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## The effects of study skills training on college academic performance

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THE EFFECTS OF STUDY SKILLS TRAINING  
ON COLLEGE ACADEMIC PERFORMANCE

An Abstract of a Thesis  
Submitted  
In Partial Fulfillment  
of the Requirements for the Degree  
Specialist in Education

Konnie K. A. Lee  
University of Northern Iowa  
March 1988

## ABSTRACT

Lee, Konnie K. A. Specialist in Education, University of Northern Iowa, March, 1988. THE EFFECTS OF STUDY SKILLS TRAINING ON COLLEGE ACADEMIC PERFORMANCE.

This study was undertaken to obtain further evidence for the effectiveness of study skills training.

The sample included 36 students who entered college in the fall of 1985 and were, at the time of the study, enrolled as juniors at the University of Northern Iowa (UNI). The experimental group consisted of 18 subjects who had previously enrolled in the course, Effective Study Strategies, and 18 control subjects who had not taken the course. The subjects from each group were matched on gender, high school percentile rank, and ACT scores.

The following are the findings in this study:

1. On the basis of student responses on the Learning and Study Strategies Inventory (LASSI) questionnaire, no significant differences were found between the experimental group and the control group in time management, anxiety, concentration, information processing, selecting main ideas, self-testing, test strategies, motivation, or attitude.
2. A significant difference between the treatment and control groups was found in use of study aids.

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A Thesis

Submitted

In Partial Fulfillment

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University of Northern Iowa

March 1988

**This Study by:** Konnie K. A. Lee

**Entitled:** THE EFFECTS OF STUDY SKILLS TRAINING ON COLLEGE ACADEMIC  
PERFORMANCE

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## CHAPTER 1

### Introduction

Students entering college find that many more study demands are placed on them than when they were in high school. Students are expected to read independently and actively as well as read from sources with different perspectives. They must be able to interpret, organize, and react to reading material as well as to lecture material. More exactly, college students are expected to show much more independence and responsibility for their own learning. For some students, the transition is difficult.

It is for these students that learning strategies or study skill programs have been established. These programs provided training to those who seek to overcome deficiencies in their study habits. The goal of these programs is to promote independent, self-motivated learners who can choose appropriate strategies to organize and integrate material as well as to make the material personally meaningful (Jonassen, 1985).

For many years American colleges have been offering special programs for students who need extra help. In 1894 Wellesley College developed the first remedial course for college students, and by the 1930s other schools also integrated special programs into their curriculum for those students who had deficits in their academic backgrounds. Since then, interest has continued in helping students overcome their academic weaknesses.

Several types of programs for students were developed over the past fifty years which reflect changes in colleges and universities as well as societal changes (Kulik, Kulik, & Shwalb, 1983). During the 1930s to 1940s the majority of colleges provided reading and learning skills courses. These courses were usually designed for students who scored low on entrance exams, had poor high school records, or obtained low grades during the first terms of college.

In the 1950s and 1960s programs began to emphasize affective as well as cognitive goals. Studies of the effectiveness of counseling with low-achieving college freshmen (DeWeese, 1959; Kaye, 1971; Johnson, 1970) indicated that failing students responded favorably (i.e., by increased GPA) to counseling treatment. Counseling sessions were initially offered to students on a one-to-one basis. Later on, the sessions developed into more group-oriented activities, and by the end of the 1960s both individual and group guidance courses were common on college campuses.

It was during the 1960s that a national trend began to obtain equal opportunities for socially, economically, and educationally deprived groups (Kulik et al., 1983). The federal government supported the development of these special programs, which included individual tutoring, learning centers, study skills courses, and others.

A trend toward open-admissions colleges during the 1960s also affected the shape of the programs. Students who would have been rejected previously were now being quickly admitted into the open-admissions schools. Courses in remedial programs sometimes became integrated into the school curriculum. The courses were provided to

enhance the university mission to provide the best possible classroom instruction to all students, including those needing remediation.

The University of Northern Iowa (UNI) instituted its first remedial program in the fall of 1978, calling it the Learning Skills Center. It was established to enhance the University's mission to provide the best possible classroom instruction to all students, including those needing remediation. The scope of these programs often encompassed both remedial and developmental aid, with reading and writing being the first priority. Assistance was also given to international students with language difficulties. Since then, the programs have evolved into a regular semester course called Effective Study Strategies. This course is offered by the Office of Learning and Instruction, and is designed to help any University student develop more effective study strategies through both individual and group learning.

The Effective Study Strategies course differs from other programs in the United States in that it is relatively short (12 hours) and it is not offered for credit at UNI. Another difference is that UNI does not have an open-door admissions policy, therefore there is selection of the students admitted. More specific information describing the program will be provided in Chapter 3.

Studies on the effectiveness of UNI's study skills program have been conducted recently. For example, Magdamo (1986) attempted to identify students' learning deficits and examine the effects of learning strategy training on their perceptions of reading and study efficiency as well as their ability to transfer the learning skills to

realistic contexts such as content area courses. McCalley (1987) has initiated a study comparing grade point averages (GPA) of students who completed a study skills course and those who did not. These studies address two major questions posed in the literature regarding program effectiveness: a) How effectively are the services meeting the objectives, and b) In what ways are students improving their skills (Maxwell, 1971; Maring, Shea, & Warner, 1987). Maxwell (1971) and Maring et al. (1987) have also pointed out the difficulty in obtaining evidence for variables which accurately and consistently define academic success.

