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**The effects of QARs on third grade students' response to  
comprehension questions**

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The University of Arizona, 1987

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**THE EFFECTS OF QARS ON THIRD GRADE STUDENTS'  
RESPONSE TO COMPREHENSION QUESTIONS**

**by**

**Irma Garza Renteria**

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**A Thesis Submitted to the Faculty of the  
DEPARTMENT OF READING  
In Partial Fulfillment of the Requirement  
For the Degree of  
MASTER OF ARTS  
in the Graduate College  
THE UNIVERSITY OF ARIZONA**

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APPROVAL BY THESIS DIRECTOR

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June 4, 1987  
Date

To Jesus, my Lord and Savior, who opened the  
doors to make it all possible.

## ACKNOWLEDGEMENTS

The author would like to express thanks for the help provided by my committee: Drs. Patricia Anders and Adela Allen.

A special thanks goes to Dr. Judy Mitchell, whose professional assistance always done in a warm and enthusiastic manner continued to encourage me throughout the project.

To the graduate students in Reading 620, thank-you for reading my drafts and offering your suggestions.

To Jan Holmberg goes a special thanks, for being such as a pleasant person with whom to work. The many hours spent sharing and writing will long be remembered.

And to Richard goes the greatest thanks of all for his love and support in reaching my goal.

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## ABSTRACT

This descriptive study investigates the effects of a metacognitive strategy called "Question-Answer Relationships (QARs)" on the ability to answer comprehension questions of content area passages. The strategy teaches students how to analyze the task demands of a question before answering it. The study also investigates the effect of QARs on the retelling abilities of subjects and the transferability of the strategy from science to social studies.

Two third grade students of average reading ability participated individually in the study. Procedures included two days of pre tests, five days of training, one day of post test and one day of transfer test.

The data were analyzed by comparing the number of correct answers per QARs category. Retellings were analyzed by total scores and sub categories of Text Comprehension, Reader Response and Language Use.

Results indicate that training in QARs increases comprehension, improves retelling abilities, and transfers from one content area to another.

## CHAPTER 1

### STATEMENT OF THE PROBLEM

The purpose of this chapter will be to present the (1) background of the study, (2) statement of the problem, (3) significance of the study, (4) assumptions underlying the study, (5) definition of terms, and (6) limitations of the study.

#### Background of the Study

An important part of schooling is the learning of content area concepts in social studies, science and other classes. The higher the students' grade level, the more time is devoted to learning from content area textbooks and less time to developing the reading skills required of each content area. According to Strahan & Herlihy (1985), textbooks are considered both the primary instructional source as well as a controlling influence on the content area curriculum.

Yet, even though content textbooks are important for instruction at all levels, many teachers assign students chapters to read independently as homework (Ratekin, Simpson, Alverman, Dishner, 1985), assuming that the material will be read and understood by them. However,

a study by Nicholson (1984) which incorporated student interviews while working, showed that while the surface structure of a classroom may appear as if content is being learned, there may be a maze of confusion in the minds of students about the topic being covered.

Some of the confusion and lack of understanding is due to the fact that each content area has its own discipline, its own set of "knowledge organized for instruction" (Vacca & Vacca, 1986, p.9) which requires a discernment of its particular structure in order for learning to take place.

Anderson & Armbruster (1984) contend that each discipline has its own set of:

1. words or phrases that explain relationships among ideas
2. thinking patterns typical of that discipline, and
3. features or attributes that are common for that discipline.

In other words, in order to learn from content materials it is not enough that a student just be able to decode the information from the text. In addition to adequate decoding, the student needs to know the implicit organization for that specific content area and be familiar with the characteristics that embody that content area.

assumptions that this ability is already developed in students and provide minimal assistance while reading the materials assigned in their courses (Herber & Herber, 1985).

Many studies have addressed the issue of the difficulty of content area textbooks and have provided strategies to facilitate comprehension in these areas (Taylor & Beach, 1984; Palincsar, 1984; Risko & Alvarez, 1986; Smith, 1985; Nicholson, 1984). Thematic organizers, concurrent interviewing, text structure, reciprocal teaching, semantic maps and numerous study guides are all examples of general instructional techniques that have been developed to improve students' comprehension of unfamiliar text.

Included with these techniques are several instructional strategies involving questioning (Manzo, 1985; Robinson, 1946; Shoop, 1986; Raphael, 1982). Questioning strategies have been a positive step toward improving comprehension (Martin, 1985; Hunkins, 1985; Wong 1985; Frase & Schwartz, 1975; Taylor & Getzels, 1976; Wixson, 1984; Andre and Anderson, 1978-1979), however, many of these strategies are teacher directed, and, "...teacher-posed questions, which only direct student thinking, are inadequate for development of comprehension in students" (Singer, 1978, p. 904).

Generally, the focus of comprehension instruction is on the specific text, rather than on the ability to comprehend texts in general (Johnston, 1985). The goal of instruction should be to develop a student's general ability to learn how to learn (Buswell, 1956).

In recent years, much questioning research has focused on instructional strategies that are more student-controlled or self-directed. A major area of research has focused on metacognition which refers to "the learners awareness of his/her cognitive resources and the compatibility between himself/herself and the demands of the reading situation; as well as the self regulation mechanisms, or control, used by the active reader in his/her efforts to understand what is read" (Brown, 1979).

Metacognitive strategies are used to improve comprehension ability, teach students to plan, monitor, and evaluate their own cognition while reading. One metacognitive strategy, Raphael's Question-Answer Relationships (QARs, 1982) was developed to improve students' ability to answer comprehension questions concerning the text they have read, by making them aware of sources of information for answering those questions. This strategy improves the ability to answer specific comprehension questions.

