakers of other languages, they have to be considered with caution because of the small size of the groups. A replication of the study measuring the effects of small group interaction on metacognitive awareness and reading comprehension is recommended with the following modifications: (a) The groups should be larger. (b) The test should be more difficult, to allow for better discrimination between the experimental and control groups. (c) The whole class discussion, which followed the individual practice in the control group, should be eliminated. This discussion, perhaps too similar in nature to the verbalization treatment in the experimental group, might have had an effect on the gains yielded by the control group.

References

- Adger, C.-T. et al. (1995). *Engaging students: Thinking, talking, cooperating*. Thousand Oaks, CA: Corwin.
- Aronson, E., Blaney, N., Stephan, C., Sikes, J., & Snapp, M. (1978). *The jigsaw classroom*. Beverly Hills, CA: London: Sage.
- Babbs, P. J. & Moe, A. J. (1983). Metacognition: A key for independent learning from text. *The Reading Teacher*, 36, 422-426.
- Baker, L., & Brown, A. L., (1984). Metacognitive skills in reading. In P. D. Pearson (Ed.), *Handbook of reading research*. New York: Longman.
- Baumann, J. F., Jones, L. A., & Siefert Kessell, N. (1993). Using think alouds to enhance children's comprehension monitoring abilities. *The Reading Teacher*, 47 (3), 184-193.
- Bejarano, Y. (1987). A cooperative small-group methodology in the language classroom. *TESOL Quarterly*, 21, 483-504.
- Bejarano, Y. (1994). An integrated groupwork model for the second language classroom. In Sharan, S. (Ed.), *Handbook of cooperative learning methods*. Westport, CN/ London: Greenwood.

- Block, E. (1986). The comprehension strategies of second language readers. *TESOL Quarterly*, 20, 463-494.
- Bristow, P. S. (n.d.). Are poor readers passive readers? Some evidence, possible explanations, and potential solutions. *The Reading Teacher*, 39, 318-325.
- Brown, A. L., Bransford, J. D., Ferrara, R. A., & Campione, J. C. (1983). Learning, remembering and understanding. In J. H. Flavell and E. M. Markman (Eds.), *Handbook of child psychology* (Vol. 3, pp. 77-166). New York: Wiley.
- Brown, A. L. (1978). Knowing when, where, and how to remember: A problem of metacognition. In R. Glaser (Ed.), *Advances in instructional psychology*. Hillsdale, NJ: Erlbaum.
- Brown, A. L., Armbruster, B. B. & Baker, L. (1984). The role of metacognition in reading and studying. In J. Orasanu (Ed.), *Reading comprehension: From research to practice* (pp. 49-75). Hillsdale, NJ: Erlbaum.
- Brown, A. L., Campione, J. C., & Day, J. D. (1981). Learning to learn: On training students to learn from text. *Educational Researcher*, 10, 14-21.
- Brown, A. L., Palinscar, A. S., & Armbruster, B. B. (1984). Instructing comprehension-fostering activities in interactive learning situations. In H. Mandl, N.L. Stein, & T. Trabasso (Eds.), *Learning and comprehension of text* (pp. 255-286). Hillsdale, NJ: Erlbaum.
- Burns, P. C., Roe B. D., & Ross E. P., (1996). *Teaching reading in today's elementary schools*. New York: Houghton Mifflin.
- Carr, H. K. (1986) Developing metacognitive skills: The key to success in reading and learning. For the MERIT, Chapter 2 project, The School District of Philadelphia.
- Carrell, P. L. (1985). Facilitating ESL reading by teaching text structure. *TESOL Quarterly*, 19, 727-752.
- Cohen, A. D. (1983). Introspecting about second language learning. *Studia Anglica Posnaniensia*, 15, 139-146.
- Collins A., & Smith, E. (1980). Teaching the process of reading comprehension. Tech. Rep. No. 182. Urbana, IL: University of Illinois, Center for the Study of Reading.

