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A Study in Comprehension Improvement of Seventh Grade Pupils Employing the SQ3R Technique

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44

A STUDY IN COMPREHENSION IMPROVEMENT OF
SEVENTH GRADE PUPILS EMPLOYING
THE SQ3R TECHNIQUE

A Thesis
Presented to
the Graduate Faculty
Central Washington State College

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

by
Dean L. Weyrick
June, 1969

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TABLE OF CONTENTS

CHAPTER	PAGE
I. THE PROBLEM AND DEFINITIONS OF TERMS USED . . .	1
The Problem	1
Statement of the problem	1
Importance of the study	2
Definitions of Terms Used	3
Comprehension	3
Study skills	4
SQ3R study technique	4
Content area	4
Job folders	4
Limitations of the Study	4
Previous Studies in Comprehension	5
II. REVIEW OF THE LITERATURE	9
An Explanation of Comprehension	10
Factors that May Affect Comprehension	12
Reading and the content subjects	12
Background of experience	14
Use of study skills	15
A Study Method for Comprehension Improvement	18
Survey	19
Question	19
Read	20

CHAPTER	PAGE
Recite	20
Review	20
III. DESCRIPTION OF THE OKANOGAN JUNIOR HIGH	
READING STUDY	21
Development of the Okanogan Reading Study . . .	21
The subjects	21
The program	24
Procedures followed	25
Collection and Presentation of the Data	28
The pre-test and post-test	28
Presentation of the results	29
IV. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . .	40
Summary	40
Conclusions	41
Recommendations	43
BIBLIOGRAPHY	45

LIST OF TABLES

TABLE	PAGE
I. Age and I.Q. Scores of Boys and Girls in the Control Group and Experimental Group	23
II. Comprehension Raw Scores for Boys and Girls of the Control and Experimental Groups (Pre-test and Post-test)	31
III. Mean Differences in Comprehension Raw Scores (Pre-test)	32
IV. Mean Differences in Comprehension Raw Scores (Post-test)	33
V. Mean Differences in Comprehension Raw Scores for Experimental and Control Boys (Post-test)	33
VI. Mean Differences in Comprehension Raw Scores for Experimental and Control Girls (Post-test)	34
VII. Mean Differences in Comprehension Raw Scores for Control Boys and Girls (Post-test)	35
VIII. Mean Differences in Comprehension Raw Scores for Experimental Boys and Girls (Post-test)	36

TABLE	PAGE
IX. Comprehension Raw Scores for Boys and Girls of the Control and Experimental Groups (Informal Post-test)	37
X. Mean Differences in Comprehension Raw Scores (Informal Post-test)	38

CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

At the time this experiment was instigated there was a lack of research at the junior high school level which combined comprehension improvement with a study technique. The writer also had a desire to attempt to teach entering junior high school students a specific study technique which was usually taught at the senior high level. This thesis is the presentation of a study in comprehension improvement employing the SQ3R technique as conducted at Okanogan Junior High School, Okanogan, Washington.

I. THE PROBLEM

Statement of the problem. It was the purpose of this study: (1) to determine if the SQ3R technique could be used successfully with content and reading material at the seventh grade level; (2) to present a program to seventh grade students at Okanogan Junior High to determine the effect of the SQ3R method on improving comprehension as measured by the Diagnostic Reading Tests; and (3) to determine if the study methods learned could be transferred to a content area.

For the purpose of this study, the null hypothesis that there would be no significant differences in comprehension ability between the experimental group using the SQ3R study technique and the control group not using this technique was employed. Specific questions for which answers were sought in this study were the following.

1. Would there be a difference between the boys in the experimental group and the boys in the control group?
2. Would there be a difference between the girls in the experimental group and the girls in the control group?
3. Would there be a difference between the boys and the girls in the control group?
4. Would there be a difference between the boys and the girls in the experimental group?

Importance of the study. The junior high school years present new and greater challenges to students at a time in their lives when they need encouragement, understanding, and helpful instruction. It is a well established fact that students are required to read from many sources as they pursue their various courses of study. Therefore, it is logical to assume and has been

shown in many tests that the poor reader does have a more difficult time achieving success in the subject matter areas. Hill (16:412) writes that reading and study skills in the content areas can be improved. The importance of developing readers who have a variety of comprehension-study skills is the obligation of both the subject area teacher and the reading specialist. The comprehension of students involved in this present study was evaluated in order to determine what effect a specific study technique had on the improvement of comprehension skills for the experimental group as related to the control group.

II. DEFINITIONS OF TERMS USED

It is necessary that a definition of certain terminology used throughout this study be presented in order to alleviate misunderstandings which might otherwise occur.

Comprehension. The ability to interpret what one reads based on his background of experience. Comprehension may take place on the literal level or in depth depending on such factors as purpose, organization, and mind set. It requires reaction on the part of the reader.

Study skills. For the purpose of this study, study skills are ways in which a student organizes his approach to a reading situation in an effort to improve comprehension.

SQ3R study technique. The term SQ3R refers to the words Survey, Question, Read, Recite and Review which are the five steps of a specific technique used in this study as the independent variable.

Content area. For the purpose of this study, a content area refers to books and materials within a general curriculum area. This term is also synonymous with the term subject area.

