DOCUMENT RESUME

ED 420 842 CS 013 231

AUTHOR Bowman, Leigh A.; Carpenter, Jan; Paone, Rose Ann
TITLE Using Graphic Organizers, Cooperative Learning Groups, and Higher Order Thinking Skills to Improve Reading Comprehension.
PUB DATE 1998-05-05
NOTE 57p.; M.A. Action Research Project, Saint Xavier University.
PUB TYPE Dissertations/Theses (040) -- Reports - Research (143)
EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Action Research; Cooperative Learning; Grade 6; *Instructional Effectiveness; Intermediate Grades; Reading Achievement; *Reading Comprehension; *Reading Improvement; *Thinking Skills
IDENTIFIERS *Graphic Organizers; Illinois (West)

ABSTRACT

This project paper described a program for increasing reading comprehension. The targeted population consisted of sixth grade students at River Bend Elementary School in a middle class community located in western Illinois. The problem of a steady decline in reading comprehension was documented by the Illinois Goals Assessment Program, Iowa Tests of Basic Skills, curriculum reading tests, and teacher's observation. Analysis of probable cause data revealed that students lacked self esteem, chose to watch television instead of read, and did not value education; curriculum content is new and untested; teaching styles have not met learning styles; at-risk students have been transferring to the school from within the district; grade level expectations have been lowered; parents lack interest in their child's education; and teachers reported that students do not apply reading strategies independently and read less frequently in their spare time. Professional consensus revealed that students do not implement comprehension strategies on their own. A review of solution strategies suggested by cited authors, combined with an analysis of the problem setting, resulted in the selection of three major categories of intervention: the implementation of cooperative learning groups, higher order thinking skills, and graphic organizers. Results indicated a substantial increase in reading comprehension. (Contains 40 references, and three tables and five figures of data. Appendixes contain samples of surveys, reading inventories, cooperative lesson plans, higher order thinking skills lessons, and graphic organizers.) (RS)

USING GRAPHIC ORGANIZERS, COOPERATIVE LEARNING GROUPS, AND HIGHER ORDER THINKING SKILLS TO IMPROVE READING COMPREHENSION

Leigh A. Bowman
Jan Carpenter
Rose Ann Paone

Saint Xavier University

Field-Based Masters Program

Chicago, Illinois

May 5, 1998

SIGNATURE PAGE

This project was approved by

John B. Nuhn Ed.D
Advisor

H. Nancy Trakes, Ph.D.
Advisor

Beverly Gulley, Ph.D.
Dean, School of Education

Abstract

This report describes a program that will increase reading comprehension. The targeted population consists of sixth grade students at River Bend Elementary School in a middle class community located in western Illinois. The problem of a steady decline in reading comprehension was documented be the Illinois Goal Assessment Program, Iowa Test of Basic Skills, curriculum reading tests and teacher's observation.

Analysis of probable cause data reveal that students lack self-esteem, chose to watch television instead of read and do not value education. The current curriculum is new and untested with this targeted population. It appears that teaching styles have not met learning styles, There is a recent increase of at-risk students transferring to River Bend Elementary from within the school district. Grade level expectations have been lowered over recent years. There is a general lack of parental interest in their child's education. Teachers reported that students do not apply reading strategies independently and read less frequently in their spare time. Professional consensus reveal that students do not implement comprehension strategies on their own.

A review of solution strategies suggested by cited authors, combined with an analysis of the problem setting, resulted in the selection of three major categories of intervention: the implementation of cooperative learning groups, higher order thinking skills, and graphic organizers. To increase the amount and quality of instructional strategies which will result in increase reading comprehension

The results from the project which implemented cooperative learning groups, graphic organizers, and higher order thinking skills showed a substantial increase in reading comprehension of the targeted sixth grade class.

TABLE OF CONTENTS

CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

Reading achievement was declining at River Bend Elementary School according to the River Bend School District's annual Report Card. The Report of Building Averages which was generated and distributed by the Iowa Test of Basic Skills (I.T.B.S.) showed that reading achievement had declined even though the students' cognitive ability scores had remained consistent. The results from the 1992-1993 Illinois Goal Assessment Program (I.G.A.P.) indicated in the 1992-1993 school year that the third grade class had 9% of the students exceeding goals in reading, 58% of the students meeting goals in reading, and 33% of the students not meeting goals in reading. Three years later the I.G.A.P. reading test results of that third grade class, who were then sixth graders, showed that 12% of the students had exceeded goals in reading, 53% of the students had met goals in reading, and 35% of the students had not met goals in reading. Even now the staff and the amount of time devoted to reading instruction continued to remain constant. The whole language reading curriculum, adopted in the 1992-1993 school year, was expected to influence student comprehension abilities in a positive way. Classroom test results and teacher observations had not supported this premise. Reading achievement was declining as was indicted by student performance on classroom tests, I.G.A.P., I.T.B.S., and by teacher observations.

Local Setting

The targeted elementary school was one of twelve elementary schools in the River Bend School District located in a western Illinois metropolitan community and served as the only school in the village of River Bend. There were 6,931 students in the River Bend School District and

three hundred and seven of those students attended school at the targeted elementary school. The five major ethnic groups in the River Bend District, according to the Bi-State Regional Commission, were Caucasian, African American, Hispanic, Asian, and Native American. The percentage of students at the targeted elementary school in each of the five ethnic groups were as follows: 82.7% Caucasian compared to 62.7% in the district, 12.4% African American compared to 30.8% in the district, 3.3% Hispanic compared to 5.6% in the district, 1.6% Asian compared to 0.7% in the district, and 0% Native American compared to 0.3% in the district.

The targeted elementary school had a 95.6% attendance rate. The number of students who enrolled in or left the school during the school year was the students' mobility rate. The students' mobility rate at the targeted elementary school was 14.5%. There were no chronic truancy cases within this school's population. However, 134 chronic truancy cases had been identified throughout the district.

At the targeted elementary school the average class size was 22 students in kindergarten through sixth grade which was consistent with the average class size throughout the district. The enrollment at the targeted elementary school was made up of 42.2% females and 57.8% males. The parents or guardians of all of the students at the targeted elementary school made at least one contact with school personnel during the 1995-1996 school year, while within the district only 96.9% of the students had parents or guardians with at least one contact with school personnel.

Students from families who received public aid were identified as low-income students. Low income students made up 37.0% of the student population at the targeted elementary school compared to 46.1% of the student population within the district. River Bend School District offered free or reduced-price lunch programs to those students who qualified. There were 24.6% of the students at the targeted elementary school who took advantage of the free or reduced-price lunch which could be compared to 44.99% of the students that used the free and reduced-price lunch program within the district.

The faculty at the targeted elementary school consisted of 19 certified staff members and one administrator. There were 13 classroom teachers, a resource teacher, a Chapter One reading

teacher, a speech pathologist, a counselor, a physical education teacher, and a music teacher. Fifteen of these professional staff members had advanced degrees. The teaching experience among the professional staff ranged from 3 years of service to 32 years of service. The school had an ancillary staff of 16 employees.

The targeted elementary school was a multi-level modern brick facility. It had 16 classrooms with a gym/cafeteria combination, a teachers' lounge, a teachers' workroom, a nurse's office, a computer lab, and a large office. The building was thirty-six years old and sat on a lot with a perimeter that equaled 1,704 feet. The school was located in a middle-class residential neighborhood. Thirty-two students were bused to the targeted elementary school from other parts of the district; the remainder of the students lived within walking distance of the school.

The targeted elementary school implemented the Science Research Associates, Inc. (S.R.A.) Direct Instruction to remediate the primary at-risk students. Chapter One was utilized as a remedial program for the intermediate grade students, and the Teachers' Assistance Team (T.A.T.) was designed to assist teachers with classroom problems. T..A.T. was composed of three teachers from within the building. The Parents Advocate Licenses Service (P.A.L.S.) offered before and after school child care for kindergarten through sixth grade students in order to meet the needs of the community. The Booster Club at the targeted elementary school was composed of volunteer parents that supported the school and its staff in a variety of ways from fundraising to classroom assistance.

Community Setting

The population of this western Illinois metropolitan community was 5,831 people according to the 1990 census. The population in the targeted community is made up of 48.9% males and 51.1% females. There were 424 children under the age of five years old and 1,271 school-age children. Eighty two children were enrolled in pre-elementary school facilities. There were 1,133 students in elementary or high school. A small percentage, 11%, of the school-aged students attended private schools. The ethnic make-up of the targeted community was as follows: 5,623 Caucasians, 124 African Americans, 124 Hispanics, 26 Asians, and 21 Native Americans.

The median income for families who lived in the targeted community was $25,034. The median price for a house in the targeted community was $42,600, and 69% of the homeowners occupied their own homes. The employment statistics for the targeted community indicated that at any given time, there were 1,659 males and 1,320 females in the labor force and 540 unemployed males and 987 unemployed females. The educational level of adults in the targeted community was as follows: 277 people had no education past ninth grade, 1,523 people had a high school diploma, and 254 people had a college undergraduate degree or higher.

Besides the twelve elementary schools in River Bend District, there were two junior high schools and one high school. The school district's personnel budget exceeded $24 million. The district employed 427 teachers with a 19:1 pupil-to-teacher ratio. The pupil-to-administrator ratio was 212:1. Teachers in the district had an average of 15 years teaching experience.

One issue of concern in the River Bend School District was the inability to track students from kindergarten through twelfth grade. Because many students moved from school to school within the district, it was difficult to analyze student trends as well as to gather individual data. Another problem that affected the targeted elementary school was the lack of a curriculum link between the grade schools and the junior high schools. Even though the River Bend School District had one of the lowest student/teacher ratios in the state, students continued to score below state averages on the I.G.A.P. There was great community concern over the proposed low-income multi-family housing project scheduled to be built in the targeted community in the upcoming year. This housing project had the potential to dramatically change the demographics of the school's population. The district trend of busing students in from other schools also had the potential to change the demographics of the school's population.

I.T.B.S. assessment was reviewed in the fall of 1994 and showed that the sixth grade students had lower scores on their reading test than the sixth grade students tested in 1993. There had been a steady decline in reading achievement in the last eight years according to the I.T.B.S. records.

National Context of the Problem

> American public schools were once ranked with the world's best. No longer. We have lost our edge, and that poses dire consequences for our country's future. Evidence from international comparisons is consistent and alarming. Data show that American schools do not begin to approach the standards of the rest of the developed world (Elam, 1993, p. 55).

Teachers and parents alike were concerned about the decline in reading comprehension in our public schools. Many of American high school students did not possess the higher order thinking skills that were expected of them. Nearly 40% of high school students could not draw inferences from printed material. Business and military leaders complained that they must incorporate costly remedial education and training programs for their employees. The Department of the Navy, for example, reported that "one-quarter of its recent recruits cannot read at the ninth grade level, the minimum needed simply to understand written safety instructions" (Gardner, David, Larsen, Yvonne, Baker, William, Campbell, Anne, Crosby, Emeral, Foster, Charles Jr., Francis, Norman, Giamatti, A., Gordon, Shirley, Harderlein, Robert, Holton, Gerald, Kirk, Annette, Marston, Margaret, Quie, Albert, Sanchez, Francisco, Jr., Seaborg, Glenn, Sommer, Jay & Wallace, Richard, 1983 p. 9). More and more young people had come from high school neither ready for college nor for work (Gardner et al, 1983). As Martha Maxwell had remarked, "It seems that every generation, at some point, discovers that students cannot read as well as they would like, or as well as professors expect" (as cited in Wyatt, 1992 p. 10). College students' inadequate reading and study skills had been a concern since the early nineteenth century. The National Center for Education Statistics found that 82% of all public and private institutions and 94% of public institutions offered at least one developmental course (as cited in Wyatt, 1992 p. 16).