- Deering, P. D. et al. (1994). *The cooperative reading project: A collaboration with teachers to examine and improve upon cooperative learning in literacy instruction*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.
- Derry, S. et al. (1993). *The effects of collaborative interaction and computer tool use on the problem-solving processes of lower ability students*. ERIC Document Reproduction Service No. ED 374776.
- Devine, J. (1984). ESL readers' internalized models of the reading process. In J. Handscombe, R. Orem, & B. Taylor (Eds.), *On TESOL '83*, 95-108. Washington, DC: TESOL.
- Devine, J., Carrell, P. L., & Eskey, D. E. (1987). Research in reading in English as a second language to speakers of other languages. Alexandria, VA: TESOL.
- Duffy, G. G. & Roehler, L. R. (1987). Teaching reading skills as strategies. *The Reading Teacher*, 40, 414-418.
- Duffy, G. G., Roehler, L. R., & Herman, B. A. (1988). Modeling mental processes helps poor readers become strategic readers. *The Reading Teacher*, 41, 762-767.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-development inquiry. *American Psychologist*, 34, 906-911.
- Garner, R. (1981). Monitoring of passage inconsistency among poor comprehenders: A preliminary test of the "piecemeal processing" explanation. *Journal of Educational Research*, 74, 159-162.
- Hauptman, P. C. (1979). A comparison of first and second language reading strategies among English-speaking university students. *Interlanguage Studies Bulletin*, 4, 173-201.
- Hayes, B. L. (1991). *Effective strategies for teaching reading*. Boston, MA: Allyn and Bacon.
- Hosenfeld, C. (1977). A preliminary investigation of the reading strategies of successful and non-successful second language learners. *System*, 5, 101-123.
- Johnson, D. W., Johnson, R. T., & Holubec, E. J. (1986). *Circles of learning cooperation in the classroom (Revised)*. Edina, MN: Interaction.

- Johnston, P. H. (1983). *Reading comprehension assessment: A cognitive basis*. Newark, DE: International Reading Association.
- Mason, L. (1995). Collaborative reasoning on self-generated analogies: conceptual growth in understanding scientific phenomena.
- McGroarty, M. (1989). The benefits of the cooperative learning arrangements in second language instruction. *NABE Journal*, 13 (2), 127-143.
- Meloth, M. S., & Deering, P. D. (1994). Task talk and task awareness under different cooperative learning conditions. *American Educational Research Journal*, 31 (1), 138-165.
- Montague, M. & Tanner, M. (1987) Reading strategy groups for content area instruction. *Journal of Reading*, 30(8), 716-723.
- Monteiro Queiroz de Melo, S. (1992). A contrastive investigation of "reading strategy awareness" and "reading strategy use" by adolescents reading in the first language (Portuguese) and in the foreign language (English). Unpublished doctoral Dissertation, University of Essex, UK.
- Oaks, S. (1995). *Talking with one's self: Reproducing collaborative writing strategies in a composition course for adults, independent, distance learners*. Paper presented at the Annual Meeting of the Conference on College Composition and Communication, Washington, DC.
- Paris, S. G., & Lindauer, B. K. (1982). The development of cognitive skills during childhood. In B. W. Wolman (Ed.), *Handbook of developmental psychology* (pp. 333-349). Englewood Cliffs, NJ: Prentice-Hall.
- Pearson, P. D., (1985). Changing the face of reading comprehension instruction. *The Reading Teacher*, 38, 724-738.
- Pearson, D., & Gallagher, M. C. (1983) The instruction of reading comprehension. *Contemporary Educational Psychology*, 8, 317-344.
- Reutzel, D. R. & Cooter, R. B. (1996). *Teaching children to read*. Englewood Cliffs, NJ: Merrill, Prentice Hall.