Job folders. A job folder in this study was a manila folder containing two pages of reading and study material from a reading workbook. These folders were labeled and numbered so they could be used individually by students. There were nine folders in each of the content areas of mathematics, science, literature, and social studies.

III. LIMITATIONS OF THE STUDY

The data of this study were based on the pre-test and post-test of fifty-eight seventh grade students

in a small junior high school in 1967. These students represent the community of Okanogan, Washington, which has a population of 2,000. Because of the variety of elements composing socio-economic background, there was no attempt to make a systematic analysis of the subjects' socio-economic backgrounds.

The students who in earlier grades had used any of the reading laboratory materials published by Science Research Associates had possibly been in contact with the study technique used in this research. It was recognized that a prior usage of the SQ3R study technique may have affected the results of this study.

There was no attempt made during the study to control independent reading. Students who finished the job folders early were permitted to read library material or subject texts from their other classes. It was recognized that this activity may possibly have had some effect on the results of the experiment.

IV. PREVIOUS STUDIES IN COMPREHENSION

Since the early part of this century, there has been an increase in research of all phases of the reading process. As early as 1917, E. L. Thorndike pointed to a considerable lack of ability within students to interpret textbook material. Hill (16:408) comments that Thorndike

found this especially in those processes requiring reasoned validation of ideas gained against purpose of reading.

Problems concerning textbook interpretation still remain with us. Donovan (6:1) showed that approximately fifty-three percent of the students entering high schools of New York read below grade norms and, furthermore, twenty-three percent were from two to five years below the norm. Research also has found that textbooks are often higher in readability level than their grade placement (16:409).

Gray (11:47) noted further that there were two common procedures being used within high schools and colleges for attacking student reading problems. One was that reading tests were used to study the attainments and needs of students. A second procedure was to provide corrective and remedial help for poor readers.

A study reported by Henderson (14:440) pointed to the value of having pupils formulate their own purposes for reading. It was believed that the method not only led the student to the comprehension skills he needed for learning, but also gave him practice in improving those skills.

Metsker (22:3630-A) reports her study from the University of Illinois where she worked with sixth

graders to find a relationship between mental age, general reading comprehension and the ability to adjust rate to different purposes. The following conclusions were stated by Metsker:

1. Children with higher M.A. who have the ability to comprehend are slightly less versatile readers than children with lower M.A. who have the ability to comprehend.
2. Children who comprehend well on a general reading test also comprehend well when skimming or scanning rapidly.
3. Children who comprehend are no more versatile than children who do not comprehend.
4. Children with higher M.A. do not have more ability to skim and scan with comprehension than children with lower M.A.
5. Children with ability to scan rapidly comprehend well on tests of specific reading activities.
6. Children with ability to skim do not have the ability to comprehend on tests of specific reading abilities.
7. Children who comprehend well on a scanning test do not scan more rapidly than children who comprehend poorly.

Research completed in the 1920's and 1930's caused teachers to become increasingly aware of the value of silent reading. This change of emphasis was based upon the belief that silent reading comprehension was a more practical, long-range goal than mere pronunciation of words. The findings of Judd and Gray, in 1938 and 1948 respectively, showed that modern schools were

accomplishing their aims of producing better comprehension of materials read silently, and of de-emphasizing skill in oral reading (28:26).

Several research studies have been reported which suggest possible ways of improving reading comprehension. Each researcher has made his proposal regarding reading comprehension improvement based on the findings of his specific research. Although these studies all deal with comprehension, there appears to be little coordination between purpose and procedures from one study to the next.

CHAPTER II

REVIEW OF THE LITERATURE

Comprehension studies are found under a variety of titles in current research material. Authors have referred to "study skills improvement" or "reading for increased meaning" when discussing the subject of reading comprehension.

There are several reasons for emphasis on comprehension improvement. Comprehension is highly related to academic grades. Also, intelligence and vocabulary skills correlate positively with comprehension. Studies have shown that good readers make approximately four percent less oral errors per one hundred words than poor readers. Even more significance is placed on the fact that in fifty-one percent of the cases tested, the errors of the poor readers changed the meaning but the errors of good readers did not. Good readers tended to correct their own mistakes more frequently than the poorer readers. These findings would indicate that lack of good comprehension is possibly one of the poor reader's basic difficulties (25:214).

Because of a desire to help readers of all ages to gain more from their reading, researchers have studied

ways to improve ability in comprehension. This review presents information concerning comprehension improvement and methods which are being suggested for its development.

I. AN EXPLANATION OF COMPREHENSION

Attempts to identify objectively the processes involved in understanding what is read by studying in detail the errors made by children in sentence and paragraph reading were made in the early twentieth century (12:275). On the basis of evidence secured, these conclusions are listed by Thorndike (30:323-32):

1. The understanding of a paragraph involves the same sort of "organization and analytic action of ideas as occurs in thinking of supposedly higher sorts".
2. In effective reading the mind selects, represses, softens, emphasizes, correlates, and organizes "all under the influence of the right mental set or purpose or demand".
3. "The fishing around in the text" for something to use in answering a question "and its use without reorganization is one of the most debased forms of reasoning--selective thinking--which school work shows".

