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An Experimental Study on the Effects of the Study Skills Course Learn How to Study on Academic Achievement at the Oblong Junior High School as Measured by the S.R.A. Achievement Test

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AN EXPERIMENTAL STUDY ON THE EFFECTS OF THE STUDY SKILLS COURSE LEARN HOW TO STUDY, ON ACADEMIC ACHIEVEMENT AT THE OBLONG JUNIOR HIGH SCHOOL AS MEASURED BY THE S.R.A. ACHIEVEMENT TEST

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William S. Brown

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William S. Brown

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CHAPTER I

INTRODUCTION

For many years elementary teachers have heard the general complaint of secondary school teachers that students come to those grades unable to read or study effectively. Similar comments have been heard at the college elvel concerning high school graduates. As a result many colleges have offered courses designed to improve study techniques.

Research has shown that students who undergo how-to-study skills courses have better academic achievement than those who do not. However, the preponderance of this research has been accomplished at the college level. My preliminary inquiry led me to believe the research done at the elementary-junior high level had been both limited and in most cases inadequate.

Can it also be stated that since the results of research at the college level indicate that academic achievement is improved as a result of the how-to-study skills courses that these results can be applied to the elementary-junior high school level?

Many students in the elementary or junior high school do not achieve academically. Could implementation of how-to-study skills courses provide these students with the necessary tools with which to achieve?

I. THE PROBLEM

Statement of the Problem. It is the purpose of this study to do the

following: (1) to compare the academic achievement gains of students, in the same school setting, taking this particular how-to-study skills course with students not taking it. (2) to provide the justification necessary to implement the how-to-study skills course into the Oblong Junior High School curriculum if the results can be applied.

Research Hypothesis. The amount of increase between pre-test and post-test scores will be greater for the experimental group receiving the study skills course, than the amount of increase displayed by the control group as measured by pre-test and post-test scores on the S.R.A. achievement test.

Null Hypothesis. There will be no significant difference in the increase of the scores shown by the experimental and the control group based on pre-test post-test results as measured by the S.R.A. achievement test.

II. IMPORTANCE OF THE STUDY

As mentioned in the introduction, the research accomplished at the elementary-junior high level on the effect of how-to-study skills courses has been both limited and in most cases inadequate.

There was some activity during the late 1940's and early 1950's in the development of how-to-study skills courses to be utilized at the elementary-junior high school level. As a review of the literature will illustrate, little has been done as of late to continue development of study skills courses at this particular school level. However, a fairly recent article may point to a significant change in content for elementary reading programs during the 1970's.

Hilton pointed out, "The improvement of reading instruction in the middle grades may be one of the most important developments in the years ahead."[1] He suggested that reading programs in the middle grades will be strengthened in part by the inclusion of content dealing with "reading-study skills" or how to study more effectively. This change has been brought about because of the complexities of our modern age. Many students cannot deal successfully with their textbooks in the content subjects because those textbooks become more difficult than they used to be. As a result, several of the newer basal series have included substantial blocks of informational type content known as "reading-study skills."[2] "Reading-study skills" have typically been a major part of how-to-study skills courses.

The composition of most middle grade reading programs has been narrative material. I found no research to indicate why the change in content was made.

There has been some evidence at the college level that students who have taken courses designed to improve study habits have increased academic effectiveness.

If the results can be applied, then why wait until college to give these courses to students? Why not teach these skills to students at an

[1]Ernest Hilton, "Some Notes on Strategy and Content for Elementary Reading Programs in the '70's," The Elementary School Journal, LXXI (April, 1971), p. 389.

[2]Ibid., pp. 384-90.

earlier age? Why allow students to go through twelve years of improper study habits and skills when this might be avoided at a much earlier date? If presented to students in the middle grades, or earlier, these skills could be developed and sophisticated by the time they entered college. It is hoped this study would test the applicability and validity of the use of how-to-study skills courses at the elementary-junior high level.

III. LIMITATIONS OF THE STUDY

It is a purpose of this study to test this particular study skills course on a group of Oblong Junior High students. If the results could be applied, the door will have been opened for future experiments in this area on a district-wide level.

It is realized that this experiment has limitations in the area of generalizations to a larger population. The size of the sample is indicative of this. The experiment has been limited to the three sections of 7th grade students at Oblong Junior High School. In all, seventy-two students are participants in this study. The experimental group contained twenty-four students, or approximately one-third of the 7th grade class. Some ninety percent of all students received their section assignment at random during pre-registration the previous spring.

The study was restricted by, but not totally limited to the study skills course Learn How to Study, copyrighted by S.R.A. Intensive instruction was limited to three days per week, for nine weeks, forty-three minutes

per day. The instruction has been administered by the school guidance counselor. The post-test is to be administered two weeks after the completion date of the study-skills course.

The book by Campbell and Stanley displayed a number of possible methods that would be effective in analyzing the results of this study.[3]

It was decided to tell the students that the purpose of the course was to increase their grades, and if such did occur, this same course might become a regular part of the school curriculum. They did not realize that they and the remainder of the 7th grade class would again take the same S.R.A. test which was taken some three weeks prior to the beginning of this course.

A variable over which there was no control, was the effect the instructor had on the subjects. Was he the type of individual that affected the scores? In other words, what would have more effect, the course or the instructor? This could be avoided in the future by having more than one group of experimental and control groups.

In the literature to be reviewed, this writer was limited to the materials available at Eastern Illinois University library, Indiana State University library, Olney Community College, Lincoln Trail Community College, and personal resources as well as those of friends and associates. The

[3]Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research? (Chicago: Rand McNally & Company, 1969), pp. 25-29.

materials include reference books, textbooks, and periodicals from the above resources.

IV. DEFINITIONS OF TERMS

How-to-Study Skills Courses. Throughout this paper the terms "how-to-study skills courses" will be used to refer to those courses designed to improve study techniques.

In this study a specific course was used in instructing students at Oblong Junior High School. The title of this course was Learn How To Study and was published by Science Research Associates. When reference has been made to this course, it shall be known as this particular study skills course.

CHAPTER II

REVIEW OF THE LITERATURE

The research specifically concerned with the effect of how-to-study skills courses has been both limited and in most cases inadequate. This was particularly true at the elementary school level. Of the literature examined by this writer, how-to-study skills courses seemed to have been implemented around 1920. Only a brief summary of the work done on this subject will here be given.

I. LITERATURE ON EVALUATION OF STUDY SKILLS COURSES

Blake[4] conducted a survey in 1953 and reported that over ninety percent of the colleges in the United States offered some kind of a study skills course. He also found that ten percent of all the freshmen were required to take such a course. In most cases, however, these courses were offered only to select groups of students.

In order to determine if students require the how-to-study courses there has been considerable research during the last dozen years on study habit inventories. Although these inventories were in different stages of development, it has been determined by Brown[5], Carter[6],

[4]Blake, W.S. Jr., "Study-Skills Programs," Journal of Higher Education. 1955, 26, pp. 97-99, and 114.

[5]Brown, W.F. and Holtzman, W.H. "Study Attitude Questionnaire for Predicting Academic Success," Journal of Educational Psychology, 1955, 46, pp. 75-84.

[6]Carter, Harold D., "Methods of Learning as Factors in the Prediction of School Success," Journal of Psychology. 1948, 26, pp. 249-258.

