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The Development, Implementation, and Evaluation of a Junior High School Study Skills Program for a Small Rural School

Donald Lawrence Burton II

Eastern Illinois University

This research is a product of the graduate program in Educational Administration at Eastern Illinois University. Find out more about the program.

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The Development, Implementation, and Evaluation of a
Junior High School Study Skills Program for a Small Rural School

(TITLE)

BY

Donald Lawrence Burton II

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1990

YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
THIS PART OF THE GRADUATE DEGREE CITED ABOVE

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The Development, Implementation, and Evaluation of a Junior High School Study Skills Program for a Small Rural School

Donald L. Burton II

Eastern Illinois University
Abstract

The purpose of this field experience project was to develop a junior high school study skills program for a small rural school. Upon completion of its development, the study skills program was pilot-tested in the Tower Hill Junior High School in Tower Hill, Illinois. After the background and possible significance of this field study is discussed, specific project objectives and research hypotheses are listed along with the appropriate operational definitions, assumptions and delimitations for this field experience. A representative review of the literature and research is given on the subject of study skills and study skills programs. Field experience activities are explained in detail. Included for each of these activities is a description of the types of data that were collected. Measuring instruments and/or data collection techniques that were used, and how the data was analyzed. The evaluation procedures which were developed and used in this field experience project determined that students did improve their study habits, did improve their knowledge of study skills, and, to a certain extent, did improve their academic achievement as a result of the new study skills program.
The purposes of this field experience project were to develop a junior high school study skills program for a small rural school, pilot-test it in the Tower Hill Junior High School in Illinois, and evaluate its effectiveness.

Background and Significance of the Field Experience

The setting for this field experience project was Tower Hill Junior High School, which is centrally located in the town of Tower Hill, Illinois. The town of Tower Hill sits on Illinois Route 15 and is the midpoint between the cities of Pana and Shelbyville. The Tower Hill Community Elementary School District Number 10 is comprised of 180 students, 58 of which make up the junior high school, consisting of grades 6, 7, and 8. The school district employs five full-time teachers in the junior high school—one for each major subject area.

For many years the elementary and junior high school teachers at Tower Hill have complained that their students lack basic study skills. These same elementary and junior high school teachers have heard the general complaint of secondary school teachers at Tower Hill that students come to those grades unable to study effectively. Upon investigation it was discovered that there was no specifically designed instruction
concerning study skills in the district. The need for a program of this type was evident.

In response to this need, the Tower Hill Junior High School Study Skills Committee was created during the fall of 1987. Five junior high school teachers and one junior high school administrator (this writer) comprised the study skills committee. This committee designed the program curriculum and pilot-tested it in the classroom.

Members of the committee felt very strongly that an evaluation of the new study skills program would be needed at the end of its first year to determine whether the class time spent on the program was more beneficial to students than the instruction they would ordinarily receive during regular class periods. Therefore, this field experience project included an evaluation plan to test the applicability and validity of the use of the newly developed, intensive and unique study skills program in grades 6 through 8.

**Specific Program Objectives**

The specific objectives that this field experience was designed to achieve were:

1. To improve students' study habits.
2. To improve students' knowledge of study skills after completion of the study skills program.
3. To improve students' quarterly grade point averages after completing the study skills program.

4. To improve students' achievement test scores.

Specific Research Hypotheses

The research hypotheses that this field experience was designed to test are listed as follows:

H1 Through the use of a study skills inventory, students would perceive themselves to have significantly improved their study habits after completion of the study skills program.

H2 Through the use of a study skills check list, teachers would perceive their students to have significantly improved their study skills after completion of the study skills program.

H3 Students' knowledge of study skills would test significantly higher after, in comparison to before, the completion of the study skills program.

H4 Students' knowledge of study skills would test significantly stronger over a period of time after completion of the study skills program.

H5 Students' quarterly grade point average would test significantly higher after, in comparison to before, the completion of the study skills program.

H6 Students' achievement test scores would test significantly higher after, in comparison to before, the completion of the study skills program.
The null hypothesis for this field experience was that the study skills program would have no significant effect on students.

**Operational Definitions, Assumptions, Delimitations**

Throughout this paper the following titles, terms, and phrases are defined as follows:

1. **Junior High School Study Skills Program.** The study skills program that was created and developed in this field experience project and pilot-tested by the staff and administration of Tower Hill Junior High School.

2. **How-to-Study Skills Programs and Courses.** Programs designed to improve study skills other than the Junior High School Study Skills Program pilot-tested in Tower Hill.

3. **Small rural school.** A K-8 elementary school within a rural area of Illinois with a total enrollment of not more than 400 students.

4. **Study habit.** A recurring learning strategy that a student uses automatically to acquire knowledge.

5. **Study skill.** A specific method of learning which recurs and is used by the student to acquire knowledge.

6. **Study Skills Inventory.** Instrument designed for this field experience project to measure the extent to which students believe they have improved their study habits as a result of the study skills program.
7. Study Skills Check List. An instrument designed for this field experience project to measure the extent to which teachers believe their students have improved their study habits as a result of the study skills program.

8. Survival Skills. A content section of a how-to-study skills program or course which includes information on study skills concerning the organization of school and study materials, scheduling and study environment.

Several measures were taken to control the variables related to this study. One control factor was how the program was presented to the students. At the onset of this program, students in Tower Hill were told that the purpose of the new study skills program was to improve their study habits, improve their knowledge of study skills, and improve their academic achievement. If these results did occur, students were told that this program might become a regular part of the school curriculum. Students were not informed as to what specific types of information would be gathered for this field experience project or how this information would be analyzed.

One variable over which there was no control in this field experience project was the effect the five instructors had on the students. Each instructor was responsible for teaching one session of the study skills program. Differences in teaching styles could have effected the results of the
study. In other words, one or more of the instructors could have had more of an impact on students than the program itself.

The opinions and feelings of parents whose children participated in the study skills program were not included in this field experience project. Parents in Tower Hill knew very little, if anything, about this project. After the study skills program was developed and pilot-tested in Tower Hill, plans were made by the staff and administration to not only educate the parents about the study skills program but also to inform parents on what they could do at home to help their children improve their study habits and study skills.

The results of this study are limited in that all the students that were involved in the study skills program attend a small rural school. Therefore, generalization of the procedures used in this study in areas with larger populations may be limited.

This study was also limited by the small number of students involved. The pilot-testing of this program included only the sixth, seventh, and eighth grades at Tower Hill Junior High School, a total of 58 students.

In addition, this field experience project was restricted by, but not totally limited to, the Junior High School Study Skills Program developed in this project. Intensive instruction for each grade was limited to only seven, 45 minute class
periods during one week. Plans for systematic review of these skills once every 9 weeks were developed and implemented.
Study Skills

Related Literature and Research

The consideration of content for how-to-study skills programs is important before a program is implemented into a school curriculum. Included in this chapter is a brief summary of the thoughts and ideas of a variety of authors on the subject of content for any good how-to-study program. Some of the information mentioned had to be revised to the appropriate grade level. Most of these concepts and ideas were incorporated into the Junior High School Study Skills program.

An important part of teaching study skills is making students aware of their own study habits. Several studies have shown that a formal study habits inventory can help students become more cognizant of their learning behaviors (Cottier & Koehler, 1978; Wren, 1989). Through these inventories students realize the need for a study skills program on a personal level.

After students realize the importance of a study skills program, they can begin concentrating on specific skills. One of the chief study survival skills is organization of time and materials (Albert, 1984; Jackson, 1985). Specific methods for improving study include organization of class materials, class preparation, and management of study time.

There are several factors to consider when organizing the study environment. First of all, Brown (1985) found that students need peace and quiet. In addition, other researchers state
that proper seating, lighting, and writing surfaces affect the quality of the study time spent (Meenes, 1954; Orchard, 1961).

In addition to organizing time and materials, students can learn to improve their listening skills. Meenes (1954) wrote that if students adopt a plan to learn they can avoid daydreams and passive listening habits. Other researchers claim that concentration while listening can be improved and that students can learn to direct and control their concentration (Brown, 1955; Coleman & Libaw, 1960; Marshak, 1979; Wren, 1989).

There are specific methods that students can employ that improve their listening abilities. Wren (1989) lists signal words that a student should be alert to when listening. "Categorize," "write," and "list" are examples of these signal words.

Another listening tactic is previewing new textbook material before a lecture. Students should also review previous notes before the class session. This has been shown to increase a student's ability to listen and anticipate important comments (Ehrlich, 1961).

As with listening, there are similar strategies that students can apply to their reading. Poor retention of reading material appears to be a common problem among students. There are two standard methods for approaching reading material included in most basal reading series. A discussion of these tactics follows.
The first, implemented by Coleman (1960), recommended the SQ3R method. The "S" stands for survey, the "Q" stands for question and the three "R's" stand for read, recite, and review. This method has been proven to significantly improve a student's reading comprehension.

The second method developed by Staton (1977) is the PQ2R method. It can be thought of as a "pretty quick reading routine." The four steps are: (a) preview; (b) question; (c) read; and (d) review. Staton also reminded students to study or read for a short time only or study for several short periods with time in between for rest or entertainment.