Smith and Dechant (25:213) listed several basic abilities to understanding:

1. Associate meaning with the graphic symbol.
2. Understand words in context and select the meaning that fits the context.

3. Read in thought units.
4. Understand units of increasing size: the phrase, clause, sentence, paragraph, and whole section.
5. Acquire word meanings.
6. Select and understand the main ideas.
7. Follow directions.
8. Draw inferences.
9. Understand the writer's organization.
10. Evaluate what is read: to recognize literary devices and to identify the tone, mood, and intent of the writer.
11. Retain ideas.
12. Apply ideas and integrate them with one's past experiences.

Traxler believes there is not an adequate definition of reading comprehension. He stated:

Specialists in the field think of 'reading' as anything from a set of more or less mechanical habits to something akin to the 'thinking' process itself. No one has yet been able to identify the components of reading comprehension . . . (32:92).

Yoakam (35:32), however, states that comprehension is an association of meanings with symbols, the evaluation of suggested meanings, a choice of a correct meaning, an organization of ideas while reading, and the retention and use of ideas gained from the content.

Authorities do not seem to agree unconditionally on an explanation of reading comprehension. It appears

to be generally accepted that comprehension involves an organization and systematic analysis of reading material. It is the writer's belief that comprehension is the retention and understanding of the material read. The degree of comprehension is dependent upon specific skills learned and developed independently.

II. FACTORS THAT MAY AFFECT COMPREHENSION

Reading and the Content Subject

The numerous problems of reading in content areas would seem to be an appropriate signal for educators to realize that adolescents need patient help and understanding when they attempt to solve their reading needs (19:160). With regard to the expectation which teachers have for pupils to know how to read subject matter material, Lee (18:28) has said, "This expectation is unrealistic unless some teacher previously has spent time teaching reading-study skills used in a particular subject. If any student does not understand the reading skills necessary to read in a content area, the teacher of this subject must accept the responsibility to teach each of his students how they should read the content of his subject".

Only recently have there been significant changes in teaching reading at the secondary level. Marksheffel (20:156) said:

During the past ten years . . . teachers have been asking pertinent questions about techniques and methods for teaching reading in the content areas.

Smith (27:318) noted that recalling what is read and fixing the content firmly in mind so that at some later time it can be brought back is an important study skill and a necessary one in "all subject fields". It seems there can be no question as to the importance of teaching reading within subject areas.

Levine commented:

Few scholars can peruse books on science, literary criticism, and history with equal facility and with derived learnings of equal importance. Yet some of our basic theories in reading instruction are predicated on the popular misconception that reading is a skill which can be applied universally to all printed matter (19:156).

Evidence presented might promote an investigation of several questions posed by Levine (19:160):

1. If understanding the written language in one body of knowledge does not yield comprehension in another, can we postulate a list of reading powers which can be of practical use in every field?
2. Can a secondary school reading expert who has no special province of learning other than English literature, social studies, or science prepare students for their reading responsibilities in history, biology, mathematics, physics, geography, economics, industrial arts, accounting, chemistry, hygiene, business arithmetic, merchandising and music?

3. Considering the different kinds of subject matter presented, can we assume the existence of a subject area known as developmental reading?
4. Should we not alert subject teachers to the necessity of spending class time in silent reading of texts because no one else can provide such training?

It would appear that there is a strong case for the development of comprehension-study skills. The basic idea of developing purposeful readers in all areas of the school curriculum can be aided by a planned attack upon teaching textbook reading skills with guidance from the content teacher. In this way the text will become more of a learning aid than a hindrance (16:413).

Background of Experience

An added factor which would affect comprehension is the student's background of experience. Hildreth said that:

For the learner to have a background of experience which ties in with reading context helps to insure learning with understanding. The child is most apt to learn to read with understanding who has had a rich background of relevant experience, whereas the child from an impoverished background may lack experiences that would aid interpretation of context (15:34).

It seems then that an appropriate beginning in any subject area would be to relate the material to experiences with which the student is familiar. Possibly with this approach, a somewhat reluctant student may become more

enthusiastic toward his work and increase his knowledge as a result of his interest in the activity.

Use of Study Skills

Exactly where to begin and what to include in a comprehension-study skill improvement program is difficult to pin-point. The preceding statement is substantiated by Smith (25:216) who commented:

Although no single basic procedure or method has been identified for developing comprehension skills, writers recommend the following procedure: survey the main headings, check the key words and ideas, and try to relate what is being read to what is already known (25:216).

Such authors as Ruth Strang, Nila Smith, and John DeBoer wrote about the skills used in studying content materials. Each of them is in close agreement with Smith's statement concerning comprehension improvement. Some investigations indicate rather clearly that there are unique differences in the skills used in different subject areas (27:309).

The needs of the student are important when determining which approach will be used to improve a student's present comprehension ability. Robinson (23:29) said that:

The creation of a study skill which uses previous findings, which satisfies the demands of school study, and which pleases the student with its efficiency is a challenge to the reading specialist.