Two aspects of this strategy have yet to be studied. One is whether QARs enhances other aspects of comprehension besides answers to specific questions, i.e., recall, integration of information, and summarization. A second aspect is whether students, having learned the strategy in one content area, will be able to transfer the use of the strategy to another content area.

#### Statement of the Problem

This study is designed to assess the effects of a metacognitive strategy, specifically QARs, on students' comprehension of science text as measured by recall.

Specifically, the purpose of this study is to investigate the following research questions:

1. Does the use of QARs improve students' ability to answer comprehension questions?
2. Does the use of QARs improve students' retelling of content area text?
3. Will the student be able to independently transfer the strategy from one content area to another content area, specifically from science to social studies?

#### Significance of the Study

In order for students to be effective in finding answers to questions, they need to know what the questions

are asking (Pearson & Johnson, 1978). Question-Answer Relationships (QARs) is a strategy which provides students with a procedure to understand the task demands of a question. Teaching students how to analyze questions using Raphael's strategy enhances their performance in answering questions. This is relevant since teachers traditionally use end-of-chapter questions in content area instruction.

The majority of the research on Question-Answer Relationships has been conducted by Raphael. These studies have investigated the following factors:

1. age - third grade through eighth grade
2. reading ability - high, average, and low
3. training - differences in length of student training and teacher training.

Although Raphael has explored the above areas, several variables using QARs remain to be considered. This study investigates two additional factors:

1. transferability - students' ability to transfer the use of QARs from one content area to another content area.
2. retelling - students' improvement in quality of retelling as a measure of comprehension after training in QARs.

When students apply a previously learned skill to a new task, transfer occurs. For example, learning to count

by fives is a prerequisite to counting nickels as well as learning to tell time.

This notion of transfer also applies to instructional strategies. According to Johnston (1985), the intent of a learning strategy is to have students "a) recognize a strategy, b) find it effective in attaining a desired goal, c) adopt the strategy for their own use, and d) generalize it to other situations " (p. 639).

Transfer is essential to learning. An effective strategy is one that can be learned in one content area and applied to another content area. This study tests the transferability of QARs from science to social studies.

Researchers have used retelling to gather data about reading comprehension (Thorndike, 1977; Mandler & Johnson, 1977; among others). As a holistic measure, retelling provides insight into the subjects' understanding of the text. As Bondy (1984) suggests, "A student who summarizes the chapter he has just read exercises cognitive skills" (p. 234).

Retelling gives an indication of the reader's metacognitive awareness and interaction with the text. It also reflects the reader's use of language (Irwin & Mitchell, 1986). Retelling is used in this study to enrich the pre, post, and transfer tests results.

### Assumptions Underlying the Study

1. All the passages used in this study were on appropriate topics for the subjects.
2. All the subjects were able to sufficiently decode the passages.
3. Retelling is a valid assessment of general comprehension.
4. The profile used for scoring the retellings is an appropriate instrument for measuring comprehension.

### Definitions of Terms

To clarify the use of terms to be used in this study, the following list is provided:

1. General comprehension - The understanding of a written passage through the process of combining one's knowledge with the author's intended meaning.
2. Recall/Retell - Activity in which students tell or write everything they can remember after reading a passage.
3. Metacognition - Conscious awareness and control of one's own cognitive processes.
4. Metacognitive strategy - An instructional activity to teach students how to become aware

of their existing knowledge and how to integrate it with new knowledge while reading.

5. Transfer - Application of strategies applied independently to new situations and tasks.
6. Question-Answer Relations (QARs) - A procedure to help students become aware of question-answer relationships by giving them a means to analyze the type of question and sources of information to answer them.

#### Limitations of the Study

This study has the following limitations:

1. Subjects in this study included only third grade students.
2. The selection of subjects was limited to one school.
3. The passages used were limited to science and social studies.
4. Sample size was limited to two subjects.
5. The study was not part of a school activity during regular class time.

## CHAPTER 2

### REVIEW OF THE LITERATURE

Recently, the focus of comprehension strategies has shifted from being teacher-directed to student-directed, that is, students self-monitoring of their own cognitive processes. Comprehension in content areas is generally assessed through comprehension questions. Thus, many of the existing strategies focus on questioning techniques. Since the ability to answer questions relies heavily on the ability to find the answer in the information sources, Taffy S. Raphael has developed a procedure called Question-Answer Relationships (QARs). This procedure helps students analyze questions to determine the sources of information, and thereby find the answers.

Thus, the purpose of this chapter will be to review research which investigates metacognitive strategies, such as QARs, and their effects on comprehension. This review will discuss studies that have investigated (1) metacognition, (2) Question-Answer Relationships (QARs), and (3) retelling as an assessment of comprehension as this will be one of two measures of comprehension for the study.

### Metacognition

The objective of teaching comprehension is to have students learn to ask their own questions and guide their own thinking so they become independent in the process of reading and learning from text (Singer, 1978). Students often perform tasks without wondering or questioning why they are doing what they are doing. They fail to question their own strategies for learning or to evaluate their own proficiency in accomplishing the task (Costa, 1984).

Students can be taught to view themselves as "active learners" in this process (Babbs and Moe, 1983; Stuart and Tei, 1983; Armbruster and Brown, 1984). When students become aware of their role as active learners, their ability to meet the needs of the reading task is improved (Sanacore, 1984).

This awareness has been termed "metacognition". Irwin (1986) defines metacognitive processes as those processes which students are cognizant of and to which students consciously apply strategies before, during or after reading. Flavell (1976) provides the following example:

I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double-check C before accepting it as a fact;...if I sense that I had better make a note of D because I may forget it; if I think to ask someone about E to see if I have it right (p.232).