Platt, 1986, cited statistics that indicated about 28% of all college freshmen needed help in reading. In four year colleges with entrance requirements, 21% of the freshman class needed remedial reading. By the time students entered college, most students had not acquired higher

order thinking skills. Content area curricula were especially challenging; most science texts used by non-science majors were written at a reading level above the reading ability of average college students (as cited by Wyatt, 1992). Because of the inequities that exist in the United States' educational systems, many minority and nontraditional students will need additional reading support at the college level. By the year 2020, minorities will make up 40% of all 18-24 year olds. Within the next decade 42% of all public school students will be from minority families. Due to these demographic changes in the United States, the need for colleges to incorporate reading courses will be critical in the twenty-first century (Wyatt, 1992). Our nation realizes that the average citizen today is better educated and more literate than the average citizen of a generation ago. owever, the average graduate of our schools and colleges today is not as well educated as the average graduate of 25 to 35 years ago (Elam, 1993). "If our schools are to provide us with a modern work force prepared to excel in a post-industrial, knowledge-based society, we must transform the design and structure of education" (Elam, 1993, p.56).

"Reading is a basic life skill. It is a cornerstone for a child's success in school and, indeed, throughout life. Without the ability to read well, opportunities for personal fulfillment and job success inevitably will be lost" (Anderson, Hiebert, Scott, & Wilkinson, 1985, p.1). This basic life skill for American children appears to be in jeopardy. From the early 1960's to the late 1970's declines were sharpest on the SAT and ACT, but there were also declines on the advanced tests which were given to heterogeneous groups of junior high and high school students (Anderson, Hiebert, Scott, & Wilkinson, 1985). In the 1960's and 1970's the scores for SAT and ACT were inconsistent. The national test scores fluctuated from year to year. In the last decade these scores have remained constant indicating better preparation in core subjects (Hayden, 1997). However, according to Richard L. Ferguson, ACT President,

> As a nation we continue to send too many students off to college with inadequate preparation, one of the leading causes of their dropping out. The percentage of freshman who fail to return for their sophomore year continues to grow, and the percentage of students who graduate within five years continues to shrink (as cited in Hayden, 1997,

p.7).

In order to evaluate the level of reading proficiency in the United States Anderson et al. compared our achievement to that of other nations. A survey of reading performance which compared the United States to 15 other countries showed American students never ranked first or second, and on most tests they ranked at or below the international average (Anderson et al., 1985).

Anderson et al., (1985) suggested that the amount of independent, silent reading a child did both in and out of school was directly related to gains in reading achievement. An estimated silent reading time in an average primary classroom was seven to eight minutes per day. In the middle grades, silent reading time increased to only 15 minutes per school day. Most children did not read much during their out-of-school free time. A study examining the free time of fifth graders found that 50% read books for an average of four minutes or less per day, 30% read two minutes or less per day, and 10% did not read at all. Thus for the majority of children, reading occupied less than one percent of their free time (Anderson et al., 1985).

Even today American educators realize that becoming a skilled reader is a journey that involves many steps. For our nation to make large gains in reading, the American educational system must have many elements in place such as higher order thinking skills, cooperative learning, and graphic organizers. Because the National Assessment of Educational Progress has warned that American students scored poorly on items that required higher order thinking, these skills need to be taught in American schools. Current researchers in learning and cognition have recognized two underlying principles: (1) higher order thinking involves the restructuring of existing knowledge, and (2) knowledge restructuring is facilitated by tasks that are meaningful, complex, and long term (Marzano, 1991).

In order to increase reading achievement, Wood and Muth (1991) stated that students need to be involved in cooperative learning experiences with other students. Cooperative groups allow students to participate in peer learning, helping, and seeking information (Wood & Muth,

1991). With these cooperative groups children can be taught to be strategic readers by modeling the mental processes which were necessary for comprehension.

Stetson and Williams (1992) believed that in order for a student to be successful at comprehending expository texts, it is necessary to strengthen their schema system. Strengthening their schema system is best accomplished through the use of graphic organizers. Cassidy and Hossler (1992) stated that a visual representation of concepts help students organize and remember information they have read. Cassidy and Hossler further suggested that the use of graphic organizers helps students understand the concept of main idea which leads to improved comprehension (1992). The use of higher order thinking skills, cooperative learning and graphic organizers are three of the elements necessary for reading improvement.

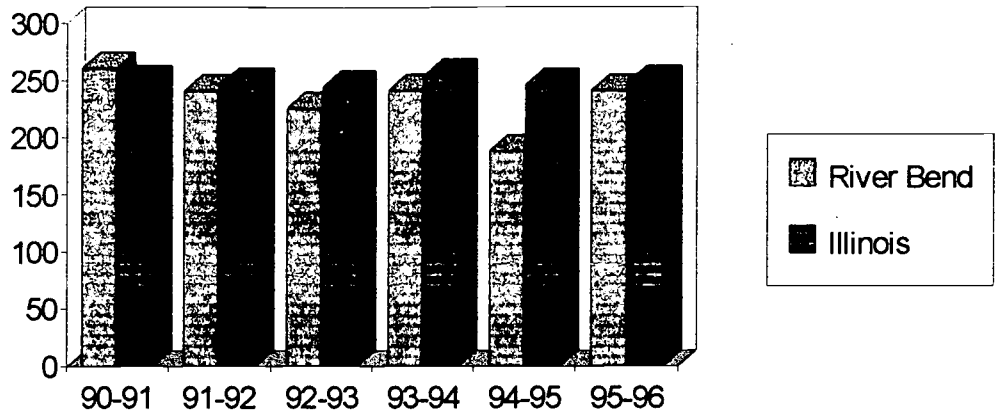
CHAPTER TWO

PROBLEM DOCUMENTATION

Problem Evidence

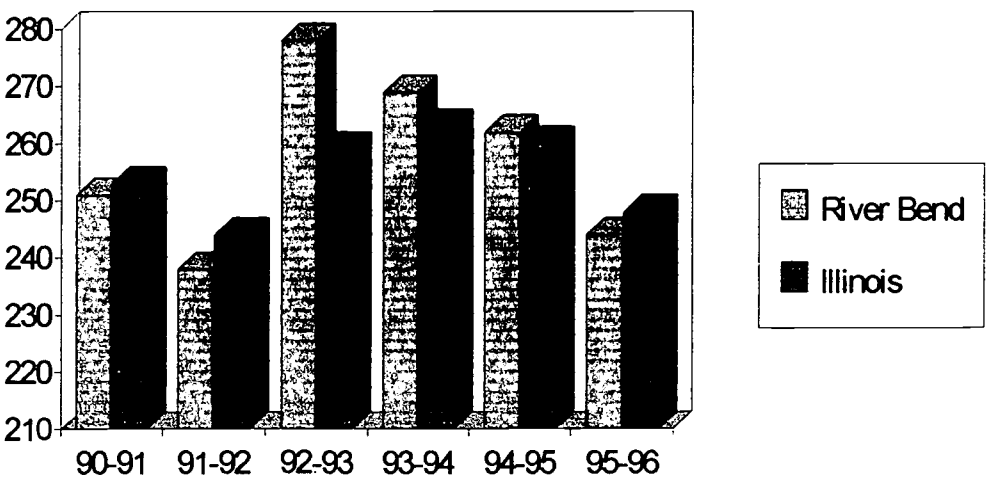
The Better Schools Accountability Law (Section 10-17a of the School Code) requires all public school districts in Illinois to report on the performance of their schools and the performance of their students through the Illinois Goal Assessment Program (I.G.A.P.). The decline in reading comprehension at the targeted elementary school was evident in the School Report Card. This School Report Card, which was generated and distributed annually by the state of Illinois, included information about the students, instructional setting, finances, and student performance in each school. There had been a steady decline in the average I.G.A.P. reading scores for the third grade classes since the 1990-1991 school year.

In 1990-1991 the third graders at the targeted elementary school scored 261 which was above the state average of 249. In 1991-1992 the third grade score declined to 241 when the state average was 247. In 1992-1993 the third grade score dropped to 226 while the state average was 245. In 1993-1994 the score increased slightly to 242 but was still significantly lower than the state average of 255. The score took a major decline in 1994-1995 when the third graders scored 189 and the state average was 247. In 1995-1996 the score increased to 242 but never reached the state average of 249.



Figure, 1. I.G.A.P. Reading Scores of Third Grade

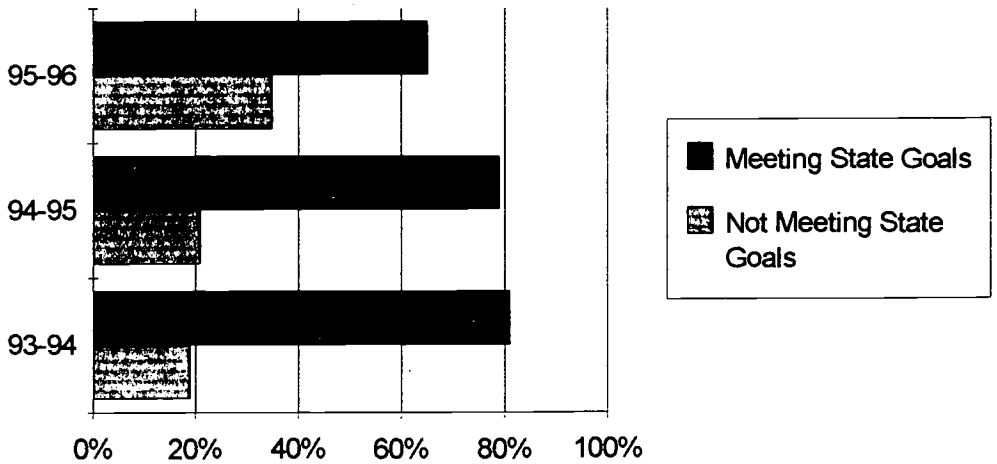
The sixth grade I.G.A.P. scores also showed a decline when compared to the state. In 1990-1991 the sixth graders scored 251 which was slightly below the state average of 253 as reported by the School Report Cards. In 1991-1992 the sixth grade score was down to 238 when the state average was 244.



Figure, 2. I.G.A.P. Reading Scores for Sixth Grade

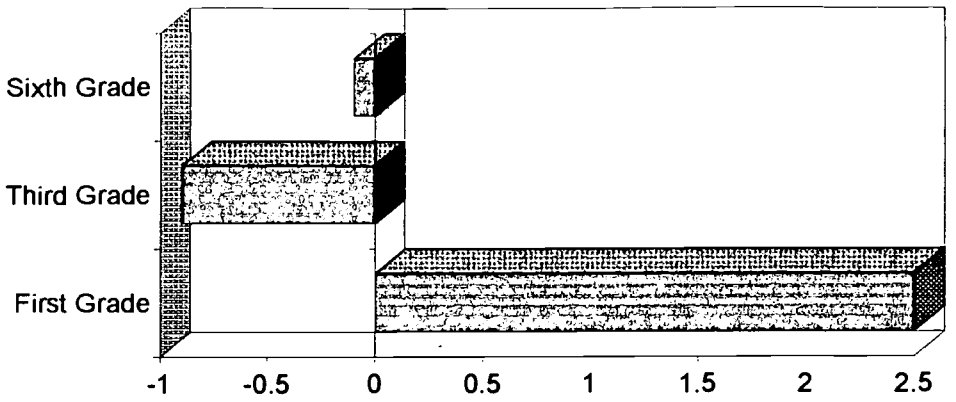
A significant increase in the test score resulted in a score of 278 in 1992-1993 which was above the state average of 259. In 1993-1994 the sixth graders scored 269 compared to the state average of 263 with 81% meeting state reading goals. In 1994-1995 the sixth grade score was

262 which was a slight increase over the state average of 260, however, there were only 79% of the sixth graders who met these goals. In 1995-1996 there once again was a decrease in the sixth grade score to 244 while the state average was 248 with 65% of the sixth graders meeting state goals. The steady decrease in the percentage of students meeting goals indicated that reading comprehension at the sixth grade level was declining.