Another concern while studying is reading speed and efficiency. Meenes (1954) stated that most students read too slowly. They acquire bad reading habits in elementary school and never improve them. Robbins (1961) provides ideas on how reading speed can be remediated. Recommendations include reading aloud and spotting key words within the reading material.

Wren (1989) identified four categories of speeds used by students while reading, which include skimming, rapid reading, normal or average reading and heavy reading. Wren also suggested that students should eliminate word pronunciation and lip movement and read for ideas, not just for words, trying to get the main thought of each paragraph.
The task of note-taking is directly related to the skills of reading and listening. There are several strategies that a student can use while taking notes when reading text material or listening to lectures. Devine (1981) and Jackson (1985) suggest using a set of abbreviations, using margin space for questions and comments, citing main points in notes by underlining them, and using word lists for vocabulary terms. Kalins (1975) advocated the use of visual devices such as flowcharts, diagrams, time lines, and continuum lines as note-taking methods students can use while studying.

In addition to the visual aspects of note-taking, it has been found that students retain more material if their notes are written in their own words (Smith, 1958). If students cannot express the content in their own words, then they do not fully understand the material.

Test-preparation is another skill that students can improve. One aspect of studying for a test is memorization. Wren (1989) and Meenes (1954) both list a series of recommendations for students on how they can improve their memories. Suggestions include learning one piece of material at a time and using short practice periods. If students are going to improve their memories, everyday practice of these recommendations is essential.

Armstrong (1975) and Bills (1985) advocated the use of several study periods for one test. They explained to students
that by preparing three nights in advance for a test, they could keep their study periods short and take an occasional break. This would not interfere with daily homework assignments in their other classes either.

There are also systematic methods for students to use when taking examinations. Honig (1973) provided students with a list of preparations to be made on the day of a test. Students should organize their study sheets for a quick review before the test; and personal items such as pens, pencils, and paper should be gathered before the exam. Suggestions are also made to students on how to deal with problem questions on a test.

In addition, different types of tests require different writing strategies. Bill (1985) made recommendations on how to write for multiple choice, true or false, matching, fill-in-the blank, short answer and math tests. For example, answer blanks on true and false tests should always be filled in regardless of whether or not the student actually knows the answer. Wren (1989) also made suggestions on learning how to write for objective and essay tests.

In researching the above literature on the content of how-to-study skills programs, the following skills were noted by most authors as being essential for the development of good study habits at the junior high school level:

1. Self-evaluation
2. Survival skills (Organization of school and study materials, scheduling and study environment.)
3. Concentration
4. Listening skills
5. Reading skills
6. Note-taking
7. Test-preparation skills
8. Test-taking skills

Research Review

Research studies concerned with the effects of how-to-study skills programs on students have been very limited. A brief summary of the research studies that have been done on this subject area at the elementary, high school, and college levels is presented in the following paragraphs.

In several studies, increase in study skills knowledge correlated positively with achievement. Carter (1948) determined that study habits inventories which had been given to students at the college level measure attributes which can be correlated with achievement. Results from his research study showed students with good study habits will achieve better than those who do not have good study habits.

Howell's (1950) study reported that junior high school students taking a how-to-study skills course were usually above the grade norm for the Iowa Every-Pupil Test of Basic Skills.
A larger gain was made in the slower experimental group (low ability students,) than the faster experimental group (high ability students).

Several research designs included instruction of specific skills followed by post-tests. Adams, Carmine, and Gersten (1982) conducted a study which explored the efficacy of utilizing systematic instruction in teaching study skills strategies to fifth grade students who had adequate reading skills but demonstrated deficiencies in study skills. Students who were taught the study strategies performed significantly higher on factual short answer tests than students who had not been trained in study strategies.

O'Laughlin (1982) suggested that effective studying reflects the ability of students to employ planned study skills. An instructional program based on this approach was developed to teach eighth graders techniques for studying in textbooks. Experimental and control groups both received a series of eighteen lessons over 9 weeks covering control of the environment. Students in the control group received the same instruction, but with the experimental group a special effort was made by the teacher to concentrate on students' allocation of time, statements of their goals, and the extraction of main ideas from the textbook. A comparison of the results showed that members of the experimental group significantly improved both
their knowledge about study skills (content) and their reading performance as measured on the Iowa Test of Basic Skills.

Harris and Trujillo (1975) worked with improving study habits of junior high school students through using the methods of self-management and group discussion. Both a self-management approach, teaching the principles of behavior modification and self-control, and a group discussion technique, involving discussion of study habits and problems, led to improvements in grade point averages for experimental classes as compared with a no-treatment control group of junior high school students.

Research concerned with study skills in the content areas has also been conducted. Page (1969) proposed, from the results of her study, that reading and study skills need to be taught concurrently with junior high school history lessons. Students who do not have good reading, study, and test-taking skills do poorly in history.

Hangge (1985), in order to determine whether the addition of study skills in the teaching of social studies would improve the learning of social studies content, conducted a study comparing two fifth grade classes in social studies for a period of 9 weeks. Both classes studied the same social studies unit. Students in the experimental group were instructed in study skills in addition to the regular social studies material. The skill areas of organization, note-taking, listening, and
test-taking were all discussed with the students. In addition, students were also given summaries for each chapter at the beginning of the unit and a programmed review to help reinforce vocabulary and general concepts at the end of each chapter.

Students in the control group were instructed as usual, assigned to read each chapter and answer the questions at the end. Both groups were given the same test upon completion of the unit. A comparison of the results indicated significantly greater student achievement in the content area for students in the experimental group.

Other studies have found that study skills knowledge alone is not a predictor of school achievement; students must have self-confidence and motivation. Berg and Rental’s (1966) research work with college students pointed out that students who are motivated to improve and voluntarily enroll in study skills courses raise their grade point averages. Students who are similarly motivated, but do not enroll, do not make the same gains. Schilling’s (1984) study suggested that when middle school teachers put greater emphasis on study skills, their students profit from greater confidence and understanding. These results, in turn, have effects on school work done by the students.

All of the above research studies agree on the following factors:
1. Students with good study habits achieve better than those who do not have good study habits.

2. A variety of methods can be used in teaching students about study skills.

3. Students increase their knowledge of study skills as a result of how-to-study programs.

4. There are many factors that are related to the improvement of student achievement, only one of which is a how-to-study skills program.

5. All different levels of students can be helped in a variety of ways by a how-to-study skills program.

6. More how-to-study skills programs are needed at the junior high school level.

In addition to the above listed factors, all of the data-based research studies agreed that students improve their grade point averages and academic achievement after completing how-to-study skills programs.

Finally, there were no research studies found which reported that negative results occurred as a product of a how-to-study skills program.
The first step in developing the junior high school study skills program was to conduct an in-depth review of the research and literature on this subject and determine the main ingredients of successful and proven study skills programs. The specific structure of this project was then adapted to fit the needs and purposes of students in small rural schools like Tower Hill Junior High School. All sixth, seventh, and eighth grade students were the recipients of the new program for the following reasons:

1. Students leave the self-contained classrooms after the fifth grade at Tower Hill Elementary School. Tower Hill Junior High School is departmentalized and classes rotate each period, creating much more responsibility for each student. The need for good study habits is of paramount importance if the transfer into sixth grade is to be successful for students.

2. Although students may have already developed study habits by the time they reach the sixth, seventh, or eighth grades, these habits can be changed. Students will benefit more if their study habits are improved at the junior high level rather than waiting until high school.

3. The idea for a study skills program was originally considered for sixth grade students only. However, upon reviewing the need in the seventh and eighth grades for such
a program, the staff and administration at Tower Hill felt it was important that these students also have the opportunity to benefit from this instruction before entering high school. If the study skills program became a permanent part of Tower Hill Junior High School's curriculum, only sixth grade students would be the recipients beginning in the 1989-1990 school year.

**Method**

**Subjects.** The study skills program was presented to 58 sixth, seventh, and eighth grade students during a consecutive 3 week period. Sixth grade students received the instruction the first week, seventh grade the second week, and eighth grade students the final week. The same material was presented each week. After the program was completed, teachers took additional class time throughout the rest of the school year to continually reinforce the concepts presented during the program.

**Design and procedure.** To determine if students perceived themselves to have improved their study habits as a result of the program, a study skills inventory was given to each students during class meeting on the last day of the remaining three quarterly grading periods in the 1987-1988 school year (see Appendix A). Information gathered included the opinions of students as to whether or not they believed the study skills program had improved their study habits. The inventory was completed each time in one day. Any student who was absent
was asked to complete the inventory upon return before receiving an admit to class.

To determine if teachers perceived their students to have improved their study habits as a result of the study skills program, five elementary teachers, through general observations, kept anecdotal records on the specific study habits of each student (see Appendix B). At the end of each remaining grading period in the 1987-1988 school year, based on these anecdotal records, teachers completed a study skills checklist on each student citing improvement, or lack of it, on each of the criteria presented on the checklist (see Appendix C). Both the student inventory and the teacher checklist were based on the criteria presented to students during the study skills program.