According to Anderson (1980) instruction in metacognitive skills teaches students to become aware of their own learning processes rather than depending on feedback from sources other than self:

Some forms of instruction such as teacher-directed instruction or computer-managed instruction (CMI) use other techniques as substitutes for the metacognitive aspects of instruction. For example, a student engaged in traditional CMI does not have to ask very often the question "do I know if I understand this material". The computer informs the student during each episode whether or not he or she understands the material (p.407).

Brown (1980) makes a distinction between knowing (or cognition, which implies having the skills) and knowing about knowing (or metacognition, which implies a reader's conscious control over the skills). She takes us a step further by breaking metacognition into four categories:

- a) knowing when you know
- b) knowing what you know
- c) knowing what you need to know
- d) knowing the utility of active intervention

(p. 458-461)

Children's metacognitive knowledge about reading develops over the grades (Moore, 1983) and as students get older they become better at selecting appropriate strategies to aid their learning (Brown, 1985). High-ability readers are more cognitively aware than low-ability readers (Moore, 1983). Otto (1985) points out that poor readers 1) do not

use skills such as rereading, 2) are unaware of a lack of understanding when reading, 3) do not realize the need to understand when reading directions, and 4) do not use reading versatilely for learning and pleasure.

### Question-Answer Relationships

Research in metacognition has led educators to develop strategies that increase students' self-awareness and teach them control of their own learning. Many of the strategies that have been successful are questioning strategies (Palinscar, 1984; Manzo, 1985; Marshall, 1983; Andre and Anderson, 1978; Adams, Carnine and Gerstein, 1982).

One of the strategies that has been successful in improving students' metacognitive awareness has been Question-Answer Relationships (QARs) developed by Taffy Raphael (1982). QARs is a strategy that teaches students how to analyze the task demands of the questions before answering them. Results of these studies have shown training in QARs to be successful in enhancing student's ability to answer comprehension questions.

Students are taught to identify questions as one of three categories: a) RIGHT THERE, b) THINK AND SEARCH, and c) ON MY OWN. In the category RIGHT THERE, the answer to the question is in the text and is easy to find. The

words used to make up the question will also be found in the sentence containing the answer. In the THINK AND SEARCH category, the answer is in the text but will be a little harder to find. That is, the answer is found in information from more than one sentence in the text. The ON MY OWN category requires the student to use his own prior knowledge to answer the question. The answer will not be found in the text. Raphael as cited in Tierney (1985) provides the following example:

Passage

Albert was afraid that Susan would beat him in the tennis match. The night before the match, Albert broke both of Susan's racquets.

RIGHT THERE

When did Albert break both of Susan's racquets?  
(The night before the match.)

THINK AND SEARCH

Why did Albert break both of Susan's racquets?  
(He was afraid that Susan would beat him.)

ON MY OWN

Why was Albert afraid that Susan would beat him?  
(He knew she had practiced more.)  
(The other students might laugh.)  
(p.54)

Raphael and Pearson (1982) and Raphael and Wonnacott (1981), as cited in Raphael (1982), found that students who had been instructed to use QARs were more

successful in answering questions than students who had not been taught how to use the strategy. Raphael and Wonnacott (1985), in a study with fourth grade students found: a) that high ability students' performance was superior compared to average ability students and both were superior to low ability students, b) students performed better on text-based questions (Right There and Think and Search categories) than on knowledge-based questions (On My Own), and c) the quality of responses was generally superior for trained students compared to students in the control group.

Results from studies using sixth grade students conducted by Raphael and Pearson (1985) showed that students' quality of responses improved after training in QARs, and that greatest improvement after training was demonstrated by average and low ability students. High ability students were more accurate in identifying the QARs categories than average ability students, and average ability students identified the QARs category more accurately than low ability students. A similar pattern was seen in the consistency of QARs identification and quality of answers given. Average ability students in the training group performed at the same level as the high ability students in the control group in terms of the quality of answers. On text-based questions, the low ability students in the training group performed at the same level as the

average ability students of the control group. Students of higher ability levels presumably already apply their knowledge of strategies and tasks successfully and, therefore, do not demonstrate as much improvement after training. Similar results were found by Raphael (1984) in four studies with fourth through eighth grade students and by Raphael and McKinney (1983) with fifth and eighth graders.

#### Retelling

Steinruck (1978) states that comprehension questions usually asked in standardized reading tests provide only limited information concerning children's reading comprehension. These questions are not usually open-ended and they tend to measure literal understanding of the text and not critical thinking skills.

A technique which is becoming more widely used as an in-depth measure of comprehension is known as Retelling. Retelling is a technique in which students read a text, and then retell as much as possible to an evaluator. Retellings can give insight into a student's processes of generating texts (Morrow, Gambrell, Kapinus, Koskinen, Marshall & Mitchell, 1986). "The basic assumption among researchers is that retelling indicates something about the reader's assimilation and reconstruction of text information and,

therefore, reflects comprehension" (Gambrell, Pheiffer & Wilson, 1985, p.216).

Dungan (1978) and Pronger (1985) in studies with first graders found that students' retellings improve with repeated exposures to text. Pronger also found that well-structured stories resulted in well-structured retellings. Stories were better recalled by second graders when visuals were provided with the story (Hay & Froese, 1984). Pellegrini (1983) in a study with Kindergarten through second grade children found that students' retellings were more complete when retold to a naive listener as compared to an informed listener.

Studies have also shown that type of text can affect comprehension. Narrative text is more readily recalled than expository text; however, as children get older, recall of expository text increases (Dixon, 1978). Recall of familiar text has been shown to be superior to recall of unfamiliar text (Taylor, 1979).

