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ABSTRACT

This study examines the effectiveness of Reciprocal Teaching during social studies instruction in fourth-, fifth-, and sixth-grade inclusive classrooms (N=128) in a rural school system in New Mexico. Reciprocal teaching is a method of scaffolded instruction that has been demonstrated to improve reading comprehension in students of various ability levels. Experimental and control classrooms at each grade level contained approximately the same number of students with learning disabilities. Comprehension assessments were administered at baseline and once weekly thereafter for a total of four measures. Results indicated that students in the experimental groups improved their performance on comprehension measures more than students in the control group. This improvement continued to be displayed after 30 days in both the sixth and fourth grades. The data also suggest that students with learning disabilities improved their ability to compose summaries as compared to the control students. (EH)

Reciprocal Teaching of Social Studies in Inclusive Elementary Classrooms

by

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Abstract

The purpose of this study was to examine the effectiveness of Reciprocal Teaching during social studies instruction in fourth, fifth and sixth grade inclusive classrooms. Research indicates that reading comprehension relies heavily upon students' ability to use metacognitive strategies to construct meaning from text. Reciprocal teaching is a method of scaffolded instruction that has been demonstrated to improve reading comprehension in students of various ability levels. Social studies textbooks are often difficult for students to understand because they are written in an unorganized manner in which the effects of events aren't always specified. These textbooks often assume that students are able to easily link new concepts with prior knowledge. Many students with learning disabilities have limited prior knowledge in addition to poor metacognitive skills. When presented with social studies texts in inclusive classrooms, therefore, many students with learning disabilities require focused instruction to allow them to benefit. Reciprocal Teaching offers promise as a useful intervention in these cases.

A rural school system in New Mexico served as the location for the study. One hundred and twenty eight students participated. Experimental and control classrooms at each grade level contained approximately the same number of students with learning disabilities. Comprehension assessments were administered at baseline and once weekly thereafter for a total of four measures. Assessments asked students to read 500 words of unfamiliar social studies text and then generate three questions, answer five questions, and compose a summary of the text. Students were also given an external measure and an assessment 30 days after intervention ended. As an exploratory measure, a small number of students with learning disabilities were compared to determine effects of intervention.

Scoring reliability was determined to be 95%. A mixed-design MANOVA was used to determine group interaction on the three dependent measures of reading comprehension.

Results indicated that students in the experimental groups improved their performance on comprehension measures more than students in the control groups. This improvement continued to be displayed after 30 days in both the sixth and fourth grades. The data also suggests that students with learning disabilities improved their ability to compose summaries as compared to the control students.

Introduction

The motivation to undertake this study came about through my experiences as an occupational therapist in the schools. As an OT, I was able to come into, and out of, various elementary school classrooms to help students with their academic work. During this time, I was also working on my dissertation and spending a good deal of time immersed in educational literature. As I spent more and more time in classrooms, I was struck by the gulf between what is found in academic journals and what transpires within classrooms. Journals abound with a bevy of techniques and strategies for instruction but, unfortunately, much of this knowledge remains inert as it does not make it to the "trenches". Particularly with regard to the concept of inclusion, general education teachers are unsure about how to educate students with learning disabilities in their classrooms. This study was an attempt to bridge the gap between cognitive research and the classroom and to examine how a well-researched educational technique could be used by general education teachers to teach social studies to students with and without learning disabilities.

Background

Research indicates that social studies textbooks are difficult for students to comprehend. Because textbooks are the end result of a variety of interests, they are often written in a manner in which concepts are not presented in a logically ordered fashion. Beck, McKeown & Gromoll (1989) describe several characteristics of social studies textbooks. Textbooks tend to make comparisons that are easy for adults to understand but difficult for students to understand. Further, concepts are often presented in a brief manner with the assumption that students can easily integrate them with prior knowledge. Additionally, causes and consequences of events are often not specified. The research suggests that, discourse between teachers and students and among students themselves is critical to the understanding of social studies. Beck, McKeown, Sinatra & Loxterman (1991) found that if they revised existing social studies text according to a model that enhanced cognitive processing, comprehension was improved in elementary school populations.

Reading comprehension has been conceptualized as an active process whereby readers construct mental representations of text (Dole, Duffy, Roehler & Pearson, 1991). Effective comprehension is also dependent upon the ability of readers to use metacognitive strategies to link prior knowledge with new information. Research also indicates that comprehension can be enhanced by peers because dialogue serves to expand and clarify existing knowledge (Palincsar,

Brown & Martin, 1987; Palincsar, 1986).

Many students with learning disabilities may not possess the ability to construct accurate representations from text. In their review of research regarding the learning characteristics of students with learning disabilities, Short & Weissberg-Benchell (1989) noticed that while skilled learners were able to achieve a balance between cognitive, metacognitive and motivational skills, students with learning disabilities had difficulty integrating these factors. The authors suggested that many students with learning disabilities had trouble focusing attention on cognitive tasks. Students with learning disabilities also had difficulties carefully considering alternatives to problems and maintaining attention to tasks for sustained periods of time. These attentional and, possibly, motivational problems were particularly evident when they were engaged in demanding cognitive tasks. Based upon their review of research studies, Short & Weissberg-Benchell concluded that, in general, skilled learners tended to be more aware than students with learning disabilities of their metacognitive knowledge such as learning styles, task demands, appropriate strategies and the importance of accessing prior knowledge when learning. However, research has suggested that forms of scaffolded instruction, such as reciprocal teaching, may be of particular benefit to students with learning disabilities (Rojewski & Schell, 1994; Palincsar & Klenk, 1992).

Reciprocal teaching is a method of scaffolded instruction that has been demonstrated to improve reading comprehension in students. The premise of reciprocal teaching is that students, by active discussion of text within a small group of their peers, can enhance their learning and improve their ability to both comprehend text and monitor understanding of text. In their original study, Palincsar & Brown (1984) described the process of reciprocal teaching in the following manner: After students divide into small groups, the text is read in segments silently, orally by students or orally by the teacher depending on the decoding ability of the students. Following each segment of the text, the dialogue leader (adult or student) within the group, begins the discussion by asking questions about the content. The rest of the group members discuss these questions, raise additional questions and, in the case of disagreements, reread the text. The discussion then moves on to identifying the gist of what has been read and to synthesizing the reading. Once again, the dialogue leader offers the initial summary and there is discussion. Clarification is used whenever there is a word, concept or phrase that has been misunderstood or is unfamiliar to the group. Finally, the leader generates and solicits predictions regarding upcoming content in the text.