Maring et al. (1987) concluded that the evaluation of reading and study skills programs on the basis of a single variable, such as improved GPA, is inappropriate. Retention rates, self-report variables related to student satisfaction, and use of skills taught are also important. Other researchers have reached similar conclusions (Entwisle, 1960; Behrman, Dark, & Paul, 1984). These non-intellectual variables (Maxwell, 1971) which are discussed here, are therefore important considerations when evaluating program effects. These and other factors, such as use of counseling techniques and relationships to test performance, will also be considered in Chapter 2 to create a more accurate picture of the success of learning strategy training.

As can be seen from this introductory look at learning strategies and their effectiveness, this has been a wide area of interest to researchers for many decades. Previous studies have shown that when cognitive outcomes have been observed, the presence of other non-intellectual variables indicate a need to take a broader, multifactored

perspective in order to obtain a more accurate perception of effective study skills programs. This study was then undertaken to obtain further evidence for the effectiveness of such study skills training.

### Statement of the Problem

Do students who complete a non-credit study skills course demonstrate long-term benefits in time management, study habits, learning skills, and anxiety control? Do their responses on a learning-strategies inventory differ from responses of students who did not take the course?

### Assumptions

There are two assumptions made in this study. The first assumption is that the students chosen for the experimental and control groups were representative samples of the population they were selected from, and that the individually selected students had comparable backgrounds. The second assumption is that subjects responded honestly to the LASSI.

### Limitations

There are several limitations which must be considered when interpreting the result to be reported. The first is that though the subjects were matched as closely as possible, there are still individual and environmental differences which were not matched. A second limitation is that the success of this study is dependent upon the rate of participants' response to and return of the questionnaire.

It is recognized that motivation to respond is an unknown, confounding variable in studies of this type. Finally, data from a self-report inventory are accurate only to the degree to which a student perceives him/herself accurately. For example, even though the learning situation of a student may not be threatening, the student may perceive it as threatening, and report greater anxiety on the questionnaire than an objective observer would.

#### Definition of Terms

Learning strategies: Refers to mental operations procedures that students may use to acquire, retain, or retrieve knowledge or performance. These procedures enable learners to organize, integrate and store information in memory, study learning materials, arrange the study process and environment, or understand what or how well they have learned. (Jonassen, 1985)

Study strategies: Refer to techniques in which learners actively process information like notetaking, outlining, and review procedures as test preparation.

Strategy training: Refers to the "Effective Study Strategies" course developed by the Office of Learning and Instruction at the University of Northern Iowa, which the experimental group took for 12 hours.

Learning and Study Strategies Inventory (LASSI): Refers to the assessment tool used in this study, which is designed to measure students' use of learning and study strategies.

## CHAPTER 2

### Review of Related Literature

#### Introduction

Young people are strongly encouraged to obtain higher education in order that they may obtain rewards such as social status, higher income, and increased social awareness. However, many students are not properly equipped for the demands that are placed on them in colleges and universities. They lack independent learning skills that are vital for success in higher education. Therefore, it has become the function of researchers to define and implement learning skills training in order that they might improve students' academic achievement. Also, as in this study, it has also been the role of researchers to integrate new research evidence, as it is found, in order that the programs maintain maximum effectiveness.

The review of related research will include studies that have evaluated the effectiveness of study skills programs. Issues in program evaluation will be discussed first, followed by studies in effectiveness of the programs. A third section will review evidence that supports the importance of observing selected variables when evaluating effectiveness of learning strategies training.

#### Issues in Program Evaluation

Sternberg (1983) has identified several problems in the evaluation of study skills programs. First, programs in the past have trained



different skills using different methods, and have been evaluated by various evaluation designs. Such variation has made it difficult to make comparisons across programs. Second, it is not always clear what factors should be used in evaluation. These two ideas will be further addressed in this chapter.

### Learning Strategy Training Effectiveness in Specific and General Populations

As a broad overview of the effectiveness of learning skills programs and evaluation methods implemented in the United States, Kulik et al. (1983) chose 60 studies for inclusion in a meta-analysis. Each study involved high-risk college students with reported measured outcomes and no serious methodological problems.

In general, GPAs were higher for students in semester-long special programs. In addition, for most of the studies, a one-year evaluation showed that persistence was higher for students receiving special assistance.

Kulik et al. (1983) concluded that even though some effects were relatively small, there was marked significance to the high-risk students enrolled in these programs. Therefore, special programs do benefit these students by decreasing failure rate when compared with peers in regular programs.

Because this study involves use of high-risk students as its sample, further research needs to be discussed in regard to effectiveness of special programs with the general college population. Entwisle (1960) further reviewed reports of evaluations of study skills

courses to see how effective the courses actually were in 22 evaluations.

Improvement of GPA generally followed study skills courses, though the range of improvement varied from a slight amount to approximately half a letter grade. It was noted that the smallest gains were found in those groups who were required to take the study skills course, therefore implying that desire to enroll in a course was an indispensable factor for achieving any large improvement in academic achievement.

In the previously mentioned studies (Kulik et al. 1983; Entwisle, 1960), there was evidence that special programs resulted in qualified success in both high-risk students and in general student populations. However, the criterion of success in these studies was essentially GPA.

There is, therefore, a need to consider soft data (subjective) variables, different assessment techniques, self-perceptions of the student, and long-term effects.