Gough[7], Holtzman[8], and Michael[9] that these tests measured attributes which were correlated with achievement. All basically agreed with the report of Carter[10]:

> The results showed that students with good study habits will achieve better than those who do not have good study habits. The test is valid for the prediction of achievement. It reveals consistent and reliable differences in the self reported study methods of good students as opposed to those who are unsuccessful in school.

In his work study habit inventories and factor analyses, Carter[11] determined that the tests brought out four principal variables. These variables were:

1. Morale or self-confidence.
2. Scholarly drive and values.
3. Study mechanics.
4. Tendency for getting work done.

[7]Gough, H.G. "What Determines the Academic Achievement of High School Students." Journal of Educational Research, 1953, 46, pp. 321-331.

[8]Holtzman, W.H. and Brown, W.F., "Study Habits and Attitudes in Prediction of Academic Success." American Psychologist, 1953, 8, p.369.

[9]Michael, W.B., and Reeder, D.E., "The Development and Validation of a Preliminary Form of a Study-Habit Inventory." Educational and Psychological Measurement, 1952, 12, pp. 236-247.

[10]Carter, op. cit. p. 258.

[11]Carter, H.D., "Cross-Validation of a Study Methods Test." California Journal of Educational Research, 1955, 6, pp. 32-38.

Originally Carter thought that morale and scholarly drive were most important in achievement. Later work done by Carter[12] and Chahbazi[13] showed that study mechanics were more important than was felt at an earlier time. One reason why study mechanics were not studied closer was due to the fact that study mechanics were harder to measure. Eckert[14] in his research showed that a slight improvement was found in those students who took a study skills course. McDonald[15] reported that there was a considerable amount of improvement in those students who took the study skills course. Wittenborn[16] confirmed McDonald's research by reporting:

> A statistical summary of the scholastic records of the students who attended the summer term reading classes and all students attending showed gain. The students who showed the greatest gain were those who attended most faithfully.

[12]Carter, H.D., "Mechanics of Study Procedure." California Journal of Educational Research, 1958, 9, pp. 8-13.

[13]Chahbazi, P., "Analysis of Cornell Orientation Inventory Items of Study Habits and Their Relative Value in Prediction of College Achievement." Journal of Educational Research, 1957, 51, pp. 117-128.

[14]Eckert, R.E. and Jones, E.S., "Longtime Effects of Training College Students How to Study." School and Society, 1935, 42, pp. 685-688.

[15]McDonald, A.S., "Influence of a College Reading Improvement Program to Scholastic Success in College." Journal of Educational Psychology, 1957, 48, pp. 171-181.

[16]Wittenborn, J.P., "Classes in Remedial and Study Habits," Journal of Educational Research, 1944, 37, pp. 571-586.

> Students who attended the classes showed a tendency to improve scholastic status. A review of the records of those who did not participate in comparison with those who did participate showed that those who did participate had better records than those who did not participate in the program.

These findings by Wittenborn as quoted above, correlated quite closely with Blake's findings.

Smith[17] and Wood showed the role that motivation played in school achievement. A control group was established who wanted to take the how-to-study course, but was unable to schedule the course. The experimental group wanted the course and was allowed to register for it. A second control group was composed of a sample of the freshman class. The results of the findings showed that the trained group had a higher grade point average than either the motivated control or the representative sample control group. It can be stated that motivation was not the only necessary variable to bring about improvement, but the actual taking of the how-to-study course.

Research by Paul C. Berg[18] tended to agree with the work done by Smith and Wood. Berg noted:

> In summary it has been pointed out that students who are motivated to improve and voluntarily enroll in study skills courses raise their grade point ratios and students who are

[17]Smith, D.E.P. and Wood, R.L., "Reading Improvement and College Grades: A Follow-up." Journal of Educational Psychology, 1955, 46, pp. 151-159.

[18]Berg, Paul C. and Rental, Victor M., "Improving Study Skills." Journal of Reading, 1966, 9, pp. 343-346.

similarly motivated, but do not enroll do not make the same gains.

In many cases the only skill which was developed was the skill of reading. Kilby[19], Kingston[20], McGinnis[21], and Shaw[22] all reported that there was improvement in overall performance by those students who took the reading skill course.

Only one source was found in this writer's probe for previous research which reported that negative results were achieved as a result of the use of how-to-study courses. Christantiello[23] and Cribbins reported finding one college that tried the study improvement found no favorable results and that the course was ineffective. Perhaps negative results were not reported as often as those experiments which bore out the research hypothesis.

[19]Kilby, R.W., "The Relation of A Remedial Reading Program to Scholastic Success in College." Journal of Educational Psychology, 1945, 36, pp. 513-534.

[20]Kingston, A.J. and George, C.E., "The Effectiveness of Reading Training at the College Level." Journal of Educational Research, 1955, 48, pp. 467-471.

[21]McGinnis, D., "Corrective Reading: A Means of Increasing Scholastic Attainment at the College Level." Journal of Educational Psychology, 1951, 42, pp. 166-173.

[22]Shaw, J.G., "An Evaluation of a Study-Skills Course." Personnel Guidance Journal, 1955, 33, pp. 465-468.

[23]Christantiello, P.D. and Cribbin, J.J., "Study Skills Problem." Journal of Higher Education, 1956, 27, pp. 35-38.

Sharp[24] and Robinson[25] brought out that successful how-to-study courses varied in length of time which was used to instruct them. They found in their investigations that courses varied from seven hours in length to several semesters long.

Most of the research dealt with; had been done primarily at the college level. A report of the limited research found, conducted at the elementary-junior high level follows.

Howell[26] reported students taking the how-to-study skills course were usually above the grade norm for the Iowa Every-Pupil Test of Basic Skills, and that a larger gain was made in the slow group than the fast group.

Howell[27] in a later experiment came up with the following conclusions:

> The total picture favored the experimental boys over the control boys (those not in the program) by .9 of a year, whereas the experimental girls surpassed those of the control girls by .8 of a year. Greatest growth occurred in the use of reference materials.

[24]Sharp, S.L., "Effective Study Methods." Journal of Higher Education, 1943, 14, pp. 217-272.

[25]Robinson, H.A., "A Note on the Evaluation of College Remedial Reading Courses," Journal of Educational Psychology, 1945, 16, pp. 201-206.

[26]Howell, Wallace J., "Work-Study Skills of Children in Grades IV to VIII," Elementary School Journal, 1950, 50, pp. 384-389.

[27]Howell, W.J., "Concept Formation of Work-Study by use of Autobiographies in Grade 4." Journal of Educational Psychology, 1953, 44, pp. 257-265.

Ruth Strang[28] in an experiment with subjects from the fifth grade to those in the sophomore status in college concluded that how-to-study programs benefited those students who took them. As a result of her research she concluded that study skills courses usually brought about improvement in the students who took these courses.

Many of the research experiments reported in the review of literature lacked what Campbell[29] and Stanley referred to as both internal and external validity. Some experiments did not have control groups or adequate control groups. Many of the experiments did not have random sampling of the subjects. It would thus be impossible to take some of these results and generalize to an entire population.

II. LITERATURE ON THE CONTENTS OF STUDY-SKILLS COURSES

The consideration of content for how-to-study courses is important, before implementation of such courses into the school curriculum. In researching different recommended how-to-study courses the following skills were noted as essential for the development of good study habits: self evaluation, self discipline, study schedule, improvement of reading ability, improving the memory, increasing ability to concentrate, and taking notes.