A blank study skills inventory and study skills checklist were used for tallying information gathered from the two instruments. The study skills inventory recording and analysis form (see Appendix D) and study skills checklist recording and analysis for (see Appendix E) were used for recording the final results and analyzing the data. For the study skills program to be considered effective, 70% of the students had to show marginal or great improvement on 70% or more of the criteria listed in both the study skills inventory and study skills checklist.
To determine if students improved their knowledge of study skills as a result of the program, study skills program pre-test and post-test scores were needed for each sixth, seventh, and eighth grade student. Pre-test and post-test instruments were identical and were given to all students on the first and last day of each week of the program. This information provided a reliable basis for comparison of the knowledge students had concerning study skills both before and after the presentation of the program.

The level of statistical significance was determined by using the t-test for nonindependent samples. Differences between pre-test scores and post-test scores before and after the study skills program were figured for each student. These differences were then totaled ($D^2$). Each individual difference was squared and all of the differences squared totaled ($D^2$). This information was plugged into the following formula in order to arrive at the t-value.

\[
\bar{D} = \frac{D^2 - \frac{D^2}{N}}{\frac{N(N-1)}{N9n-1}} \text{ degrees of freedom}
\]

After applying the t-value to the t-table it could be determined whether or not the difference between pre-test scores and post-test scores before and after the study skills program were statistically significant at the .05 level. If the difference
was significant at this level and not due to chance alone, the null hypothesis suggested could be rejected and the research hypothesis suggested could be accepted.

To determine whether or not there was any difference caused by the grade placement of the students involved, a one-way analysis of variance test was used. It was important to discover if the differences between the grade placement of the students involved had any effect on the variance that was found in the test score data.

To determine if students' knowledge of study skills grew stronger over time, study skills program test scores were needed for each student. These tests were given to students during class meetings on the last day of the three remaining quarterly grade periods in the 1987-1988 school year. It should be noted here that the test given to students to get these scores was the same instrument as the study skills program pre-test/post-test that was given to students on the first and last day of each week of the study skills program. Data collected from these subsequent tests provided a reliable basis for determining if students' knowledge of study skills grew stronger over time. The level of statistical significance was determined here by using a two-way analysis of variance test.

Study skills program pre-test, post-test and all subsequent test scores were recorded and analyzed using the study skills
program test-scores analysis form (see Appendix F). For the study skills program to be considered effective, 50% or more of the students would have to show an initial 10% increase in their knowledge of study skills on the last day of each week of the program. In addition, 50% or more of the students would also have to show some continued increase in their knowledge of study skills during each of the three quarterly grading periods following the presentation of the study skills program.

To determine if students have improved their quarterly grade point averages and achievement test scores, the following information was needed:

1. Quarterly grade point averages were needed for each current sixth, seventh, and eighth grade student from spring semester 1987 through the entire 1987-1988 school year. Grade point averages were also needed for previous sixth graders during the same six quarterly grading periods for the last 10 years.

2. Achievement test scores were needed for each current sixth, seventh, and eighth grade student from both the 1986-1987 school year and the 1987-1988 school year. Achievement test scores were also needed for previous sixth, seventh, and eighth graders during the same two year period for the last 10 years.

This information provided a reliable basis for comparison of students quarterly grade point averages and achievement test scores for three grading periods before and three grading periods
after the presentation of the study skills program. Data collected on previous sixth, seventh, and eighth graders for the last 10 years who had not participated in the study skills program provided a reliable basis for determining the natural academic growth patterns of students during this period of time at Tower Hill Junior High School.

Quarterly grade point averages and achievement test scores were recorded and analyzed using their respective analysis forms (see examples in Appendices G and H). For the study skills program to be considered effective 50% of the students would have to show an improvement beyond normal growth patterns in both their grade point averages and their achievement test scores.

For the analysis of grade point average scores, a standard analysis of variance test was used. For the analysis of achievement test scores, a multi-variate analysis of variance test was used. Included in the grade point averages and achievement test scores from before the program were the normal growth averages for students at Tower Hill Junior High School during this time period in their school careers.

The judgments to be made in the above field experience evaluation procedure involved and included the collection of this information to determine whether or not:

1. Students improved their study habits as a result of the study skills program.
2. Students improved their knowledge of study skills as a result of the study skills program.

3. Students' quarterly grade point averages improved after the study skills program.

4. Students' achievement test scores improved after the study skills program.

Based up these judgments, two decisions would be made concerning the new study skills program. The first decision includes the following factors:

1. Whether to continue the study skills program as presently structured; or

2. To continue the study skills program but make modifications according to the information gathered in the evaluation; or

3. To discontinue the study skills program.

In addition, a second decision would be made to implement the study skills program into the Tower Hill Junior High School curriculum at the sixth grade level or to exclude the study skills program from the curriculum.
Results of the Study

Study Skills Inventory

The study skills inventory recording and analysis form (see Appendix D) was used for recording the final results and analyzing the data received from the students as to whether or not they believed the study skills program had improved their study habits. The results of the study skills inventory are included in Table 1.

Students overwhelmingly perceived themselves to have improved their study habits as a result of the study skills program. All 58 students (100%) involved in the study felt that they had shown a marginal or great improvement in 70% or more of the 47 criterion items listed on the study skills inventory. There was one exception to this statement. Seventy percent of sixth graders did not feel that they had improved in completing their studying and homework away from radio, stereo, or television.

Study Skills Checklist

The study skills check list recording and analysis form (see Appendix E) was used for recording the final results and analyzing the data received from the teachers as to whether or not they believed that their students had improved their study habits as a result of the study skills program. Table 2 shows the results of the study skills check list.

Teachers strongly perceived that their students had improved their study habits as a result of the study skills program.
Table 1

Results of the Study Skills Inventory

<table>
<thead>
<tr>
<th>Grade in School</th>
<th>Number of Students</th>
<th>Number/% of Students Showing Marginal or Great Improvement in 70% or more of the Inventory Items</th>
<th>Number/% of Inventory Items where 70% or More of Students Show Marginal or Great Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth</td>
<td>18</td>
<td>18/100</td>
<td>46/98.8</td>
</tr>
<tr>
<td>Seventh</td>
<td>14</td>
<td>14/100</td>
<td>47/100</td>
</tr>
<tr>
<td>Eighth</td>
<td>26</td>
<td>26/100</td>
<td>47/100</td>
</tr>
<tr>
<td>Totals</td>
<td>58</td>
<td>58/100</td>
<td>140/99</td>
</tr>
</tbody>
</table>
Table 2
Results of Study Skills Checklist

<table>
<thead>
<tr>
<th>Grade in School</th>
<th>Number of Students</th>
<th>Number/% of Students Showing Marginal or Great Improvement in 70% or more of the Checklist Items</th>
<th>Number of Checklist Items</th>
<th>Number/% of Checklist Items where 70% or more of Students Show Marginal or Great Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth</td>
<td>18</td>
<td>18/100</td>
<td>29</td>
<td>29/100</td>
</tr>
<tr>
<td>Seventh</td>
<td>14</td>
<td>14/100</td>
<td>29</td>
<td>29/100</td>
</tr>
<tr>
<td>Eighth</td>
<td>26</td>
<td>26/100</td>
<td>29</td>
<td>29/100</td>
</tr>
<tr>
<td>Totals</td>
<td>58</td>
<td>58/100</td>
<td>87</td>
<td>87/100</td>
</tr>
</tbody>
</table>
All five elementary teachers involved in keeping anecdotal records and completing check lists on the students felt that each of the 58 students (100%) had shown a marginal or great improvement in 70% or more of the 29 criterion items listed on the study skills check list. There were no exceptions to this statement.

**Study Skills Program Pre-test and Post-test Scores**

The study skills program test-score analysis form (see Appendix F) was used for recording the final results and analyzing the data received from the pre-test and post-test scores. To answer the question as to whether or not there was a significant difference between the pre-test and post-test scores, all 58 test score differences were used. Any potential differences that may have occurred between the grade placement of students involved was temporarily ignored, but will be dealt with later in this field experience project. This was done to provide more power to the t-test regarding the success or lack of success of the training being tested. Tables 3, 4, and 5 describe the calculations and data used.