Initially, the leader models the entire process using structured dialogue to identify and break down the processes involved and coaches the students on how to ask good questions, construct good summaries, etc. Gradually, the leader's role decreases and the students take on greater responsibility for carrying out the process. According to Palincsar & Brown, several points are emphasized to the students during the process of reciprocal teaching. The first is that the acquisition of the strategies is a joint responsibility that is shared by the teacher and students. Second, although the teacher initially assumes the major responsibility for the instruction and modeling of strategies, responsibility is gradually transferred to the students. Third, all students are expected to participate in the discussion. The teacher enables all students to participate by providing scaffolds in the form of supporting statements, prompts or altering the demands on the student. Finally, students are continually reminded that the strategies are useful methods that will help to improve the comprehension of text. By continually trying to construct meaning from text, students also come to realize that reading requires not only the ability to decode words but also metacognitive strategies that facilitate constructive and evaluative activities.

To determine the overall effect of reciprocal teaching interventions, Rosenshine & Meister (1994) reviewed16 reciprocal teaching studies. The authors delineated two forms of reciprocal teaching they found in the literature. In the first form, all modeling and instruction on how to apply the four strategies took place during the dialogues themselves; there was no prompting beforehand on the use of strategies. The authors called this form "reciprocal teaching only" (Rosenshine & Meister, 1994, p. 483). An example of this method was the original study by Palincsar & Brown (1984). The second form of reciprocal teaching involved introducing the students to the four strategies before the dialogues began. These lessons typically involved worksheet activities and discussions conducted on a whole class basis to familiarize students with the processes underlying effective use of the strategies. Rosenshine & Meister referred to this form as "explicit teaching before reciprocal teaching" (Rosenshine & Meister, 1994, p. 483). All of the studies they reviewed had comparable experimental and control groups as part of their design. Across all studies, the median effect size was .32 when standardized tests were used as a measure of criterion and .88 when experimenter-developed comprehension tests were used. According to Rosenshine & Meister, effective results with experimenter-developed outcome measures applied regardless of grade level, number of instructional sessions, class size, number of strategies taught or whether a

teacher or experimenter provided the instruction.

Rosenshine & Meister (1994) also discussed some areas that were inconsistent among studies and needed further clarification. Many criticisms of the reviewed studies involved dialogue. For example, few studies contained examples of the dialogue experimenters used to present the intervention. Also, few studies assessed the quality of student summaries and questions during reciprocal teaching. Additionally, many studies failed to utilize follow-up measures to determine effects of reciprocal teaching. Rosenshine & Meister suggested that future research provide more information regarding the implementation of reciprocal teaching within classroom settings.

The purpose of this study was to examine the effectiveness of reciprocal teaching during social studies instruction in fourth, fifth and sixth grade inclusive classrooms. There were two research hypotheses: First, I expected that students in the experimental classrooms would (a) significantly improve their ability to answer short questions based on unfamiliar passages of social studies text, (b) generate questions about the text and (c) compose a short summary of this text when taught with the method of reciprocal teaching as compared to students who were taught by traditional methods. Second, I expected that students with learning disabilities in the fourth, fifth and sixth grades would significantly improve their ability to answer questions, generate questions and compose summaries as a result of reciprocal teaching as compared to students who were being taught by traditional methods.

Participants and Setting

This study took place between January 16, 1996 and April 23, 1996 at a rural public elementary school in New Mexico. In 1994, this school district adopted the practice of inclusion as a means to educate students with mild to moderate disabilities. At the time of this study, all students with learning disabilities were receiving special education services and many were also receiving related services such as occupational therapy or speech therapy.

At each grade level, there were two inclusive classrooms and two non-inclusive classrooms. Within the inclusive classrooms, there were approximately five out of 22 students with identified learning disabilities.

For this study, both of the inclusive classrooms at the fourth, fifth and sixth grade levels were asked to participate. All six general education teachers were told before the study began that I would serve as the principal teacher for social studies during the study and that they would not be

teaching social studies. They were also told about the method of reciprocal teaching and that the study would last about one month at each grade level. All six general education teachers agreed to participate. The experimental classrooms at each grade level were determined because the teachers in each of these classrooms expressed more of an interest in having the intervention take place in their classrooms than the (eventual) control classroom teachers.

Three of the teachers (one fourth grade teacher and both fifth grade teachers) were familiar with me as I had worked with them in my role as occupational therapist at some point during the last five years. This role did not involve any teaching of academics on a whole class basis. Of the other three teachers, two were new to the school (both at the sixth grade) and one I had not worked with previously (fourth grade). Both teachers in the sixth grade were in their first year of teaching. Both teachers in the fifth grade had taught at least 25 years and the experimental teacher was due to retire at the end of the school year. The teacher of the fourth grade control classroom had taught for about 10 years longer than the experimental classroom teacher, who was in her fifth year of teaching.

All students in the target classes were asked to sign a permission form agreeing to participate in the study. Students were also given a parental consent form and told that if they brought this form back the next day with a parent's signature to either participate or not, they would be given a pencil emblazoned with an NFL logo. This resulted in a very high rate of forms returned the next day. One hundred and twenty eight out of a possible 135 students participated in the study. Three students declined to participate and four students did not return their permission forms despite three attempts to get them back.

In the fourth grade experimental classroom, there were 15 boys and 7 girls; 7 students had documented learning disabilities. In the fourth grade control classroom, there were 13 boys and 8 girls; 1 student had a learning disability. In the fifth grade grade experimental classroom, there were 9 boys and 13 girls, 5 students had learning disabilities. In the fifth grade control classroom, there were 10 boys and 12 girls; 5 students had learning disabilities. In the sixth grade experimental classroom, there were 8 boys and 11 girls; 3 students had learning disabilities. In the sixth grade control classroom, there were 12 boys and 10 girls; 4 students had learning disabilities. Table 1 contains a description of all participants in the fourth, fifth and sixth grades.