- Sarig, G. (1987). High-level reading in the first and in the foreign language: Some comparative process data. In J. Devine, P. L. Carrell & D. E. Eskey (Eds.), *Research in reading in English as a second language* (pp. 105-120). Alexandria, VA: TESOL.
- Sarig, G. & Folman, S. (1987). Metacognitive awareness and theoretical knowledge in coherence production. Paper presented at the 20th Anniversary Communication and Cognition International Congress, Ghent. [Forthcoming in M. Spoelders (Ed.), *Communication and Cognition*, special issue.]
- Sharan, S. (1980). Cooperative learning in small groups: Recent methods and effects on achievement, attitudes and ethnic relations. *Review of Educational Research*, 50, 241-271.
- Sharan, S. (1990). "Cooperative learning". Presentation given at the Open University of Israel.
- Sharan, S. & Sharan, Y. (1992). *Expanding cooperative learning through group investigation*. New York: Teachers College Press.
- Sharan, S., Kussell, P., Hertz-Lazarowitz, R., Bejarano, Y., Raviv, S. & Sharan, Y. (1984). *Cooperative learning in the classroom: Research in desegregated schools*. Hillsdale, NJ: Erlbaum.
- Sigel, I. & Cocking, R. (1997). *Cognitive development from childhood to adolescence: A constructivist perspective*. New York: Holt, Rinehart and Winston.
- Slavin, R.E. (1980). Cooperative learning. *Review of Educational Research*, 50, 315-342.
- Slavin, R. E. (1983). When does cooperative learning increase student achievement? *Psychological Bulletin*, 94, (3) 429-445.
- Stevens, R. J. & Slavin, R. E. (1995). Effects of a cooperative learning approach in reading and writing on academically handicapped and nonhandicapped students. *Elementary School Journal* 95 (3), 241-262.
- Winograd, P. N. & Hare V. C., (1988). Direct instruction of reading comprehension strategies: The role of teachers explanations. In E. Goetz, P. Alexander. & C. Weinstein (Eds.), *Learning and study strategies: Issues in assessment, instruction, and evaluation* (pp.121-139). Hillsdale, NJ: Erlbaum.

Wohl, A. & Klein-Wohl, E. (1994). Teaching and learning the language arts with cooperative learning methods. In Sharan, S. (Ed.) *Handbook of cooperative learning methods*, The Greenwood Educators' Reference Collection. Westport, CN, London: Greenwood.

Appendix A: Research Design

Week 1:

EXPERIMENTAL AND CONTROL GROUPS

Training in reporting thinking processes and practice.

Week 2:

EXPERIMENTAL AND CONTROL GROUPS

Pre-Test: - Finding the main idea of 13 short texts
 - Reporting on the thinking processes (recorded)

Week 3: (Beginning of the intervention)

Instruction: Finding the main idea.

EXPERIMENTAL: + Group work

- (1) Modeling of strategy 1:
 First and last sentence and
 sign posts
- (2) GW guidelines and practice
 of verbalization in groups

CONTROL: - Group work

- (1) Modeling of strategy 2:
 Categorization of key words
 a visual organizer.
- (2) Individual practice

Week 4:

Instruction: Finding the main idea.

EXPERIMENTAL: + Group work

- (1) Modeling of strategy 2: Categorization of key words
- (2) GW practice based on the
 guidelines and verbalization

CONTROL: - Group work

- (1) Modeling of strategy 1: First and
 last sentence and sign posts in a
 visual organizer
- (2) Individual practice

Week 5:

Practice of the two strategies taught in Weeks 3 and 4.

EXPERIMENTAL: + Group work

Students work on texts in groups and report on their process and product

CONTROL: - Group work

Students work on texts individually

Week 6:

Further practice: same as Week 5.

Week 7:

POST-TEST: same as pre-test. See Week 1.

Appendix B: Guidelines For Working In Small Groups

1. Initiate the discussion, define the problem and suggest a procedure for solving the problem.
2. Listen carefully to others.
3. Speak in turn and let others speak too.
4. State your ideas or opinion contribute to the discussion.
5. Ask others for ideas or opinions.
6. Relate to others' ideas and respond to them.
7. Check for comprehension.
8. Ask for clarification.
9. Clarify or elaborate.
10. Summarize, pulling related ideas together after the group has discussed them.

Appendix C: Group Observation Form

While observing the group in action, try to identify behaviors of the types described below. Write one or two examples of each.

1. Did anyone initiate the discussion?
2. Did everyone listen carefully to the others?
3. Did everyone talk in turn?
4. Did everyone contribute to the discussion?
5. Did everyone ask others for ideas or opinions?
6. Did everyone contribute to others' contributions?
7. Did anyone check for comprehension?
8. Did anyone ask for clarification?
9. Did anyone clarify or elaborate?
10. Did anyone summarize?