The calculations and combined data produced a t (calculated value) of 3.576. Comparing this value to the t (table value at probability level = 0.01) of 2.4 indicates that post-test scores are significantly different from pre-test scores. Further, noting that post-test mean (average) score values are larger that pre-test score values indicates that the "training" caused an elevation in the test scores.
<table>
<thead>
<tr>
<th>Students</th>
<th>Pre-Test</th>
<th>Post-test</th>
<th>Difference</th>
<th>Difference Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>9</td>
<td>81</td>
</tr>
<tr>
<td>2.</td>
<td>41</td>
<td>46</td>
<td>5</td>
<td>25</td>
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<td>44</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
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<td>39</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
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<td>17</td>
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<td>28</td>
<td>3</td>
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<td>7.</td>
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<td>8.</td>
<td>29</td>
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<td>11</td>
<td>121</td>
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<td>31</td>
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<td>49</td>
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<td>33</td>
<td>6</td>
<td>36</td>
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<td>19</td>
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<td>36</td>
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<td>4</td>
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<td>37</td>
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<td>16</td>
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<td>11</td>
<td>121</td>
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<td>28</td>
<td>36</td>
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<td>64</td>
</tr>
<tr>
<td>16.</td>
<td>27</td>
<td>22</td>
<td>-5</td>
<td>25</td>
</tr>
<tr>
<td>17.</td>
<td>39</td>
<td>36</td>
<td>-3</td>
<td>9</td>
</tr>
<tr>
<td>18.</td>
<td>36</td>
<td>43</td>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td>Totals</td>
<td>528</td>
<td>608</td>
<td>80</td>
<td>700</td>
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Table 4
Seventh Grade Pre-Test and Post-Test Scores

<table>
<thead>
<tr>
<th>Students</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Difference</th>
<th>Difference Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>31</td>
<td>39</td>
<td>8</td>
<td>64</td>
</tr>
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<td>2.</td>
<td>39</td>
<td>40</td>
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<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>23</td>
<td>21</td>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
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<td>5</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
<td>31</td>
<td>37</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>6.</td>
<td>42</td>
<td>46</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>7.</td>
<td>26</td>
<td>24</td>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>15</td>
<td>17</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>18</td>
<td>26</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>10.</td>
<td>29</td>
<td>35</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>11.</td>
<td>36</td>
<td>43</td>
<td>7</td>
<td>49</td>
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<tr>
<td>12.</td>
<td>33</td>
<td>39</td>
<td>6</td>
<td>36</td>
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<td>24</td>
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<td>7</td>
<td>49</td>
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<tr>
<td>14.</td>
<td>24</td>
<td>29</td>
<td>5</td>
<td>25</td>
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<tr>
<td>Totals</td>
<td>392</td>
<td>453</td>
<td>61</td>
<td>413</td>
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</tbody>
</table>
## Table 5

### Eighth Grade Pre-test and Post-test Scores

<table>
<thead>
<tr>
<th>Students</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Difference</th>
<th>Difference Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>37</td>
<td>42</td>
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<td>25</td>
</tr>
<tr>
<td>2.</td>
<td>28</td>
<td>33</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>3.</td>
<td>22</td>
<td>28</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>4.</td>
<td>32</td>
<td>35</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5.</td>
<td>31</td>
<td>39</td>
<td>8</td>
<td>64</td>
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<tr>
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<td>37</td>
<td>43</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
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<td>23</td>
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<td>4</td>
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<td>41</td>
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<td>0</td>
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<td>32</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>10.</td>
<td>29</td>
<td>30</td>
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<td>1</td>
</tr>
<tr>
<td>11.</td>
<td>25</td>
<td>31</td>
<td>6</td>
<td>36</td>
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<td>32</td>
<td>34</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>39</td>
<td>47</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>14.</td>
<td>31</td>
<td>36</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>15.</td>
<td>35</td>
<td>31</td>
<td>-4</td>
<td>16</td>
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<tr>
<td>16.</td>
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<td>22</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
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<td>29</td>
<td>2</td>
<td>4</td>
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<td>36</td>
<td>10</td>
<td>100</td>
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<td>23</td>
<td>28</td>
<td>5</td>
<td>25</td>
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<tr>
<td>20.</td>
<td>29</td>
<td>35</td>
<td>6</td>
<td>36</td>
</tr>
</tbody>
</table>

(table continues)
Table 5 (Continued)

<table>
<thead>
<tr>
<th>Students</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Difference</th>
<th>Difference Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>30</td>
<td>36</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>22.</td>
<td>36</td>
<td>36</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23.</td>
<td>21</td>
<td>27</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>24.</td>
<td>26</td>
<td>29</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>25.</td>
<td>17</td>
<td>20</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>26.</td>
<td>29</td>
<td>34</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>Totals</td>
<td>749</td>
<td>858</td>
<td>109</td>
<td>683</td>
</tr>
</tbody>
</table>
Differences Between Grade Placement of Students

To determine whether or not there was any difference caused by the grade placement of the students involved, a one-way analysis of variance test was used. Table 6 displays these results.

Table 6
Analysis of Variance, Summary of Differences between Grade Placements

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sums of Squares</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>2</td>
<td>0.615</td>
<td>0.3075</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Error</td>
<td>55</td>
<td>728.488</td>
<td>13.2452</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>729.1034</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Because the F statistic is less than 1, there would be no point in testing further. It is clear that differences between the grade placement of the students involved explained very little of the variance that was found in the test score data.

The majority of students (60%) involved in this study did show an initial 10% or more increase in their knowledge of study skills upon the completion of the program (Table 7).
Study Skills

Table 7

Analysis of Students' Initial Increase of Knowledge Attributable to Study Skills Program

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number of Students</th>
<th>Number/% of Students Showing Initial 10% Increase of Study Skills Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth</td>
<td>18</td>
<td>11/61</td>
</tr>
<tr>
<td>Seventh</td>
<td>14</td>
<td>9/64</td>
</tr>
<tr>
<td>Eighth</td>
<td>26</td>
<td>15/58</td>
</tr>
<tr>
<td>Totals</td>
<td>58</td>
<td>35/60</td>
</tr>
</tbody>
</table>

Study Skills Program Post-test Scores and Additional Quarterly Test Scores

In addition to recording pre-test and post-test scores, the study skills program test-score analysis form (see Appendix F) was also used for each student involved in the study. To answer the question as to whether or not students' knowledge of study skills grew stronger over time, all post-test scores and additional quarterly test scores were used. This information is contained in Tables 8, 9, and 10.

To analyze for any "time trend" that might exist, a two-way analysis of variance test was performed on this data. In this
Table 8
Sixth Grade Post-Test Scores and Three Quarterly Test Scores

<table>
<thead>
<tr>
<th>Student</th>
<th>Post-Test</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>35</td>
<td>37</td>
<td>37</td>
<td>41</td>
</tr>
<tr>
<td>2.</td>
<td>46</td>
<td>45</td>
<td>45</td>
<td>48</td>
</tr>
<tr>
<td>3.</td>
<td>44</td>
<td>46</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>4.</td>
<td>39</td>
<td>43</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>5.</td>
<td>17</td>
<td>26</td>
<td>27</td>
<td>33</td>
</tr>
<tr>
<td>6.</td>
<td>28</td>
<td>30</td>
<td>35</td>
<td>41</td>
</tr>
<tr>
<td>7.</td>
<td>31</td>
<td>27</td>
<td>26</td>
<td>36</td>
</tr>
<tr>
<td>8.</td>
<td>40</td>
<td>38</td>
<td>44</td>
<td>45</td>
</tr>
<tr>
<td>9.</td>
<td>38</td>
<td>40</td>
<td>42</td>
<td>43</td>
</tr>
<tr>
<td>10.</td>
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<td>33</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>11.</td>
<td>25</td>
<td>26</td>
<td>28</td>
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<tr>
<td>12.</td>
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<td>13.</td>
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<td>39</td>
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<tr>
<td>16.</td>
<td>22</td>
<td>26</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>17.</td>
<td>36</td>
<td>38</td>
<td>42</td>
<td>45</td>
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</table>

(table continues)
### Table 8 (Continued)

<table>
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<tr>
<th>Student</th>
<th>Post-Test</th>
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<th>Third</th>
<th>Fourth</th>
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</thead>
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<tr>
<td>18.</td>
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<td>43</td>
<td>44</td>
<td>46</td>
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<tr>
<td>Totals</td>
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<td>632</td>
<td>671</td>
<td>714</td>
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</table>
### Table 9

#### Seventh Grade Post-Test Scores and Three Quarterly Test Scores

<table>
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<th>Post-Test</th>
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<th>Third</th>
<th>Fourth</th>
</tr>
</thead>
<tbody>
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<td>4.</td>
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<tr>
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<td>41</td>
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<tr>
<td>14.</td>
<td>29</td>
<td>30</td>
<td>36</td>
<td>40</td>
</tr>
<tr>
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<td>512</td>
<td>548</td>
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<td>Fourth</td>
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</table>

(continued)
<table>
<thead>
<tr>
<th>Student</th>
<th>Post-Test</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.</td>
<td>36</td>
<td>38</td>
<td>40</td>
<td>39</td>
</tr>
<tr>
<td>19.</td>
<td>28</td>
<td>30</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>20.</td>
<td>35</td>
<td>35</td>
<td>37</td>
<td>40</td>
</tr>
<tr>
<td>21.</td>
<td>36</td>
<td>37</td>
<td>34</td>
<td>36</td>
</tr>
<tr>
<td>22.</td>
<td>36</td>
<td>34</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>23.</td>
<td>27</td>
<td>29</td>
<td>32</td>
<td>39</td>
</tr>
<tr>
<td>24.</td>
<td>29</td>
<td>35</td>
<td>35</td>
<td>37</td>
</tr>
<tr>
<td>25.</td>
<td>20</td>
<td>26</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>26.</td>
<td>34</td>
<td>36</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td>Totals</td>
<td>858</td>
<td>916</td>
<td>946</td>
<td>1,026</td>
</tr>
</tbody>
</table>
analysis, the time source of variance was split out into time linear, time quadratic and time cubic using orthogonal polynomial coefficients. The results of this test are included in Table 11.