One concern about retelling as an assessment is the difficulty in analyzing the results. Several instruments have been developed to measure retellings ranging from checklist and /or point systems (Wood, 1985; Marshall, 1983) to holistic scoring (Irwin & Mitchell, 1983).

## CHAPTER 3

### DESIGN OF THE STUDY

The purpose of this chapter was to describe (1) subjects, (2) materials, (3) procedure of the study, (4) scoring the data, and (5) analysis of the data.

#### Subjects

The two subjects who participated in this study were selected from one of the third grade classes of an elementary school in the Tucson Unified School District One. Subjects were selected according to the following criteria:

1. The subjects were able to independently read material at their grade level.
2. The subjects had previous exposure to reading content area materials.
3. The subjects had reading and testing scores available in school records.

The third grade teacher recommended the subjects. Reading records and ITBS scores for the previous year were used to fulfill the above criteria and to confirm teacher's recommendations.

### Materials

#### Passages

Eight passages from a third grade science book and one passage from a third grade social studies book were selected for this study. The following criteria guided the selection of the nine passages to be used with the subject:

1. All the science passages were taken from the same science book and all the social studies passages from the same social studies book.
2. The books from which the passages were selected were ones that had not been previously used by the subjects and were not likely to have been read by the subjects on their own initiative. Further, these books were ones that were comparable to other third grade science and social studies books.
3. Each passage consisted of topics which were of approximately the same degree of familiarity to the subjects, as indicated by teacher opinion.
4. Each passage contained approximately the same number of words, within a range of 200 - 300 words.
5. Each passage contained the same number of pictures and other illustrations as much as possible.

6. Subjects read the passages in random order.
7. For each passage, six comprehension questions were developed, two of each QARs type.

### Questions

Six questions were developed for each passage including two for each QARs category. Students in a Reading graduate class were asked to assist the researcher in developing the questions. The following procedure was used:

1. Students received a brief training which involved instruction in identifying each QARs type, followed by a discussion for the purpose of clarification.
2. For two passages, students independently developed questions, along with the answers, and identified the QARs category for each question. The researcher followed the same procedure for developing questions for the remaining seven passages.
3. The same graduate class at a subsequent session was asked, after a brief review, to verify the quality of the remaining seven passages and questions which had been prepared by the researcher. The passages were evaluated on the basis of their appropri-

lateness for the grade level of the subjects. Each question was evaluated to verify the quality and proper QARs category identification.

4. Each passage and its questions were evaluated by two readers. If disagreement occurred, a third reader was assigned to rate the passage and its questions.
5. Passages evaluated as inappropriate were eliminated. Questions of poor quality were re-written and re-evaluated.

#### Procedure of the Study

Each lesson was conducted separately; subjects did not participate in or listen to each other's lessons. The entire activity for each lesson was tape recorded, however, only the retellings were transcribed for scoring.

DAY 1 - To establish a baseline of retelling scores, each subject silently read a science passage and orally answered six comprehension questions. The subject was then asked to retell as much as he could remember about the topic read.

Following each retelling, two types of probes were used by the researcher:

1. "Is there anything else you want to add?"

2. "You mentioned \_\_\_\_\_. Can you tell me more about that?"

DAY 2 - Same procedure as Day 1.

DAY 3 - The intervention procedures for conducting QARs training were those outlined in Tierney, Readence & Dishner (1985). In this first lesson the subject was introduced to the different types of questions:

1. Right There - The answer is in the story.
2. Think and Search - The answer is in the story but a little harder to find.
3. On My Own - The answer is not in the story, but in the reader's head.

The subjects practiced identifying the task demands to answer each type of question. The following script by Raphael (1985) was used:

"We are going to talk about different types of questions and the best way to answer them. Sometimes your workbook or teacher give questions that ask for information you can find quite easily in the book. Other times you won't find the answer there. I will describe three kinds of questions: Right There, Think and Search, and On My Own. Each type can be figured out by deciding where you get the information for the answer. We call this a Question-Answer Relationship, or QARs for short" (p.56).

A discussion followed about the differences between the text-based responses, and the knowledge-based responses. The subject then read the science passage silently. After reading, the subject read each question.

There was a discussion between the subject and the researcher about the type of QARs each specific question represented as well as the answer for each question.

DAY 4 - This lesson began by reviewing each QARs category. The subject silently read the science passage. After reading the passage, the subject read each question and practiced identifying each question as to the type of QARs it represented. Additionally, the subject answered the questions orally, receiving immediate feedback for each answer. Further, the subject was asked to justify his answer to the question and choice of QARs.

DAY 5 - Same procedure as Day 4.

DAY 6 - Same procedure as Day 4.

DAY 7 - Same procedure as Day 4 with the exception that rather than receiving feedback immediately after each question and answer, the subject completed the entire task before receiving feedback.

DAY 8 - To establish a maintenance score, the subject silently read the science passage, read each question, and orally answered each question. The subject was then asked to retell as much as he could remember about the passage.

DAY 9 - To establish a transfer score, the same procedure for Day 8 was followed with the exception that a

social studies passage was used instead of a science passage.