The findings of Robinson (23:145) showed that the student's tasks consist of selection and comprehension of basic concepts, completion of his comprehension within a reasonable time factor, and the adoption to a comprehension level which will permit him to complete his assignment most efficiently. Robinson further believes that focusing a reader's attention on the main ideas in the selection tends to keep him from becoming engrossed in detail and speeds up his reading. The use of a preliminary survey and the precomprehension of what is coming can help in speeding up comprehension (23:146).

Strang (29:269) noted that if a student has already found a method of study which is efficient, there is no need to make him accept another procedure because "there is no one best method". Strang continued by saying:

However, many students are dissatisfied with their methods and want to create conditions that are conducive to study, to recognize barriers to concentration, to become aware of and to appraise the methods they are using, and to improve them (29:269).

Marksheffel (20:216) said, "The teaching of study skill is helpful for improving the learning of a large number of students when they volunteer to take the courses, when they are motivated to improve their skills, and when they are not above average in achievement".

One of the most significant studies in comprehension development was made in 1966 by Frederick B. Davis (3:499-545). Davis tested eight comprehension skills which were selected after reviewing experimental studies on comprehension in reading. Special attention was given to results of studies made after Davis had completed a 1941 study of nine reading comprehension skills. The eight skills studied in 1966 were:

1. Recalling word meanings.
2. Finding answers to questions answered explicitly or merely in paraphrase in the content.
3. Weaving together ideas in the content.
4. Drawing inferences from the content.
5. Recognizing a writer's purpose, attitude, tone and mood.
6. Drawing inferences about the meaning of a word from context.
7. Identifying a writer's techniques.
8. Following the structure of a passage.

Davis concluded that comprehension among mature readers is not a unitary mental skill or operation. Systematic and carefully planned exercises are appropriate on an individualized basis and should be provided during the secondary school education. It was further stated that these exercises should (1) familiarize students with as many word meanings as possible, (2) provide material

for drawing inferences, and (3) provide practice in following structure, location of explicit or paraphrased answers, and recognition of the attitude, tone, mood, and purpose of an author.

Attention has been directed toward several ways in which comprehension-study skills might be improved. A basic approach to improving comprehension would involve teaching of reading comprehension by the individual content teacher, relationship of subject material to the students past related experiences, and the use of an effective set of study skills.

III. A STUDY METHOD FOR COMPREHENSION IMPROVEMENT

Research studies have shown that there are varying degrees of effectiveness with regard to methods of study. Smith (27:36) stated:

The preview technique, used so often in connection with content subject books, is primarily one of organization. According to this procedure the individual skims through an entire selection or chapter noting only titles of sections, or topical sentences or main ideas (27:36).

Hammill (13:16) noted that the method which used reading skills most effectively and resulted in the greatest learning achievement was the SQ3R method.

Sister Mary Donald (5:33-35) concluded from a study of seventh grade pupils that the SQ3R method

developed better powers of organization, association, and critical thinking. Teacher observations emphasized that development of study skills and a security in independent attack of content material were results of using the SQ3R method. Test scores did not indicate a significant difference on general reading but the differences of the means of the raw scores showed a gain in favor of the experimental group.

Francis P. Robinson, in a text entitled "Effective Study", gives a detailed description of the SQ3R method (which he developed) which represents a higher level skill and has been quite effective for school work. The method outlined by Robinson included the following five steps.

SURVEY--Glance over the headings in the chapter to see the few big points which will be developed. Also read the final summary paragraph if the chapter has one. This survey should not take more than a minute and will show the three to six core ideas around which the discussion will cluster. This orientation will help you organize the ideas as you read them later.

QUESTION--Now begin to work. Turn the first heading into a question. This will arouse your curiosity and so increase comprehension. It will bring to mind information already known, thus helping you to understand that section more quickly. And the question will make important points stand out while explanatory detail is recognized as such. Turning a heading into a question can be done on the instant of reading the heading, but it demands a conscious effort on the part of the reader to make this query for which he must read to find the answer.

READ--Read to answer the question, i.e., to the end of the first headed section. This is not a passive plodding along each line, but an active search for the answer.

RECITE--Having read the first section, look away from the book and try briefly to recite the answer to your question. Use your own words and name an example. If you can do this you know what is in the book; if you can't remember, glance over the section again. An excellent way to do this reciting from memory is to jot down cue phrases in outline form on a sheet of paper. Make these notes very brief! Now repeat steps Question, Read, and Recite on each succeeding headed section.

REVIEW--When the lesson has thus been read through, look over your notes to get a bird's-eye view of the points and of their relationship and check your memory as to the content by reciting on the major subpoints under each heading. This checking of memory can be done by covering up the notes and trying to recall the main points. Then expose each major point and try to recall the sub-points listed under it (23:28-29).

Marksheffel has recently endorsed the technique proposed by Robinson. Marksheffel states that the SQ3R method of study "is known to most everyone who teaches a study skills course. It is generally recognized as being efficient and effective, especially at the high school and college levels" (20:218).

CHAPTER III

DESCRIPTION OF THE OKANOGAN JUNIOR HIGH READING STUDY

The purpose of this chapter is to describe the Okanogan Junior High reading study by reporting how participants were selected, describing the procedures and materials used, and stating the consequent findings of the study.