#### Evaluation Variables

McKeachie, Pintrich, and Lin (1985) evaluated an introductory psychology course at the University of Michigan called Learning to Learn, which was designed to teach concepts of cognitive psychology and the application of learning strategies. Results showed that from the beginning of the semester to the end of the semester the students in the Learning to Learn course who scored higher on the Scholastic Achievement Test improved more on attitude and anxiety scales of the LASSI than did comparison groups of introductory psychology students in

other courses. In general, there was success in improving students' learning strategies, and there was correlation with achievement in other courses. Through this study, McKeachie et al. (1985) demonstrated the importance of students' reporting self-perceptions of their skills when evaluating the success of these types of programs because it is this knowledge which will help students adapt their learning to various tasks.

Behrman, Dark, and Paul (1984), in their study of 75 students who completed a structured learning-skills course, investigated not only whether these students could demonstrate a higher level of academic performance than a matched group, but also how long any differences might remain, and whether attrition might be reduced. (Change in academic performance was measured by taking the difference between a predicted GPA [computed by using a regression equation that is a function of a student's high school GPA and composite ACT score] and an obtained GPA. A measure of the overall difficulty of a student's college program [average course GPA, which is the average grade given in courses shown on the student's transcripts] was also obtained for all the subjects. Finally, student motivation of both groups was assessed in a telephone survey.)

Results showed that learning skills intervention can have both short- and long-term effects in improved academic performance. After one academic year, while all students had significantly higher actual GPA's than predicted GPA's, the learning skills groups showed more improvement over predicted performance than the control group.

After three academic years, although statistically fewer of the experimental group students left school, there were no differences between the learning skills and control groups on predicted GPAs. This indicates that the study skills taught in the course can reduce attrition and be readily learned and used in a short period of time, but their effects on grades do not linger. The authors stated a need to identify what specific components of the course and what resultant behavior changes by the students account for the outcomes.

Maring, Shea, and Warner (1987) evaluated the university reading and study skills (R/SS) center at Washington State University. They used both hard data indicators (i.e., improved GPA, decreased attrition rates) and soft data indicators (i.e., student satisfaction, use of skills taught, and other affective and performance variables obtained by self-report techniques) to evaluate program effectiveness.

Results showed that the subjects of the treatment groups, who completed the reading and study skills course, did not differ from others in terms of subsequent GPA. However, they did continue attending the university in significantly greater numbers.

Telephone survey responses indicated that students were satisfied with the R/SS program and that most reported that they used time management, study environment, test-taking, and read/recite strategies they had learned in the course. The researchers concluded that the evaluation of reading and study skills programs on the basis of a single variable, such as improved GPA, is inappropriate. They stated that other factors such as retention rates, self-report variables

related to student satisfaction, and use of skills taught should also be considered.

The aforementioned studies have generally demonstrated positive relationships between study skills courses and academic achievement, specifically, grade point average. Moreover, it can be concluded that success of this type of training cannot be judged by grade point average alone. Self-perceptions of the student, use of the LASSI instrument, and length of time between taking the course and implementing assessments, are all factors found to be important when studying the success of study skills courses. Other variables also need to be investigated in order to obtain a broader, more accurate perception of effective learning strategies training.

#### Assessing the Success of a Learning Strategies Program

Tarpey and Harris (1979) sought to answer the following questions:

1. Does a course in study skills have an effect on students' study behaviors and academic achievement as measured by end-of-term GPA and the Survey of Study Habits and Attitudes (SSHA) (Brown & Holtzman, 1955)?

2. Does communication skills training of college students in academic achievement groups have an effect on scholastic achievement as measured by end-of-term grade point average?

The investigation was conducted using a structured group counseling model in which student academic behaviors were the focus. Interpersonal communications skill training was begun as a pre-group

training experience in which desired communication behaviors were taught by the group leaders and then practiced by group members.

The experiment included two groups of students: those in study skills classes receiving communications skills training, along with instruction in basic coursework, and those in study skills courses who had no communications skills training accompanying basic coursework instruction. The criterion was a comparison of GPA and the Survey of Study Habits and Attitudes. GPAs of a nontreatment control group were also compared with the treatment groups.

Subjects were 91 students attending a Midwestern university who requested to take a one-credit course in study skills during the spring 1976 quarter. Five groups were chosen from this pool of students. Two groups received communication skills training as well as basic course instruction. Two groups received instruction in only basic curriculum, and one group received no treatment.

Treatment was conducted during ten weekly 2-hour sessions. The criterion instrument, Survey of Study Habits and Attitudes, was administered the week before and the week following the treatment. Between the first and second class time, interviews were held where leader and student expectations were voiced and a commitment was made to work toward academic achievement.

The results of post-GPAs from students in the no-treatment group and from those receiving communications skills training showed significantly higher averages for students in the latter group. Significant differences were found between post GPAs of students in the basic study skills group and the no-treatment group where those in the

basic study skills group had higher GPAs. There was no significant difference in GPA between those who had only basic study skills and those who received communication skills training as well. On the SSHA, significant differences were found on pre- and post-comparison for students in communication skills training and the basic study skills group.

These results indicate that students who volunteered to take study skills courses can raise their GPAs from below minimum standards to success in academics. Further, outcomes on the SSHA support the use of a structured group experience to increase students' study behaviors, however more evidence is needed to support this. Unlike the program in this study, the UNI study skills program includes no communications skill training, is a no-credit course, and runs for only 12 hours. These factors may produce results which differ from the findings of this study.