[28]Strang, Ruth, "An Introspective Approach to Study Problems." Journal of Educational Research, 1957, 51, pp. 271-278.

[29]Ibid, pp. 1-7.

The study-skills contents presented in this section were not calibrated to any particular level of education in that concepts can be taught at any level of education, so long as the teaching methods are brought down to the level of the group that is being instructed in the course.

This portion of the study includes most of the concepts or ideas presented in the SRA how-to-study skills course used at Oblong Junior High School.

The order of this section will be as follows:

1. Self evaluation and self discipline.
2. Scheduling.
3. Study setting.
4. Concentration.
5. Reading.
6. Listening.
7. Note-taking.
8. Improving memory.
9. Underlining.
10. Examinations.

SELF EVALUATION AND SELF DISCIPLINE

Before a study skills improvement course is taken it is important that a self evaluation of present study skills be made. The instructor of the course could help out by administering a study-habits inventory.

Wren[30] incorporated a study-habit inventory which was a weighted check-list of specific habits and attitudes which bore an important relationship to scholastic success. This inventory was projected for college students but could be brought to the level of the elementary-junior high by changing the terminology utilized.

Once it has been decided to take advantage of the study skills course, it is important to develop the self discipline which is necessary to make use of the course. Initally the course will result in more time being spent in study. However, in the long run it will save time and bring about better grades.

The student no longer has to be told to go and study. Once he has established a schedule he should of his own will go to his study station and begin working.

For students having difficulty getting started, Burgess V. Warren recommended the following in getting the parents involved with the study skills development of the students. The parents could (1) set up a starting time and set an alarm clock to ring at that time, (2) help prepare the study area with textbooks, pencils, paper, reference books, etc., (3) make sure the room is not overheated, (4) eliminate as many distracting things as possible, (5) quiz him on his study assignments - this will encourage him to study harder; it will also determine if he

[30]Wren, Charles G., Practical Study Aids, Stanford University: Stanford University Press, 1939, pp. 1-4.

really learned the subject matter, (6) determine if the child understands the terms used - a child may not know what the assignment means, (7) suggest that he set himself limits - if there is trouble concentrating even though conditions are favorable in the study room, time limits may help, (8) be prepared to reinforce good study habits - this could be verbal reinforcement or reinforcement that allows certain privileges.[31]

SELF EVALUATION - SELF DISCIPLINE CONCEPTS OR IDEAS

It is important that self discipline is developed. Younger children may need the help of the parents. Reinforcement for good study behavior will help this along. The ideal situation is one which the child will want to go and study without having to be told. The student should evaluate his study skills and attempt, with the aid of the parents and teachers to put aside poor study behavior.

SCHEDULING

No two people work exactly alike. It is important that each student discovers when he works best and develops a work schedule according to his results.[32] Research has shown that relatively short but frequent practice periods produce more learning than a comparable single period.

[31]Warren, Virginia Burgess, Tested Ways to Help Your Child Learn, Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1961, pp. 232-238.

[32]Orchard, Ely Norris, Study Successfully, New York: McGraw-Hill Book Co., Inc., 1953, pp. 16-17.

It is important that a schedule be followed once it has been set up. Study can be effective without a person being really "up" for it. A good habit of regular study will be formed by following the schedule. Since all schedules usually need to be adjusted, adjustments should be made as needed, while attempting to maintain the original schedule as closely as possible.[33]

SCHEDULING CONCEPT OR IDEA

To help develop self discipline, a schedule is recommended. Students in the course should be required to make up a schedule and then make revisions to it. Regularity is of importance in developing good study habits and skills. The schedule provides for this.

STUDY SETTING

Much time can be wasted and little studying accomplished unless the proper conditions are available. Lack of concentration is the worst offender of the student who is trying to study. As a result, successful studying is best accomplished in a place free from distractions. The area should include all of the necessary tools to accomplish a study task. A straight back chair and desk with good lighting are essential. The desk should face a blank wall.[34] If at all possible,

[33]Meenes, Max, Studying and Learning, New York: Random House, Inc., 1954, p. 12.

[34]Orchard, op. cit., pp. 20-21.

only studying should be accomplished at this station, so that the station may become a stimulus in order to arouse the response of studying.[35] It is also recommended that studying be done alone. Studying with others should be limited to listening and reciting of lessons in order to correct the other person. Group study is most effective as a late phase of preparation for an examination. All in all, independent study is best, but studying with others may be useful if properly implemented.[36]

If there is difficulty in finding a suitable place for studying alone, the most quiet spot in the home should be used. Most homes would probably be happy to make efforts to provide a healthy atmosphere for study should the problem be presented to the parents. If this cannot be achieved, then a visit to the library, studying after school, or studying in the home of a friend may be implemented.

STUDY SETTING CONCEPT AND IDEAS

The setting must be conducive to studying. Arrangements should be made to acquire such a setting. Concentration if of the utmost importance.

[35] Meenes, op. cit., p. 13.

[36] Ibid., pp. 14-15.

CONCENTRATION

Wren[37] defined concentration as the "ability to direct and control attention." People find no problem in concentrating on something they enjoy doing. An example of this is going to a good movie or a good basketball game. Concentration is a habit that must be developed.

Inability to concentrate may be due to the fact that proper habits were never formed or that other problems were interfering with the attention to certain facts. Little things such as having to make a phone call may distract the train of thought and break concentration. If this happens in the midst of study, jot down the task, idea, or problem on a piece of paper and attend to it later. Develop good working habits and try not to let petty annoyances interfere with concentration. Make sure that a goal is set and be determined to complete it. Begin working immediately. Don't wait and fool around until concentration is completely lost.

If difficulty in concentration persists, some of the following techniques can be used. Make a check mark each time the mind wanders; try and reduce this number. Use the stop-and-ask system. That is, read a division, topic or subtopic and then stop and question what was just read. If an adequate answer cannot be given, the material should be read a second time or until such time that mind wandering no longer exists.[38]

[37]Wren, op. cit., p. 19.

[38]Brown, Howard E., This is the Way to Study, Chicago: J. B. Lippincott Co., 1955, pp. 19-21.

CONCENTRATION CONCEPTS AND IDEAS

The greatest loss of time in studying is the lack of concentration. Techniques should be devised to try to keep the mind from wandering.

READING

It is important for a student to know when and how to vary his reading rate. Several factors determine reading rate. First is the difficulty of the material. This may range from a light novel to the technical nature of science books. Second is familiarity of the vocabulary of the material. Reading for pleasure may be done more quickly than reading for research. Reading a textbook is much slower than reading the newspaper.

Speeds used in reading were reported by Wren[39] as falling into four main categories. These four categories were:

A. Skimming is the most rapid way of reading and is used:
   1. To determine whether a book has certain information.
   2. To find the author's method or organization.
   3. To get a general survey of the book and determine its usefulness to the individual.

[39]Wren, op. cit., pp. 9-10.

B. Rapid reading is speed without skipping, and is used:

1. To get principal points.
2. To read familiar material with the purpose of picking up new ideas or to refresh the memory.
3. To find the answer to a specific problem. This rate is most appropriate for reading fiction and light non-fiction.

C. Normal or average reading represents a slowing down for thoroughness, and is used:

1. To get a fairly complete understanding of the material read.
2. To make an outline.
3. To summarize.
4. To collect information for a theme report.