The results of this analysis indicate that there is a significant ($P < 0.01$) time effect. This effect, when split out, appears to be associated with time linear and not time quadratic or time cubic. The slope of the time linear effect ($b = 1.047$) further indicates that each additional quarter of time students can expect their mean test scores to increase by 1.047 units each. It is important to realize that the R-square (coefficient of determination) for the two-way analysis $(11,634.89 - 10,298.45)/11,634.89 = .115$) is relatively low. Only 11.5% of the variance is accounted for using this model.

The majority of the students (69%) involved in this study did remain stable or show some continued increase in their knowledge of study skills during each of the three quarterly grading periods following the presentation of the study skills program. Table 12 displays these results:

<table>
<thead>
<tr>
<th>Student Grade Point Average Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form (see Appendix G) was used for recording the three quarterly grade point averages of each student from both before and after the presentation of the study skills program. The normal growth pattern for students at Tower Hill Junior High School</td>
</tr>
</tbody>
</table>
Table 11
Analysis of Variance Summary Table for Students Knowledge of Study Skills Over Time

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Square</th>
<th>Mean Square</th>
<th>F</th>
<th>Regression Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>2</td>
<td>31.13</td>
<td>15.5636</td>
<td>--</td>
<td>b(lin) = 1.047</td>
</tr>
<tr>
<td>Time</td>
<td>3</td>
<td>1288.35</td>
<td>429.4526</td>
<td>9.1</td>
<td>b(qd) = 0.246</td>
</tr>
<tr>
<td>t lin</td>
<td>1</td>
<td>1272.61</td>
<td>1272.61</td>
<td>27.0</td>
<td>b(cub) = 0.039</td>
</tr>
<tr>
<td>t quad</td>
<td>1</td>
<td>14.00</td>
<td>14.00</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>t cub</td>
<td>1</td>
<td>1.74</td>
<td>1.74</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Grade by time</td>
<td>6</td>
<td>48.09</td>
<td>8.0149</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Error</td>
<td>219</td>
<td>10,298.45</td>
<td>47.0249</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>231</td>
<td>11,634.89</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
### Table 12

Analysis of Students' Knowledge of Study Skills Over the Three Quarterly Grading Periods Following the Study Skills Program

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number of Students</th>
<th>Number/% of Students Remaining Stable or Showing Some Continued Increase of Study Skills Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth</td>
<td>18</td>
<td>12/67</td>
</tr>
<tr>
<td>Seventh</td>
<td>14</td>
<td>10/71</td>
</tr>
<tr>
<td>Eighth</td>
<td>26</td>
<td>18/69</td>
</tr>
<tr>
<td>Totals</td>
<td>58</td>
<td>40/69</td>
</tr>
</tbody>
</table>
(Grades 6, 7, and 8) was determined to be a .18 increase in grade point average during these three years of school. Therefore, this increase was added into their grade point averages from before the study skills program presentation. For the analysis of grade point average scores, a standard analysis of variance test was applied. Tables 13 A and B list some of the calculations involved and the results:

Tables 13A and 13B
Analysis of Variance Summaries of Students' Quarterly Grade Point Averages from Before and After the Study Skills Program

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>68</td>
<td>211.12947789</td>
<td>3.10484526</td>
</tr>
<tr>
<td>Error</td>
<td>279</td>
<td>17.95988160</td>
<td>0.06437234</td>
</tr>
<tr>
<td>Corrected total</td>
<td>347</td>
<td>229.08935948</td>
<td></td>
</tr>
</tbody>
</table>

Note: F Value = 48.23, Pr > F = 0.0001, R-Square = 0.921603, C.V. = 9.5988965, Root MSE = 0.25371704, and Score Mean = 2.64318966.
In these analyses, there were found to be consistent variations among students. Students did not respond uniformly. Grades earned by quarter were found to be very different (Table 13B - Grade Quarter - Pr > F = 0.0022). These results suggest that the rates of change for sixth graders from quarter to quarter varied from those of seventh and/or eighth graders. Grades earned were also found to be highly different in regards to grade placement (Table 13B - Grade - Pr > F = 0.0064).
This data will later suggest that eighth graders improved their grade point averages more often than seventh and sixth graders.

The key finding in these analyses is the fact that before versus after taking the study skills program had little influence on the majority of students' quarterly grade point averages (Table 13 B - Before - Pr > 0.7875). It is worth noting that over time (Quarters 1, 2, and 3), student performance both before and after taking the training showed a negative slope (see Table 14, "Estimate" column). These results suggest that many students were overall doing poorer instead of better. It is also worth noting that their negative slope was not significantly different from zero. However, given this data, a conclusion can be made that the training had little measurable impact on the majority of students, as far as scoring either better or worse on their quarterly grade point averages.

Even though the study skills program had little measurable impact on the majority of students' quarterly grade point averages, 34% of the students involved in this study did show some improvements in their grade point averages beyond normal patterns in the three quarterly grading periods following the presentation of the study skills program. Some 60% of the students who did improve their grade point averages were eighth graders. Table 15 displays the results:
Worksheet used in the Analysis of Students' Quarterly Grade Point Averages From Before and After the Study Skills Program

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate*</th>
<th>T for HO+</th>
<th>Pr &gt;</th>
<th>Standard Error of Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>3.44714412</td>
<td>16.32</td>
<td>0.0001</td>
<td>0.2112064162</td>
</tr>
<tr>
<td>Grade 6</td>
<td>-1.326972934</td>
<td>-8.48</td>
<td>0.0001</td>
<td>0.1564720266</td>
</tr>
<tr>
<td>Grade 7</td>
<td>-0.751245421</td>
<td>-4.75</td>
<td>0.0001</td>
<td>0.1580961311</td>
</tr>
<tr>
<td>Grade 8</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Before A</td>
<td>0.093545535</td>
<td>0.45</td>
<td>0.6526</td>
<td>0.2075708053</td>
</tr>
<tr>
<td>Before B</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Quart A</td>
<td>-0.014081565</td>
<td>-0.07</td>
<td>0.9465</td>
<td>0.2095832881</td>
</tr>
<tr>
<td>Quart B</td>
<td>-0.111495358</td>
<td>0.53</td>
<td>0.5952</td>
<td>0.2095832881</td>
</tr>
<tr>
<td>Quartsq A</td>
<td>-0.019015252</td>
<td>-0.37</td>
<td>0.7141</td>
<td>0.0518584148</td>
</tr>
<tr>
<td>Quartsq B</td>
<td>0.019053714</td>
<td>0.35</td>
<td>0.7280</td>
<td>0.0518584148</td>
</tr>
<tr>
<td>Grade 6</td>
<td>A Before</td>
<td>-0.018717949</td>
<td>-0.29</td>
<td>0.7685</td>
</tr>
<tr>
<td></td>
<td>B Before</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

(table continues)
Table 14 (Continued)

| Parameter       | Estimate* | $T$ for $H_0^+$ | $Pr > |T|$ | Standard Error of Estimate |
|-----------------|-----------|-----------------|--------|---------------------------|
| Grade 7         |           |                 |        |                           |
| B Before        | --        | --              | --     | --                        |
| Grade 8         |           |                 |        |                           |
| (Before)        | --        | --              | --     | --                        |
| Grade 6         |           |                 |        |                           |
| Quarter 1       | -0.320811966 | -4.12           | 0.0001 | 0.0777952435               |
| Grade 6         |           |                 |        |                           |
| Quarter 2       | -0.170192308 | -2.19           | 0.02595 | 0.0777952435               |
| Grade 6         |           |                 |        |                           |
| Quarter 3       | --        | --              | --     | --                        |
| Grade 7         |           |                 |        |                           |
| Quarter 1       | -0.116565934 | -1.39           | 0.1669 | 0.0841063792               |
| Grade 7         |           |                 |        |                           |
| Quarter 2       | -0.041263736 | -0.49           | 0.6241 | 0.0841063792               |
| Grade 7         |           |                 |        |                           |
| Quarter 3       | --        | --              | --     | --                        |
| Grade 8         | --        | --              | --     | --                        |

* All grades were estimated at the "B" level.
Table 15

Analysis of Improvement in Students' Grade Point Averages From Before and After the Study Skills Program

<table>
<thead>
<tr>
<th>Grade in School</th>
<th>Number of Students</th>
<th>Number/% of Students Showing Grade Point Average Improvement over Three Quarterly Grading Periods Following the Study Skills Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth</td>
<td>18</td>
<td>4/22</td>
</tr>
<tr>
<td>Seventh</td>
<td>14</td>
<td>4/29</td>
</tr>
<tr>
<td>Eighth</td>
<td>26</td>
<td>12/46</td>
</tr>
<tr>
<td>Totals</td>
<td>58</td>
<td>20/34</td>
</tr>
</tbody>
</table>
Student Achievement Test Scores

The Achievement Test Score Recording and Analysis Form (see Appendix H) was used for recording the achievement test scores for each student from both the year before and the year after. The normal growth patterns for students of Tower Hill Junior High School (Grades 6, 7, and 8) were determined over this three-year period and are listed in Table 16 below:

Table 16
Natural Growth Patterns in Achievement Test Scores over a Three Year Period

<table>
<thead>
<tr>
<th>Subject</th>
<th>Increase in Achievement Test Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>+0.8</td>
</tr>
<tr>
<td>Math</td>
<td>+0.8</td>
</tr>
<tr>
<td>Language</td>
<td>+0.9</td>
</tr>
<tr>
<td>Listening</td>
<td>+0.7</td>
</tr>
</tbody>
</table>

At this time, these increases were added into student's achievement test scores from before the study skills program presentation. For the analysis of achievement tests scores, a multi-variate analysis of variance test was used. This decision
was based upon the premise that the skills of a student are correlated. Certain types of students do well on all tests and others do poorly on all tests. Obviously, there are exceptions to the assumption. Otherwise, only one test would have been necessary.