Table 1. Participants According to Grade Level

	Experimental	Control
	Fourth Grade	
Boys	15	13
Girls	7	8
Students with LD	7	1
Total	22	21
	Fifth Grade	
Boys	9	10
Girls	13	12
Students with LD	5	5
Total	22	22
	Sixth Grade	
Boys	8	12
Girls	11	10
Students with LD	3	4
Total	19	22
Total number of students	63	65

Treatments were assigned to existing classrooms, rather than by random assignment for several reasons. First, teachers had different schedules from one another. For example, some taught social studies in the morning and some in the afternoon. Second, teachers did not usually cover the same material in the same order or at the same pace as other teachers. In the sixth grade, for example, one teacher was studying the Russian Revolution while the other teacher was getting ready to start a unit on Africa. Finally, because these classrooms contained students with special needs, students were often pulled from the class. For these reasons, teachers were reluctant to face the possibility of students being shuttled in and out of their rooms any more than necessary.

Materials

All classes used the same social studies textbooks and workbooks that they had been using before the study. Classes followed the same course of social studies they would have pursued had they not participated in the intervention. Teachers shared their planned lesson content with me and I covered that material in the same time frame that they would have.

Procedure

The intervention began in the sixth grade, proceeded to the fifth grade and ended in the fourth grade. The sixth and fifth grade interventions lasted17 days. The fourth grade intervention lasted 15 days. The instructional procedure was the same at each grade level. After two days of describing reciprocal teaching (Appendix A) to the control and experimental classrooms at a particular grade level, students were given the first of four comprehension assessments. Students read a section (about 500 words) of unfamiliar text from their social studies book and were given a one page assessment asking them to do three things. First, I told them to pretend that they were the teacher and had to think of three good questions to ask over the passage. These questions needed to be made up by them and not simply copied out of the book (each section had a list of three "Reading Check" questions to guide reading). Second, students had to answer five short answer questions. Finally, students were asked to compose a summary of the passage. I told the students that if they found the main points of the section and combined them, they would have a summary of the section. Students were also told that they could leave their textbooks open for use. All participants were told that they would lose points for blanks. This identical format was used for the three comprehension assessments that followed at each grade level. It generally took each class 30 minutes to read a passage and complete an assessment, however, all classes were told that they had

a maximum of 45 minutes to complete the assessments. An example of a comprehension passage and assessment for fourth grade is found in Appendix B. After both experimental and control classrooms were given this assessment, the intervention began.

On the first day of actual reciprocal teaching, the students were divided into groups of four or five on the basis of the teacher's input regarding students with high abilities and students with low abilities. All groups contained a mix of students of varying abilities. On a few occasions, there was more than one student with learning disabilities per group but this was infrequent. Students who had decided not to participate were spread amid the groups and there was never more than one nonparticipating student per group. There were also never more than five groups to each classroom. Students were told that their groups could meet at any location in the classroom. Students were given a passage of text (usually three to four pages) to cover and the daily worksheet that had been formulated in the pilot study to be completed. The worksheet asked students to think of three good questions to ask about the material that they read. It also asked them to list the subheadings of the section they read and to list three main points of each subheading. This worksheet is found in Appendix C. Generally, it took the groups about 30 minutes to complete each day's reading. Students were told that the daily worksheets were to structure the process and that they were not intended to be used every day of the study.For the first five days, I structured and monitored the process of reciprocal teaching, answered questions and provided scaffolding as necessary to the groups. In the sixth grade, another adult who worked closely with many of the students helped with this process. There was no other adult in the room helping in the fifth grade. In the fourth grade, an educational aide provided occasional help. Help to the groups (if available) was rotated throughout the intervention to ensure that all groups benefited equally from scaffolding. The degree of scaffolding was tapered off by all adults as the study progressed. During the second week of intervention, there were only isolated cases of students needing any help from an adult.

Teachers kept a very low profile throughout the intervention and did not interject into the lessons except to state a procedural fact, such as what time the class was going to an assembly or what part of homework was due the next day. Once a week, throughout the course of the intervention in the experimental classrooms, I observed how social studies was being taught in the particular control classrooms. Without exception, teaching in these rooms was teacher directed,

with no observed peer interaction. In general, students in these classrooms were to read a particular section of text and answer questions at the end of the chapter. In the fourth and fifth grades, students also needed to complete worksheets.

At the start of each day of intervention, I provided some procedural feedback to students regarding how the intervention was going. After this review, students were asked to get into their groups to begin the process. After a week of reciprocal teaching (unless there was an assembly), students in both conditions were given the second comprehension assessment.

At the midpoint of each intervention, I assigned students to completely different groups in an effort to prevent students from assuming a passive or non-helping role. I also wanted to have the students gain facility working with new people within different contexts. This reassignment was done based upon what had been observed in previous sessions. I tried to balance the make-up of these new groups and place students with higher abilities in the same groups having students with lower abilities. Generally, students looked forward to this midpoint change but, inevitably, it was difficult to break up some groups because the members had become familiar with each other or they were friends before they were placed in the group.

Data Collection

Comprehension assessments continued once a week until all four had been given. The performances of all students in the experimental and control classrooms on these measures were then scored according to a revision of Bottomley & Osborn's (1993) criteria found in Appendix D. Responses were then compared to determine effect of intervention. Scores of the students with learning disabilities in the experimental classrooms on the initial and fourth assessments were compared with the scores of the students with learning disabilities in the control classrooms on the initial and fourth assessments to determine if the experimental students experienced any increases, relative to the control students, in comprehension.

Both treatment groups were also given an external assessment existing of a standardized measure from the textbook. This assessment usually took place between the third and fourth week of intervention. At the fourth and fifth grade level, this measure was the chapter test. The external assessment was not done for the sixth graders because the classes were studying different material. Finally, 30 days after the last intervention in a class, all students were given a follow-up assessment to determine the retention of the concepts of reciprocal teaching. The format of this

assessment followed the format of the weekly comprehension assessments.

Reliability of the Measures

To determine the reliability of the scoring system, 20% of the assessments were scored independently by two different raters. A total of 882 responses were scored. Out of this number, there were 48 responses where, after discussion with a third rater, disagreements still occured. Using this item by item reliability, interrater agreement was determined to be 94.55%.

Results

There were no missing data. If, for some reason, students missed the classwide assessment, I found them (usually the next day) and administered the appropriate assessment. Only one student (a fifth grade student from the experimental classroom) did not complete the entire study because he moved out of the school district before the 30 day assessment was given.