D. Heavy reading calls for the slowest rate, and is used:

1. To evaluate or criticize.
2. To read very difficult or unfamiliar material.
3. To discover a method of solving a problem.

Meenes[40] brought out that most students read too slowly. They carried with them some of the bad habits which they acquired while they were in elementary school. They had not acquired skillful reading habits and

[40]Meenes, op. cit., pp. 28-29.

most people read at a slower speed than they were capable.

Robbins [41] provided the following suggestions to increase reading speed: Make fewer fixations and have a longer eye span, improve vocabulary, practice to break down old and bad reading habits, and active thought during reading.

Wren[42] and Larsen had the following comments: Eliminate word pronunciation and lip movement; read for ideas, not for words; try to get the main thought of each paragraph; look for something definite; reduce re-reading to a minimum; try to read more rapidly; time reading on various types of material.

Smith[43], Shores and Brittain brought out some of the physical reasons for poor reading and the elimination of those reasons helped to improve reading. Bad posture, poor lighting, and/or other environmental deficiencies were some examples. Defective vision might also be the cause.

Coleman[44] and Libaw through experiments found that there was rapid forgetting after reading. In order to avoid this and get more out of the reading and in the preparation for examination, they recommended the use of the SQ3R method. The "S" stands for survey. It is recommended

[41]Robbins, Philip A., How To Make Better Grades, New York: Grosset & Dunlap Inc., 1961, pp. 67-68.

[42]Wren, op. cit., pp. 10-11.

[43]Smith, Samuel, et. al., Best Methods of Study, New York: Barnes & Noble, Inc., 1958, p. 5.

[44]Coleman, James C. et al., Successful Study, Chicago: Scott Foresman & Co., 1960, pp. 52-54.

that the student glance over the headings in the chapter. This need not take more than a few minutes and will bring out the major ideas of the chapter. Also, it will help to organize ideas while reading.

The "Q" stands for question. Turn the first heading into a question. This should arouse curiosity and increase comprehension. If information is already known about the subject; it will bring it to mind. In addition, the question will make important points stand out while explanatory details are recognized as such.

The three "R's" stand for read, recite, and review. Answers to the questions that have been formed should be located and read. After a section of the book has been read, close the book and try to briefly recite what has just been read. If this cannot be accomplished, review or re-read the material over quickly, repeating the process until the material is fairly well mastered. For review, Coleman and Libaw recommended when the lesson had been read, the student was to review at times to check the memory. This could be done by reviewing the notes taken on the readings.

READING CONCEPT OR IDEAS

Most people read at a rate which can be improved. Speed of reading can be categorized into classes. The SQ3R method can be used to improve comprehension. Teach students how to use different types of reading and attempt the elimination of physical deterrents to good reading.

LISTENING

Listening may be divided into two categories, active and passive. It is important to be prepared to actively listen when seated in the classroom. Meenes[45] stated, "To benefit from a learning situation, you must adopt a set plan to learn. You are then attentive rather than passive. While the teacher lectures you listen closely avoiding daydreams."

Coleman[46] and Libaw brought out that the mind was able to think much faster than the average speaking rate of 100-125 words per minute. This gives the mind ample time to roam. Thoughts naturally stray to what is most interesting. The mind can be trained to use this advantage. As a result, the listener would get much more out of a lecture than if he just let his mind wander. When a student understands what his instructor is saying and is keeping up with him, his mind may tend to wander. The student should try to foresee the instructor's arguments, to guess the conclusions he is trying to reach.

Wren[47] brought out a list of signal words a reader should be on the alert for when he is reading. This writer believes that these should be utilized in listening as they will signal important points that may be coming up. A signal that another fact is coming are words like next, further, besides, moreover, but, also, in addition, yet, on the other

[45]Meenes, op. cit., pp. 25-26.

[46]Coleman, op. cit., pp. 9-10.

[47]Wren, op. cit., p. 13.

hand, another and finally. Signal words for another time are then, soon, meanwhile, later, at last, and finally.

Signal words for another place are there, here, above, beneath, on the other side, and yonder. Signal words for a specific case are for example, especially, and in particular, therefore, consequently, and for this reason are signal words in forming a conclusion. The latter are known as half signals. Full signals are words like "first" and "second." These reveal directly the speaker's points.

Ehrlich[48] stressed that the listener should prepare himself before the lecture. He should read the textbook assignment before going to class and not afterward. He should read over the notes he has made on the readings before the lecture. He should read his notes on the previous lecture before he comes to class. By accomplishing these three points, the student will be better prepared to listen to the lecture and take adequate notes. It will enable the listener to anticipate some of the important comments which the lecturer will be making and he will be able to tie in what he already knows with what is being presented.

LISTENING CONCEPTS OR IDEAS

Listening is an active activity. Because the mind moves faster than the average speaker, a constant effort must be made by the listener to avoid

[48]Ehrlich, Eugene H., How to Study Better and Get Higher Grades, New York: Thomas Y. Crowell Co., 1961, pp. 58-59.

having his mind wander. Preparation before the lecture is recommended. Trying to get ahead of the speaker and anticipating what he is to say is also recommended. Teach students to be aware of the wandering of the mind.[49]

NOTE TAKING

Wren[50] and Larsen recommended that the student should make his notes brief and get the important thoughts of the speaker. The only things which should be taken down in full are references, definitions, formulas, direct quotations, and specific facts. Try to arrange notes so the relationship between two items shows up. The most recommended method is to take notes in outline form.

This can be done by accomplishing the following:

1. Put statements of headlines or main topics at the extreme left of the paper, next to the margin.
2. Indent every statement which is subordinate to the preceding one.
3. Put co-ordinate or equal statements on the same line of indention.
4. Keep the beginning of all lines belonging to co-ordinate statements even with the same line of indentation.
5. Employ, in addition to indentation, a uniform labeling system such as: I, A, 1, or a.

[49]From Methods of Study by C. C. Crawford.

[50]Wren, op. cit., pp. 21-22.

Do not try to stop to recover a point that has been missed. Check later with the instructor or with a fellow student. Use cues to spot important points. Some of these points are: title and introductory remarks; repetition of the main points; summaries; key words; voice inflection; pauses; changes in the speaking voice; use of transitional words such as "besides," "therefore," and "but." As soon as possible, rework notes. This should be continued until skill in notetaking is such that reworking is not necessary. Keep notes for each subject together.

Meenes[51] stated that it was difficult to say what method of note-taking is best. Some recommend outline form and others running notes. If a student is not satisfied with his notes, Meenes recommended that he check his notes with someone who is successful in taking notes. If notes are too bulky, an outline of the notes is in order.

The recommendations stated above are for lecture notes. The taking of reading notes is also important. Smith[52] and Wren[53] both recommended that reading notes be in the student's own words and not in the words of the author. If the student cannot express the content in his own words, then he doesn't understand the material well enough. The student is cautioned not to over-outline. Very long, detailed outlines will be more of a hindrance than an aid. A uniform method of organization is

[51]Meenes, op. cit., p. 27.

[52]Smith, op. cit., pp. 21-24.

[53]Wren, op. cit., pp. 23-24.

stressed. Orchard[54] stressed the importance of extracting the central thought of each paragraph.