Figure, 3. Sixth Grade Students Meeting and Not Meeting State Goals in Reading

During the 1993-1994 school year at the targeted school, the scores on the Iowa Test of Basic Skills (I.T.B.S.) were used to compare the progress of the same group of students at first, third, and sixth grade levels. That data combined the I.T.B.S. and the Cognitive Abilities Test (COGAT). This analysis showed the difference between the predicted grade equivalent and the actual grade equivalent based on the COGAT. The reading performance had decreased according to this comparison. In first grade the difference was +2.5. By third grade the class's performance had decreased to a difference of -0.9. By sixth grade reading achievement had increased slightly showing a difference of –0.1. Overall, however, these students' reading performance was below their predicted grade equivalent.



Figure, 4. Comparison Between Predicted and Actual Grade Equivalent

A survey was distributed to the intermediate teaching staff at the targeted elementary school to elicit information on their perception of student trends as they related to reading comprehension over the past 10 years. All teachers responded to the survey. The majority of the teachers indicated that students' reading comprehension was declining. The staff indicated that this decline in reading comprehension was due to students choosing to spend free time with technology and social activities rather than choosing to read.

The Gates MacGinitie Reading Inventory was administered in September of 1997. The targeted sixth grade class had a Normal Curve Equivalent (NCE) of 41. The NCE scale was designed so that the NCE's of 1, 50, and 99 coincide with the National Percentile Ranks (PR) of 1, 50, and 99. The national average is 50. Thus with a score of 41 the targeted elementary school scored below the national average.

The Houghton Mifflin Periodic Survey was administered as a pretest to the targeted sixth graders in September, 1997. This test was designed to measure the students' ability to comprehend expository text. Sixty four percent of the targeted students scored below the seventieth percentile. This indicated that a majority of the targeted class was unable to comprehend adequately the material at the sixth grade level.

Houghton Mifflin also provided a test that measured the students' mastery of the expository theme. The targeted sixth graders took this pretest in September of 1997. The class

scores ranged from 81% to 33% with 73 % of the targeted students scoring below the 70th percentile.

Probable Causes

An analysis of the literature revealed that there were several causes for the decrease in reading comprehension scores. Barber (1993) stated that the national decline in the value of education had resulted in the educational crisis that the country was now facing which was that more than 90 million adults lacked simple literacy. Fewer than 20% of those surveyed were able to compare two metaphors in a poem or calculate the cost of carpeting a room. According to Barber other considerations are as follows:

1. Teachers' salaries in America are lower than accountants, architects, doctors, lawyers, engineers, judges, health professionals, auditors, and surveyors. Educators in Tokyo, Ottawa, or Amsterdam earn more than teachers in New York or Chicago.
2. American students attend school for 180 days compared with Japanese and European students who attend for a minimum of 240 days.
3. The country is comfortable with pretending to care.

"The young with their keen noses for hypocrisy are in fact adept readers - but not of books. They are society-smart, and what they read so acutely are the social signals emanating from the world in which they will have to make a living" (Barber, 1993, p. 40). According to Barber this makes television, advertising, and celebrities the teachers of American children. American children spend 1,200 to 1,800 hours each year watching television compared to the 900 hours per year they spend in school. Young people have learned to heed what society teaches, and American society teaches greed, materialism, and success. Students see in the media that a man who throws a baseball at 95 miles per hour is paid millions of dollars in salary and endorsements, while their elementary teacher earns a small fraction of that amount. The lesson they learn, according to Barber, is to avoid teaching careers. Barber states, "If they observe their government spending up to $35,000 a year to keep a young black man behind bars but a fraction of that to keep him in school, they will write off school" (Barber, 1993, p.42). Barber also stated that public education,

according to Barber, is the root of democracy, and to maintain our freedom, Americans must pay the price. This price includes increasing teachers' salaries, making them equal to the salary of an executive or a lawyer, reducing class size, extending the school year, raising educational standards, and upgrading physical facilities. Without putting value back on education, "The conclusion is inescapable: we are not serious. We have given up on the public schools because we have given up on kids; and we have given up on kids because we have given up on the future" (Barber, 1993, p. 46).

Parents and teachers noticed that another cause for a decline in reading comprehension scores was that many students were underachievers and lacked the motivational drive to achieve their potential. An underachiever is described as a student who receives unexpected divergent scores on two standardized tests. The first test, an Intelligent Quotient (IQ) test, usually rate the student at his/her mental capacity. The second test was an achievement test. The problems arose when there was a discrepancy between what the IQ test predicted the student would achieve and what the student actually did achieve. According to Rimm (1997), there were no predictable groups of students who were underachieving. Underachievers were not limited to a certain socioeconomic class nor to a certain geographical area. The problem was occurring all over the United States. Rimm writes, "The problem is so serious that by the fourth grade, the performance of most children in the United States is below what it should be for the nation and is certainly below the achievement levels of children in competing countries" (1997 p. 18).

The diverse learning styles represented in a classroom were another cause for decreasing reading comprehension (Marshall, 1984). For example, in Texas the standards of each grade level were tightened and raised by school officials. Administrators stated that no more social promotions were going to be allowed. Everyone had to pass an exit exam before going on to high school. Students taking the exit exam found it difficult, and there was a 40% failure rate which resulted in a mass exodus of students from the public schools. The inability of teachers to meet the individual student's learning style contributed to the failure. Marshall is quoted as saying, "Success in learning is basic to success in life." (Marshall, 1984, p.62) Therefore if students do

not learn by the traditional methods, teaching styles need to change to reach the individual student.

CHAPTER THREE

STRATEGY FOR A SOLUTION

Literature Review

The first strategy for improving reading comprehension was cooperative learning groups. Over the past two decades, research at various grade levels and in many subject areas had documented the effectiveness of cooperative learning methods. Generally, cooperative groups were composed of four to six heterogeneously grouped students. The group members consisted of male and female students from diverse socioeconomic backgrounds. The students needed to be at various stages of mastery in the cognitive task process. The students worked cooperatively on a given task within the group. There were two different types of group tasks which identified and solved problems. In one group all members worked cooperatively to learn the task. In the other group each member was assigned an individual task which was taught to the rest of that group.

The goal of cooperative learning groups, according to Dishon and O'Leary, was for each student in the group to assume leadership responsibilities and to participate equally and actively in the group's work (as cited in McManus & Gettinger, 1996). Additional goals included encouraging positive peer interactions, increasing academic achievement, promoting a positive group attitude toward the subject matter, and developing self-esteem. Cooperative learning groups often improved the following social skills of students: initiating interactions, sharing information and ideas, asking questions, following directions, and staying on task.

Cooperative learning methods often involved incentives for cooperation such as group rewards for recognition of academic performance. Cooperative learning created a cooperative

atmosphere in the classroom rather than a competitive one. A noncompetitive atmosphere was encouraged when students invested in each other's learning and not just in their own.

According to Stevens and Slavin, learners needed more cognitive support when learning complex tasks (1995). In most cases cooperative learning included structured lessons with teacher-led instruction preceding the cooperative learning activity. In the beginning, teachers provided strong support for these groups by providing coaching and modeling of the desired goals. When the groups advanced in their learning skills, teacher support gradually faded and cooperative learning groups became more independent. Then the teacher became a facilitator to promote, extend, and build the students' knowledge. Since members of the cooperative learning groups were at different stages of mastering the new skills, the learners were able to internalize the given task within their developmental reach by working together.

Johnson and Johnson, Slavin, Kagan and others have conducted research on cooperative learning groups. Their findings suggested there was a positive relationship between the ability to think critically, to perform higher order thinking, and to think more creatively when the student's learning occurred in a cooperative group setting (as cited in Bellance & Fogarty, 1991).

Cooperative groups often discussed probable answers. The students interacting cooperatively within the group were increasing their own understanding by articulating their thinking process (Stevens & Slavin, 1995). Collaboration required the students to reflect on their knowledge, to discover generalizations, and to explain it to other group members. Making generalizations and elaborations required the students to understand the new material and to connect it to prior knowledge. Research on cooperative groups has shown that group members who gave and received explanations, learned better than those students who just sat and were given the answers (Meloth & Deering, 1992).

Stevens, Slavin, and Farnish (1991) conducted a study to determine the effects of cooperative learning groups on elementary reading instruction and student achievement. Students in second through sixth grade worked on reading activities and comprehension. Students in the cooperative learning groups scored significantly higher achievement in reading vocabulary and

reading comprehension at the end of the first year than to those students who were taught by the traditional methods. The experiment continued for a second year with positive results. Students in the cooperative learning group continued to score higher in reading vocabulary, reading comprehension, and language expression.

In another study McManus and Gettinger (1996) reported that teachers used cooperative learning groups for 92% of the time allotted for reading. The majority of those teachers believed that as a result of using cooperative learning groups, student academic behavior increased favorably for 83% of the students, social behavior increased for 91% of the students, and attitudes improved for 86% of the students. Overall, teachers believed students' self-esteem improved. Teachers viewed cooperative learning as an effective classroom procedure. Fifty-eight percent of the student population preferred completing assignments in cooperative groups (McManus & Gettinger, 1996). Students even attributed their academic and social success to the positive effects of cooperative grouping. Stevens et al. (1991) incorporated Direct Instruction with cooperative learning groups. According to their findings, intense teacher-directed methods of Direct Instruction and cooperative learning assisted students in improving reading scores. The control group of teachers and students used the traditional methods and curriculum material. Again, cooperative learning had a decisive positive effect over traditional methods. Bellanca and Fogarty (1991) pointed out that more than 500 research studies indicated that the cooperative learning approach for all students had positive effects.

The second strategy for improving reading comprehension was higher order thinking skills. Comprehension was once believed to be the natural result of decoding. Later comprehension was seen as a far more intricate process which incorporates knowledge, experience, thinking, and teaching. Comprehension relied on knowledge about the world as a whole and the worlds of language and print. Inferential and evaluative thinking was essential for comprehension (Fielding & Pearson, 1994). Baker and Brown implied that the problems with reading comprehension resulted from the lack of knowledge and use of strategies. These problems were thought of as metacognitive deficiencies that improved with proper instruction (as cited in

Ward & Traweek, 1993). Experimental studies offered evidence that children could be taught higher order thinking. Dramatic improvements in students' reading comprehension have been a result of such explicit metacognitive instruction (Kelly, Moore & Tuck, 1994).

Freeburg and Driscoll stated that critical thinking was a practice for determining the value of an idea or concept (as cited in Fitzpatrick, 1994). Raths saw critical thinking as a method which was linked with inquiry and decision making (as cited in Fitzpatrick. 1994). When students were expected to use strategies which required them to think critically, their reading comprehension skills improved dramatically. Fitzpatrick (1994) stated that critical thinking was not expected or promoted in most current classrooms. Reading research done in the 1980's consistently showed that students who had difficulty comprehending reading materials lacked the knowledge about the process of reading and did not have the ability to regulate and monitor their comprehension (Ward & Traweek, 1993). The importance of training students to become critical thinkers became clear to the researchers. The students who had the ability to understand what they read demonstrated the use of self questioning and monitoring activities (Kelly, Moore, & Tuck, 1994). Researchers have also shown that post-reading classroom interaction increased reading comprehension, and cooperative interaction was often cited as a structure which enabled critical thinking to occur. Therefore, the use of cooperative groups was implemented as a critical thinking strategy to positively influence reading comprehension (as cited in Fitzpatrick, 1994). Unfortunately many districts failed to encourage the development of the ability to confront, evaluate, and assimilate new information. The learning environment in each classroom encouraged students to express themselves freely. Educators encouraged students through the use of critical thinking activities to become divergent thinkers (Fitzpatrick, 1994). Borich stated, "The ability to ask questions that require higher order thinking skills is one of the most valuable skills that an effective teacher can have" (as cited in Fitzpatrick, 1994, p.143). Fitzpatrick added, "Higher order questions, questions that require critical thinking, asked in conjunction with the reading process improve reading comprehension" (p.143).