A mixed design multivariate analysis of variance (MANOVA) with two between factors (grade and treatment group) and one within factor (time) was utilized to determine the effect of these factors on the three dependent variables (ability to answer questions, ability to generate questions, ability to compose summaries) measuring reading comprehension. According to the MANOVA, there was a significant change in reading comprehension as a function of treatment group (Wilk's lambda = 11.25, $p < .05$). There was also a significant change in comprehension performance as a function of grade (Wilk's lambda = 8.80, $p < .05$). The group by grade interaction was not significant. Additionally, there was a significant treatment group by time interaction (Wilk's lambda = 5.17, $p < .05$). The three-way interaction was not significant. MANOVA results are displayed in Table 2. Means and standard deviations for both the experimental and control groups on reading comprehension measures over all four trials are displayed in Table 3.

Univariate testing indicated a significant group by time interaction for each of the three dependent variables: answering questions, $F(3, 366) = 2.68, p < .05$; generating questions, $F(3, 366) = 6.26, p < .05$, and composing summaries, $F(3, 366) = 10.07, p < .05$. The univariate summary for answering questions, generating questions and composing summaries is found in Table 4.

Post-Hoc Testing

Tukey's post hoc analysis indicated significant changes at the .05 level in the experimental

group's ability to answer questions between the first and second trials, t (62) = 2.06 and between the second and third trials, t(62) = 2.68. Also, there were significant changes between the experimental and control group's ability to answer questions on the third, t(126) = 2.65 and fourth, t (126) = 3.09 trials. These effects are graphed in Figure 1. Post hoc testing also indicated a significant change in the experimental group's ability to generate questions over time between the first and second trials, t(62) = 3.60. Also, there were significant changes between the experimental and control groups in ability to generate questions on the second, t (126) = 4.06, third, t(126) = 4.16 and fourth, t(126) = 3.87 trials. These effects are graphed in Figure 2. Finally, the experimental group's ability to compose summaries also improved significantly between the first and second trials, t (62)= 4.72. Again, there were significant changes between the experimental and control groups in ability to compose summaries on the second, t(126) = 6.25, third, t(126) = 5.57 and fourth, t(126) = 4.89 trials. All of these effects are graphed in Figure 3.

Table 5 displays significant post-hoc statistics and effect sizes for each comprehension measure and trial. Effect sizes were determined by subtracting the mean score of the control group on the dependent variable from the experimental group mean and dividing this number by the control group's standard deviation.

Table 2. MANOVA Summary for Reading Comprehension Measures According to Treatment Group, Grade and Time

		MANOVA	
Source	df	Value	Wilks lambda
Group	1	.78	11.25*
Grade	2	.67	8.80*
Group X Time	3	.88	5.17*
Gp. X Gr. X Time	3	.95	1.06

*p < .05

Table 3. Descriptive Statistics for Comprehension Measures

	Experimental Group		Control Group	
		Answering Questions Total possible score = 10		
Trial	M	SD	M	SD
1	5.81	2.63	5.52	3.06
2	6.62	2.61	5.83	2.56
3	7.48	2.29	6.28	2.79
4	7.32	2.49	5.91	2.67
		Question Generation Total possible score = 9		
1	3.44	2.63	3.35	2.67
2	4.94	2.56	3.02	2.76
3	5.17	2.47	3.17	2.93
4	5.61	2.83	3.58	3.10
		Summary Composition Total possible score = 3		
1	1.11	.96	.82	.86
2	1.67	.90	.71	.83
3	1.59	.96	.68	.87
4	1.67	.89	.86	.98

Table 4. Univariate Summary of Group X Time Interaction for Answering Questions, Question Generation and Summary Compositon

Variable	df	MS	F
Answering Questions	3	9.14	2.68*
Error	366	3.41	
Question Generation	3	27.89	6.26*
Error	366	4.46	
Summary Composition	3	3.09	10.07*
Error	366	.31	

*p < .05.

Table 5. Significant Post-Hoc Scores and Effect Sizes

Variable/Trial	t Score	Effect Size
Answering Questions 3	2.65	.43
Answering Questions 4	3.09	.53
Question Generation 2	4.06	.69
Question Generation 3	4.16	.68
Question Generation 4	3.87	.66
Summary Composition 2	6.25	1.00
Summary Composition 3	5.57	1.00
Summary Composition 4	4.89	.83