A variable that Tarpey and Harris (1979) did not study is the long-term effects of the strategies they taught. Therefore, further research is needed to demonstrate the persistence of the program effects.

Research by Scott and Robbins (1985) investigated personality variables, achievement motivation, and study behaviors of students in a learning skills center. Subjects included 60 undergraduate students attending a western university. Three measures were administered to the students at the beginning of classes: The Goal Instability Scale, The Personal Competency Inventory, and the Study Skills Questionnaire.

Identification of a high-risk group consisted of students who had scored one standard deviation below the mean on the Goal Instability Scale. Differences between high goal instability students (high risk) and the other students were found by calculating t-tests between the means of scores on five variables: final grades, cumulative GPA, personal competency, study skills, and goal instability. The results indicated that while classes in the learning skills center tried to improve academic competence through instruction in study skills and management of behaviors, high risk students (who did more poorly in academics than the nonrisk group) were incapable of taking advantage of the opportunity. Therefore, in order that these students might use extra training to the greatest advantage, it may be useful to refer them for counseling aid. Moreover, there are implications that this counseling aid may make the difference between successful instruction and non-successful instruction. Compared with the UNI program, research results may differ due to the absence of any counseling aid at UNI in conjunction with study instruction.

Simpson, Nist, and Hoglebe (1985) studied the relationship between the use of study strategies and test performance. Subjects included 37 students enrolled in a college reading course. They were referred to the class because of low Scholastic Aptitude Test Verbal (SATV) scores and low high school grades.

During a six-week period, students were taught study strategies based on a modified version of the SQ3R (survey, question, read, recite, and review) method. Students were instructed on various strategies such as rehearsal, picking out main ideas, asking and



answering questions, charting, summarizing, and test taking. They were quizzed throughout the six weeks over their understanding of the strategies. They were then tested in speech, geography, and political science using 60 percent higher-level questions (evaluative and application), and 40 percent memory-level questions. Before receiving the test results, the students were instructed to write down how they had prepared for the exam. The responses were coded as positive or negative learning behaviors, and the composite score of the positive minus the negative behaviors was calculated. Negative behaviors consisted of activities which did not require active involvement on the part of the learner, such as rereading, memorizing, and cramming, while positive behaviors consisted of underlying ideas, annotating text, predicting test questions, and other active rehearsal strategies.

Correlations between the three test scores and positive learning behaviors were high. High correlations were found between test scores and composite scores of positive minus negative behaviors.

Students with high SATV tended to obtain higher test scores; however, SATV scores did not significantly correlate with the number of positive or negative study behaviors for any of the tests. These results indicate that when assessment is done immediately after instruction, positive results will be found. But it is important to note that the range of the tests is limited due to the fact that the instructors of the study strategies course taught the material on the tests directly. Therefore, in order to generalize to greater numbers of students, a less specific context is needed. The LASSI instrument has potential to serve this purpose because of the broader context it

takes. In addition to this need for wider boundaries, it is also important to observe whether similar results will occur in long-term assessments.

### Summary

The researchers in this chapter obtained various results from their studies. First, it has been shown that intensive programs (more instruction time) produce significant results. Second, the use of hard and soft data demonstrated success when evaluating study skills programs. Third, the LASSI is a good instrument to use when assessment is made of soft indicators in study skills training effectiveness. Fourth, immediate testing after training resulted in significant differences.

These related studies offer some implications for an evaluation of UNI's study skills program. It has been shown that intensive credit-receiving programs generally show positive results, but because of the relatively short, 12-hour, non-credit course available at UNI for the general population, success is uncertain.

Another factor to consider in conjunction with the UNI program is that there are different ways to demonstrate success (i.e., through hard or soft data). This study will utilize only soft-data indicators, which may produce results different from those of previous studies which used both types.

A third consideration is the assessment technique implemented. The question can be asked whether the LASSI will show differences in a

broader context, such as in this study, where many factors are being observed (i.e., anxiety, motivation, time management, etc.).

Finally, immediate testing has shown strong results in similar program evaluations, but it is not yet clear how long the effects will last. This study will gather soft data two years after students finished the Effective Study Strategies course.

## CHAPTER 3

### Methodology

This chapter describes the UNI learning strategy training program, the subjects, instrumentation, research questions, procedures used to collect data, and data analysis.

#### Learning Strategy Training Program

The Office of Learning and Instruction offers a 6-week course each semester called Effective Study Strategies, which is available to all students attending the University. This class is designed to help students develop more effective learning strategies and habits. Specific topics covered in the course are time management, concentration and remembering, lecture note-taking, study systems for tests, and textbook reading strategies. During the first session of Effective Study Strategies, the students were reassured that this course would help them with their areas of concern, and if their specific problem was not addressed on the syllabus, they could bring it to the instructor's attention. It was also emphasized, however, that success of the course depended on the efforts of the student and the willingness shown to practice the new skills in regular classwork. The students were encouraged to become active learners and to become more responsible in their own learning so that they could ultimately learn without teacher-directed instruction.

The following study strategy course outline was used by the instructors of the Effective Study Strategies class:

Day 1: Creating Your Own Study System.

Day 2: Managing Your Time.

Day 3: Previewing Textbook Assignments.

Day 4: The Lecture Class: Listening and Taking Notes.

Day 5: Practicing the 3/4, 1/4 Notemaking System.