I. DEVELOPMENT OF THE OKANOGAN READING STUDY

As mentioned in chapter one, the purpose for this study was threefold: (1) to ascertain if the SQ3R study technique could be used successfully by seventh grade students, (2) to determine if the method would improve their comprehension as measured by a standardized test, and (3) to determine if the experimental group, due to use of the SQ3R technique, would have better comprehension raw scores than the control group.

The Subjects

The participants for this study were members of the three seventh grade reading classes at Okanogan Junior High School. These students had previously been ability grouped by the school administration. Two of the classes

contained low-average achievers and below average students. One class was composed of above average and high-average achieving students. Those in the latter class were divided equally into the two study groups. One of the below-average, under-achieving classes was selected as an experimental group and the other class was a control group. The experimental and control groups were matched on the basis of sex, chronological age, and measured intelligence.

The students involved in the research were from a variety of socio-economic backgrounds. Although a systematic analysis of the socio-economic backgrounds of the subjects was not used as one of the variables in matching the groups, students were selected for both the control and experimental groups from several economic, educational, and professional backgrounds.

Table I, on the following page, shows the groups as they were selected for the study.

The subjects' ages are given in years and months along with the I.Q. score as established by the Lorge-Thorndike Intelligence Test. Each study group had twenty-nine subjects, fourteen boys and fifteen girls. The girls in both the control and experimental group had higher mean I.Q. scores than the boys.

TABLE I

AGE AND I.Q. SCORES OF BOYS AND GIRLS IN THE CONTROL GROUP AND EXPERIMENTAL GROUP

Boys						Girls					
Control Group			Experimental Group			Control Group			Experimental Group		
Student	Age	I.Q.	Student	Age	I.Q.	Student	Age	I.Q.	Student	Age	I.Q.
1	12- 2	119	1	12- 0	118	1	12-10	91	1	11- 9	94
2	12- 3	103	2	12- 4	108	2	12- 1	111	2	12- 1	111
3	13- 3	105	3	12- 4	110	3	12- 4	118	3	12- 1	116
4	13- 3	115	4	12- 5	123	4	11- 9	120	4	12- 1	120
5	12-10	107	5	12- 8	112	5	12- 6	138	5	12- 3	135
6	12- 7	113	6	12- 8	112	6	12- 3	115	6	12- 6	116
7	12-10	121	7	12- 9	131	7	12- 3	120	7	12- 6	124
8	12-11	103	8	12-11	104	8	12- 2	126	8	12- 6	127
9	12-10	112	9	12-11	112	9	12- 4	114	9	12- 7	105
10	13- 0	103	10	13- 0	104	10	12- 4	114	10	12- 9	108
11	12- 8	103	11	13- 2	104	11	12-10	111	11	13- 0	116
12	12- 8	95	12	13- 3	92	12	12- 9	117	12	13- 0	124
13	13- 8	90	13	13- 4	86	13	13- 7	100	13	13- 2	104
14	13- 2	101	14	13- 9	94	14	13- 8	107	14	13- 3	112
						15	12-11	80	15	14- 4	87
Mean I.Q.		106	Mean I.Q.		108	Mean I.Q.		112	Mean I.Q.		113

The Program

This was a six week study carried out in a small junior high school of approximately 240 students. The ability grouping done by the administration was on the basis of I.Q., as measured by the Lorge-Thorndike Intelligence Test, and the elementary school performance of the students. This research study utilized the already established groups and further divided the classes into experimental and control groups.

Thirty-six job folders were prepared from the Be A Better Reader Workbook - Book II by Nila B. Smith (26:units 2,4,5,9). The folders were made by taking pages from the workbook and placing them in manila folders. These folders were then placed in a file so students could read them independently. The subject matter of the folders was in the fields of literature, science, mathematics, and social studies. Each of the nine folders covering these subjects contained a reading selection followed by ten comprehension and discussion questions. The folders were clearly titled and numbered to enable accurate record keeping. A record was kept for each study group so students could tell at any time which folders had not been completed.

Other than reading these folders, the program included practice and drill twice a week on phonics,

vowel sounds, silent letters, blends, digraphs, diphthongs, syllabication, vocabulary development, determining fact and opinion, prefixes, suffixes, selecting details, cause-effect relationships, use of an index, synonyms, antonyms, and how to use the library.

Procedures Followed

The physical setting of the classroom was a circular arrangement of individual desks. The students faced the center of the room and a large table where instructional materials were placed. By storing the folders on the center table, the students could select and replace the folders with a minimum of disturbance of other people. The class which contained both experimental and control group subjects was arranged so the experimental group sat on the opposite side of the room facing the control group. It was assumed by the writer that this arrangement would cause less confusion when giving directions or speaking to one specific group. Also students were seated next to members of their own group and were less concerned about the work of the other group. The students in the combined class were the higher achieving subjects and therefore were able to work independently when instructions did not pertain to them. There was no explanation of the difference between the

work for the two groups. They were simply referred to on all records as being in either Group E or Group C.

The instructions were given to each study group separately. The experimental group members were shown the folders, the content of which was explained and discussed. These same students were taught the SQ3R technique of study and were reminded of how to use it with the folders during the duration of the experiment.