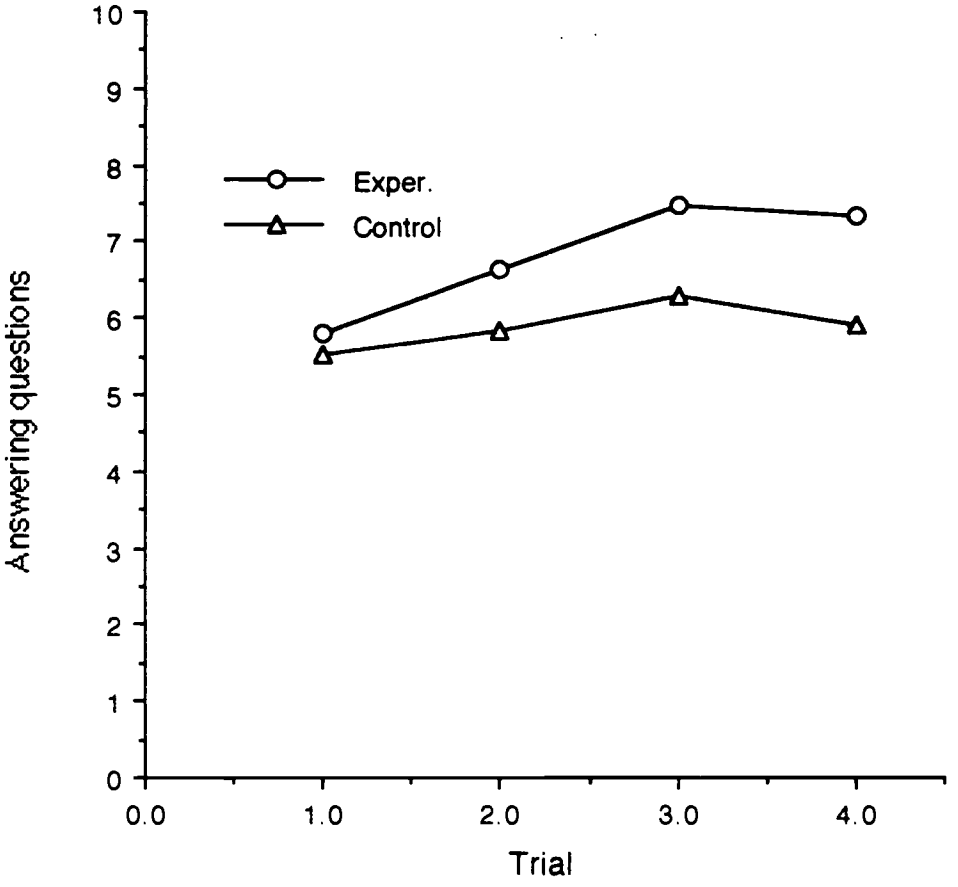

Figure 1. Group X time effect for ability to answer questions

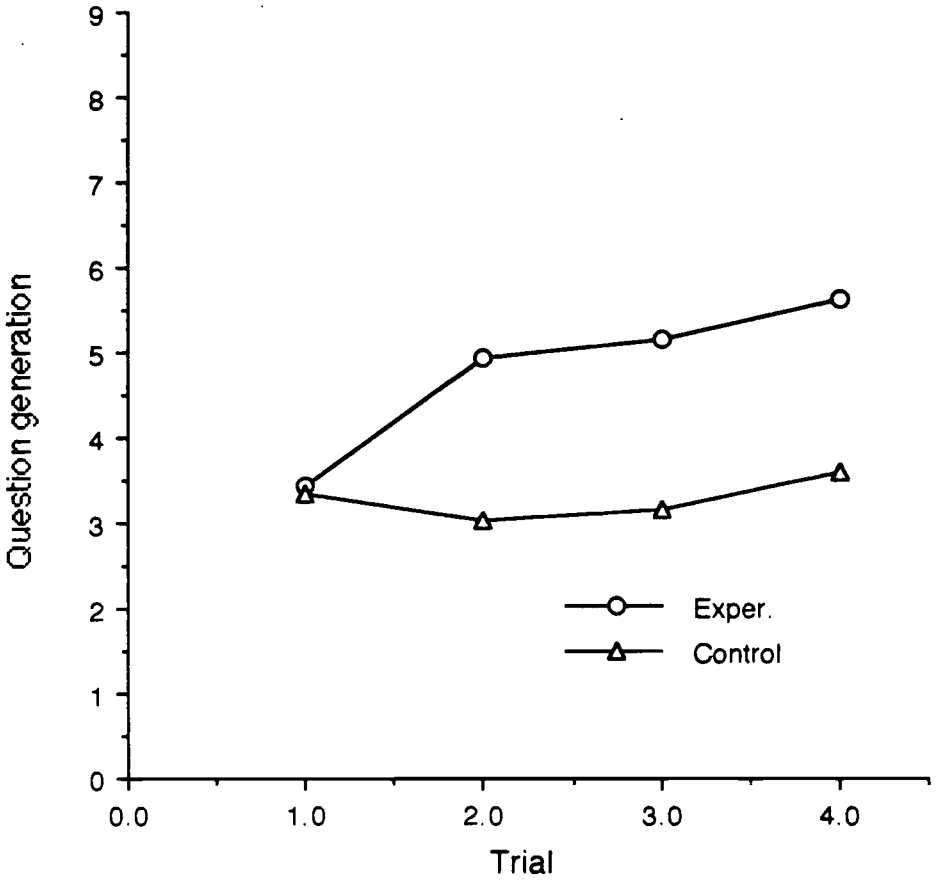

Figure 2. Group X time effect for ability to generate questions

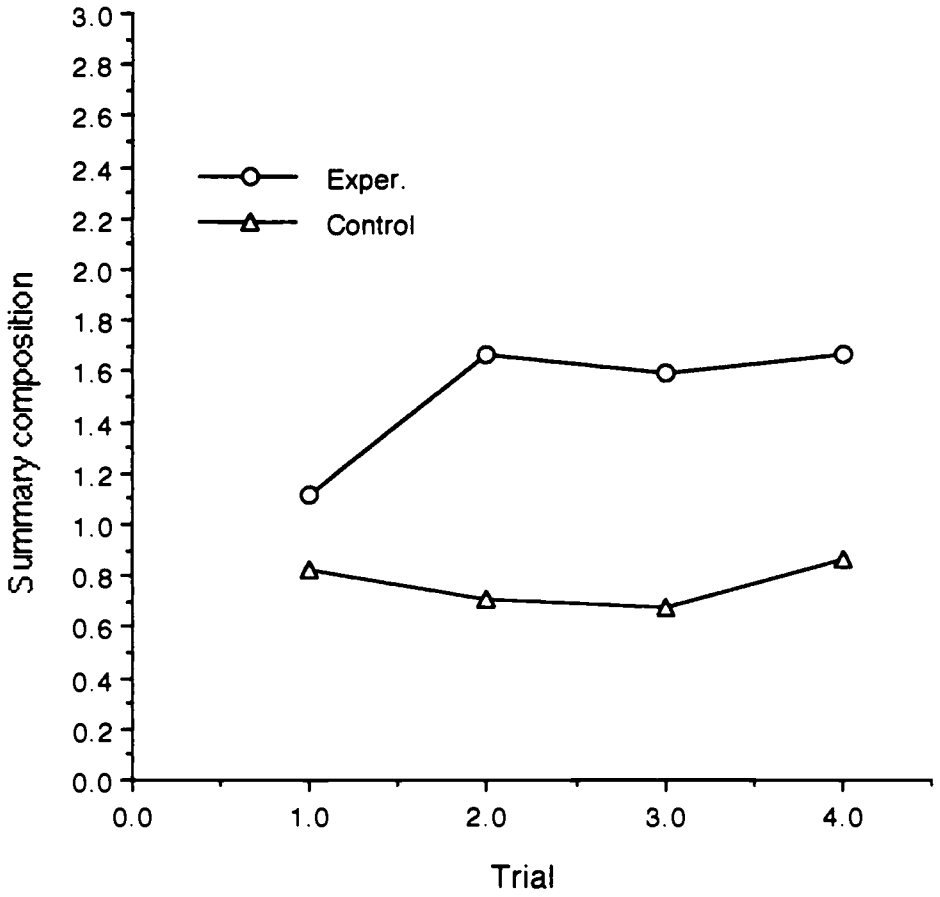

Figure 3. Group X time effect for summary composition

Students with Learning Disabilities

As an exploratory measure, three 2 X 2 repeated measures ANOVAS were performed to determine if the students with learning disabilities in the experimental classrooms (N = 15) differed significantly from the students with learning disabilities in the control classrooms (N = 10) on comprehension ability over four trials. Results indicated that there was no significant difference between the experimental and control groups on ability to answer questions. The difference approached significance ($p < .07$) between the groups on ability to generate questions. Finally, there was a significant difference between the two groups on ability to compose summaries from the first to the fourth trials ($F = 4.5$, $p < .05$).