NOTE-TAKING CONCEPT OR IDEAS

This is one skill which requires plenty of practice to acquire. Caution is advised in taking too many notes from both lectures and readings. Teach different methods of taking notes and outlining in books. Students should seek important points and listen for words which give clues to important portions of the lecture or the readings.

IMPROVING MEMORY

Meenes[55] made the following comments in reference to memory:

> Every thing you have learned undergoes change with time. The ability to recall or to use your reading tends to diminish or to suffer distortion. How can this be prevented or offset?
>
> The first requisite for good retention is thorough learning. What is well learned is well retained. It is also true that the better the method used in learning, the better the retention. Thus, spaced learning is better retained than what is acquired through massed practice. What is learned with understanding suffers less from forgetting than what is learned by repetition alone.

[54] Orchard, op. cit., p. 46.

[55] Meenes, op. cit., pp. 53-54.

> Using your learning keeps it from being forgotten. Each time you use it you strengthen it. If you allow it to fall into disuse, it will deteriorate. You will stop using your learning when you lose interest in it. What you have no further need for, you tend to forget.
>
> Some forgetting is the result of interference from other learning. When the same cue is connected with two different memories, there will be interference until one gains dominance by practice. For that reason, interference tends to diminish as the new learning becomes more firmly established. When both responses to the same cue are of equal strength, interference is a problem until one gains by repetition at the expense of the other.

Meenes[56] also stated that forgetting was never complete. Relearning something takes less time than originally required. The loss is usually recovered with practice. Meenes stated that it is better to allow forgetting than to try to prevent it. The mind is able to store large amounts of materials and the mind does not become overburdened. It is also well to check recall of subject matter before placing complete confidence in memory. Memory may undergo distortion and thus distort the material to be recalled. The best way to restore lost memory is to relearn.

[56]Meenes, op. cit., p. 54.

Wren[57] and Larsen recommended nine points in helping to improve memory. These points were as follows:

1. Be sure to have an accurate understanding of the material you wish to remember.
2. Learn with the intention of remembering. Experiments have shown that whenever there was no intention to remember, very little progress was made despite many readings.
3. Use a logical form of organization. Before the student begins to memorize, he should assemble the materials in some logical order.
4. Select or create key words to represent the facts to be remembered.
5. Try to see mental pictures of whatever you read.
6. Memorize by using the method most appropriate for the material to be memorized.
    a. Memorize word for word those materials which are more effectively learned in that way. Formulas, dates, laws, etc., are this type; however, even much of this material can be organized. Be sure to understand the material even though you memorize it by rote.

[57]Wren, op. cit., pp. 16-17.

b. Memorize poems, plays, speeches or similar materials by repeating the whole selection from beginning to end until the general pattern becomes familiar, after which you should work on the difficult parts. If the selection is very long, you should divide it into logical units and memorize each of the units.

7. Use short practice periods. Spend ten minute periods instead of half hour periods. Take pauses after intensive memorizing, but do not take up a new mental activity. Use several sessions to memorize rather than one session. Materials will be learned better if there are intervals between repetitions.
8. Trust your memory.
9. Recite to yourself whatever you have learned. Experiments show that the best time to recite or recall materials is immediately after reading it. In one study students remembered as much after an interval of 63 days with the aid of prompt reciting as they did after one day without such reciting.

MEMORIZING CONCEPTS OR IDEAS

The best method to improve memory or retain somthing learned is to use what has been learned. Practice is the key word in this section.

Wren and Meenes are fairly well in agreement about learning one thing at a time and the use of short practice periods. Teach students that if they are to retain something they must use it.

UNDERLINING

The main purpose for underlining is brought out by Smith[58] and Brittain. They indicated the following:

1. To designate weak spots in mastery of subject matter.
2. To distinguish facts from opinions, and truths from error.
3. To indicate important problems, facts and ideas to be considered and remembered.
4. To make a word, sentence, paragraph, idea, or argument easy to locate.
5. To point out selected passages, words, or facts that will be needed for special uses such as to clinch an argument or to apply knowledge to practical use.

Meenes[59] brought out that underlining helped the student to keep alert and made it easier for him to locate significant material in the book at a later date.

The student should keep in mind that he should underline only in a book that he owns. Too much underlining would defeat the purpose set out to

[58]Smith, op. cit., p. 16.

[59]Meenes, op. cit., p. 28.

accomplish. A red pencil is recommended. Once the student has mastered the area, he may go over the red with a black pencil. Key facts and statements that are not understood should be underlined. Place a large question mark in the margin of the area that is not understood. Passages which are to be reviewed should also be underlined. Special passages should be underlined also. In the case of special passages a different color or double lines should be used. Little notes in the margin often prove useful.[60]

Meenes[61] indicated that underlining may not be enough. In that case the student should then outline the chapter or material he is working with.

UNDERLINING CONCEPTS OR IDEAS

Students should not be afraid to mark up their own books by underlining. Too much underlining is as bad as too little or no underlining. Teach students how to effectively underline in the books which they own. Underlining is an excellent way to get quick review of materials already covered.

PREPARING FOR AND TAKING EXAMINATIONS

Meenes[62] indicated that direct preparation for a test is undertaken with a different mental set. Try to anticipate the type of questions and the

[60]Smith, op. cit., pp. 17-20.

[61]Meenes, op. cit., p. 28.

[62]Ibid, p. 32.

kind of answers that the questions require. Then, examine the materials and learn what is needed for the test to the degree that insures adequate recall at the time of the examination.

The following steps should be followed according to Meenes:

1. Look through your material and bring together all that belongs to a single topic.
2. Make an exclusive list of topics and itemize every item of information or idea that is relevant.
3. Study topic by topic. Your topical organization will give you your answers to essay questions and will also provide information for short answer questions.

This method will help in preparation for any type of test if supplemented by self-testing with the type of question that will make up the examination. Meenes recommended learning the material rather than to be excessively concerned over the type of questions and the kind of answers that the questions require. The construction of a special outline containing cue words and phrases as aids to memory can help as a review tool shortly before taking the test and thus help keep memory alive.

Wren[63] indicated that the best method for preparing to take examinations and the actual taking of examinations was simply adequate preparation for the examinations. This was the most important suggestion for overcoming jitters. Wren believed in systematic preparation for examinations.

[63]Wren, op. cit., p. 24.

He gave the following ten hints:

1. Begin the day after a test to prepare for the next test.
2. Arrange for a schedule for review.
3. Review by making a list of important laws, principles, theories, experiments, or ideas.
4. Make a condensed summary or outline of material reviewed.
5. Cramming, as a concentrated review of material previously learned is beneficial. Cramming as a last minute effort to learn for the first time is harmful, because it results in a confused mass of undigested material. (Meenes[64] strongly agrees with this.)
6. Predict questions which you would ask if you were the instructor and then be sure you know the correct answer.
7. Find out from the instructor the kind of test that will be given and material to be covered. Some instructors make available examinations from previous years.
8. Know the difference between essay and objective examinations. Realize that essay tests, which require the ability to recall, necessitate a study emphasis which is different from that necessary for objective tests, which require the ability to recognize.

[64]Meenes, ibid, p. 9.

9. Review selectively. Give special attention to phases of the subject in which you are weak.
10. Analyze previous examinations in order to determine your weaknesses.