Day 6: What is Annotation?

Day 7: Annotating Your Textbooks.

Day 8: Concentrating and Remembering.

Day 9: Learning Strategies: Sample Test Questions and Concept Cards.

Day 10: Learning Strategies: Charting, Timelines, and Mapping.

Day 11: Preparing for and Taking Essay Exams.

Day 12: Overcoming Test Anxiety and Managing Stress.

Class activities included lectures, individual and group discussions, checklists, films, videotapes, brainstorming, practice exercises, and teacher's feedback. Students also wrote in their own journals discussing coursework and concerns which had arisen. The instructors then reviewed and reacted to the comments either by writing in the journals or by talking individually with students.

When a new strategy is taught, students are given the rationale for the strategy. For example, students are asked if they often lose concentration as they read, or have difficulty remembering because they have not adequately prepared themselves for the reading task; if so, a preparation strategy called previewing can be helpful because it helps

to improve the ability to focus on and remember information derived from texts.

After each set of exercises was presented, group discussion and examples volunteered by students were used to see the potential of the strategy or to clarify any problems students would have in using the new strategies.

### The Subjects

The subjects consisted of students who entered UNI in the fall of 1985 and at the time of the study were enrolled as juniors at the University of Northern Iowa. There were 36 subjects participating in the study. The experimental group consisted of 18 subjects who had previously enrolled in the Effective Study Strategies class. The 18 control subjects were matched on gender, high school percentile rank ( $\pm 2$  points), and ACT scores ( $\pm 2$  points). All the information was obtained from the University Registrar's Office.

Originally, the sample consisted of 136 subjects; however, attrition reduced the number significantly. Attrition can be attributed to four factors. First, 24 of the students were not enrolled at the time of the study. Second, nine students were enrolled during the semester but had heavy work and study schedules and were unable to respond to the questionnaire. Third, three students did not have accurate telephone numbers and addresses listed in the campus directory and could not be contacted. Finally, six students had made arrangements to come to the Educational Laboratory but did not arrive at the time arranged. Follow-up calls were unsuccessful in

rescheduling appointments. Because the majority of students (48) who did not show up were from the experimental group, which is a finite and limiting group, they could not be replaced. As a result, their matched controls also had to be deleted from the study. When the experimental subject was available but the matched control member was not, new matched subjects were found.

### Instrumentation

The subjects were sent a letter (Appendix A) asking for their voluntary participation in the study and were also given a follow-up phone call to confirm appointments. From September 24 to September 29, 1987, students came to the Interdisciplinary Educational Laboratory where they were given the questionnaire.

The self-report questionnaire, Learning and Study Strategies Inventory (LASSI), was administered to both the experimental and control groups. This instrument was designed by Weinstein et al. (1987) to measure the student's use of learning strategies as well as the degree of success of intervention programs. Using a 5-point Likert scale, the subject indicated the degree to which the survey items were descriptive of him/her.

The questionnaire (Appendix B) consists of 27 items, which are divided into 10 individual scales:

1. attitude and interest (Is school really important or worthwhile?)
2. motivation (Do they stay up-to-date in class assignments?)

3. anxiety (Do they worry so much that it is hard for them to concentrate?)
4. time management (Do they study only under pressure of a test?)
5. concentration (Do they concentrate fully when studying?)
6. information processing (Do they translate what they study into their own words?)
7. selecting main ideas (Can they identify the important points in readings without much difficulty?)
8. study aids (Do they attend available group review sessions?)
9. self-testing (Do they try to identify potential test questions when reviewing class material?)
10. test strategies (Can they adapt studying to different types of courses?)

The LASSI took approximately 15-20 minutes to complete, though there was no time limit. Subjects were told to answer each question as accurately as possible. Scaled scores were derived from these 10 areas and were then compared numerically between the experimental and the control group.

#### Research Question

The purpose of this study is to measure the use of learning strategies from self-reported facility in the areas of motivation, attitude, attention, time management, concentration, information processing, selecting main ideas, study aids, self-testing, and test strategies, and to compare the responses of those who had attended Effective Study Strategies with the responses of those who had not. In



short, do students who have completed the University of Northern Iowa study strategy course report more favorably on motivation, attitude, attention, time management, concentration, information processing, selecting main ideas, study aids, self-testing, and test strategies, than those who had not taken the course?

#### Data Analysis

Because the subjects of the two groups were matched on high school percentile ranks and ACT scores, the t-test for non-independent samples was used. The advantage of using this matched-group design is that it ensures that the experimental groups are "equivalent" in initial ability. The measure to be analyzed by the t-test is the difference between the paired scores obtained from responses on the LASSI questionnaire. The questionnaire responses were entered on a software disk and computed by a program designed specifically for this study.

## CHAPTER 4

### Results

This chapter presents a discussion of the analysis of data which was obtained through self-reports of students on the LASSI.

#### Comparison of LASSI Scores

Do students who complete the study skills course report more positive responses on the LASSI than those who did not take the study course?