#### Summary of Treatment and Data Collection

The following is a summary of the training and data collection:

##### Pre Test

Days 1 - 2 ... Silent reading of science passage;  
answer comprehension questions;  
retell

##### Intervention

Days 3 - 7 ... Silent reading of science passages;  
read questions and discuss QARs  
categories; answer questions

##### Post Test

Day 8 ..... Silent reading of science passage;  
answer comprehension questions;  
retell

##### Transfer Test

Day 9 ..... Silent reading of social studies  
passage; answer comprehension  
questions; retell

### Scoring of the Data

Scoring of the data was divided into two phases:

#### Questions

Each passage had six comprehension questions. Each correct answer was assigned one point. To establish reliability of the results, two raters participated in the scoring of each passage. Both raters independently scored the answers. Discussion between the raters resolved any disagreement about the scores. The following data was scored:

- a. Total number correct answers on the pre test
- b. Total number correct answers on the post test
- c. Total number correct answers on the transfer test

#### Retellings

Oral retellings for days 1, 2, 8, and 9, were tape recorded, transcribed and scored according to procedures described in Irwin & Mitchell (1986). Two raters scored each retelling in order to establish reliability of the results. Points were assigned to each level of rating. A high rating was given three points; a moderate rating received two points; and one point was given to a low rating. The total score possible for each retelling was 36 points. The following data was scored:

- a. Total score on pre test
- b. Total score on post test
- c. Total score on the transfer test

#### Analysis of the Data

A descriptive analysis was used to interpret the following data for each subject:

#### Questions

1. Total number correct on the pre test  
vs  
Total number correct on the post test
2. Total number correct on the post test  
vs  
Total number correct on the transfer test

#### Retellings

1. Total number correct on the pre test  
vs  
Total number correct on the post test
2. Total number correct on the pre test  
vs  
Total number correct on the post test

The data were analyzed by comparing the responses of the two subjects for each of the following:

1. Total scores of comprehension questions
2. Scores for each of three QARs categories
3. Total retelling scores
4. Scores for each of three retelling classifications

## CHAPTER 4

### RESULTS AND DISCUSSION

The purpose of this chapter is to present the results of the study. The findings and discussions for each research question are presented under the headings: 1) results related to research question one, 2) results related to research question two, and 3) results related to research question three.

Comprehension was the most important factor analyzed rather than the ability to identify each question by its correct QARs category. Therefore, during the pre, post and transfer testing, subjects were not asked to label each question as Right There, Think and Search, or On My Own. The following graphs indicate the number of correct responses, with several of the graphs also indicating the number of correct responses within each QARs category.

#### Results Related to Research Question One

Question one asked: Does the use of QARs improve students' ability to answer comprehension questions? Each passage contained six comprehension questions with each correct answer receiving one point. A total of six points

was possible per passage. Results of the pre and post tests are presented in Figure 1.

Figure 1. Individual scores of the comprehension questions for the pre and post tests for each subject.

	Pre	Post	
		A	B
6			
5			
4	A B		
3	A		
2			
1			
0			

The scores indicate that gains were made from the pre to the post test for both subjects. Both subjects made gains of at least two points. Subject A progressed from a score of 3.5 in the pre test to a score of six in the post test. Subject B's scores improved from four points in the pre test to six points in the post test.

Comprehension questions were further analyzed according to the three QARs categories: Right There, Think and Search, and On My Own. Figure 2 gives the results of the individual scores for each category.

Figure 2. Individual scores of QARs categories for pre and post tests

	Right There		Think and Search		On My Own	
2		A B		A B		A B
1	A		A		A	B
0						
	Pre	Post	Pre	Post	Pre	Post

Results from Figure 2 show that gains were made in all categories by both subjects from the pre to the post tests. Subject A made a gain of one point in the categories Right There and Think and Search. Similar gains by subject B were made in the On My Own Category.

Figures 1 and 2 indicate that the comprehension scores did improve from the pre to the post test for both subjects. There are several factors to consider that may have contributed to these gains.

During the pre test subject A glanced in the article for all of the questions before attempting to answer them, whereas subject B, after reading the passage, did not refer to the passage while answering the questions. These behaviors revealed important information that may be common among students while completing similar activities.

Referring to the article for every question may indicate that the subject believed the answer was always in the passage and never in his head. Conversely, the latter

may imply that the subject viewed answering questions as a testing activity of what was remembered without the aid of the passage. Even though these behaviors were suitable for answering some questions, they were unsuitable for answering others.

The modification of these behaviors during the training of QARs aided the subjects' responses to the questions of the post test, since subjects now had three different sources from which to gather their answers.

Throughout the training, Think and Search was the most difficult for the subjects to answer and Right There was the easiest. On My Own needed to be clarified several times for both subjects.

It may be that requiring the reader to put information together from two different places in the passage to form the answer makes Think and Search a more difficult thinking skill than Right There. Generally, this skill is not introduced in primary grades or not practiced by low-to-average ability students. It is interesting to note that the researcher and the graduate students who assisted in developing the questions also had a difficult time creating Think and Search questions.

On the contrary, students usually have plenty of practice answering detail questions which could account for the ease with which the subjects answered the Right There questions. For some of the On My Own questions, the

subjects thought that if they remembered the answer from the passage without having to refer back to it, then the question was identified as On My Own instead of Right There. The five days of training with QARs helped alleviate some of the difficulty and confusion with the categories.

The results may have also been affected by the following observation. While correcting the answers to the comprehension questions, the researcher and the rater realized that some of the questions may have differed in clarity. This may have caused the subjects to give incomplete or wrong answers to these specific questions. Piloting the questions could have resolved this problem.

The findings from the post tests suggest that training in the use of QARS does improve students' ability to answer comprehension questions in the content areas.

#### Results Related to Research Question Two

Question two asked: Does the use of QARs improve students' oral retelling of content area text? Oral retellings were collected for pre and post test days 1, 2, 8, and 9. The retellings were then scored by two raters using Irwin & Mitchell's (1987) Retelling Profile. In order to graph the data, points were assigned to each level of rating. A high rating was given three points; a moderate rating received two points, and one point was given to a low

rating. The total score possible for each retelling was 36 points.