Comprehending and recalling information from expository text were especially difficult

tasks for young readers. Expository texts were crowded with difficult vocabulary, complex concepts, unfamiliar and strange organizational structures, as well as numerous tables and figures. Concepts are often presented one after another making the text rich in information but weak in comprehensibility (Griffin & Tulbert, 1995). In addition, students' lack of background knowledge made the learning situation more difficult for the young reader.

The third strategy for improving reading comprehension was the use of graphic organizers. Since the early 1960's researchers have studied the effect of the use of graphic organizers on reading. The graphic organizer, originally called an advance organizer, was developed to translate Ausubel's cognitive theory of meaningful reception learning into practice (Ausubel, 1968). Ausubel believed that an individual's existing knowledge was a major factor in learning new information. He believed that new information was acquired only when it was related to previously learned information. Ausubel promoted the use of advance organizers as an easy tool for teachers to bridge a student's existing cognitive structure with a new learning task. The advance organizer was an introductory prose passage that contained content which was important to the structure of the passage. The advance organizers "provide ideational scaffolding for the stable incorporation of the more differentiated material in the learning passage" and "increase the discriminability between the new material and similar or conflicting ideas in the cognitive structure" (p. 148).

Other researchers proposed that a visual-spatial representation which became known as a structured overview would support existing cognitive structure and research supported this hypothesis. Three studies were conducted to determine whether one procedure was more effective than another procedure for improving students' reading abilities as measured by standardized tests (as cited in Griffin, Malone & Kameenui, 1995). No differences were discovered between students who received advance organizers and those who did not. Barron and Schwartz explained the negative findings of the three studies and observed that the structural overview was perceived as "something a teacher did for students" (as cited in Griffin, Malone & Kameenui, 1955). Researchers concluded that the students may have seen the information in the

structural overview or in the advance organizer as isolated pieces of information, and they did not integrate this information into their prior knowledge structure.

Many other research investigations have been conducted on the use of graphic organizers to facilitate reading comprehension. The results of these studies were inconclusive as to the type of student to receive the most benefit. The results were also inconclusive as to when the organizer should be introduced in the reading lesson, and who should be responsible for creating the organizer (Dunston, 1992). Although Rice (1994) also found the results of using graphic organizers inconclusive, he found that postgraphic organizers were better than pregraphic organizers. Barron and Stone (as cited in Dunston, 1992) examined 141 tenth and eleventh graders' learning of vocabulary relationships in a passage on mental health. They found the postgraphic organizers were more effective than preorganizers when compared on a vocabulary relationship test. Since two variables, position of the graphic organizers (preorganizers and postorganizers) and the teacher versus student construction of the organizers, were manipulated at the same time in the study, researchers has difficulty determining which variable contributed to the difference between conditions.

Early studies included graphic organizers which were teacher-directed in prereading activities (Moore & Readence 1984). Moore and Readence found, "strong effects were obtained when students constructed GOS (graphic organizers) after encountering content and when vocabulary knowledge was the dependent variable" (p.11). When fifth grade students were required to read and recall social studies content, Griffin, Malone and Kameenui (1995) found that that those who had received the graphic organizer and explicit instruction performed better on the measured transfer than those who received only the traditional basal instruction. Davis (1994) found that the use of a prereading story map produced a 14% better inferential comprehension than did the traditional directed reading activity at the third grade level. However, there were no statistical differences between groups at the fifth grade level.

Troyer's research (1994) using fourth, fifth, and sixth graders indicated that there were statistical differences between the students who had the benefit of instruction in the use of graphic

organizers and those who did not. The students received instruction in the characteristics of three text structures: attribution, collection, and comparison. She found that the most effective reading comprehension strategy involved the use of graphic organizers. In Troyer's study those students who were taught strategies using prereading graphic organizers and mental modeling outscored students who were provided only with content questions ahead of time. This study seemed to indicate that a high level of visual learners are in today's classroom, probably as a result of growing up in the generation of television, movies, videos games, and computers.

Darch, Carnine and Kameenue (1986) conducted a study investigating the use of three techniques with sixth grade students: graphic organizer strategy, a directed reading strategy, or a SQ3R strategy. Students were taught in cooperative groups or in independent study. Their results indicated that those students who were taught using graphic organizers in a cooperative group setting produced higher results in facilitating the comprehension of expository information.

Ellis (1994) recommended utilizing the Integrated Strategies Instruction Model (ISI) when working with expository subjects. The ISI model focused on methods for teachers to facilitate student comprehension with the intentional use of effective thinking and problem-solving cognitive processes.

> The ISI model has a dual purpose. One purpose is to provide teachers with a set of instructional procedures and devices that can potentially enhance students' understanding and remembering of content-area subjects as well as performance on academic tasks. The other purpose of ISI is to teach, explicitly teach, the use of powerful information-processing skills (use of background knowledge, metacognition, strategies, self-motivation tactics, etc.). The goal is to assist students to become cognitively literate (p.169).

Ellis believed these thinking strategies were best utilized when students interacted in cooperative groups. He further recommended the use of graphic organizers. With students constructing these organizers, there is a potential for an increase in comprehension and note taking.

Sinatra and Pizzo (1992) used a nine-step plan that involved semantic mapping. Semantic mapping or webbing showed students how ideas and information were related and organized. When used as a whole class strategy, students learned that a particular kind of map represented a particular kind of text, and students transferred this learning across the curriculum. Sinatra and Pizzo believed that once these map plans were modeled for a whole class, students in small groups could develop their own maps which they could share with the class. This learning activity allowed students to cooperatively reflect about thinking. The authors carried this mapping strategy into a writing component that they felt strengthened the understanding of the range of information contained in the content unit. The evaluation of this program showed that the students in third through fifth grade who used mapping improved dramatically in reading comprehension.

Jones, Pierce & Hunter (1988) stated that graphic organizers should reflect the structure of the text. Students need to preview the text to determine its structure. Students then need to make hypotheses about the structure and mentally search their repertoire of graphic organizers to find the one that best fits. Then the students monitor their comprehension as they read. The students should complete the organizer after having chosen the graphic organizer that best fits the text. Finally, students should construct a summary based on the information that is in the graphic organizer. The studies have shown that graphic organizers have been most effective when the teacher presents and models the organizer first for the whole group. Then the teacher acts as the coach while the class plans and constructs the graphic organizer as a group. Next, in small groups, students plan and share their graphic organizer. Finally each student constructs his own graphic organizer. "In conclusion, graphic organizers and outlines are fundamental to skilled thinking because they provide information and opportunities for analysis that reading alone and linear outline cannot provide" (Jones, Pierce & Hunter, 1988, p. 25).

Project Objectives and Processes

As a result of cooperative learning, during the period of September, 1997, to January, 1998, the sixth grade students at the targeted elementary school will increase reading comprehension by 10% as measured by the Houghton Mifflin Theme Test. In order to accomplish this objective, the following processes will be utilized in the classroom:

1. Develop cooperative learning lessons.
2. Examine and teach the necessary social skills to enhance successful cooperative learning.
3. Assign cooperative groups of two or three students to develop a museum exhibit.

As a result of implementing higher order thinking skills during the period of September, 1997 to January, 1998 the sixth grade students at the targeted elementary school will increase reading comprehension by 3 NCEs as measured by the Gates MacGinitie Reading Inventory. In order to accomplish this objective the following processes will be utilized in the classroom:

1. Teach and model good questioning techniques.
2. Develop lesson plans that require students to utilize higher order thinking skills.
3. Develop a museum exhibit.

As a result of implementing graphic organizers, during the period September, 1997, to January, 1998, the sixth grade students at the targeted elementary school will increase reading comprehension by 10% as measured by the Houghton Mifflin Periodic Reading Survey. In order to accomplish this, the following processes are necessary:

1. Graphic organizers will be taught and modeled.

2. Develop lesson plans that will require students to create and use their own graphic organizers.
3. Require students to include a write up on their museum exhibit.

Action Plan

In early September a survey was distributed to the intermediate teaching staff at the targeted elementary school to extract information about their perceptions of the trends of reading comprehension within the building. The members of the action research team created this survey as shown in Appendix A. It was utilized as one component to document the evidence of the problem.

Three pretests were administered to the targeted sixth grade class at the targeted elementary school to determine baseline data in early September. These tests were the Gates MacGinitie Reading Inventory, Houghton Mifflin Theme Test, and Houghton Mifflin Periodic Reading Survey. McDougal, Littell and Company Student Reading Inventory was completed and used as supporting data to show evidence of the problem at the targeted elementary school. See Appendix B.

During the second week of September the results from the pretest were used to establish cooperative learning groups. Each group was made up of two to four students and met a minimum of 45 minutes per week. In the following weeks of September each group participated in cooperative group activities and the necessary social skills were taught and reviewed to ensure each group's success. These cooperative groups continued to be utilized until January.

In the second week of September a variety of higher order thinking strategies were beginning to be introduced. The targeted population needed to incorporate these strategies when they established their cooperative group projects. Higher order thinking strategies continued to be introduced and modeled through January and were utilized during discussions. These discussions took place for a minimum of 45 minutes per week.

The researchers began introducing graphic organizers in September. A variety of organizers were introduced, discussed, and modeled. This process first took place in a whole

group direct instructional setting. The teacher acted as the facilitator as the students created and utilized these graphic organizers in cooperative groups.

An expository theme unit began in the month of October. Each of the interventions, cooperative grouping, higher order thinking skills, and graphic organizers, were expanded during this time. Cooperative groups continued to meet weekly for a minimum of 45 minutes. Each week at least one activity was implemented that utilized higher order thinking skills. The activities ranged in length from 15 to 30 minutes. Each week a graphic organizer was either reviewed, or introduced, modeled, or implemented. This weekly session took approximately 30 minutes.

The museum exhibit was introduced to the students during the first week of November. Students were allowed to form their own interest-based cooperative groups, ranging from two to three members. Each group was responsible for generating a display which would incorporate a report and an artifact throughout the month of November. The students were provided with the opportunity to meet in their cooperative groups to work on the exhibit weekly for a minimum of 45 minutes.

The museum exhibits were displayed in the classroom during the second week of December. Each group then began to prepare and practice an oral narrative. Other classes at the targeted elementary school and parents were invited to view the exhibition and hear each cooperative learning group's oral narrative presentation.

The initial baseline pretests, Houghton Mifflin Theme Test, Houghton Mifflin Periodic Reading Survey, and Gates MacGinitie Reading Inventory were readministered as post tests in the third week of January. The tests were scored and the results compared to the previous tests given in September. The test scores were analyzed to assess whether reading comprehension was in fact influenced by the following interventions: Cooperative learning, higher order thinking strategies, and graphic organizers.

Methods of Assessment

Standardized curriculum tests covering the content and skills were administered in order to assess the effects of the interventions. The adopted reading curriculum for the targeted elementary school is Houghton Mifflin Literature Experience Reading Series. The sixth grade book, Beyond the Reef, presents material utilizing a thematic approach. The assessments, which accompany the series, included a theme test designed to assess student mastery of skills and concepts covered in the expository unit. For the purpose of this study these holistically designed assessments were assigned a point value by the action research team. The purpose of this point value system was to enable the researchers to compare student results more effectively. Also included in this series were four Periodic Reading Survey. For this purpose researchers will utilize survey number four. This Periodic Reading Survey assessed the students' ability to read and comprehend expository material utilizing an unfamiliar expository text. For comparison purposes the evaluators scored these tests on a percentage basis.