The control group was instructed and shown how to read the material from start to finish. Their comprehension of the material was shown by answering questions as soon as they completed the reading. The speed of their reading was not stressed, in fact, emphasis was placed on comprehension skill rather than finishing quickly. As the study progressed, considerable teacher-pupil interaction on a one-to-one basis occurred in both groups.

The comprehension-study skills work days were conducted on Monday, Wednesday, and Friday. Each group was in class for fifty-five minutes. One folder was to be completed each day and the remaining time could be spent in studying another subject or reading a library book. This researcher set a limit of one folder per day to combat the natural desire of this age student to compete with his peers. In order for the student to

understand the application of the SQ3R technique in a complete assignment, it was required that any folder started should be completed within one class session. Since the content of the folders covered mathematics, science, literature, and social studies, the student had the chance to select folders from a variety of interest levels. No requirement was made to complete a given number of folders in any subject. However, students were encouraged to keep their reading balanced.

Tuesday and Thursday were the two days when fundamental reading skills were taught. Each group worked on the same material which was presented by the instructor in lecture or with the use of worksheets. The participants were taught the proper use of library materials by the school librarian on three days during the study.

Each job folder was identified by a number, name of the story, and the subject of the story. It was then a relatively simple task for the student to copy this information to his answer sheet so accurate records could be kept. These papers were neither corrected nor returned to the students. It was the thinking of the researcher that a grade or knowledge of responses was less important to the study and would not serve to help or hinder a participant's study skills during the duration of this research.

Time also did not permit the correction of these papers so they could be returned the following session.

Therefore, the posted records indicated only those folders which the student had completed.

II. COLLECTION AND PRESENTATION OF THE DATA

The results of any study or learning situation help to determine its value. To evaluate the reading study just described, several comparisons of the mean differences in comprehension raw scores of the control group and the experimental group were made.

The Pre-test and Post-test

The Diagnostic Reading Test-Survey Section (form A and B) was used for the pre-test and post-test. The test has three sections: General Reading, Vocabulary, and Comprehension. Since this study is related specifically to comprehension, only the comprehension scores from the DRT were used. The test measures study-type reading skills for students in grade seven through college freshmen. It consists of four selections as might be found in social studies and science material. The DRT comprehension raw score is a combination of the comprehension score on the rate of reading selection and the score from the comprehension test. This test score is a

"dependable measure of story type and work type comprehension" (1:3). The purpose of the pre-test and post-test was to measure comprehension changes resulting from use of the folders and the SQ3R study techniques.

A teacher made test was also prepared and administered at the end of the six week period. The subject matter was an eleven page section on the Roman Empire (2:101-113). The format of the selection permitted an opportunity for students to use SQ3R. There were a total of twenty-five questions, multiple choice and true-false, which permitted this researcher to determine whether the experimental or control group scored higher on material from a content textbook.

Presentation of the Results of the Study

On September 1, 1967, the Diagnostic Reading Test-Survey Section, Form A was administered to the control group and the experimental group as a means of pre-testing their comprehension ability. Six weeks after the pre-test, Form B of the DRT was given to determine if the study techniques used during the six week period had any significant effect on the comprehension improvement of the participants. The results of the two tests are given in Table II on page 31.

Each student was assigned a number which is carried throughout the presentation of the data. The table gives the comprehension raw score for each student. Data collected on participants who missed any of the tests, who moved from the district during the study, or who entered the study late were not included in any of the statistics or tables presented here.

TABLE II

COMPREHENSION RAW SCORES FOR BOYS AND GIRLS OF THE
CONTROL AND EXPERIMENTAL GROUPS
(PRE-TEST AND POST-TEST)^a

Control Group - Boys			Control Group - Girls		
Student	Pre- ^b	Post- ^c	Student	Pre-	Post-
1 . . .	24	21	1 . . .	11	20
2 . . .	20	24	2 . . .	13	24
3 . . .	16	19	3 . . .	23	27
4 . . .	23	25	4 . . .	31	28
5 . . .	25	21	5 . . .	31	30
6 . . .	16	23	6 . . .	30	33
7 . . .	17	20	7 . . .	19	25
8 . . .	19	26	8 . . .	15	11
9 . . .	33	28	9 . . .	15	16
10 . . .	27	23	10 . . .	22	20
11 . . .	21	24	11 . . .	29	25
12 . . .	17	14	12 . . .	17	31
13 . . .	11	6	13 . . .	14	22
14 . . .	25	28	14 . . .	21	29
			15 . . .	10	12
Experimental Group - Boys			Experimental Group - Girls		
Student	Pre-	Post-	Student	Pre-	Post-
1 . . .	17	26	1 . . .	11	7
2 . . .	29	28	2 . . .	13	12
3 . . .	28	21	3 . . .	10	19
4 . . .	28	32	4 . . .	22	28
5 . . .	17	18	5 . . .	30	20
6 . . .	23	24	6 . . .	26	24
7 . . .	32	32	7 . . .	19	24
8 . . .	22	22	8 . . .	29	24
9 . . .	16	22	9 . . .	21	23
10 . . .	14	22	10 . . .	5	21
11 . . .	21	24	11 . . .	17	23
12 . . .	12	18	12 . . .	26	38
13 . . .	7	12	13 . . .	12	16
14 . . .	15	20	14 . . .	26	21
			15 . . .	7	13

^aThe possible raw score was 40.