Figure 3. Individual scores from the oral retellings of the pre and post tests

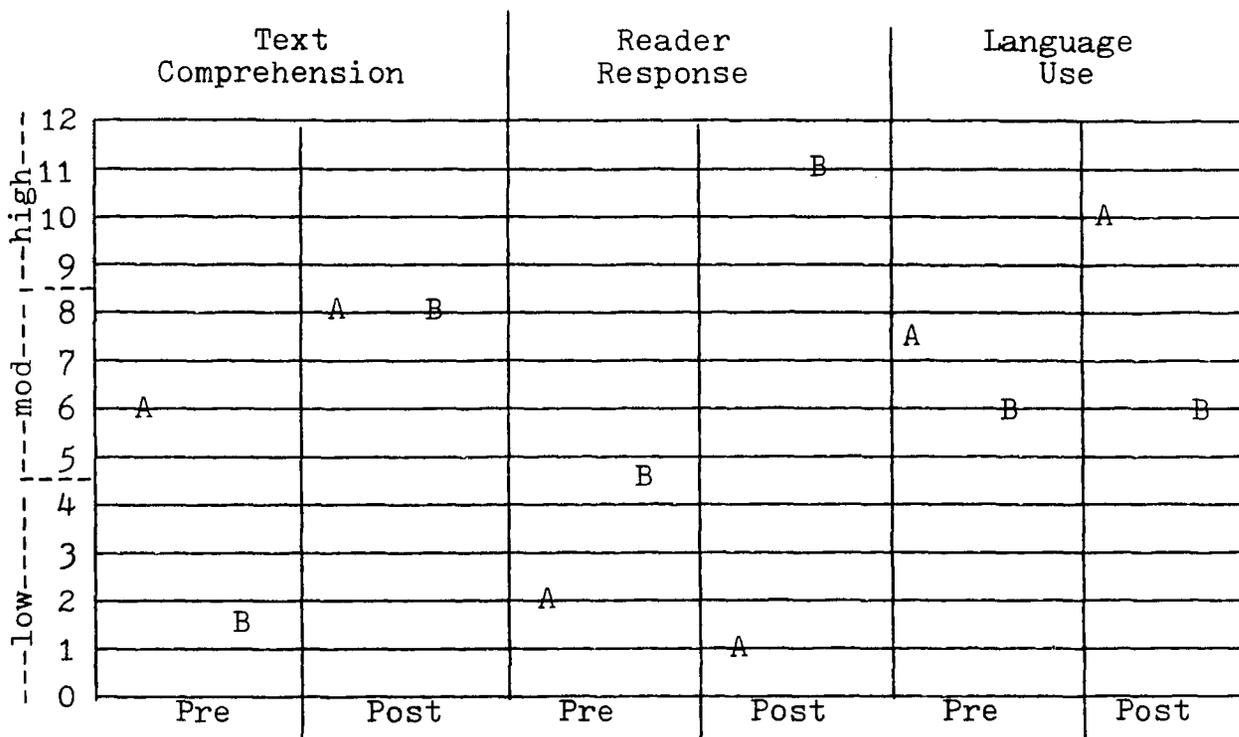
	Pre	Post
35		
30		
25		B
20		A
15	A	
10	B	
5		
0		

Both subjects showed an improvement in their oral retellings from the pre to the post test. Figure 3 shows a gain of four points for subject A and a gain of 13 points for subject B.

For qualitative purposes the 12 items on the Retelling Profile were grouped into three classifications: Text Comprehension, Reader Response, and Language Use. A sample of the Retelling Profile is shown in Appendix C.

The results of the individual scores for each subject's retellings on the pre and post tests according to the three classifications are presented in Figure 4. A score of 12 was possible for each classification. The low-to-high rating scale of the Retelling Profile is also provided.

**Figure 4.** Individual retelling scores for Text Comprehension, Reader Response, and Language Use.



There were gains from the pre to the post test for both subjects in the Text Comprehension classification. Subject B made notable gains from 1.5 in the pre test to eight in the post test with subject A making lesser gains from six to eight. In the Reader Response classification subject B made important gains of 6.5 points from pre to post tests, whereas, subject A's score regressed from two points to one point. Subject A, however, did make a gain of 2.5 points in the Language Use classification, where a score of six points remained constant from the pre to post test for subject B.

Test Comprehension and Language Use are the classifications in which subject A's retellings made major gains. Retellings by subject B showed major gains in Text Comprehension and Reader Response.

The retelling scores presented in Figures 3 and 4 indicate that the use of QARs does improve subjects' ability to recall information read, however, there are several other factors to consider that may have affected these gains.

Since Figure 1 shows that QARs training did improve subjects' comprehension, it is conceivable that the classification of Text Comprehension in the retellings would also improve. Practice is another factor that may have caused the gains in the retellings. Subjects had previously done two retellings each in the pre test. The retellings also could have been affected by the added learning that took place while answering the questions for the passage immediately prior to each retelling.

Subject B gained 6.5 points in both Text Comprehension (low to moderate) and Reader Response (moderate to high). All of subject B's retellings included a large number of creative expressions indicative of his involvement with the text. It is possible that the improvement in Text Comprehension caused the improvement in the Reader Response. Subject B's use of language for the retellings was not affected, however, by the improvement in

comprehension. Language Use was maintained at a moderate level for both pre and post tests.

Whereas subject B's retellings included an abundance of affective involvement with the text, Subject A's retellings included minimal individualistic reactions to it. This could account for subject A's low rating of Reader Response in both pre and post tests. Retellings by subject A were brief and literal. The ratings of Text Comprehension and Language Use improved two and three points each, respectively. Again, the gain of comprehension could have influenced the gain from moderate to high in Language Use for subject A.