The Gates MacGinitie Reading Inventory was utilized to compare the class as well as individual student growth. The growth was shown in NCEs. The researchers examined the average gain achieved as a result of the interventions.

PROJECT RESULTS

CHAPTER FOUR

Historical Description of the Intervention

The objective of this project was to increase the reading comprehension of the targeted sixth grade class. The implementation of cooperative learning, higher-order thinking skills, and graphic organizers was used to facilitate discussion and to increase understanding of expository text. Three pretests were administered to the targeted sixth grade class as a baseline in early September. The three assessments were the Gates MacGinitie Reading Inventory, Houghton Mifflin Theme Test, and Houghton Mifflin Periodic Reading Survey. Using the results of these pretests, cooperative learning groups were established during the second week of September. Each group was composed of two to four students of diverse abilities and met a minimum of 45 minutes per week throughout the intervention period. The necessary social skills for successful group interactions were directly taught. The social skills chosen included listening, using six-inch voices, cooperating, and participating. In order to reinforce these social skills, reading lessons were modified enabling students to work in cooperative groups to accomplish the lessons' objectives. A sample lesson can be found in Appendix C.

Starting the second week of September a variety of higher order thinking skills was introduced. The higher order thinking strategies used were visualization, question/answer relationship, fat and skinny questions, compare and contrast, analysis, synthesis, and evaluation. The targeted population incorporated these strategies during the cooperative group projects and

utilized them during class discussions. These discussions took place for a minimum of 45 minutes a week. A sample lesson plan can be found in Appendix D.

Graphic organizers were also introduced during September. A variety of organizers were introduced, discussed, and modeled. This process first took place in a whole-group direct instruction setting. Then the teacher acted as a facilitator as students utilized the graphic organizers in cooperative groups. The graphic organizers that were introduced included a Problem-Solution Form, a Spider Map, a Decision-Making Frame, a Series of Event Chain, a Comparison Matrix, and Clarifying Circles. Samples of the graphic organizers can be found in Appendix E. Early in October each of the interventions, cooperative learning groups, higher order thinking skills, and graphic organizers, were expanded to incorporate the expository theme.

The museum exhibit, which was the culminating project for the expository unit, was introduced to the students during the first week of November. Students were allowed to form their own interest-based cooperative groups. Each group was responsible for generating a museum display and a report. The students were provided with the opportunity to meet in their cooperative groups weekly to work on their exhibit for a minimum of 45 minutes. The museum exhibits were displayed in the classroom during the second week of December. Each group prepared an oral and written narrative report. Parents and other classes were invited to view the exhibits and to hear the presentations.

Presentation and Analysis of Results

In order to assess the effects of the implementation of cooperative grouping, graphic organizers, and higher order thinking skills on the targeted group's reading comprehension the Gates MacGinitie Reading Inventory, the Houghton Mifflin Theme Test, and the Houghton Mifflin Periodic Reading Survey were readministered the third week in January. These data were analyzed and compared to the data from the pre-assessments administered in September. The results are presented in Tables 1 and 2.

Table 1

Gates MacGinitie Reading Inventory Pretest and Posttest Reading Averages

Assessments	Pretest	Posttest
Class Average on the Gates MacGinitie Reading Inventory	44.3%	49.6%

According to Gates MacGinitie Reading Test Manual for Scoring and Interpretation, "If the Class Comprehension NCE differs from an earlier Class Comprehension NCE by more than about 3 NCEs there is about 95% chance that the relative achievement of the students has changed." (MacGinitie, Walter H. MacGinitie, Ruth K., 1989 p.28). In the fall, the class's average comprehension NCE was 44.3, and in the winter the class's average comprehension NCE was 49.6. With this positive difference of 5.3 NCEs, the targeted class demonstrated substantial achievement. This achievement was further documented with the pretest and posttest Houghton Mifflin Theme Test which showed the class's average increased from 58.7% to 79.0%. The Houghton Mifflin Periodic Reading Survey also shows substantial growth. The pretest was 63.7%, and the posttest was 81.3%. The project objective was to increase the reading comprehension of the targeted sixth grade class by 10% as measured by Houghton Mifflin Theme Test and Houghton Mifflin Periodic Reading Survey.

Table 2

Houghton Mifflin Pretest and Posttest Reading Class Averages

Assessments	Pretest	Posttest
Houghton Mifflin Theme Test	58.7%	79.%
Houghton Mifflin Periodic Reading Survey	63.7%	81.3%

Conclusion and Recommendations

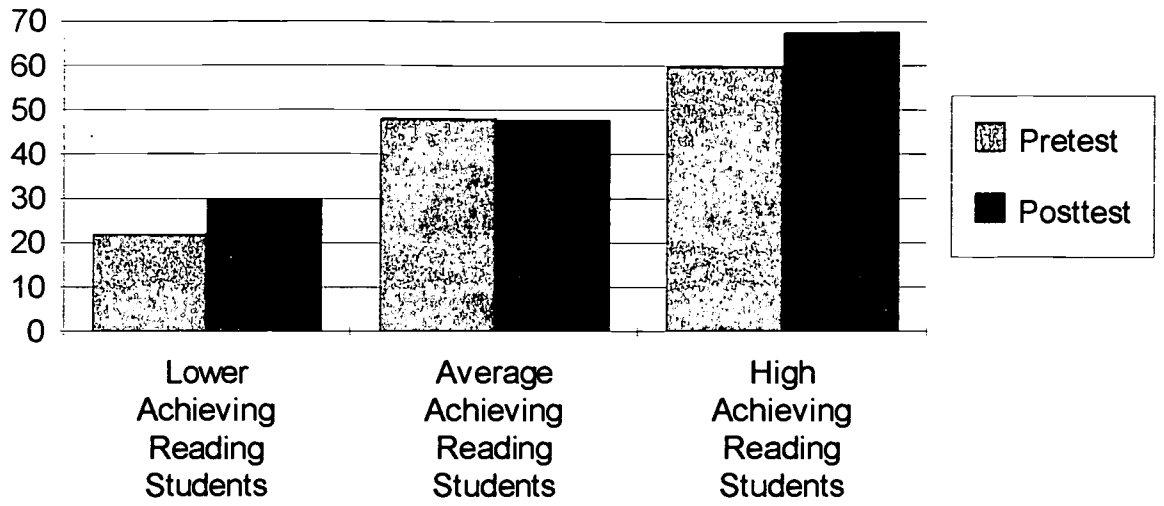
As a result of cooperative learning groups, the sixth grade students at the targeted elementary school increased their comprehension scores by 21% as measured by the Houghton Mifflin Theme Test. This 21% increase surpassed the researchers 10% goal. Implementing higher order thinking skills resulted in the targeted sixth grade students increasing their reading comprehension by 5.3 NCEs compared to the 3 NCEs the researchers predicted. The use of graphic organizers resulted in the targeted sixth grade students increasing their reading comprehension by 17% as measured by the Houghton Mifflin Periodic Reading Survey compared to the predicted increase of 10%.

Table 3

Students' Percentage Range on Pretests and Posttests

Test Scores Achieved	Houghton Mifflin Theme Test	Houghton Mifflin Theme Test	Houghton Mifflin Periodic Reading Survey	Houghton Mifflin Periodic Reading Survey
	Pretest	**Posttest**	Pretest	**Posttest**
0% - 25%	0%	**0%**	0%	**0%**
26% - 50%	5%	**0%**	5%	**2%**
51% - 75%	11%	**8%**	8%	**5%**
76% - 100%	2%	**10%**	6%	**12%**

Based on the presentation and analysis of the data, cooperative learning groups, graphic organizers, and higher order thinking skills increased the targeted sixth graders' reading comprehension. The results clearly indicate that when the interventions were used concurrently, they had a dramatic positive effect on reading comprehension. In retrospect the researchers concluded that the assessments chosen were not designed to measure the three specific interventions. These three interventions were so interrelated it was not possible to delineate the direct effect of any one intervention.



Figure, 4. The Average Gates MacGinitie Reading Inventory NCEs of the Targeted Students

The implementation of the three interventions appeared to have the most benefit for the highest and lowest achieving students. The researchers utilized I.T.B.S. scores to identify those students who were reading above and below grade level. Sixty-three percent of the students reading above grade level significantly improved their reading comprehension as measured by the Gates MacGinitie Reading Inventory. Fifty percent of the students reading below grade level also increased their reading comprehension as measured by the Gates MacGinitie Reading Inventory. The researchers believed the dynamics that existed within the cooperative group setting provided a safe environment for the lowest achieving readers to ask questions and to benefit from the responses of the highest achieving students. The highest achieving students also benefited in this cooperative group setting because they used metacognition to help their teammates. Graphic organizers, the researchers believed, were also instrumental in the gains of the highest and the lowest achieving students. Graphic organizers provided an opportunity for the highest achieving students to creatively manipulate the information. The lowest achieving students benefited from the structure of the graphic organizers. These graphic organizers enable the students to analyze, understand, and assimilate the information.

The research team observed that there was no difference in achievement between genders. The results showed a gain of 5.29 NCEs for the males and 5.27 NCEs for the females of the targeted sixth grade class. The researchers concluded that the use of cooperative groups, graphic organizers, and higher order thinking skills benefited the students.

The three interventions were so interrelated that it was not possible to identify the direct benefit of any one intervention. Further study is needed to identify the benefits of each intervention and its effects on reading comprehension.

References

Anderson, Richard, Heibert, Elfried, Scott, Judith, & Wilkson, Ian 1985 Becoming a Nation of Readers. The National Academy of Education, The National Institute of Education, The Center for the Study of Reading. 1985

Ausubul, D.P. 1968. The Psychology of Meaningful Verbal Learning. New York: Grune & Stratton

Avery, Charles W., & Beth Faris Avery (1994, May). Merging reading and cooperative strategies through graphic organizers. Journal of Reading, 37, 689-690

Barber, Benjamin (1993, November). America Skips School. Harper Magazine, 287, 39-46

Bellanca, James 1990 The Cooperative Think Tank. IRI/SkyLight Training and Publishing, Arlington Heights, IL 1990

Bellanca, James & Fogarty, Robin 1991 Blueprints for Thinking in the Cooperative Classroom. IRI/SkyLight Training and Publishing, Arlington Heights, IL 1991

Cassidy, Jack, Hossler, Anne (1992, September). Help your students get the main idea with graphic organizers. Learning, 21, 75-77, & 82

Clarke, John (1991, April). Using visual organizers to focus on thinking. Journal of Reading, 34, 526-534

Davis, Zephaniah (1994, July/August). Effects of pre-reading story mapping on elementary readers' comprehension. Journal of Educational Research, 87, 353-359

Darch, Craig, Carnine, Douglas, & Kameenui, Edward J. (1986, August). The role of graphic organizers and social structure in content area instruction. Journal of Reading Behavior, 18, 275-295

Dunston, Pamela J. (1992, Winter). A critique of graphic organizers research. Reading Research and Instruction, 31, 57-65

Elam, Stan (Ed.) The State of the Nation's Public Schools a Conference Report. Phi Delta Kappa, 1993

Ellis, Edwin S. (1994, January). Integrating writing strategy instruction with content-area instruction: Part 1-orienting students to organizational devices. Interventions in School and Clinics, 29, 169-179

Fielding, Linda, & Pearson, David (1994, February). Reading comprehension: What works. Educational Leadership, 51, 62-68

Fitzpatrick, Karen (1994, Fall). Improving Reading Comprehension Using Critical Thinking Strategies. Reading Improvement, 31, 142-144