Wren[65] had recommendations on learning how to write for objective examinations. He listed seven points to be remembered:

1. Read the directions twice and underline all significant words in the directions.
2. Find out if you will be penalized for wrong answers or whether only the correct answers will be counted. If there is no penalty for wrong answers, guess; however, if there is a penalty, answer only if you are reasonably sure.
3. Answer the questions as you read them, except that you should omit all difficult and debatable questions and come back to them later.
4. Try recalling a forgotten fact by some relationship. If you cannot recall it, drop it and come back to it later.
5. Underline words such as only, always not usually, in the test questions before you answer them. Note that true-false questions including such words as most, generally, and may do allow for exceptions.

[65]Wren, op. cit., p. 25.

6. Try changing the wording of a difficult true-false statement so that you are able to understand it better. An objective test measures not only knowledge, but also carefulness in reading.
7. Upon finishing your paper, re-read it as a check against carelessness; whenever you are in doubt, rely upon your first answer.

Recommendations in the actual writing of essay examinations were:

1. Read all the questions through first unless there is a large number of questions, each requiring a short answer, or unless they are being written on the chalkboard. Spend five minutes or more making a very sketchy outline of the answers jotting down key words or phrases.
2. Make up your mind quickly on optional questions. Don't waste time worrying about your decisions.
3. Answer first the question that you are certain you know, leaving plenty of space for answers to omitted questions. After each answer, leave enough space for additional thoughts which you may wish to add during the course of the examination.
4. Concentrate upon one question at a time. Once you have selected the question with which you want to deal, let it be your sole concern for the time being.

5. Be sure you know exactly what is wanted before you begin to write. Distribute your time proportionately among the questions.
6. Think more and write less. Instructors are usually impressed by brevity, conciseness, and accuracy.
7. If you do not know the answer to a question, try to reason it out. If you cannot reason it out, do not waste time giving an erroneous or absurd answer.
8. Begin your answer to each question with one or more summary sentences. You may amplify these as much as time permits.
9. Be familiar with what is required by directions such as 'outline', 'name', 'describe', 'illustrate', 'explain', and 'define'. Note the following:
    a. 'Name the kinds...outline...enumerate'. This type of question tests your ability to remember connected facts, ideas, and principles. Name the items wanted, but do not explain them unless you are instructed to do so.
    b. 'Define...describe...explain'. In defining, name the general class to which the item belongs, and then indicate how it differs

from the other items of the same class. In describing or explaining, go into more detail; try presenting the thing from several points of view.

c. 'Compare'...

Take the two things named and show in what ways they are alike, and in what ways they differ.

d. 'Discuss'...

The answer to a discussion question, above all others, needs to be carefully organized. Use the back of your examination booklet or sheet to jot down the organization of your answer. Write comments on the kinds, causes, quality, steps, etc., making your organization clear by using numbers for each topic. Give illustrations to make the meaning clear.

10. Pay no attention to your neighbor; he may be a poor student.

11. Check your examination paper to determine whether you left out answers to questions or part of questions, made statements on your paper that you did not mean or which are not clear, and that you followed directions.[66]

[66] Wren, op. cit., pp. 25-27.

Wren incorporated in his checklist above most of the recommendations made by Coleman[67] and Libraw, Orchard[68], Robbins[69], Ehrlich[70], and Crow[71]; all agreed with the points that were brought out by Wren. There was little disagreement in this area by the various authors.

PREPARING FOR AND TAKING EXAMINATIONS: CONCEPTS OR IDEAS

Being thoroughly prepared is the best method to face an examination and avoid the jitters. Students should know the types of test and what kinds of preparation necessary for each. Keep on the alert for key words. Review the test before it is handed in.

SUMMARY OF LITERATURE REVIEWED

It should be pointed out that throughout this chapter, Review of Literature, a synopsis follows each topic discussed. It is titled first by the title of the topic under consideration, then followed by the heading Concept or Ideas.

[67]Coleman, op. cit., pp. 19-22.

[68]Orchard, op. cit., pp. 62-68.

[69]Robbins, op. cit., pp. 58-64.

[70]Ehrlich, op. cit., pp. 254-279.

[71]Crow, Lester and Alice, How To Study, New York: Collier Book, 1963, pp. 140-159.

To this writer, it is apparent that the literature reviewed contains no cognition skills not capable of being presented on a level attainable by an average seventh grade student. Most of the skills and concepts discussed in this chapter are of a progressive nature. The skills are those which grow with experience and maturity. Students of all ages could experience success in some form on all items discussed in this chapter.

CHAPTER III

DESIGN OF THE STUDY

The primary purpose of this study was to determine the effects of the how-to-study course on academic achievement of students who had taken the course.

Subjects: The subject sample consisted of sixty-seven seventh grade students from Oblong Junior High School at Oblong, Illinois. The study was conducted during the spring semester of 1974. All students were randomly assigned at the beginning of the school year to their respective class section. 7A was selected at random to be the experimental group. 7B and 7C thus became the control group and received no special treatment in regards to this study. The experimental group contained twenty-seven students of which six failed to complete materials needed for this study. The control group contained some fifty-one students of which six were dropped for failure to complete materials needed for this study. Failure to complete materials indicates the student failed to complete either the pre-test, post-test, or both.

For a list of students completing the study, see Tables III and IV in Chapter IV.

Research Hypothesis: The amount of increase between pre-test and post-test scores will be greater for the experimental group receiving the study skills course, than the amount of increase displayed by the control group as measured by pre-test and post-test scores on the S.R.A. Achievement Test.

Null Hypothesis: There will be no significant difference in the increase of the scores shown by the experimental and the control group based on pre-test post-test results as measured by the S.R.A. Achievement Test.

Independent Variable: The independent variable in this experiment was the treatment given the experimental group. This treatment was an intensive how-to-study skills course.

Dependent Variable: The amount of "change" between pre-test and post-test scores for each group on the basis of S.R.A. test scores as measured by the "t" test for comparing independent means.

The S.R.A. Achievement Test was chosen because it was the test utilized for the past five years at Oblong Junior High School. All of the skills which were taught to the experimental group were measured in this test.

Procedures: The experimental group in this study received a prescribed study skills course entitled Learn How To Study published by Science Research Associates of Chicago, Illinois. The contents of the course included the areas of:

1. Why it is important to study.
2. How to set up good conditions for study.
3. How to find information.
4. How to organize information.
5. How to report information.

The same instructor taught all areas. The actual content of each of these five areas was very similar to the skills areas reviewed in Chapter II of

this paper. They were as follows:

1. How people learn to study.
2. Study habits checklist.
3. Making a schedule for study.
4. Arranging a place for study.
5. How to listen in class.
6. Reading for facts.
7. Using the dictionary.
8. Using the library.
9. Making an outline.
10. Taking notes in class.
11. Making a report.
12. Preparing for a test.
13. Taking a test.

The study skills course was designed for nine weeks, three days per week, forty-four minutes per day. 7A was selected as the experimental group by the flip of a coin. 7B and 7C, the remainder of the seventh grade class became the control group.

7A spent three of their five weekly study-hall periods covering material in the study skills course, Learn How To Study. 7B and 7C remained in their respective study-halls on regular five days per week basis.

The amount of time for the treatment to take effect was twelve weeks. The post-test was administered at that time to the entire seventh grade population. The experimental and the control group received both the pre-test and the post-test in one large group. The tests were administered by the

same individual, the school guidance counselor.