The data from Table 1 can be used in answering this. The mean scores were found for the experimental group and the control group. The mean score for each group could vary from 18 to 90 because the subjects chose from 1 to 5 (not at all typical to very much typical) the degree to which the questions pertained to themselves. It should also be noted that approximately half of the items are numbered from 1 to 5, while the other half are numbered from 5 to 1. This is because some items are stated in a positive direction (item number 37, Appendix B), while others are stated in a negative direction (item number 49, Appendix B). Overall performance is interpreted such that higher scores indicate a more positive self-report in the specific area. Obtained scores which are on the 75th percentile or above indicate that there is relatively good performance in that specific area. The following scales are shown with the scores which would place the student on the 75th percentile: (1) attitude, 34; (2) motivation, 34;

Table 1

LASSI Mean Scores, Standard Deviations, t-values for Experimental and Control Groups

| Problem Areas              | N  | Mean    | SD    | t-value | Sig. |
|----------------------------|----|---------|-------|---------|------|
| 1. Attitude                |    |         |       |         |      |
| EG                         | 18 | 32.1667 | 3.823 | 1.14    | .271 |
| CG                         | 18 | 33.4444 | 3.568 |         |      |
| 2. Motivation              |    |         |       |         |      |
| EG                         | 18 | 29.5000 | 4.890 | 1.54    | .142 |
| CG                         | 18 | 31.2222 | 4.784 |         |      |
| 3. Time Management*        |    |         |       |         |      |
| EG                         | 18 | 24.1667 | 6.802 | 0.70    | .495 |
| CG                         | 18 | 25.4444 | 6.810 |         |      |
| 4. Anxiety*                |    |         |       |         |      |
| EG                         | 18 | 22.2778 | 5.039 | 1.82    | .086 |
| CG                         | 18 | 25.0556 | 5.876 |         |      |
| 5. Concentration*          |    |         |       |         |      |
| EG                         | 18 | 25.2778 | 4.240 | 1.85    | .082 |
| CG                         | 18 | 27.5000 | 3.034 |         |      |
| 6. Information Processing* |    |         |       |         |      |
| EG                         | 18 | 26.5556 | 4.938 | 0.32    | .755 |
| CG                         | 18 | 27.1667 | 6.573 |         |      |
| 7. Selecting Main Ideas*   |    |         |       |         |      |
| EG                         | 18 | 18.5556 | 3.053 | 0.29    | .779 |
| CG                         | 18 | 18.2778 | 3.322 |         |      |
| 8. Study Aids*             |    |         |       |         |      |
| EG                         | 18 | 23.9444 | 3.556 | 2.52    | .022 |
| CG                         | 18 | 26.5000 | 4.315 |         |      |
| 9. Self-testing*           |    |         |       |         |      |
| EG                         | 18 | 23.1111 | 4.497 | 0.68    | .506 |
| CG                         | 18 | 24.0000 | 4.311 |         |      |
| 10. Test Strategies*       |    |         |       |         |      |
| EG                         | 18 | 27.2778 | 6.406 | 1.94    | .069 |
| CG                         | 18 | 29.7778 | 3.318 |         |      |

EG = Experimental Group      CG = Control Group      (df = 17, p < .05)

\* Areas taught in the UNI Effective Study Strategies course

(3) time management, 28; (4) anxiety, 31; (5) concentration, 29; (6) information processing, 30; (7) selecting main ideas, 20; (8) study aids, 28; (9) self-testing, 28; (10) test strategies, 32. In none of the tested areas did either experimental or control subjects reach the 75th percentile of the normative data.

As shown on the table, the use of study aids was the area in which there was found a significant difference between the means of the experimental group (mean = 23.9444) the control group (mean = 26.5000,  $t = -2.52$ ,  $p < .05$ ). The control group scored significantly higher than the experimental group.

No difference was found in time management (e.g., "I find it hard to stick to a study schedule"). No difference was found in the area of anxiety (e.g., "I worry that I will flunk out of school"). In the area of concentration (e.g., "I concentrate fully when studying), no significant differences were found between the means. Information processing (e.g., "I try to see how what I am studying would apply to my everyday living") showed no differences. Selecting main ideas (e.g., "I have difficulty identifying the important points in my reading") showed no differences. Significant differences were not found in the area of self-testing (e.g., "I test myself to be sure I know the material I have been studying"). Test strategies (e.g., "I have difficulty adapting my studying to different types of courses") also failed to show significant differences between the means. Attitude (e.g., "I feel confused and undecided as to what my educational goals should be") showed no difference between the treatment and control groups. Finally, motivation (e.g., "I come to

class unprepared") showed no significance between the means of the two groups. The latter two factors received no direct instruction time during the study skills training. Out of all ten areas on the LASSI, only the area of study aids showed a significant difference.

In summary, the reported results showed that neither the experimental group nor the control group indicate more favorable results in the majority of the areas included in the LASSI questionnaire. Study aids was the only area which showed a significant difference, and that difference was not in the expected direction.

## CHAPTER 5

## Discussion, Conclusions, and Implications

Discussion

The UNI study skills program teaches many skills which are directly related to the areas on the LASSI questionnaire. In the area of time management, students learn time management steps, how to use events calendars for long-term planning, how to make daily and weekly schedules, and also how to adhere to a time-management schedule. Information processing is taught in annotation techniques (in which students read textbook paragraphs and state key concepts in their own words). When learning of test strategies, students are presented with ways to prepare for both objective and subjective tests (i.e., charting, time lines, mapping) and discuss how to select a test preparation strategy. Anxiety is addressed with an inventory of test anxieties and with holistic perspectives, where students are asked to consider the worst that could happen as a result of failing an exam. Selecting main ideas is taught by having students use provided texts and their own textbooks to pick out key concepts from each paragraph that is read. To teach study aids, students practice a 3/4, 1/4 system of notetaking and learn other techniques such as highlighting main ideas and mapping. Finally, self-testing is taught with activities such as the use of the Active Reading Cycle, creating a review/study sheet, and in the case of essay exams, writing answers to projected questions). In general, the time spent for most of these areas ranged

from 15 to 20 or 30 minutes, thus only relatively short periods of time were allotted to most areas tested by LASSI.