Gardner, David, Larsen, Yvonne, Baker, William, Campbell, Anne, Crosby, Emeral, Foster, Charles Jr., Francis, Norman, Giamatti, A., Gordon, Shirley, Harderlein, Robert, Holton, Gerald, Kirk, Annette, Marston, Margaret, Quie, Albert, Sanchez, Francisco, Jr., Seaborg, Glenn, Sommer, Jay & Wallace, Richard A Nation at Risk: The imperative for Education Reform. US Printing Office, Washington, DC April 1983

Griffin, Cynthia Carlson, & Tulbert, Beth Lorene (1995, January/March). The effects of graphic organizers on students' comprehension and recall of expository text: A review of the research and implications of practice. Reading and Writing Quarterly, 11, 73-89

Griffin, Cynthia C., Malone, Linda Duncan, & Kameenui, Edward J. (1995, November/December). Effects of graphic organizer instruction on fifth-grade students. Journal of Educational Research, 89, 98-107

Hayden, Kelley (1997, August). Trends of Increases in ACT College-Entrance Scores Continues http:/www.actorg/news/08-13-97.html

Jones, Bean Fly, Pierce, Jean, & Hunter, Barbara (1988-1989, December -January). Teaching students to construct graphic representations. Educational Leadership, 20-25

Kaminski, Rebecca A. (1993, December). Students' ability to apply and reflect on organizational structures used in composing. National Reading Conference

Kelly, Marie, Moore, Dennis W., & Tuck, Bryan F.(1994, October). Reciprocal teaching in a regular primary school classroom. Journal of Educational Research, 88, 53-60

Kletzien, Sharon Benge & Hushion, Barbara Conway (1992, March). Reading workshop: Reading, writing, thinking. Journal of Reading, 35, 444-450

Marshall, Carol (1995, March, April). The Power of Learning Styles. Educational Research, 8 62-66

Marzano, Robert (1991, April). Fostering thinking across the curriculum through knowledge restructuring. Journal of Reading, 34, 518-525

MacGinitie, Walter H., & Macginitie, Ruth K. (1989). Gates MacGinitie Reading Tests Manual for Scoring and Interpretation. Riverside Publishing Company. Itasca, Il 1989

McManus, Susan, & Gettinger, Maribeth (1996, September/October). Teacher and student evaluations of cooperative learning and observed interactive behaviors. The Journal of Educational Research, 90, 13-22

Meloth, Michael S., & Deering, Paul D. (1992). Effects of two cooperative conditions on peer-group discussions, reading comprehension, and metacognition. Contemporary Educational Psychology, 17, 175-193

Moore, David & Readence, John E. (1984, September & October). A quantitative and qualitative review of graphic organizer research. Journal of Educational Research, 78, 11-17

Rice, Gary E. (1994, January/March). Need for explanations in graphic organizer research. Reading Psychology, 15, 36-67

Rimm, Sylvia B. (1997, April). An Underachievement Epidemic. Educational Leadership, 54, 18-22

Sinatra, Richard, & Pizzo, Jeanne (1992, August). Mapping the road to reading comprehension. Teaching K-8, 102-105

Stetson, Elton, & Williams, Richard P. (1992, September). Learning from social studies textbooks: Why some students succeed and others fail. Journal of Reading, 36, 22-29

Stevens, Robert J., & Slavin, Robert E. (1995, January). Effects of a cooperative learning approach in reading and writing on academically handicapped and nonhandicapped students. The Elementary School Journal, 95, 241-262

Stevens, Robert J., Slavin, Robert E. & Farnish, Anna Marie (1991, March). The effects of cooperative learning and direct instruction in reading comprehension strategies on main idea identification. Journal of Educational Psychology, 83, 8-16

Troyer, Sandra J. (1994, April). The effects of three instructional conditions in text structure on upper elementary students' reading comprehension and writing performance. Paper Presented at AERA

Ward, Linda, & Traweek, Dean(1993, Winter). Application of a metacognitive strategy to assessment, intervention, and consultation: A think-aloud technique. Journal of Psychology, 31, 469-485

Wood, Karen D., & Muth, K. Denise (1991). The case for improved instruction in middle grades. Journal of Reading, 35, 84-89

Wyatt, Monica (1992, September). The past, present and future needs for college reading courses in the US Journal of Reading, 36, 10-19

Appendix A

Teacher Survey Grades 4-6

Please reflect on the students you are teaching currently and circle the answer closest to your opinion.

1. The number of students who are able to read and comprehend grade level materials are:

decreasing staying consistent increasing

2. The number of students who chose to read in their free classroom time has:

decreased stayed consistent increased

3. The number of students in the classroom who implement comprehension strategies on their own are:

decreasing staying consistent increasing

4. The number of students who utilize graphic organizers on their own are:

decreasing staying consistent increasing

5. The number of students who will reread sections of stories on their own are:

decreasing staying consistent increasing

6. The number of students who are able to activate prior knowledge without prompting are:

decreasing staying consistent increasing

7. The number of students that seek out help from peers independently are:

decreasing staying consistent increasing

8. The number of students that have the necessary skills for cooperative learning groups are:

decreasing staying consistent increasing

9. The number of students who transfer what is learned to new situations and other areas or subjects are:

decreasing staying consistent increasing

10. The number of students that appear to be metacognitive "thinkers" are:

decreasing staying consistent increasing

11. The number of students that independently set a purpose for reading is:

decreasing staying consistent increasing

12. The number of students who show confidence in their own reading judgment are:

decreasing staying consistent increasing

13. The number of students who can make appropaite inferences of events and characters are:

decreasing staying consistent increasing

14. The number of students that are able to demonstrate understanding of the topic, main ideas and supporting details are:

decreasing staying consistent increasing

Additional comments you wish to clarify with: _____

_____

_____

_____

_____

_____

_____

Name _____ Date _____ 41

Beginning of School Year Appendix B

Reader's Self-Evaluation Form

Directions: Use this form to describe how you think and feel about reading at this time. You may circle more than one answer on any item.

1. These are my feelings about reading:

a. I like to read, both at home and at school.
b. I like to read for fun, but not for school.
c. I really don't like to read and would rather do other things.
d. I would like to read more if I were a better reader.
e. I would like to read more if I had more time.
f. I like to read aloud.
g. I do not like to read aloud.

2. These are my feelings about reading at home:

a. It's a waste of time.
b. It helps me escape and relax.
c. I only read when I have to for an assignment.
d. I read mostly for information.
e. I read mostly for entertainment.
f. I love to read and wish I had more time for it.

3. I consider myself to be

a. a very good reader.
b. a good reader.
c. an average reader.
d. a poor reader.

4. In order to read and understand material for school,

a. I read best when I'm alone in a quiet place.
b. I read best with things going on around me.
c. I read best aloud with another student or in a small group.
d. I read best when the teacher tells us what to look for first.
e. I understand more when I have a long period of time to read.
f. I understand more when I read in short little spurts.
g. I read the material twice.

5. These problems bother me when I am reading:

a. There are too many words that I don't know.
b. I read too slowly.
c. I read too fast and forget things.
d. I get bored quickly and stop paying attention.
e. My eyes get tired easily.
f. Other things distract me.

For the following questions, choose the answer that fits your habits *most* of the time.

6. How often do you read each of the following? Circle your answer.

a. newspapers	Never	Sometimes	Often	Usually
b. magazines	Never	Sometimes	Often	Usually
c. novels	Never	Sometimes	Often	Usually
d. comic books	Never	Sometimes	Often	Usually
e. books of information	Never	Sometimes	Often	Usually

7. How much time do you spend at home reading for enjoyment?

a. never
b. up to 30 minutes a week
c. 30 to 60 minutes a week
d. more than an hour a week
e. an hour a day or more

8. Circle the topics or types of literature you like to read.

a. young adult novels
b. adventure/survival
c. science fiction
d. mysteries
e. sports
f. stories about animals
g. humorous stories
h. historical fiction
i. fantasy
j. myths and legends
k. science
l. poetry
m. biographies
n. history
o. travel/other places
p. news articles

9. What is the best book you have *ever* read? _____

10. What is the best book you have read lately? _____

Appendix C

COOPERATIVE LESSON PLAN

Subject: Egyptian Unit Vocabulary Development

Warm Up Activity: The students will complete a written vocabulary pretest independently.

Grouping Method: Base groups will be utilized.

Content: This will be an on going weekly activity.

Day One Students will review the results of their pretest with their peers. The students will jigsaw the list of words. Each student in the group will choose five words from the list. They will be responsible for examining these words for the group. The next day each student must be prepared to "teach" the their words to the group utilizing context sentences, synonyms, and antonyms.

Day Two Group members will take turns "teaching" their words to the others.

Day Three Group activity assessment (group grade)-
Each group will receive five index cards with a vocabulary word on each. Together they will complete a word web for the five words. Example follows-

Day Five The students will complete and individual post test of all vocabulary words. The group will receive bonus points if each student in the group passes with at least 80%.

Student Roles: On day three when the group members convene to begin jig sawing the words I will assign the following roles:

1. Manager- Keeping the group on task.
2. Checker- Monitors group members comprehension of material.
3. Encourager- Provides positive feedback to group members.
4. Recorder- Writes down group responses.

Evaluation: The students will be evaluated three ways. The first will be the group word web. The second will be the individual test students take. Finally the students will fill out a group assessment .

Appendix D

Higher Order Thinking Skill Lesson

Thinking Skill Focus:

This lesson focuses on visualization and its impact on our comprehension of covered material.

Elicit Synonyms of Thinking Skills:

The students generated the following synonyms when asked:

1. Picture in your head.
2. To see something
3. To think about how something looks.

Elicit Examples of Potential Uses:

During a classroom discussion we talked about how developing and refining our visualization skills can positively influence our comprehension. The students generated the following benefits of visualization:

1. Picturing things in your head helps you remember them.
2. Picturing things in your head makes stories more interesting (Like a movie in your head).

Lesson Steps:

1. Explain to the students that they will participate in an activity that will help to develop their visualization skills.

2. Ask the students to work with their thinking partners. They should each get a piece of paper and pencil. Then ask the students to move their chairs so they are back to back.

3. Distribute to one of the students in each pair a paper with a geometric design already drawn on (see attached).

4. Explain to the students that they will describe this design to their partners. The other student will attempt to recreate the design. They can ask as many questions as necessary.

5. Continue this process until both students feel they have completed the design to the best of their ability.

Practice Focus Skill:

The students will then switch roles so that each has an opportunity to do each part.