^bPre-test scores of Form A--Diagnostic Reading Test.

^cPost-test scores of Form B--Diagnostic Reading Test.

Table III shows the pre-test comprehension results of the experimental and control groups. Each group consisted of fourteen boys and fifteen girls or a total of twenty-nine subjects per group.

TABLE III
MEAN DIFFERENCES IN COMPREHENSION RAW SCORES
(PRE-TEST)

Group	N	Mean	σ_M	σ_{DM}	Obtained t	Required t
Con.	29	20.44	6.66			
Exp.	29	18.91	7.50	1.86	.82	.01=2.68

The control group achieved a mean raw score of 20.44 as compared to the 18.91 score for the experimental group. The obtained t of .82 was not statistically significant at the .01 level of confidence. Thus it may be seen that there was no statistically significant difference in comprehension ability as measured by this test at the beginning of the experiment.

Table IV shows the post-test comprehension results of the experimental and control groups. Each study group consisted of twenty-nine students.

TABLE IV
 MEAN DIFFERENCES IN COMPREHENSION RAW SCORES
 (POST-TEST)

Group	N	Mean	σ_M	σ_{DM}	Obtained t	Required t
Con.	29	21.28	6.30			
Exp.	29	22.00	6.06	1.62	.44	.01=2.68

The control group mean of 21.28 was slightly below the experimental mean of 22.00. The standard deviation from the mean scores of 6.30 and 6.06 respectively resulted in an obtained t score of .44 which was not statistically significant.

Table V gives the results of the comprehension post-test for the boys in the experimental group and the control group.

TABLE V
 MEAN DIFFERENCES IN COMPREHENSION RAW SCORES
 FOR EXPERIMENTAL AND CONTROL BOYS
 (POST-TEST)

Group	N	Mean	σ_M	σ_{DM}	Obtained t	Required t
Con.	14	21.64	5.60			
Exp.	14	21.64	5.28	2.06	.00	.01=2.78

Both groups had a comprehension mean raw score of 21.64. The standard deviation from the mean score was 5.60 for the control group and 5.28 for the experimental group. This resulted in a standard deviation of the difference between the two means of 2.06. The obtained t of .00 was not statistically significant.

Table VI shows the results of the comprehension post-test for the girls in the experimental group and the control group.

TABLE VI
MEAN DIFFERENCES IN COMPREHENSION RAW SCORES
FOR EXPERIMENTAL AND CONTROL GIRLS
(POST-TEST)

Group	N	Mean	\overline{GM}	\overline{GDM}	Obtained t	Required t
Con.	15	21.44	6.26			
Exp.	15	21.01	6.90	2.40	.18	.01=2.76

The control group achieved a mean raw score of 21.44 while the experimental group had a score of 21.01. The standard deviation from the mean scores were 6.26 and 6.90 respectively. The standard deviation of the difference between the two means was 2.40. The results were not statistically significant at the .01 level of confidence.

Table VII gives results for the comparison between boys and girls in the control group on the comprehension post-test.

TABLE VII
MEAN DIFFERENCES IN COMPREHENSION RAW SCORES
FOR CONTROL BOYS AND GIRLS
(POST-TEST)

Group	N	Mean	$\overline{\sigma}_M$	$\overline{\sigma}_{DM}$	Obtained t	Required t
Boys	14	21.64	5.60			
Girls	15	21.44	6.26	2.19	.09	.01=2.77

The control boys achieved a mean raw score of 21.64 and the standard deviation from the mean of 5.60. The girls had a 21.44 mean raw score and a 6.26 standard deviation. The obtained t of .09 was not statistically significant.

Table VIII shows results for the comparison between boys and girls in the experimental group on the comprehension post-test.

TABLE VIII

MEAN DIFFERENCES IN COMPREHENSION RAW SCORES
FOR EXPERIMENTAL BOYS AND GIRLS
(POST-TEST)

Group	N	Mean	σ_M	σ_{DM}	Obtained t	Required t
Boys	14	21.64	5.28			
Girls	15	21.01	6.90	2.27	.28	.01=2.77

The boys in the experimental group attained a mean of 21.64 and their standard deviation from the mean was 5.28. The girls had a mean of 21.01, slightly lower than the boys, and a standard deviation score of 6.90. The obtained t of .28 was not statistically significant at any level of confidence.

At the termination of the study, an informal test was administered to determine which group would score the highest on a reading selection taken from a textbook in social studies. Table IX gives the raw scores of the control group and the experimental group from the informal post-test.