The diversity in the subjects' retellings may reflect their individual differences. Further, each subject expressed himself differently and these differences appeared to be captured by the Retelling Profile. The Retelling Profile scores seem related to the QARs response scores for both subjects.

#### Results Related to Research Question Three

Question three asks: Will the student be able to transfer the strategy from one content area to another content area, specifically from science to social studies? The subjects' total scores of the social studies passage was compared to their pre and post test of the science passages. These results are found in Figure 5.

Figure 5. Individual scores of comprehension questions for pre, post and transfer tests

	Pre	Post		Tran
6		A	B	A
5				B
4	A	B		
3				
2				
1				
0				

Figure 5 shows that gains were made for both subjects from the pre to the transfer test. Subject A was able to maintain a score of six points for both the post and the transfer test. Subject B regressed from six points on the post test to five points on the transfer test.

The transfer tests scores were further analyzed as to the number of correct answers per each QARs category.

These results are shown on Figure 6.

Figure 6. Individual scores of comprehension questions for pre, post and transfer tests according to QARs categories.

	Right There			Think and Search			On My Own		
2		A	A		A	A		A	A
1							A		
0	A			A					
2		B			B	B		B	B
1	B		B	B					
0							B		
	Pre	Post	Tran	Pre	Post	Tran	Pre	Post	Tran

The results from Figure 6 indicate that both subjects were able to maintain the gains made in the post test over to the transfer test for all of the categories with the exception of the category Right There for subject B. Subject A's major gains were in the Right There and Think and Search, whereas, subject B's major gains were in the On My Own category.

Retellings were also analyzed for the transfer of the strategy QARs. These results are shown in Figure 7.

Figure 7. Individual scores of retellings for pre, post and transfer tests

	Pre	Post	Tran
35			
30			
25		B	
20	A	A	A B
15			
10	B		
5			
0			

These transfer retelling scores indicate that only subject A maintained his score from the post test. Subject B regressed from 25 points in the post test to 20 points in the transfer test.

The retellings were also analyzed according to the three classifications outlined in the Retelling Profile.

Figure 8 gives these results.

Figure 8. Individual scores of retellings grouped in classifications of Text Comprehension, Reader Response and Language Use for pre, post and transfer tests

	Text Comprehension			Reader Response			Language Use		
	Pre	Post	Tran	Pre	Post	Tran	Pre	Post	Tran
12					B	B			A
11									
10								A	
9									
8		AB	A					A	
7									
6	A							B	B
5									
4						B			
3						A			
2									
1	B								
0						A	A		

Subject A maintained a moderate rating of eight for his retelling during the transfer test in Text Comprehension. Subject B's moderate rating of eight in the post test regressed to a low rating of three in the transfer test.

Subject B's transfer scores remained constant in the Reader Response with a high rating of 11 points from the post to the transfer test. Subject A regressed from the pre to the post test with a low rating of one which was the same score as the transfer test.

In the classification of Language Use, the retellings for subject A improved from a moderate score of 7.5 in the pre test to a high score of 10 in the post test, to a high score of 11 in the transfer test. Subject B's retellings stayed at a moderate rating of six for all three tests.

The findings from the comprehension scores and the retellings of the transfer tests found in Figures 5, 6, and 7 suggest that, overall, subjects were able to transfer the use of QARs from one content area to another. The subjects' ability to transfer the use of QARs from science to social studies could be ascribed to differences in style and structure of both texts. It could be that students have more experience with social studies texts than science texts or that they find the former text types easier than the latter.

Another possibility to consider for the results of the transfer tests, is the effect of practice during the pre tests, intervention of training and post tests. Subjects could have performed well in the transfer because of all their practice in answering the questions and retelling that was done prior to the transfer test.

#### Summary of Findings

The descriptive analysis of subjects' responses to comprehension questions indicates that the intervention of

QARs did enhance comprehension in three different levels of thinking required for answering some questions. The analysis also showed improvement in subjects' retellings with the most gains made in Text Comprehension. The results of this study also gave a clear indication of QARs transferability from science to social studies by the subjects.

## Chapter 5

### CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter presents a restatement of the problem, design and procedures of the study, and findings, conclusions, implications, and suggestions for further research.

#### Restatement of the Problem

The purpose of the study was to assess the effects of QARs (Questions - Answer Relationships), a metacognitive strategy, on subjects' comprehension of content area text. QARs is a strategy designed to teach students how to analyze the task demands of the questions before answering them.

Studies investigating the effects of QARs have found that students trained in QARs were more successful in answering questions than those not trained in QARs. Other studies have compared students' answers before and after training in QARs. Results have shown that the quality of answers is superior after QARs training. Research has also found that average and low ability students show greater improvement with QARs instruction than high ability students.

The three research questions addressed in the study were:

1. Does the use of QARs improve subjects' ability to answer comprehension questions?
2. Does the use of QARs improve subjects' retelling of content area text?
3. Will the subject be able to transfer the strategy from one content area to another content area, specifically from science to social studies?

#### Design and Procedures

The subjects in the study were selected from one of the third grade classes of an elementary school in the Tucson Unified School District One. Subjects were below average according to achievement tests and teacher recommendations.

All passages were selected from a third grade science or social studies textbook. Six comprehension questions were developed from these passages including two of each QARs category. Students in a graduate class assisted the researcher in developing the questions and verifying the quality of both the passages and questions.

Procedures consisted of two days of pre tests followed by five days of training in QARs. To assess the effect of QARs on comprehension, a post test was then used.