Transfer Focus Skill:

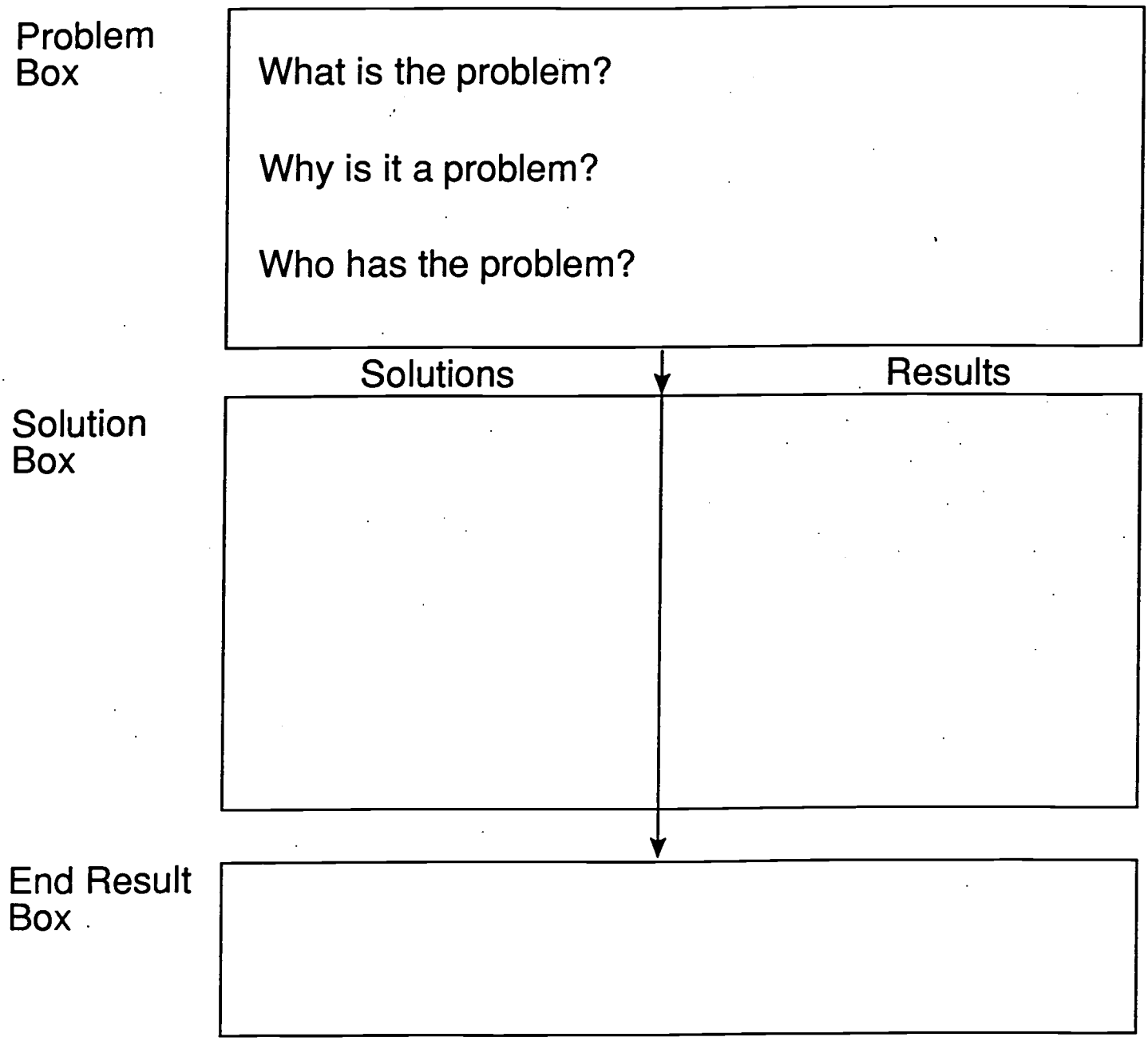
The transfer of this lesson is always ongoing. Each time we read whether it's narrative or expository text requires the students to visualize the content.

Assessment of Focus Skill:

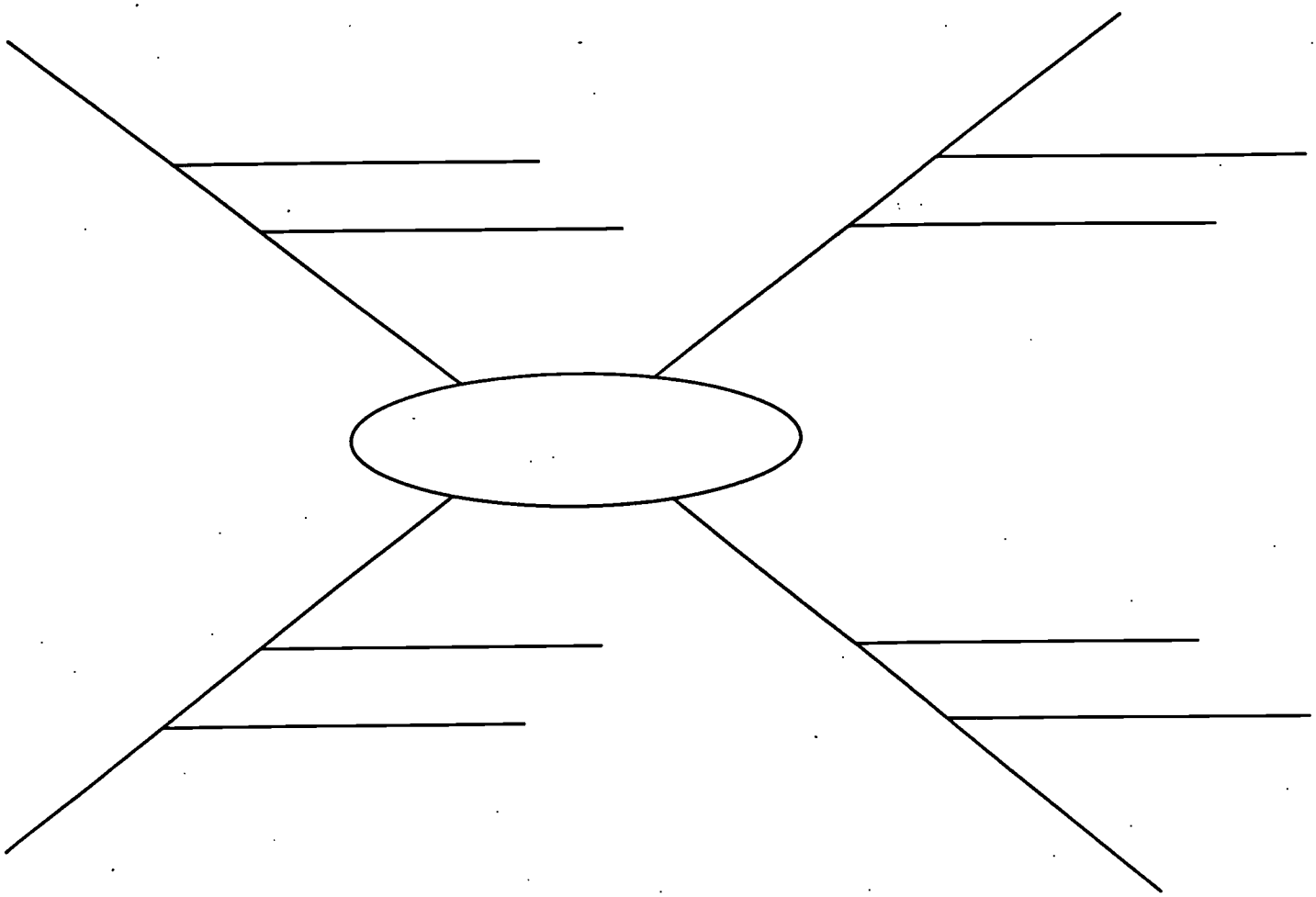
Teacher observation and student artifacts will be used to assess understanding of concept.