External Assessment Results

An independent t-test was carried out to determine if the experimental classrooms at each grade level performed significantly better than the companion control classes on an external assessment. Results indicated that there were no significant differences in scores between the fifth grade experimental and control groups. As previously described, no results were obtained for sixth grade because different content was being covered in each class.

Thirty Day Assessment Results

All students were given a 30-day assessment to determine if there were any lasting effects of treatment. This assessment followed the format of the four comprehension assessments. Students read an unfamiliar passage of social studies text and had to answer five questions, generate three questions and compose a summary of the text. Statistical analysis revealed that the sixth grade experimental group performed significantly better in comprehension as compared to the control classroom, $t(39) = 5.81$, $p < .05$. The fourth grade experimental classroom also demonstrated significantly better performance than controls, $t(41) = 4.18$, $p < .05$. There was not a significant difference between the fifth grade groups.

Discussion

According to the results of this study, reciprocal teaching did result in significantly higher performance on reading comprehension measures for the experimental groups as compared with the control groups at all grade levels. These results support Palincsar & Brown's (1984) assertion that reciprocal teaching is an effective method to improve the comprehension-monitoring and comprehension-fostering skills of students. The results also suggest that it is possible to implement

reciprocal teaching on a whole-class basis. Finally, the results suggest that students with various educational attributes are capable of successfully participating in cooperative groups as well as assuming various leadership roles within these groups.

Specifically, students with learning disabilities in the experimental classrooms significantly improved their ability to compose summaries. Although this was an exploratory measure, these results suggest the notion that students with learning disabilities may benefit from reciprocal teaching as a means to improve some facets of reading comprehension.

There are several implications of this study for instruction and learning. First, discourse is crucial to the understanding of complex material such as social studies. Teachers need to give students opportunities to discuss and mull over material in all content areas, not just social studies. Moreover, students were eager for these chances to discuss and question material. Teachers could also help stress to students how the information in textbooks relates to students. In this way, teachers could help to activate background knowledge. Finally, educators need to have access to more instructional techniques to use with students who have difficulties learning material as it is traditionally presented.

Limitations of the Study

Any study that uses intact classrooms as a unit of measurement is subject to some limitations. Related to this topic is the issue of teacher familiarity with the researcher. It was beneficial to me that the teachers knew me and felt comfortable with me in their classrooms. Possibly, there might have been different results had the researcher been from outside of the school system. Also, because the sixth grade experimental classroom covered different material than the control classroom, there might have been some variability in the measures in this population.

This study examined comprehension performance on experimenter-designed assessments as opposed to standardized measures. This was because I was interested specifically in social studies texts and not the ability to comprehend unrelated text. As Rosenshine & Meister (1994) suggest, generally, there are greater effects with experimenter-designed assessments than standardized assessments. Experimenter-designed assessments are often easier for students to understand because they are more logically written. There needs to be more research examining how performance may differ on experimenter-designed versus standardized measures.

Not all students with learning disabilites are the same. Some are stronger in

comprehension, some are stronger in decoding, and some are poor in both comprehension and decoding. It should not be assumed that because there were statistical differences in this very small population of students with learning disabilities, that such differences would occur in all other populations of these students.

Finally, reciprocal teaching is but one component of good instruction. In social studies, in particular, other forms of learning such as hands-on instruction, plays and multimedia presentations can be of great value. It has become obvious to me during this study that social studies should be much more than simply reading passages from textbooks and completing worksheets. Future research should examine how reciprocal teaching can work in concert with other methods of instruction to improve the understanding of social studies for students of all learning abilities.

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Appendix A

Day 1: Overview of Reciprocal Teaching: Questions and Summaries

(Investigator): One of the most important things we learn in school is how to read. But it doesn't do us any good to be able to read the words if we don't understand what we are reading. The ability to understand what we read is called comprehension. How many of you have ever had the experience of reading something and realizing that you have not remembered a thing about what you just read? (this happens to me as well).

In social studies, for example, there are lots of areas that are difficult to understand because the book is talking about countries that we don't remember where they are. Or the book has names or places that are difficult to pronounce. Or the book refers to something that has happened that we have completely forgotten about. Or it talks about dates like 1013 which are hard for us to imagine. When these things happen, you usually have to read things over and over. Let's look at an example of something that we really need to think about to understand:

> Sumatra is the westernmost island of Indonesia. It is a tropical land of rain forests, mountains and swamps. Many different groups live on Sumatra. The **Minangkabaus** are the largest group. They live in villages in western Sumatra near the cities of Bukittinggi and Padang. The name Minangkabau has an important part in the people's history. It means "triumphant water buffalo" and refers to an ancient legend. To save their land from an invading prince, the Minangkabaus proposed a fight to the death between their baby buffalo and the prince's giant champion buffalo.

Now, what sorts of questions do people have over this passage? (Where is Sumatra?; How do you say Minangkabaus?; Where are Bukittinggi and Padang?). What are some important points of this passage? What do you understand? What don't you understand?

For the next three weeks or so, we will be doing social studies in a different way. We will be working in groups of about four learning about how to ask good questions about what we're reading; how to pick out the main ideas of what we're reading and how to use them to write summaries or what we've read; how to clarify things which means how to ask questions about things we don't understand. Finally, we will talk about how to predict what might happen next. This might be a little harder because it's hard to predict what's happening sometimes in social studies. So, it will be different but it will be fun.

Appendix A (cont)

Questions

(Investigator): Questions play an important part of our lives. Much of school is based on answering questions. What are some other occasions or situations when questions are important? (Reading assignments, tests, when we need more information about how to do something).

Let's practice asking some questions for situations when we might need more information. For example, suppose you want to see the movie, "Toy Story", but you don't know when the movie begins. You might call the theater and ask, "What time does Toy Story begin?"