Before a multi-variate analysis of variance test could be applied to the data, standard analysis of variance tests needed to be performed on the data from each individual achievement test subject area (reading, math, language, and listening). Tables 17 A and B, 18 A and B, 19 A and B, and 20 A and B list the results.

Table 17A and 17B
Analysis of Variance Summary, Reading Achievement Test Scores
Table 17A

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Square</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>49</td>
<td>361.06977040</td>
<td>7.36877082</td>
</tr>
<tr>
<td>Error</td>
<td>28</td>
<td>17.69740909</td>
<td>0.63205032</td>
</tr>
<tr>
<td>Corrected Total</td>
<td>77</td>
<td>378.76717949</td>
<td>--</td>
</tr>
</tbody>
</table>

Note: F Value = 11.66, Pr > F = 0.0001, R-Square = 0.953276, C.V. = 10.432578, Root MSE = 0.79501593, and Score Mean = 7.62051282.
Table 17B

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>2</td>
<td>12.9022653</td>
<td>6.4511327</td>
<td>10.21</td>
<td>0.0005</td>
</tr>
<tr>
<td>Before Grade</td>
<td>1</td>
<td>13.0668878</td>
<td>13.0668878</td>
<td>20.67</td>
<td>0.0001</td>
</tr>
<tr>
<td>Grade (Before)</td>
<td>2</td>
<td>0.37355871</td>
<td>0.1867793</td>
<td>0.30</td>
<td>0.7464</td>
</tr>
<tr>
<td>Student (Grade)</td>
<td>44</td>
<td>346.1974610</td>
<td>7.8681241</td>
<td>12.45</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Tables 18A and 18B

Analysis of Variance Summary, Math Achievement Test Scores

Table 18A

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>49</td>
<td>139.02797203</td>
<td>2.83730555</td>
</tr>
<tr>
<td>Error</td>
<td>28</td>
<td>8.77318182</td>
<td>0.31332792</td>
</tr>
<tr>
<td>Corrected total</td>
<td>77</td>
<td>147.80115385</td>
<td>--</td>
</tr>
</tbody>
</table>

Note: F Value = 9.06, Pr > F = 0.0001, R-Square = 0.940642, C.V. = 8.2550667, Root MSE = 0.55975702, and Score Mean = 6.78076923.
Table 18B

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>2</td>
<td>13.0756758</td>
<td>6.5378379</td>
<td>20.87</td>
<td>0.0001</td>
</tr>
<tr>
<td>Before</td>
<td>1</td>
<td>17.1430057</td>
<td>17.1430057</td>
<td>54.71</td>
<td>0.0001</td>
</tr>
<tr>
<td>Grade (Before)</td>
<td>2</td>
<td>0.58552791</td>
<td>0.2927639</td>
<td>0.93</td>
<td>0.4047</td>
</tr>
<tr>
<td>Student (Grade)</td>
<td>44</td>
<td>107.5222078</td>
<td>2.4436865</td>
<td>7.80</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Tables 19A and 19B

Analysis of Variance Summary, Language Achievement Test Scores

Table 19A

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>49</td>
<td>303.72398718</td>
<td>6.19844872</td>
</tr>
<tr>
<td>Error</td>
<td>28</td>
<td>33.85050000</td>
<td>1.20894643</td>
</tr>
<tr>
<td>Corrected total</td>
<td>77</td>
<td>337.57448718</td>
<td>--</td>
</tr>
</tbody>
</table>

Note: F Value = 5.13, Pr > F = 0.0001, R-Square = 0.899724, C.V. = 14.7637527, Root MSE = 1.0995210, and Score Mean = 7.44743590.
Table 19B

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>2</td>
<td>5.5864156</td>
<td>2.7932078</td>
<td>2.31</td>
<td>0.1178</td>
</tr>
<tr>
<td>Before</td>
<td>1</td>
<td>7.0827969</td>
<td>7.0827969</td>
<td>5.86</td>
<td>0.0222</td>
</tr>
<tr>
<td>Grade</td>
<td>(Before 2</td>
<td>2.6565968</td>
<td>1.3282984</td>
<td>1.10</td>
<td>0.3472</td>
</tr>
<tr>
<td>Student</td>
<td>(Grade) 44</td>
<td>290.9241104</td>
<td>6.6119116</td>
<td>5.47</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Table 20A and 20B

Analysis of Variance Summary, Listening Achievement Test Scores

Table 20A

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>49</td>
<td>259.19855245</td>
<td>5.28976638</td>
</tr>
<tr>
<td>Error</td>
<td>28</td>
<td>62.71990909</td>
<td>2.23999675</td>
</tr>
<tr>
<td>Correct total</td>
<td>77</td>
<td>321.91846154</td>
<td>--</td>
</tr>
</tbody>
</table>

Note: F Value = 2/36, Pr > F = 0.0084, R-Square = 0.805168, C.V. = 20.567235, Root MSE = 1.4966619, and Score Mean = 7.27692308.
Upon the completion of the four individual achievement test subject area analysis of variance tests, a comparison of all four test scores could be made simultaneously (multi-variate analysis of variance test). The results of the individual analyses of variance tests clearly show that the majority of students scored significantly better on their achievement tests after rather than before the study skills program was presented ([Reading - Table 17 B] Before - Pr > F = 0.0001; [Math - Table 18 B] Before - Pr > F = 0.0001; [Language - Table 19 B] Before - Pr > F = 0.0222; [Listening - Table 20 B] Before - Pr > F = 0.0020). However, caution is needed when reviewing the results. The individual analyses of variance tests can be compared to a college scout going to one basketball game to determine whether
to offer a scholarship to a basketball player. Clearly, if the player has a good night and scores well, gets lots of rebounds, passes the ball well and scores on a high percentage of his shots, a scholarship offer might seem appropriate. Would it not be prudent, however, for the college scout to look at the basketball player's season averages for points scored, rebounds made, passes and/or assists made, and scoring percentage? What if the college scout discovered that the player in question was the low person on the team in three out of the four criteria used in reviewing the abilities of each player?

The calculations of the multi-variate analysis of variance tests are displayed in Tables 21 A and B, 22 A and B, and 23 A and B:

In this analysis, achievement test scores were found to be highly different in regards to grade placement (Table 21 B - Four Statistical Tests - Pr > F = 0.0001). Earlier, similar results were found for sixth, seventh, and eighth grade students and their quarterly grade point averages. Interaction among individual achievement test scores from before and after the study skills program presentation was almost nonexistent (Table 23 B - Four Statistical Tests - Pr > F = 0.9400, 0.9375, 0.9426, and 0.5847). In most cases, whatever the achievement test score was before the study skills program (usually the lowest of the two scores), it was better after the training.
Tables 21A and 21B

Multi-Variate Analysis of Variance Summary for the Differences in Students' Achievement Test Scores by Grade Placement

Table 21A

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>12.90226532</td>
<td>10.837300971</td>
<td>5.8172455655</td>
<td>12.753044521</td>
</tr>
<tr>
<td>Mathematics</td>
<td>10.837300971</td>
<td>13.075675831</td>
<td>8.3175278045</td>
<td>7.6958192507</td>
</tr>
<tr>
<td>Language</td>
<td>5.8172455655</td>
<td>8.3175278045</td>
<td>5.5864155583</td>
<td>3.1449511223</td>
</tr>
<tr>
<td>Listening</td>
<td>12.753044521</td>
<td>7.6958192507</td>
<td>3.1449511223</td>
<td>14.895372485</td>
</tr>
</tbody>
</table>

Characteristic Vector $V'EV = 1$

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Root</th>
<th>Percent</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root</td>
<td>1.8792846768</td>
<td>85.50</td>
<td>0.11343835</td>
<td>0.31901176</td>
<td>-0.00601237</td>
<td>-0.05177879</td>
</tr>
</tbody>
</table>