TABLE IX

COMPREHENSION RAW SCORES FOR BOYS AND GIRLS OF THE
CONTROL AND EXPERIMENTAL GROUPS
(INFORMAL POST-TEST)^a

Control Group			Experimental Group		
Student	Boys	Girls	Student	Boys	Girls
1 . . .	16	13	1 . . .	17	15
2 . . .	15	15	2 . . .	21	17
3 . . .	12	19	3 . . .	17	19
4 . . .	16	18	4 . . .	19	20
5 . . .	13	20	5 . . .	18	19
6 . . .	16	18	6 . . .	17	16
7 . . .	18	19	7 . . .	22	17
8 . . .	18	14	8 . . .	15	18
9 . . .	19	20	9 . . .	18	18
10 . . .	18	15	10 . . .	14	12
11 . . .	13	17	11 . . .	17	17
12 . . .	10	17	12 . . .	21	15
13 . . .	12	9	13 . . .	14	9
14 . . .	15	20	14 . . .	14	19
15 . . .	-	8	15 . . .	-	12

^aThe possible total raw score was 25.

Table X shows the informal test comprehension results for the control group and the experimental group.

TABLE X
 MEAN DIFFERENCES IN COMPREHENSION RAW SCORES
 (INFORMAL POST-TEST)

Group	N	Mean	$\overline{\sigma}_M$	$\overline{\sigma}_{DM}$	Obtained t	Required t
Con.	29	15.44	3.26			
Exp.	29	16.82	2.88	.81	1.70	.01=2.68

The control group achieved a mean of 15.44 as compared to the higher mean of 16.82 for the experimental group. The obtained t of 1.70 was not statistically significant at the .01 level of confidence. Thus it may be seen that there was no statistically significant difference in comprehension ability as measured by this test at the end of the experiment. It must be pointed out that there is no comparison possible regarding an increase or decrease in learning on the informal test since there was not a similar form administered at the beginning of the study.

In chapter III a description of the study as it was conducted at Okanogan, the type of student involved, the program which was established and the procedures that were followed has been presented. A discussion of

testing and results was given to describe the achievement of the control and experimental groups on both a standardized test and an informal test.

CHAPTER IV

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

I. SUMMARY

There were several purposes prevalent in the writer's mind at the beginning of this study. First, it was thought that students entering the junior high school needed some instruction in study techniques which would help them adjust to increased loads of school work. Second, the writer wished to determine if the SQ3R technique could be adapted to junior high students and used successfully by them. Third, it was deemed necessary that the study should include specific emphasis on comprehension improvement.

While reviewing literature on the subject of study skills as related to comprehension improvement, it was found that Francis P. Robinson had designed and tested a method he called SQ3R. He had used and tested many high school and college students using his technique. He concluded that students who used the SQ3R method made significant increases in comprehension of subject material.

The Okanogan Junior High reading study lasted six weeks. The students were selected from the writer's

seventh grade reading classes. The research utilized an experimental group and a control group which were selected on the basis of sex, chronological age, and I.Q. score. The experimental group used the SQ3R technique three days per week following a pre-test for comprehension achievement. The control group used the same study material three days per week but did not use the SQ3R technique. The remaining two days were used by both groups for reading skill development as directed by the instructor. Materials for the study were selected from a workbook by Nila B. Smith entitled Be A Better Reader-Book II. Job folders were prepared for use on an individualized basis during the six week period.

The Diagnostic Reading Test-Survey Section was used for the pre-test and post-test in order to establish whether significant gains in comprehension raw scores occurred. An informal test was also administered at the end of the study to determine if there was any significant transfer of study skills to content material.

II. CONCLUSIONS

As a result of the research conducted at Okanogan Junior High, the null hypothesis which stated that no

significant difference in comprehension ability would occur as a result of using the SQ3R study method was accepted. Since none of the comparisons were found to be statistically significant, the answer to the questions stated following the hypothesis in chapter I was also negative; that is, the sex of the subjects appeared to have no effect on the ability to use the SQ3R technique.

On the basis of the statistical analysis, it was concluded there were no significant differences between using the SQ3R technique and reading followed by the answering of questions for the seventh grade subjects involved in this study. However, the higher mean scores for the experimental group may indicate a possible tendency for greater comprehension improvement on the part of the experimental group and would suggest that the SQ3R technique is possibly a meaningful study technique for seventh grade students. It was observed throughout the study that students in the experimental group were more organized in their approach to content material and showed greater self-confidence when beginning a study task. Students in the control group finished sooner and had more time for individualized activity than the experimental group. This was possibly due to the lack of a specific, organized approach to their reading and study.

III. RECOMMENDATIONS

Since the preceding conclusions are based on evidence that is supported by test results and student performance, it is recommended that instruction of junior high school students particularly seventh graders, include a unit on study skills.

It is recommended that each subject teacher be personally interested and show concern for the student, willing to accept him as he is and then work from that point to help him gain confidence in himself and adjust to the new situation.

It is further recommended that each subject teacher ascertain the comprehension ability of his or her students through the use of informal teacher-made tests.

In the interest of further research, the prospective researcher might consider whether a random sampling of an entire grade level is desirable. If standardized tests are to be utilized, do they apply to the specific age and grade level of the participants?

It is recommended that nine week and eighteen week studies be completed at the junior high school level for the purpose of relating the SQ3R study technique and comprehension improvement.

In further studies of this nature, it is recommended that the experimental and control groups be in separate rooms with different teachers.

It is further recommended that any papers completed by participants be corrected and returned to them. This would permit students to learn of their achievement and would also give the researcher a means of judging the quality of instruction. It might also lead to improvements for increasing student learning.

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