Experimental Design: The research design utilized for this experiment was the pre-test, post-test, control group design. (See Table II in Chapter IV.)

R	O	X	O
R	O		O

Campbell and Stanley reported this design very strong in internal validity. They also reported this to be the most widely used of the true experimental designs discussed in their book.[72]

Statistical Procedures: The raw data used in analyzing the results of this experiment was the mean scores from the pre-test and post-test administered to both the experimental and control group. This data was the basis for determining the standard deviation of the mean between members of the same group on both the pre-test and the post-test.

The application of a two-sample "t" test was utilized to measure the amount of change between the post-test pre-test mean scores for the experimental and control group. This was a one tail test due to the nature of the research hypothesis. In order for the treatment to show significant difference the "t" value would have to be at least 1.671 at the .05 level.[73]
Further analysis could be applied to the results of this experiment such as: Did girls do better than boys? Did certain intelligence ranges score higher? For the present, this writer was only interested in seeing what effects this particular study skills course had on achievement as demonstrated on the S.R.A. Achievement Test.

[72]Campbell, op. cit., p. 13

[73]Van Dalen, op. cit., p. 381

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The purpose of this experiment was to statistically compare the achievement of two groups of Oblong Junior High students. The experimental group received an intensive nine week how-to-study course designed to improve academic achievement. The control group continued their normal school routine.

The "t" test for differences between independent means was applied to statistically analyze the results of the application of the test to the two groups to determine if the results were significantly different. The confidence level was set at the .05 level. In order to show a significant difference the "t" value would have to be at least 1.671.

Results of Statistical Analysis: The results of the "t" value at -.67221 proved to reject the research hypothesis. Thus, the null hypothesis can be accepted. (See Table V this chapter.)

TABLE 1

SOURCES OF INVALIDITY FOR DESIGNS 1 THROUGH 6

	Sources of Invalidity											
	Internal								External			
	History	Maturation	Testing	Instrumentation	Regression	Selection	Mortality	Interaction of Selection and Maturation, etc.	Interaction of Testing and X	Interaction of Selection and X	Reactive Arrangements	Multiple-X Interference
Pre-Experimental Designs:												
1. One-Shot Case Study X O	−	−				−	−			−		
2. One-Group Pretest-Posttest Design O X O	−	−	−	−	?	+	+	−	−	−	?.	
3. Static-Group Comparison X O --- O	+	?	+	+	+	−	−	−		−		
True Experimental Designs:												
4. Pretest-Posttest Control Group Design R O X O R O O	+	+	+	+	+	+	+	+	−	?	?	
5. Solomon Four-Group Design R O X O R O O R X O R O	+	+	+	+	+	+	+	+	+	?	?	
6. Posttest-Only Control Group Design R X O R O	+	+	+	+	+	+	+	+	+	?	?	

Note: In the tables, a minus indicates a definite weakness, a plus indicates that the factor is controlled, a question mark indicates a possible source of concern, and a blank indicates that the factor is not relevant.

It is with extreme reluctance that these summary tables are presented because they are apt to be "too helpful," and to be depended upon in place of the more complex and qualified presentation in the text. No + or − indicator should be respected unless the reader comprehends why it is placed there. In particular, it is against the spirit of this presentation to create uncomprehended fears of, or confidence in, specific designs.

psychological processes which systematically vary with the passage of time, independent of specific external events. Thus between O_1 and O_2 the students may have grown older, hungrier, more tired, more bored, etc., and the obtained difference may reflect this process rather than X. In remedial education, which focuses on exceptionally disadvantaged persons, a process of "spontaneous remission," analogous to wound healing, may be mistaken for the specific effect of a remedial X. (Needless to say, such a remission is not regarded as "spontaneous" in any causal sense, but rather represents the cumulative

TABLE II

NTERPRETATION OF HEADINGS

X – PRETEST SCORE
Y – POSTTEST SCORE
-X – AMOUNT OF CHANGE FROM PRETEST TO POSTTEST
M_X – MEAN SCORE OF PRETEST
M_Y – MEAN SCORE OF POSTTEST
M_{Y-X} – MEAN AMOUNT OF CHANGE

TATISTICS OF IMPORTANCE

MEAN SCORE OF PRETEST
7A – 6.448 7B&7C – 6.630

MEAN SCORE OF POSTTEST
7A – 7.195 7B&7C – 7.319

MEAN IMPROVEMENT
7A – .352 7B&7C – .472

TABLE III

7A EXPERIMENTAL GROUP

ME	Pretest Score X	Posttest Score Y	Y - X	$X - M_x$	$Y - M_y$	$(Y-X-M_{y-x})$	$(Y-X-M_{y-x})^2$
1. Girl	5.8	6.3	+ 0.5	+ .648	+ .895	+ .148	.021904
2. Boy	4.7	4.4	- 0.3	+1.748	+2.795	- .652	.425104
3. Girl	5.8	4.9	+ 0.7	+ .648	+2.295	+ .348	.121104
4. Boy	4.6	4.1	- 0.5	+1.848	+3.095	- .852	.728304
5. Girl	8.4	8.9	+ 0.5	-1.952	-1.705	+ .148	.021904
6. Girl	6.6	7.1	+0.5	- .152	+ .095	+ .148	.021904
7. Girl	5.8	6.4	+ 0.6	+ .648	+ .795	+ .248	.011504
8. Boy	5.6	6.1	+ 0.5	+ .848	+1.095	+ .148	.021904
9. Girl	10.7	11.1	+ 0.4	-4.252	-3.905	+ .048	.002304
10. Girl	8.8	9.3	+ 0.5	-2.352	-2.105	+ .148	.021904
11. Boy	6.4	7.7	+ 1.3	+ .048	.505	+ .948	.897704
12. Girl	6.7	7.3	+ 0.6	- .252	- .105	+ .248	.071504
13. Boy	4.8	4.4	- 0.4	+1.648	+2.995	- .752	.565504
14. Boy	6.1	5.7	- 0.4	+ .348	+1.495	- .752	.565504
15. Boy	6.8	6.4	- 0.4	- .352	+ .795	- .752	.565504
16. Girl	8.2	8.8	+ 0.6	-1.752	-1.605	+ .248	.071504
17. Boy	10.7	11.1	+ 0.4	-4.252	-3.905	+ .048	.002304
18. Girl	10.1	11.2	+ 1.1	-3.652	-4.005	+ .848	.719104
19. Boy	5.9	5.7	- 0.2	+ .548	+1.495	- .552	.304704
20. Boy	7.1	8.2	+ 1.1	- .652	- .005	+ .848	.719104
21. Boy	5.8	6.1	+ 0.3	+ .648	+1.095	- .052	.002704
ACS —	135.4	151.1	7.4				5.942984
ANS —	6.448	7.195	.352				