(table continues)
Table 21A (Continued)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Root</th>
<th>Percent</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.3186414624</td>
<td>14.50</td>
<td>0.13191372</td>
<td>-0.13922785</td>
<td>-0.04406713</td>
<td>0.08658862</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>0.05387125</td>
<td>-0.16944579</td>
<td>0.19618801</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>0.21845701</td>
<td>0.13802219</td>
<td>-0.04898855</td>
<td>0.12607034</td>
</tr>
<tr>
<td>Statistic</td>
<td>Percent</td>
<td>F</td>
<td>Num DF</td>
<td>Den DF</td>
<td>Pr &gt; F</td>
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<tr>
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<td>--------------</td>
<td>----------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>Wilks Lambda</td>
<td>0.26338356</td>
<td>5.9283</td>
<td>8</td>
<td>50</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td>Pillai's Trace</td>
<td>0.89433526</td>
<td>5.2576</td>
<td>8</td>
<td>52</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td>Hotelling-Lawley Trace</td>
<td>2.19792614</td>
<td>6.5938</td>
<td>8</td>
<td>48</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td>Roy's Greatest Root</td>
<td>1.87928468</td>
<td>12.2154</td>
<td>4</td>
<td>26</td>
<td>0.0001</td>
<td></td>
</tr>
</tbody>
</table>
Tables 22A and 22B

Multi-Variate Analysis of Variance Summary for the Differences in Students' Achievement Test Scores Before and After the Study Skills Program

Table 22A

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>13.066887784</td>
<td>14.966821023</td>
<td>9.620296875</td>
<td>18.447877841</td>
</tr>
<tr>
<td>Language</td>
<td>9.620296875</td>
<td>11.01909375</td>
<td>7.082796875</td>
<td>13.58196875</td>
</tr>
<tr>
<td>Listening</td>
<td>18.4478777841</td>
<td>21.130210227</td>
<td>13.58196875</td>
<td>26.044778409</td>
</tr>
</tbody>
</table>

Characteristic Vector V'EV = 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Root</th>
<th>Percent</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>2.2421494508</td>
<td>100.00</td>
<td>0.08726069</td>
<td>0.31357856</td>
<td>-0.02008851</td>
<td>-0.01233137</td>
</tr>
</tbody>
</table>

(table continues)
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Root</th>
<th>Percent</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>-0.08187925</td>
<td>0.06571544</td>
<td>0.14026173</td>
<td>-0.06846336</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>-0.09084074</td>
<td>-0.08429916</td>
<td>0.14987205</td>
<td>0.05457986</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>-0.25222263</td>
<td>0.20738888</td>
<td>-0.12809412</td>
<td>0.07719674</td>
</tr>
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</table>

Characteristic Vector $V'EV = 1$
Table 22B

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
<th>F</th>
<th>Num DF</th>
<th>Den DF</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilks' Lambda</td>
<td>0.30843735</td>
<td>14.0134</td>
<td>4</td>
<td>25</td>
<td>0.0001</td>
</tr>
<tr>
<td>Pillai's Trace</td>
<td>0.69156265</td>
<td>14.0134</td>
<td>4</td>
<td>25</td>
<td>0.0001</td>
</tr>
<tr>
<td>Hotelling-Lawley Trace</td>
<td>2.24214945</td>
<td>14.0134</td>
<td>4</td>
<td>25</td>
<td>0.0001</td>
</tr>
<tr>
<td>Roy's Greatest Root</td>
<td>2.24214945</td>
<td>14.0134</td>
<td>4</td>
<td>25</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
Tables 23A and 23B

Multi-Variate Analysis of Variance Summary for the Interaction Between Students' Achievement Test Scores Before and After the Study Skills Program

Table 23A

<table>
<thead>
<tr>
<th></th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>0.37355865103</td>
<td>0.44532404692</td>
<td>0.88414516129</td>
<td>0.5432554252</td>
</tr>
<tr>
<td>Mathematics</td>
<td>0.44532404692</td>
<td>0.58552785924</td>
<td>1.2295645161</td>
<td>0.72685337243</td>
</tr>
<tr>
<td>Language</td>
<td>0.88414516129</td>
<td>1.2295645161</td>
<td>2.6565967742</td>
<td>1.5403709677</td>
</tr>
<tr>
<td>Listening</td>
<td>0.54321554252</td>
<td>0.72685337243</td>
<td>1.5403709677</td>
<td>0.90492961877</td>
</tr>
</tbody>
</table>

Characteristic Vector V'EV = 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Root</th>
<th>Percent</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root</td>
<td>0.1110935956</td>
<td>96.06</td>
<td>0.09898423</td>
<td>0.14506657</td>
<td>0.12363682</td>
<td>-0.03604775</td>
</tr>
</tbody>
</table>

(table continues)
Table 23A (Continued)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Root</th>
<th>Percent</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Language</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root Percent</td>
<td>0.0045574852</td>
<td>3.94</td>
<td>-0.20056906</td>
<td>-0.12291348</td>
<td>0.1006805</td>
<td>0.04871978</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>0.16994937</td>
<td>-0.36625836</td>
<td>0.11840063</td>
<td>-0.01178486</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>-0.07558626</td>
<td>0.04008697</td>
<td>-0.07965813</td>
<td>0.14876886</td>
</tr>
</tbody>
</table>
### Table 23B

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
<th>F</th>
<th>Num DF</th>
<th>Den DF</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilks' Lambda</td>
<td>0.89593100</td>
<td>0.3530</td>
<td>8</td>
<td>50</td>
<td>0.9400</td>
</tr>
<tr>
<td>Pillai's Trace</td>
<td>0.10452262</td>
<td>0.3584</td>
<td>8</td>
<td>52</td>
<td>0.9375</td>
</tr>
<tr>
<td>Hotelling-Lawley Trace</td>
<td>0.11565108</td>
<td>0.3470</td>
<td>8</td>
<td>48</td>
<td>0.9426</td>
</tr>
<tr>
<td>Roy's Greatest Root</td>
<td>0.11109360</td>
<td>0.7221</td>
<td>4</td>
<td>26</td>
<td>0.5847</td>
</tr>
</tbody>
</table>
In the multi-variate analysis of variance test, achievement test scores were significantly different after, in comparison to before, the training (Table 22B - Four Statistical Tests - Pr > F = 0.0001). Given these results, a conclusion can be made that the study skills program had a great impact on the majority of the students' achievement test scores. Even though the training obviously produced results, it is not clear whether the study skills program improved reading which aided math which aided language which aided listening, or aided reading and math and language and listening. Separate analyses of variance tests usually assume the latter, while the multi-variate analysis of variance test will accept either.

Over all, 56% of the students in this study did show some improvement in their achievement test scores beyond normal growth patterns following the presentation of the study skills program. Table 24 shows the results:
<table>
<thead>
<tr>
<th>Grade in School</th>
<th>Grade of Students</th>
<th>Number of Students</th>
<th>Reading</th>
<th>Math</th>
<th>Language</th>
<th>Listening</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth</td>
<td>18</td>
<td>10/56</td>
<td>13/72</td>
<td>10/56</td>
<td>13/72</td>
<td>46/64</td>
<td></td>
</tr>
<tr>
<td>Seventh</td>
<td>14</td>
<td>6/43</td>
<td>8/57</td>
<td>2/14</td>
<td>10/71</td>
<td>26/46</td>
<td></td>
</tr>
<tr>
<td>Eighth</td>
<td>26</td>
<td>12/46</td>
<td>21/81</td>
<td>10/38</td>
<td>16/62</td>
<td>59/57</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>58</td>
<td>28/48</td>
<td>42/72</td>
<td>22/38</td>
<td>39/67</td>
<td>131/56</td>
<td></td>
</tr>
</tbody>
</table>
Findings, Conclusions, and Recommendations

The purposes of this field experience project were to develop a junior high school study skills program for a small rural school, pilot-test it in the Tower Hill Junior High School, and evaluate its effectiveness. Within the limitations of this study, the summary below of the findings of this study is based upon the analysis of the data presented earlier in this field experience paper. Conclusions (judgments) and recommendations (decisions) based upon these findings are also presented.

Findings

The findings of this field experience project are listed as follows:

1. Through the use of a study skills inventory, 100% of the students involved in this study perceived themselves as having significantly improved (Marginal or Great Improvement on 70% or more of inventory items) their study habits after completion of the study skills program (H₁ can be accepted).

2. Through the use of study skills checklist, all five elementary teachers perceived 100% of the students involved in this study to have significantly improved (Marginal or Great Improvement on 70% or more of checklist items) their study habits after completion of the study skills program (H₂ can be accepted).
3. Students' knowledge of study skills did test significantly higher after, in comparison to before, the completion of the study skills program. Fully 60% of the students involved in this study did show an initial 10% or more increase in their knowledge of study skills upon completion of the program (H3 can be accepted).

4. Students' knowledge of study skills did test significantly stronger over a period of time (three quarterly grading periods) after the completion of the study skills program, and 69% of the students involved in this study did remain stable or show some continued increase in their knowledge of study skills during each of the three quarterly grading periods following the presentation of the program (H4 can be accepted).

5. Students' quarterly grade point averages did not test significantly higher after, in comparison to before, the completion of the study skills program. Only 34% of the students involved in this study showed some improvement in their grade point averages beyond normal growth patterns in the three quarter grading periods following the presentation of the program (H5 cannot be accepted).

6. Students' achievement test scores were significantly higher after, in comparison to before, the completion of the study skills program. Some 56% of the students involved in this study did show some improvement in their achievement
test scores beyond the normal growth patterns following the presentation of the program (H6 can be accepted).