In the eight previously mentioned areas, with the exception of study aids, a significant discrepancy did not occur between the means of the experimental and treatment groups. Therefore, the UNI study skills program may be said to have no significant effect when comparisons are made on these factors.

McKeachie et al. (1985) found general success in improving students' learning strategies and some correlation with achievement in other courses. But they also discussed the importance of self-perceptions of ability when evaluating success of learning strategies programs. Their discussion supports the use of the data in this study, which are obtained from self-reports of students' participation in this study. It must be noted, however, that the data are dependent on the accuracy of each students' self-perceptions of his/ her study habits. If the students rate the questions as either more applicable or less applicable when that is not the case, then the evaluation of the program will also be inaccurate to the same degree.

It will be recalled that Behrman, Dark, and Paul (1984) observed the effectiveness of study skills programs over time (one year and three years). In the one-year evaluation, the learning skills groups had shown more improvement over predicted performance than the control group. In the follow-up after three academic years, no differences were found between the learning skills and control groups on actual GPA. This indicates that study skills taught in the course could be

readily learned and used in a short period of time but that there were no long-term effects.

The students chosen for the experimental group in this study were those who had taken the Effective Study Strategies course at UNI during the fall of 1985 as freshmen and were in their junior year at UNI at the time of the study. The control group included all these variables except for enrolling in the Effective Study Strategies course. The two-year lapse between taking the course and taking the LASSI questionnaire may have worked to minimize the long-term success of the course, as in the Behrman et al. (1984) study.

Use of study aids showed a significant difference between the treatment and control groups. The experimental group scored lower (mean = 23.9444) than the control group (mean = 26.5000). This may be due to the fact that those who took the Effective Study Strategies course learned a wide variety of study skills (i.e., selecting main ideas, self-testing, etc.), thereby having a wider repertoire to choose from. It may be that those in the control group do not have as many choices and thereby focus on one type which is familiar to them.

The Effective Study Strategies course is not the only promoter of learning strategies on campus. Study aids are used by professors when they hand out summary worksheets of textbook and lecture material, and are found in textbooks which mark important ideas with headings or italics. Therefore, because students have more exposure to study aids in the general courses, they could be using them more.

Maring et al. (1987) found that treatment groups did not differ in terms of GPA, and concluded that the evaluation of reading and study



skills programs on the basis of a single variable such as improved GPA, was inappropriate. They stated that other factors, such as retention rates and self-report variables, were also important. This study concentrated on the latter soft-data indicator and found that there were still no significant differences in most areas between the group who had received study skills training and the group that had not. This indicates that completion of a learning-skills course did not automatically lead to better performance and that other factors are needed for students to successfully apply study skills in regular coursework.

The research by Scott and Robbins (1985) obtained similar findings with this study in that study skills training itself is not enough for students to effectively use the study skills. Some other factor is needed to insure the success of extra training.

### Conclusions

Based on this discussion, the following conclusions can be drawn from the results:

1. The assessment instrument, LASSI, did not show any differences between the self-perceptions of experimental group subjects and the control group subjects.
2. No long-term benefits from the UNI study skills course were demonstrated in the specific areas covered by the LASSI.

### Implications

Improving learning strategies of college students and assessing the effectiveness of programs is a relatively new area in the educational field for colleges and universities. Though numerous researchers have studied program effectiveness, there is a need for further investigation to obtain more evidence and to verify previous findings. The limited number of subjects in this study restricts the generalizability of these results. Future studies should attempt to obtain a larger number of subjects.

In further studies done on this topic, different assessment materials might also be used to limit the possibility that differences occurred due to the testing instrument. The Simpson et al. (1985) study tested from the material taught in their course and found significant results. Therefore, it may be useful for the UNI program to assess students on material that is directly taught in the Effective Study Strategies course.

In future research, it may also be useful to design a matched-group study using students who took the Effective Study Strategies course in order to obtain pre- and post-data to observe any differences before and after the study skills instruction.

Because the main concern is to help those students who wish to maintain or increase academic achievement, it would be advantageous to identify a population of students who would respond optimally to learning skills training.

As previously mentioned, Scott and Robbins (1985) found that though students were exposed to study skills, they failed to take

advantage of the opportunity. However, counseling aid seemed to help in improving academic competence. In relation to the UNI study skills program, these results may indicate that in addition to the skills taught from the course Effective Study Strategies, some sort of one-on-one counseling may also be advantageous.

Because intensive, credit-giving programs have shown effectiveness for students, it may be beneficial for the UNI program to consider a longer program and to possibly give credit for the course.

Out of the sample of 136 students, 36 students actually participated. This may imply that these 36 subjects differ somehow from those who did not participate and are, therefore, not representative of the sample. Factors such as motivation and anxiety may differentiate between participants and non-participants. Further research is needed to examine this possibility.

Finally, self-perceptions of students are important considerations when assessing the success of study skills programs. There may be differences between students in areas such as attribution of success they may consider success to be due to their own capabilities or to environmental factors, such as good instruction or easy tests. Such differences would compound self-report scores. Further research is also needed in this area.