.352
21
= 5.942984

IME	Pretest Score - X	Post test Score - Y	$Y-X$	$X-M_x$	$Y-M_y$	$Y-X-(M_{y-x})$	$[Y-X-(M_{y-x})]^2$
1. Boy	9.8	11.7	+1.9	+2.170	+4.381	+1.428	2.039184
2. Girl	5.3	5.2	-0.1	-1.330	-2.119	-.572	.327184
3. Boy	6.3	6.4	+0.1	-.330	-.919	-.372	.138384
4. Boy	6.7	6.8	+0.1	+.170	-.519	-.372	.138384
5. Boy	8.5	9.6	+1.1	+1.870	+2.281	+.628	.394384
6. Girl	4.3	4.3	0.0	-2.330	-3.019	-.472	.222784
7. Boy	4.3	4.4	+0.1	-2.330	-2.919	-.372	.138384
8. Girl	8.7	8.5	-0.2	+2.070	+1.181	-.672	.451584
9. Girl	8.7	9.3	+0.6	+2.070	+1.981	+.128	.016384
10. Boy	4.3	5.1	+0.8	-2.330	-2.219	+.328	.107584
11. Boy	4.1	4.4	+0.3	-2.530	-2.919	-.172	.029584
12. Girl	7.6	7.7	+0.1	+.970	+.381	-.372	.138384
13. Boy	5.4	5.9	+0.5	-1.230	-1.419	+.028	.000784
14. Boy	4.1	4.1	0.0	-2.530	-3.219	-.472	.222784
15. Boy	4.6	4.8	+0.2	-2.030	-2.519	-.272	.073984
16. Boy	6.1	6.5	+0.4	-.530	-.819	-.072	.005184
17. Boy	4.9	5.5	+0.6	-1.730	-1.819	+.128	.016384
18. Boy	4.6	5.9	+1.3	-2.030	-1.419	+.828	.685584
19. Girl	5.2	5.8	+0.6	-1.430	-1.519	+.128	.016384
20. Girl	5.3	5.5	+0.2	-1.330	-1.819	-.272	.073984
21. Girl	4.4	5.1	+0.7	-2.230	-2.219	+.228	.051984
22. Boy	4.6	5.6	+1.0	-2.030	-1.719	+.528	.278784
23. Boy	4.7	4.1	-0.6	-1.930	-3.219	-1.072	1.149184
24. Girl	7.9	7.2	-0.7	+1.270	-.119	-1.172	1.373584
25. Boy	6.3	6.2	-0.1	-.330	-1.119	-.572	.327184
26. Girl	6.7	9.2	+3.5	+.170	+1.881	+3.028	9.168784
27. Boy	7.8	8.9	+1.1	+1.170	+1.581	+.628	.394384
28. Girl	7.7	8.1	+0.4	+1.070	+.781	-.072	.005184
29. Girl	8.6	9.3	+0.7	+1.970	+1.981	+.228	.051984
30. Boy	4.1	4.2	+0.1	-2.530	-3.119	-.372	.138384
31. Boy	7.1	7.7	+0.6	+.470	+.381	+.128	.016384
32. Boy	5.6	6.3	+0.7	-1.030	-1.019	+.228	.051984
33. Girl	7.9	8.7	+0.8	+1.270	+1.381	+.328	.107584
34. Girl	10.5	11.7	+1.2	+3.870	+7.981	+.728	.529984
35. Girl	10.7	11.6	+0.9	+4.070	+7.881	+.428	.183184
36. Boy	5.7	5.7	0.0	-.930	-1.619	-.472	.222784
37. Boy	6.1	6.1	0.0	-.530	-1.219	-.472	.222784

TABLE IV 7B & 7C CONTROL GROUP, CONTINUED

NAME	PRETEST SCORE-X	POSTTEST SCORE-Y	Y-X	X-M_x	Y-M_y	Y-X-(M_{y-x})	$[Y-X-(M_{y-x})]^2$
39. Boy	5.8	6.4	+ 0.6	- .830	- .919	+ .128	.016384
40. Girl	10.5	11.3	+ 0.8	+3.870	+3.981	+ .328	.107584
41. Boy	5.6	4.6	- 1.0	-1.030	-2.719	-1.472	2.166784
42. Boy	6.5	5.8	- 0.7	+ .070	-1.519	-1.172	1.373584
43. Girl	8.3	9.2	+ 0.9	+1.670	+1.881	+ .428	.183184
44. Girl	6.6	7.4	+ 0.8	- .030	+ .081	+ .328	.107584
45. Girl	10.1	10.1	0.0	+3.470	+2.781	- .472	.222784
46. Girl	9.6	10.7	+ 1.1	+2.970	+3.381	+ .628	.394384
TOTALS —	307.0	336.7	21.7				23.913264
MEANS —	6.630	7.319	.472				

$= .472$

$= 46$

$^2 = 23.913264$

$$\text{om} = \sqrt{\frac{\Sigma x_1^2 + \Sigma x_2^2}{N_1 + N_2 - 2}\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}$$

$$S_{DM} = \sqrt{\frac{\Sigma X_1^2 + \Sigma X_2^2}{N_1 + N_2 - 2}\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}$$

$$= \sqrt{\frac{5.942984 + 23.913264}{21 + 46 - 2}\left(\frac{1}{21} + \frac{1}{46}\right)}$$

$$= \sqrt{\frac{30.856248}{65}\left(\frac{1}{21} + \frac{1}{46}\right)}$$

$$= \sqrt{.475604\left(\frac{1}{21} + \frac{1}{46}\right)}$$

$$= \sqrt{.475604 \times .067}$$

$$= \sqrt{.031865468}$$

$$= .17851$$

ST FOR INDEPENDENT MEANS

$$\frac{M_1 - M_2}{S_{DM}} = \frac{.352 - .472}{.17851}$$

$$= \frac{-.120}{.17851}$$

$$= -.67221$$

CHAPTER V

SUMMARY AND CONCLUSIONS

For years, teachers at various levels of education have indicated that students come to those levels unable to read or "study" effectively. As a result there has been an increased tendency at the college level to offer courses designed to improve study techniques.

The notion that improved academic study habits, leading in turn to increased academic effectiveness, is educationally sound. There has been evidence, at the college level, that students who undergo study skills courses have better academic achievement than those who do not.

If the results could be applied, why wait until college to instruct students in study techniques? Why not offer study skills courses prior to the senior high level?

Major Findings: The "t" test statistics showed the difference between the means of the experimental and control groups not to be significant at the .05 level. The research hypothesis was rejected and the null hypothesis accepted.

Conclusions: Generalizations of results from a particular group of students having taken a course to an entire student population at other institutions may be very risky. There are so many variables that Oblong students may not be very representative of other student populations. As a result, these conclusions were drawn with a bit of caution.

From the findings at this point, this writer concludes the following:

1. The Oblong Community Unit School District does not have the necessary justification to implement this particular study skills course into it's seventh grade curriculum.
2. Oblong Junior High students did not achieve better academically as a result of having taken this particular study skills course, as reflected by the S.R.A. test scores.
3. The results of this limited study, using this particular study skills course, indicated that previous results at the college level could not be applied to Oblong Junior High students.

Recommendations: The results of this study cannot be termed as conclusive. This was a limited study intended merely to "open the door" to future study on the effects of study skills courses at the elementary school level. Consequently, this writer would like to make the following recommendations:

1. Another study be made at a lower grade level, and one at the senior high level involving a greater number of students.
2. A follow-up study should be done on the academic achievement of those students involved in the Oblong seventh grade experiment.

3. An immediate follow-up study should be made at the close of this semester. The study should compare the marks received by individual students in each subject of study. It is possible that a significant level of increase might be noted in better grades earned by students in either the experimental or the control group.

4. A further statistical analysis of this study should be made with consideration given to other variables, such as: Did one sex achieve better than the other? Did certain intelligence ranges score higher than others?

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