**Conclusions**

Based on the findings on this field experience project, the following conclusions (judgments) can be made concerning the study skills program:

1. Students did improve their study habits as a result of the study skills program.
2. Students did improve their knowledge of study skills as a result of the study skills program.
3. Students' grades and achievement test scores did improve as a result of the study skills program. However, it must be pointed out again that students' quarterly grade point averages did not improve after, in comparison to before, the completion of the study skills program.

**Recommendations**

Based upon the conclusions of this field experience project, the following recommendations (decisions) can be made concerning the study skills program.

1. The study skills program should be continued as presently structured.
2. The study skills program should be implemented into the Tower Hill Junior High School curriculum at the sixth grade level.
Potentially, having other variables that would have measured the students' interests and/or motivations might have improved the model that was used in this field experience project. For example, students with low self-esteem might have been shown to receive twice the benefit from a study skills program than those having a higher belief in themselves. This is not to predetermine what might happen, but rather just an indication of what might happen. To determine whether any of these possible relationships existed, it would have been necessary to measure other variables before and during the testing period. It would also have been necessary (statistically speaking) to have a control group. This group of students, who would share similar interests and educational capabilities, would not have received the training (study skills program). The purpose of this control group would have been to substantiate that the improvements realized in the study could not be otherwise explained. For example, one possible explanation for some of the improvement shown in this study might be that the continued exposure to the same test caused the performances of the students to improve.
References


Brown, H. (1955). This is the way to study. Chicago: Lippencott.


Appendix A

Study Skills Inventory

This inventory has been designed to obtain your opinions as to whether or not the study skills program has helped you. In addition, we want to find out what parts of the program need to be improved.

Instructions to students: Read the following statements and place an X in the appropriate blank beside each item which best indicates how you feel the study skills program has affected your study habit in that specific area. Do not put your name on the inventory. These responses are to be confidential. Return the inventory to your teacher at the end of the class meeting.


<table>
<thead>
<tr>
<th>No Improvement</th>
<th>Marginal Improvement</th>
<th>Great Improvement</th>
</tr>
</thead>
</table>

A. Preparing assignments

1. I do my homework on time. 
   [ ] [ ] [ ]

2. I get missed assignments from teachers or classmates. 
   [ ] [ ] [ ]

3. I keep a calendar, assignment sheet, or log of all assigned work. 
   [ ] [ ] [ ]
4. I schedule review time for test
   __________  __________  __________
5. I plan enough study time.
   __________  __________  __________

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Marginal</th>
<th>Great</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improvement</td>
<td>Improvement</td>
<td>Improvement</td>
</tr>
</tbody>
</table>

B. Study time
1. I study when I feel fresh.
   __________  __________  __________
2. I study in a quiet well-lighted place.
   __________  __________  __________
3. I sit upright at a desk or chair to study.
   __________  __________  __________
4. I have all the materials I need—pencils, dictionary, paper, textbooks, notes—close by.
   __________  __________  __________
5. I study away from radio, stereo, TV.
   __________  __________  __________
6. I take short breaks every 20-30 minutes.
   __________  __________  __________
<table>
<thead>
<tr>
<th>Study Skills</th>
<th>No Improvement</th>
<th>Marginal Improvement</th>
<th>Great Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. I set goals for my study sessions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C. Listening</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. I look at the speaker.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I mentally answer questions as I listen.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I ask questions as I need help.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I make sure I know what I am expected to do.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D. Taking Notes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. I keep a notebook divided into subjects for each class.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I write down notes or vocabulary my teacher puts on the board.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. I organize my notes by using outline form or some other system.

4. I use my own shorthand or set of abbreviations when I take notes.

5. I give my notebooks a regular house-cleaning.

6. I review my class notes daily.

E. Reading

1. I look over the entire section before I read.

2. I examine chapter reviews before I read the section.

3. I examine chapter headings and diagrams before I read.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>I keep main points in mind as I read.</td>
<td>Improvement</td>
</tr>
<tr>
<td>5.</td>
<td>I underline main ideas and important words and phrases as I read.</td>
<td>Improvement</td>
</tr>
<tr>
<td>6.</td>
<td>I summarize important ideas in my own words</td>
<td>Improvement</td>
</tr>
<tr>
<td>7.</td>
<td>I jot down questions I have or words I do not understand.</td>
<td>Improvement</td>
</tr>
<tr>
<td>8.</td>
<td>I use a glossary or dictionary as I read to check definitions of unfamiliar words.</td>
<td>Improvement</td>
</tr>
</tbody>
</table>

### F. Taking Tests

1. I study a little each day instead of cramming. | Improvement | Improvement | Improvement |
2. I have a system for memorizing facts. | Improvement | Improvement | Improvement |
3. I prepare my own
   review sheet and use
   it to help organize
   my information.  ______  ______  ______

4. I get a good night's
   sleep before a test.  ______  ______  ______

5. I read test directions carefully.  ______  ______  ______

6. I read the entire
   test before I start
   and budget my time
   appropriately.  ______  ______  ______

7. I do the easy
   questions first.  ______  ______  ______

8. I read true-false
   and multiple-choice
   questions carefully
   to catch clue words.  ______  ______  ______

9. I write legibly, in
   an organized form.  ______  ______  ______
10. I look over my test carefully when my teacher hands it back, and then correct my errors.

G. Writing Reports

1. I make sure I understand the assignment requirements.

2. I select a topic I enjoy and can find information about.

3. I use library resources well.

4. I have a system for organizing information I have collected.

5. I make an outline and rough draft of my report.
6. I rewrite and proofread until the paper is really a "clean one". 

<table>
<thead>
<tr>
<th>No Improvement</th>
<th>Marginal Improvement</th>
<th>Great Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. I recopy neatly. 

|                |                      |                  |
Appendix B

Anecdotal Record

Observer's name: ______________  Student's name: ______________
Grade: _____  Date: ______  Time: ______  Subject area: ______

Description of classroom situation: ____________________________

_________________________________________________________

Specific study habit(s) observed: ________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________
Appendix C
Study Skills Check List

Teacher's name ___________________ Student's name ________________

Grade __________

Instructions to teacher: Read the following statements and place an X in the appropriate blank beside each item which best indicates the study habit of this specific student since the presentation of the study skills program.

No Marginal Great Improvement Improvement Improvement

A. Preparing assignments

1. Student turns in homework on time. __________ __________ __________

2. Student picks up missed assignments. __________ __________ __________

3. Student keeps assignment log of all assigned work. __________ __________ __________

B. Study time

1. Student appears fresh and rested. __________ __________ __________

2. Student sits upright at desk. __________ __________ __________
3. Student brings necessary materials. _______ _______ _______

C. Listening

1. Student looks at speaker. _______ _______ _______

2. Student asks questions if help is needed. _______ _______ _______

3. Student follows instructions. _______ _______ _______

D. Taking notes

1. Student keeps organized notebook. _______ _______ _______

2. Student takes notes on information put on the board. _______ _______ _______

3. Student keeps notes organized. _______ _______ _______

E. Reading

1. Student completes reading. _______ _______ _______
Study Skills

No Improvement Marginal Improvement Great Improvement

2. Student writes down main point in reading assignments. 

3. Student summarizes important ideas from reading in his/her own words. 

4. Student uses glossary or dictionary to check definitions of unfamiliar words. 

F. Taking tests

1. Student prepares own review sheet to organize information for test. 

2. Student follows test directions carefully. 

3. Student reads entire test before starting and budgets time appropriately.
4. Student writes
   legibly and in an
   organized form.    

5. Student proofreads
   test when completed.    

6. Student looks over
   test carefully when
   teacher hands it
   back and corrects
   errors.    

G. Writing reports
   1. Student understands
      assignment require-
      ments.    

   2. Student selects
      topics on which
      information is
      available.    

   3. Student uses library
      resources well.    

   4. Student organizes
      information
      collected.
5. Student makes outlines and rough drafts of reports.  

6. Student rewrites and proofreads reports until they are "clean".  

7. Student recopies reports neatly.
Appendix D

Study Skills Inventory Recording and Analysis Form

Total responses for each statement on inventory

for Grades 6-7-8 (Circle one)

<table>
<thead>
<tr>
<th>Section and Statement</th>
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<th>Marginal Improvement</th>
<th>Great Improvement</th>
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Appendix E

Study Skills Checklist Recording and Analysis Form

Total responses for each statement on checklist
for Grades 6-7-8 (Circle one)

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Appendix F

Study Skills Program Test Score Analysis Form

Study skills test scores from the 1987-1988 school year

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| 4. | % | - | % | - | % | - |
| 5. | % | - | % | - | % | - |
| 6. | % | - | % | - | % | - |
| 7. | % | - | % | - | % | - |
| 8. | % | - | % | - | % | - |
| 9. | % | - | % | - | % | - |
| 10 | % | - | % | - | % | - |
Appendix G
Quarterly Grade Point Average Recording and Analysis Form

School Year
19-19

Sixth, seventh, and eighth grade students prior to the 1987-1988 school year have not participated in the study skills program.

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7.
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</table>
Sixth, seventh, and eighth grade students prior to the 1987-1988 school year have not participated in the study skills program.

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Overall Class Average