Perhaps, after 12 hours of learning instruction and discussion, the LASSI questions mean different things to the experimental group, so the criterion instrument was not the same for both groups. This factor could also have an important impact on future studies.

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## APPENDIX A



University of Northern Iowa

Office of Learning and Instruction

231 Student Services Center  
Cedar Falls, IA 50614-0387  
(319) 273-2346

September 9, 1987

Dear Student:

As the Reading/Learning Strategies Specialist in the Office of Learning and Instruction, it has been my responsibility to provide the most effective learning assistance and reading instruction possible. To this end, I must survey University reading loads, study texts currently used on campus, and conduct research on useful learning strategies.

Konnie Lee, a graduate student in School Psychology here at UNI, has chosen an area of learning strategies for her Educational Specialist thesis. She is surveying students at the University of Northern Iowa, to see how affective measures, such as attitude, motivation, anxiety, and concentration, affect school success. Her conclusions will be useful for all of us in deciding how to help future UNI students succeed.

Konnie needs your help to complete her survey. Your name was chosen randomly for participation in this survey. All information will be kept confidential.

I would greatly appreciate your volunteering your time to respond to the questionnaire Konnie has prepared. Please indicate a time that would be convenient for you to go to the Interdisciplinary Educational Laboratory, 159 Education Center, to meet with her. The questionnaire will take approximately 15 to 30 minutes to complete.

After you have circled a day and an hour from the listed times below, please print your name on the signature line at the bottom of this page. Then return this letter to Konnie in the enclosed stamped, self-addressed envelope.

Thank you very much for your time, and Konnie looks forward to hearing from you.

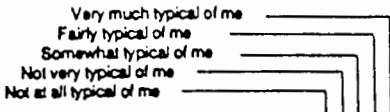
Sincerely yours,

Karen S. Agee, Ph.D.  
Reading/Learning Strategies Specialist

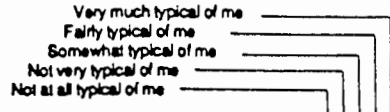
|                      |       |       |      |      |
|----------------------|-------|-------|------|------|
| Monday, October 26   | 9:00  | 11:30 | 2:00 | 4:30 |
| Tuesday, October 27  | 9:30  | 12:00 | 2:30 | 5:00 |
| Thursday, October 29 | 10:00 | 12:30 | 3:00 |      |
| Friday, October 30   | 10:30 | 1:00  | 3:30 |      |
|                      | 11:00 | 1:30  | 4:00 |      |

Print name here \_\_\_\_\_





- 39. I am unable to concentrate well because of restlessness or moodiness. a b c d e
- 40. I try to find relationships between what I am learning and what I already know. a b c d e
- 41. I set high standards for myself in school. a b c d e
- 42. I end up " cramming " for almost every test. a b c d e
- 43. I find it hard to pay attention during lectures. a b c d e
- 44. I key in on the first and/or last sentences of most paragraphs when reading my text. a b c d e
- 45. I only study the subjects I like. a b c d e
- 46. I am distracted from my studies very easily. a b c d e
- 47. I try to relate what I am studying to my own experiences. a b c d e
- 48. I make good use of daytime study hours between classes. a b c d e
- 49. When work is difficult I either give up or study only the easy parts. a b c d e
- 50. I make drawings or sketches to help me understand what I am studying. a b c d e
- 51. I dislike most of the work in my classes. a b c d e
- 52. I have trouble understanding just what a test question is asking. a b c d e
- 53. I make simple charts, diagrams, or tables to summarize material in my courses. a b c d e
- 54. Worrying about doing poorly interferes with my concentration on tests. a b c d e
- 55. I don't understand some course material because I don't listen carefully. a b c d e
- 56. I read textbooks assigned for my classes. a b c d e
- 57. I feel very panicky when I take an important test. a b c d e
- 58. When I decide to study, I set aside a specific length of time and stick with it. a b c d e
- 59. When I take a test, I realize I have studied the wrong material. a b c d e



- 60. It is hard for me to decide what is important to underline in a text. a b c d e
- 61. I concentrate fully when studying. a b c d e
- 62. I use the chapter headings as a guide to identify important points in my reading. a b c d e
- 63. I get so nervous and confused when taking an examination that I fail to answer questions to the best of my ability. a b c d e
- 64. I memorize grammatical rules, technical terms, formulas, etc., without understanding them. a b c d e
- 65. I test myself to be sure I know the material I have been studying. a b c d e
- 66. I put off studying more than I should. a b c d e
- 67. I try to see how what I am studying would apply to my everyday living. a b c d e
- 68. My mind wanders a lot when I study. a b c d e
- 69. In my opinion, what is taught in my courses is not worth learning. a b c d e
- 70. I go over homework assignments when reviewing class materials. a b c d e
- 71. I have difficulty adapting my studying to different types of courses. a b c d e
- 72. Often when studying I seem to get lost in details and "can't see the forest for the trees." a b c d e
- 73. When they are available, I attend group review sessions. a b c d e
- 74. I tend to spend so much time with friends that my coursework suffers. a b c d e
- 75. In taking tests, writing themes, etc., I find I have misunderstood what is wanted and lose points because of it. a b c d e
- 76. I try to interrelate themes in what I am studying. a b c d e
- 77. I have difficulty identifying the important points in my reading. a b c d e