One of the activities we will be doing for the next couple of weeks is learning to ask good questions about material we have read. We will focus on asking questions about important information rather than about unimportant, trivial or detailed information.There are several reasons why we need too learn to ask questions while reading:

(a) Questions are ways in which we can **test ourselves** to make sure we understand what we have read.

(b) Questions are a good way to **focus on important information** in a passage

(c) With a little practice, it is possible that we can become skilled enough at questioning that we can **predict the kinds of questions we might be asked on a test**. This would be very useful while studying.

(I) Let's begin by talking about the words that are used to ask questions. What are some of the words that we can use to begin sentences that ask questions? (On board): Who, What, When, Where, Why, How.

(I)Let's ask some questions about the following sentences. At first, you will be given the question word; however, later you will be asked to think of your question words. Look at the first sentence on the overhead. The falcon is a female hunting bird. Ask a question about this statement using the word **"what".**

1. What is a falcon?; What is the name of a female hunting bird?

(I) Ask a question about the information in sentence 2. Begin your question with the work **"who".**

2. In medieval times, in Europe, only members of a royal family could own falcons.

(I) Ask a question about the information in sentence 3. Begin your question with the word

Appendix A (cont)

"why".

3. The falcon bathes in shallow streams to control bird lice that live in her feathers.

(I) Ask a question about the following information using the word **"where".**

4. A falcon prefers to hunt in open areas.

(I) Ask a question about the following information using the word **"how"**

(I) Now that you've had some practice, read the paragraph on the overhead and put a check mark next to the best question. Remember that the best question should be about the most important information in the paragraph. Be ready to discuss your choice.

> Contrary to what some people believe, snakes do not sting with their tongues. Their tongues are used to sharpen their sense of smell. The snake picks up tiny particles of matter in the air with his tongue and puts them in two tiny holes at the bottom of his nostrils so that he can smell better.
>
> (On overhead)

____a. How many holes does a snake have at the bottom of his nostrils?

____b. What does a snake use his tongue for? (a main idea question)

____c. Why do some people use the expression, "He speaks with a forked tongue?" (this question is not answered in the text)

(I) Let's try another one.

> While very small snakes eat very small insects or worms, large snakes can eat small deer, leopards and goats. All snakes, regardless of size, eat living animals or animal eggs. In fact, some snakes swallow each other.

____a. What snake eats its neighbor snake?

____b. What do snakes eat? (a good main idea question since the paragraph describes what snakes eat)

____c. How is the diet of the small snake different from the diet of the large snake? (also a good question but not as general as the previous one)

Appendix A (cont)

(I) Write some main idea questions for the following two paragraphs.

(On overhead)

> Camels have been helpful to people who live in deserts for thousands of years. They have carried people as well as their goods on their strangely shaped backs. They are able to cross deserts and mountains on trips that may take two months.

(On overhead)

Scientists have studied the camel carefully to determine how it can live where other animals would die. They have found that the camel's body is especially well-designed for its life in the hot, dry, sandy parts of the world.

Summaries

(I) The ability to summarize what we have read is a very important skill, otherwise we are caught up in all sorts of trivial things that don't have much importance. If we can't pick out what is important in what we're reading, then we are not understanding what we are reading. What is a summary? A summary is one or two sentences that tells the most important ideas of a section. So, in order to summarize things, we need to be able to pick out the main points of what we're reading. If we're able to pick out these points, then we can combine them into a summary. Remember, good summaries don't include details or information that is not important. Let's take a look at this section:

(On overhead)

> As the Roman Empire grew larger, it became harder to control. Many of the empire's citizens had never seen Rome. They felt little loyalty to it. Interest in holding the empire together declined even in the city of Rome itself. Because so many emperors governed badly, the Romans lost their respect for the emperors and for the Roman Empire.

(I)What are the main ideas of this paragraph?

Discussion

(I) Let's do another one

> Much of Africa lies in the tropics on both sides of the equator. Some of the wettest places in the world cover West Africa's southern coast and most of Central Africa. This steamy land, with its tall trees that block the sunlight, is called a rain forest. Rain falls there almost year-round, often averaging more than 100 inches.

(I) What are the main ideas of this section?

Appendix A (cont)

(I) Now that you all are getting pretty good at picking out the main points of sections, let's talk about a technique to use to write a short summary of what we have read. Remember that summaries tell us what the important points were of the sections we read. Everyone take out a sheet of paper and open your books to page 287 and write the main heading at the top of the page. It's the one outlined in blue (West African Beginnings). Next write the letter "A", skip some lines and write the letter "B" down the side of your page and find the subheadings. These are the ones in bold print. In this case they are "The Nok Culture" and "The Soninkes". Write "The Nok Culture" next to letter A and "The Soninkes" next to letter B. Now, under letter A, write the numbers 1, 2 and 3. Next to each of these numbers we are going to write a main point of this passage. Most of the time, each section has about 3 main points unless it's very long. So let's look at what might be some of the main points of this section; (students look and discuss with investigator what are some main points). The same procedure is followed for "The Soninkes". We should now have a pretty good idea of what was important in these sections. If we combine all of these ideas together by going down the list, we
compose a summary of what we have just read (investigator demonstrates).
(Investigator): Questions?

Day 2: Clarifications and Predictions

Clarifications

(I) Remember when we were talking about reading things and not understanding what they're about? When we don't understand something, what do we do? (Ask questions). Clarifying means knowing when we don't understand something and asking questions to find out about it. We do this so we will understand what we're reading.

(I) Let's take an example (text from Minangkabaus)

(I) What didn't we understand about this passage? What did we do about it? (asked questions or tried to find out where the information was).

(I) It's very important to try to understand what we're reading. When we're doing social studies, it's important to ask about what you aren't understanding because it helps you to know where trouble spots are. Also, someone in your group may know the answer to your question or you

Appendix A (cont)

might know the answer to someone else's question. Let's look at another example.

> West Africa had rich resources that drew outsiders to it. Elephants with tusks of valuable ivory roamed its forest lands. Gold glittered in its riverbeds and could be mined in great quantity. From earliest times, traders came to West Africa in search of these valuable resources. Most came from North Africa or the Middle East. They crossed the Sahara on the backs of camels--the "ships of the desert.

(I) What is unclear about this passage? What don't people understand?

How could things be clarified?