To assess the subjects' ability to transfer the use of QARs to a different content area, a second post test was given the following day.

To support the pre, post, and transfer test results, students' retelling of the passages were analyzed as a second measure of comprehension.

Scoring of the data was divided into two parts: Scoring of answer to the comprehension questions and scoring of the retellings. Two raters independently scored each response. The following data was scored for both answers to the questions and the retellings:

1. total score on the pre test
2. total score on the post test
3. total score on the transfer test

Subjects were not assessed for their ability to identify each question according to QARs type but rather for correct answers to comprehension questions. Only completely correct responses to the questions received credit.

Retellings were analyzed according to twelve items grouped into three classifications: Text Comprehension, Metacognitive Awareness, and Language Facility.

#### Findings of the Study

The following findings are based on the results of the data analysis of the QARs results and the retelling results for pre, post and transfer test passages:

1. Between pre and post tests, subjects' comprehension score increased for total comprehension and for all of the sub categories.

2. Between pre test and post test, subjects' retelling scores increased for total comprehension and for the sub classification of Text Comprehension.

3. Between post test and transfer test, subjects' comprehension scores maintained or increased for total comprehension and for the sub categories Think and Search and On My Own. Between post test and transfer test, subjects' retelling scores maintained or increased for total comprehension and for none of the sub classifications.

### Conclusions

The following conclusions are based on the findings of this study and are not meant to be generalized to a larger population due to the small sample size. The conclusions are also limited to passages derived from similar texts, and to comprehension instruments similar to those used in this study.

1. Training in QARs does improve subjects' ability to answer comprehension questions.

2. Training in QARs does improve retellings of content area texts.

3. Subjects are able to transfer the use of QARs from one content area to another.

### Implications

The following implications for research are suggested by the conclusions of this study:

1. Extending the instructions in QARs may have a greater effect on the improvement of comprehension and/or the ability to answer comprehension questions.

2. Style and structure of retellings may be affected not only by training in QARs, but also by the style and structure of the text.

3. Extending the training in QARs may improve subjects' ability to identify questions according to their QARs category.

4. Performance on Think and Search type questions may be affected by the characteristics of text.

The following implications for instruction are suggested by the conclusions of the study:

1. Implementing QARs in content area instruction may enhance subjects' comprehension of text.

2. Providing classroom instruction on the use of QARs may enable subjects to use the strategy independently while completing assignments.

3. Training in QARs for instructors may enhance their ability to analyze passages and the accompanying questions found in textbooks.

4. Teachers may also increase their ability to develop and instruct students in questions that assess

different levels of comprehension within their content area of instruction.

#### Suggestions for Further Research

1. Replication of this study early in the school year to allow a longer period of training and opportunities to observe students' independent use of QARs.
2. Replication of the study with a delay test of at least three weeks after training in QARs.
3. Replication of this study with more subjects.
4. Replication of this study with passages from other content areas.
5. Replication of this study with comparisons of oral and written retellings.
6. Replication of this study with transfer from social studies to science.
7. Replication of this study including identification of QARs categories on the post test.
8. Replication of this study within a classroom setting during regular school hours.

## APPENDIX A

### SCIENCE PASSAGE

Which animal is stronger, a big snake or a small mouse? You probably answered that the snake is stronger. And you are probably right. A mouse must defend itself from snakes which eat mice.

A mouse usually tries to run away and hide when it sees a snake. But sometimes a mouse defends itself in a different way. It stands still and pretends it is going to attack the snake. The mouse's actions might scare or confuse the snake. When an animal acts this way we say it is bluffing. A mouse might use bluffing when it is too far from its home to make a quick getaway.

Many animals, when bluffing, look larger and fiercer than normal. You probably have seen a cat raise its back, fluff its fur, and hiss when a dog comes near it. With its raised back and fur standing on end, the cat looks larger than normal. The dog might back off from the fierce, hissing cat.

But not all animals use bluffing to frighten their enemies. When a predator approaches, the killdeer bird protects the young in its nest by pretending that its wing is broken, as shown in the picture. By bluffing, the killdeer draws attention away from its nest of helpless young birds. If the predator follows the bird away from the nest, the young birds might be safe. The bluffing killdeer then flies to safety.

## APPENDIX B

### QUESTIONS FOR SCIENCE PASSAGE

1. Why would a killdeer pretend its wing is broken?
  
2. When have you ever seen a person bluffing and how did you know?
  
3. When would a mouse use bluffing?
  
4. Why does a cat raise its back, fluff its fur, and hiss?
  
5. What does a mouse usually do when it sees a snake?
  
6. What is an example of children bluffing on the playground?

APPENDIX C

RETELLING PROFILE

	none	low	mod	high
1. Retelling includes information directly stated in text.				
2. Retelling includes information inferred directly or indirectly from text.				
3. Retelling includes what is important to remember from the text.				
4. Retelling provides text-appropriate content and concepts.				
5. Retelling reflects reader's background knowledge relative to text information.				
6. Retelling includes summary statements or generalizations which can be applied to the real world.				
7. Retelling contains highly individualistic and creative impressions or reactions to text.				
8. Retelling indicates affective involvement with the text on the part of the reader.				
9. Retelling demonstrates appropriate use of language (vocabulary, sentence structure, language conventions).				
10. Retelling indicates reader's ability to organize or compose the structure of the response.				
11. Retelling demonstrates the reader's sense of audience or purpose.				
12. Retelling indicates reader's control of the mechanics of speaking or writing.				

Interpretation: Items 1-4 indicate text comprehension;  
 Items 5-8 indicate reader's response;  
 Items 9-12 indicate language use.

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