Appendix E

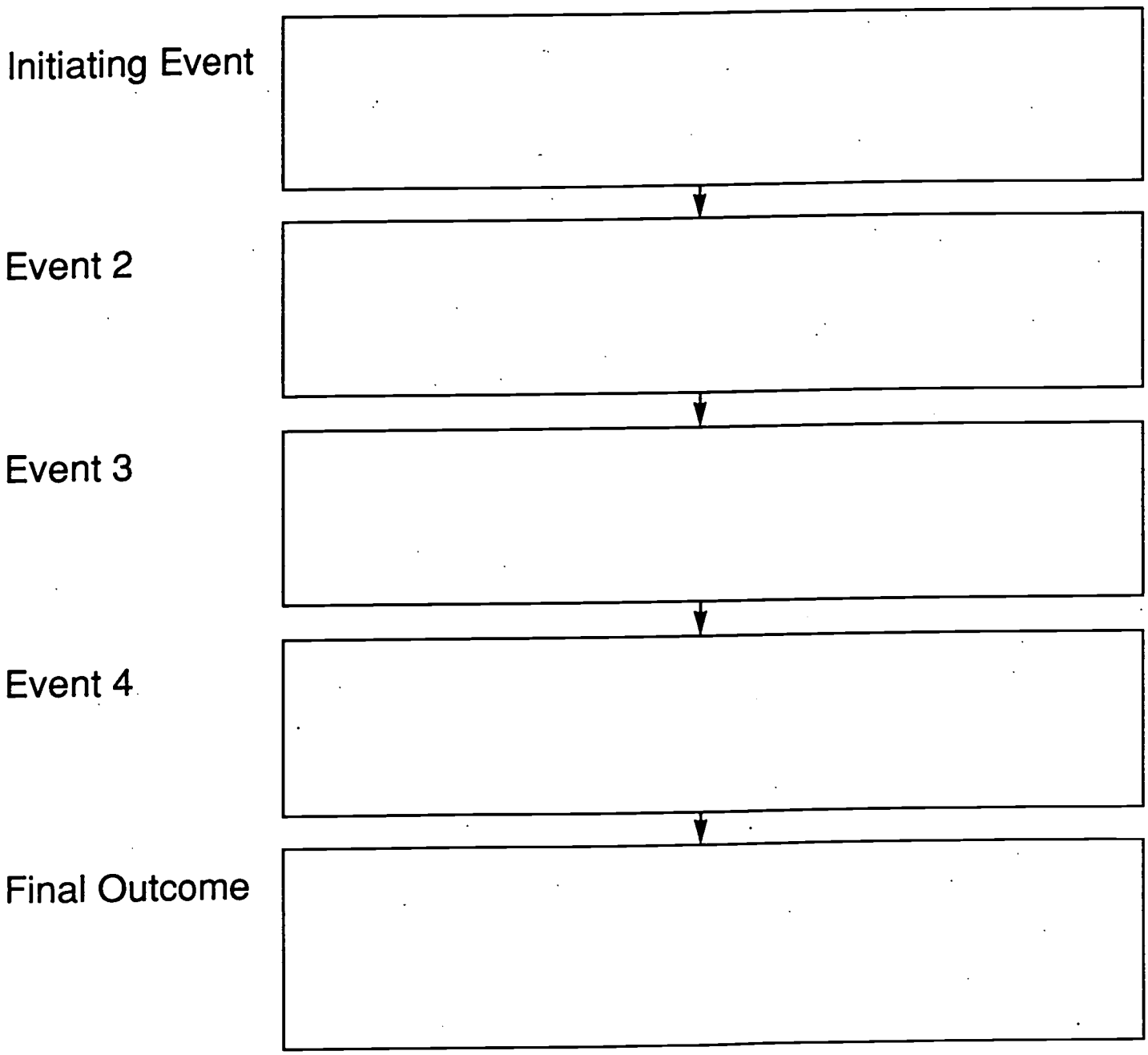
Problem-Solution Frame



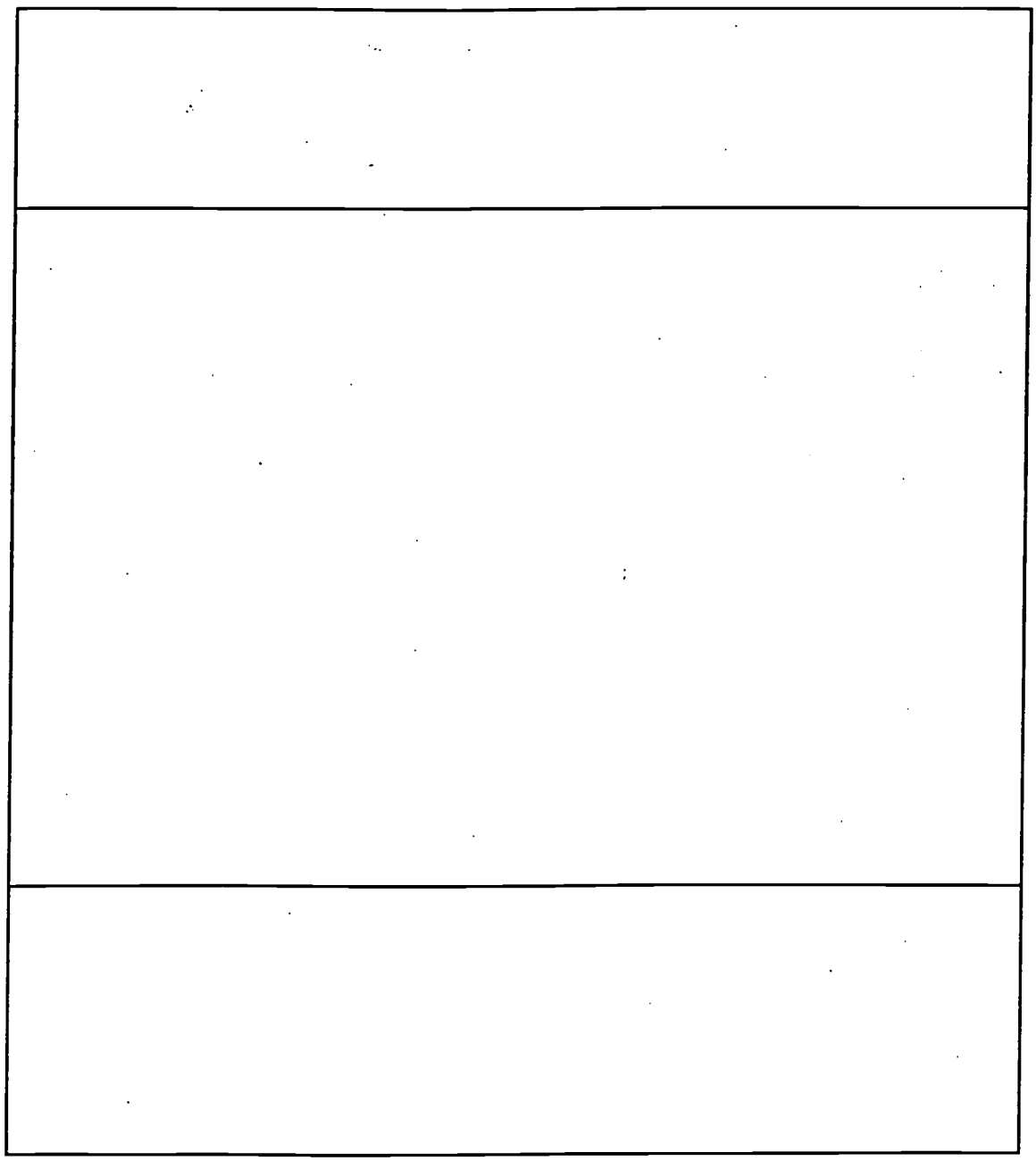
Spider Map



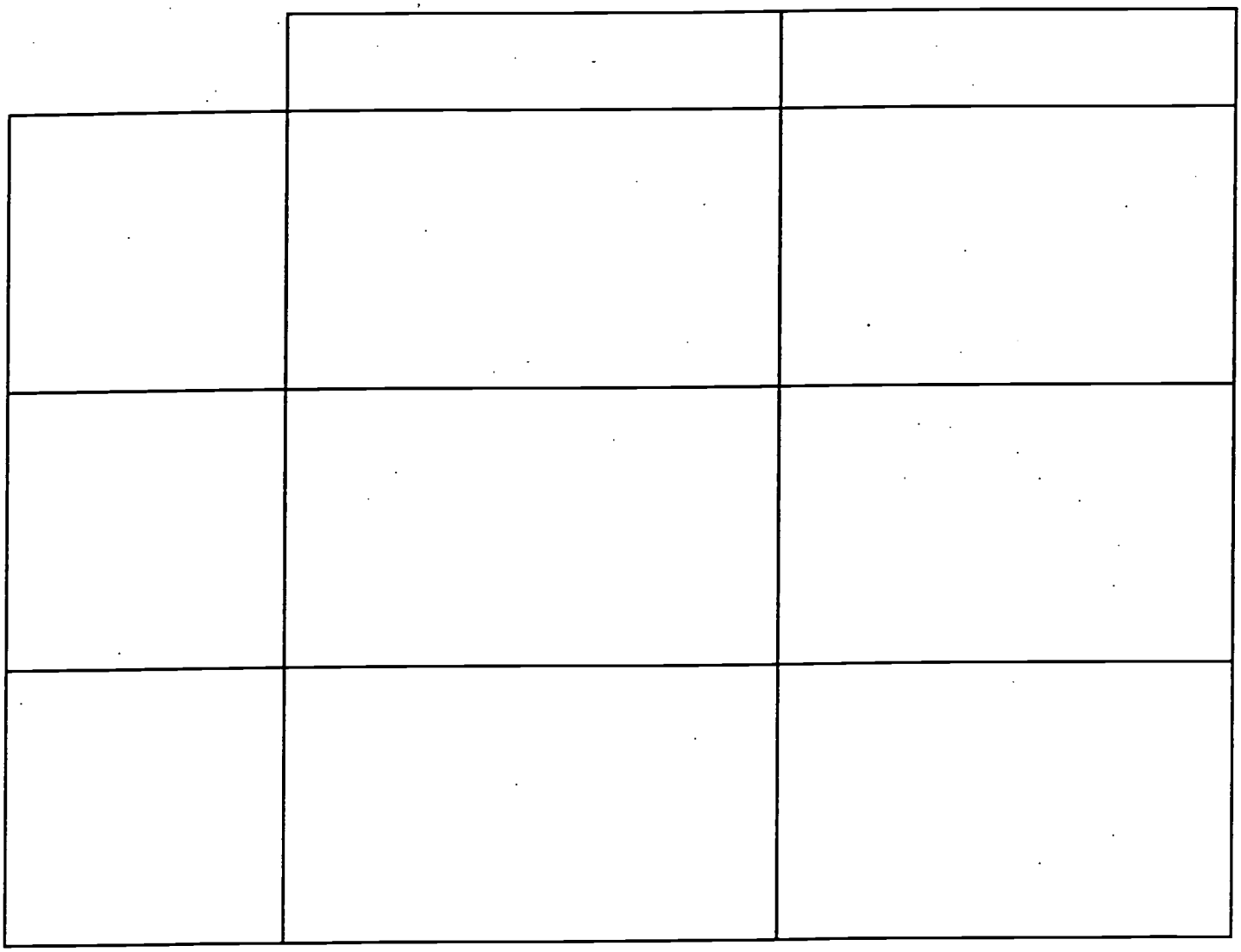
Series of Events Chain



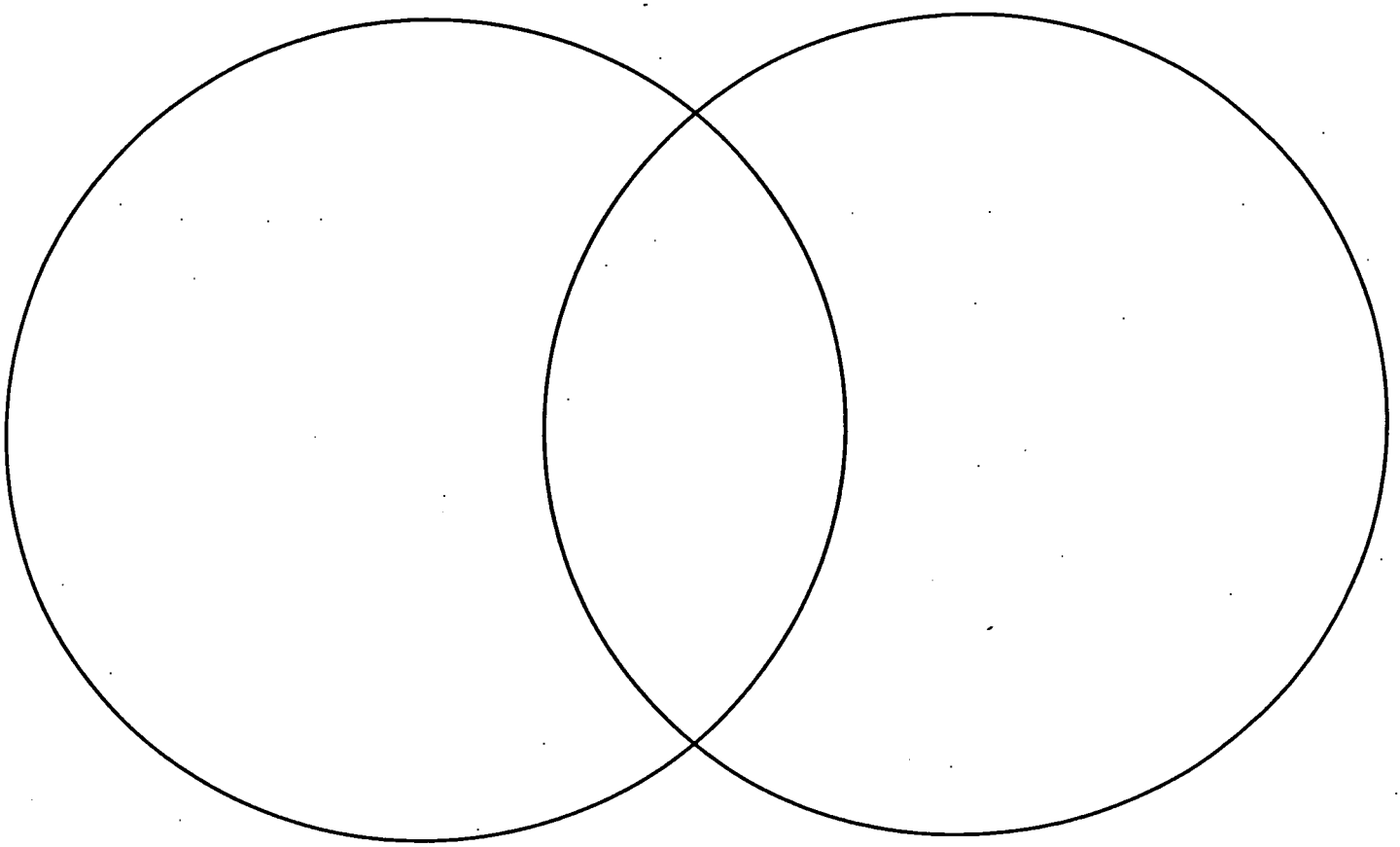
Decision-Making Frame



Comparison Matrix



Clarifying Circles



CS013231

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

ERIC®

REPRODUCTION RELEASE
(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Using Graphic Organizers, Cooperative Learning Groups, And Higher Order Thinking Skills to Improve Reading Comprehension	
Author(s): Leigh A. Bowman, Jan Carpenter, Rose Ann Paone	
Corporate Source:	Publication Date: ASAP

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic/optical media, and sold through the ERIC Document Reproduction Service (EDRS) or other ERIC vendors. Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce the identified document, please CHECK ONE of the following options and sign the release below.

[X] ← Sample sticker to be affixed to document

Check here
Permitting microfiche (4" x 6" film), paper copy, electronic, and optical media reproduction.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

Level 1

Sample sticker to be affixed to document → [ ]

"PERMISSION TO REPRODUCE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

Level 2

or here
Permitting reproduction in other than paper copy.

Sign Here, Please

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but neither box is checked, documents will be processed at Level 1.

"I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce this document as indicated above. Reproduction from the ERIC microfiche or electronic/optical media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries."

Signature: Leigh A. Bowman	Position: Student / FBMP
Printed Name: Leigh A. Bowman	Organization: School of Education
Address: Saint Xavier University 3700 West 103rd Street Chicago, IL. 60655 Attention: Dr. Richard Campbell	Telephone Number: (773) 298-3159
	Date: 3-24-98

OVER

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information reguarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:	
Address:	
Price Per Copy:	Quantity Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name and address of current copyright/reproduction rights holder:

Name:

Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC / EECE
University of Illinois
805 W. Pennsylvania Ave.
Urbana, IL 61801

If you are making an unsolicited contribution to ERIC, you may return this form (and the document being contributed) to:

ERIC Facility
1301 Piccard Drive, Suite 300
Rockville, Maryland 20850-4305
Telephone: (301) 258-5500