Predictions

(I) Predicting something means using clues about something to suggest what might happen in the future. When we predict the weather, we use clues like wind, air pressure, temperature, etc. to suggest what might happen tomorrow or next week. When we predict something that might happen next in what we're reading, we use clues in the passage to suggest what could happen next. When we see a title of a story or a paragraph, we use those words to form a picture of what is in store for us or what might happen next. When something is centered or is in capital or bold letters, we know that this is one clue about what we are going to read. For example, we know that the heading "Regions of Asia" will tell us something about certain regions of Asia. Predicting what might come next also helps to keep us interested in what we're reading. How many of you have ever read a mystery or a short story? You know that you want to keep reading to see if what you're thinking really happens or not. Let's look at this example:

Here is the heading "The Soviet Union." What do you think will be described in this section? Here are some other subheadings under "The Soviet Union."

"Early History", "The Romanovs", "Revolution and Communism" and "Stalin".

(I) What do you think the passage of text that comes after "Early History" will tell us? Are there clues in the passage that will tell us what may come next? The first sentence of a paragraph is the topic sentence. It almost always tells us what the paragraph is going to be about. For example, here is a sentence: "Marx thought that socialism would one day give rise to communism." Now, what do people think will come next?

Appendix B

Comprehension Passage from Fourth Grade Text

California

California is the third-largest state in size, with more people than any other state. It has a treasure chest of natural resources on the land, under the ground, and in the nearby sea. Its mountains, ocean beaches, rich farmland, and large cities make it a land of variety and contrast.

The Land and the Climate

From Washington and Oregon the Coast Ranges stretch all along the coast of California. Higher mountains lie east of the Coast Ranges in California. They are the **Sierra Nevada**. Between the coast Ranges and the Sierra Nevada is the huge **Central Valley**.

The Central Valley gets very little rain. Nevertheless, it is one of the best farmlands in the world. Hundreds of crops grow in the Central Valley. Among the main ones are lettuce, tomatoes, grapes, sugar beets, rice, and cotton.

Miles of irrigation canals provide water for this rich farmland. These canals connect the Central Valley to California's largest rivers, the **Sacramento** and the **San Joaquin** (SAN wah-KEEN). Snow in northern California's mountains melts to feed these rivers.

Another important farming area, the Imperial Valley, is in southeast California in the Sonoran Desert. The Colorado River supplies water to this fertile but dry farming valley.

Different parts of California have different climates. The deserts in southeast California get fewer than 10 inches (about 25 cm) of rain a year. As many as 80 inches (about 200 cm) fall along the northern coast. In the damp, foggy northern region grow the **redwoods**, some of the world's tallest trees. Redwoods may grow to a height of 300 feet (about 91 m) or more.

Along the coast and in the valleys of California, the climate is usually mild all year. Since the temperature rarely drops below freezing, farmers there plant year round.

Although some parts are wetter than others, most of California has two seasons. The wet season comes in the winter. The dry season runs from about April to November.

California has many beautiful places. High cliffs and rocks line much of its northern coast. In the north, the mountains are covered with forests. During the winter, much snow falls in the mountains.

At King's Canyon, in the southern Sierra Nevada, are the giant **sequoias** (si-KWOY-

Appendix B (cont)

uhz). These huge trees are among the oldest living things in the world. Nearby is Mount Whitney, the second-highest peak in the United States. Farther south and east, in the Mojave Desert, is Death Valley. Death Valley is one of the hottest and driest places in the United States. At 282 feet (86 m) below sea level, this valley is the lowest point in the Western Hemisphere.

California Long Ago

Junipero Serra (hoo-NEE-puh-roh SER-uh), a Spanish priest, led the first settlers to California from Mexico. Father Serra built a chain of missions in California in order to teach the Indians here. Over the years large cities grew up around some of the missions. These cities include **San Diego** (SAN dee-YAY-goh), **San Jose** (hoh-ZAY), and **San Francisco**.

California became part of the United States after a war with Mexico in 1848. By that time, wagon trains of pioneers were pushing west. Then a discovery suddenly brought many more people west. The discovery was gold.

Appendix B (cont)

Comprehension Assessment

Name: _____ Date: _____ p. 303-06

1. What are 3 good questions to ask over this passage?

a._____

_____

b._____

_____

c._____

_____

2. Answer the following questions:

a. What lies between the Coast Ranges and the Sierra Nevada? _____

_____

b. What river supplies water to the Imperial Valley? _____

_____

c. During what months does the dry season in California run? _____

_____

d. What is the lowest point in the Western Hemisphere? _____

_____

e. In what year did California become a state? _____

_____

3. Write a brief summary of the section you read today

_____

_____

_____

_____

Appendix C

Daily Worksheet

Name: _____ Date_____

1. What do you think are 3 good questions to ask about the material you have read today?

a._____

_____

b._____

_____

c._____

_____

_____
Main Heading of Section

Introduction:

1._____

_____

2._____

_____

A. (subheading) _____

1._____

_____

2._____

_____

3. _____

_____

Appendix C (cont)

B. (subheading) _____

1. _____

_____

2. _____

_____

3. _____

_____

C. (subheading) _____

_____

1. _____

_____

2. _____

_____

3. _____

_____

D. (subheading) _____

_____

1. _____

_____

2. _____

_____

3. _____

_____

Appendix D

Revised Scoring Key for Comprehension Measures (from Bottomley & Osborn, 1993)

QUESTIONS

0 = Nonsense, irrelevant or not text-based; incorrect or inaccurate; formulated in statement form; topic of question not clear or obvious; question does not make sense. Score 0 for Reading Check questions

1 = a vague question about the general topic

2 = a specific (e.g. number or location) detail question based on text information; a question about something that is not a main idea

3 = a question about a main idea in the passage or a bolded concept

.5 = Deduct for lack of clarity, obvious misunderstanding or a question that is badly formed

ANSWERING QUESTIONS

0 = a clearly incorrect answer

1 = a partially correct answer

2 = a clearly correct answer; generally is the exact wording from the book

SUMMARIES

0 = No response, incorrect or simple restatement of title; undecipherable

1 = contains one of the main or bolded points; the general topic alone should not be counted as an idea

2 = contains 2 or 3 main or bolded points; if the questions that were answered are strung together in a summary, score 2 points

3 = contains more than 3 main or bolded points

.5 = Deduct for marked lack of clarity, a summary difficult to interpret, yet still interpretable, or simply very badly formed (if a student just lists topics-- give it a 1 and deduct .5)

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