INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

ProQuest Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600

UMI
POSTSECONDARY LEARNING STRATEGY INSTRUCTION
AND STUDENT OUTCOMES

By
Stacey L. Hartman

Copyright © Stacey L. Hartman 2002

A Dissertation Submitted to the Faculty of the
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY
In Partial Fulfillment of the Requirements
For the Degree of
DOCTOR OF PHILOSOPHY
In the Graduate College of
THE UNIVERSITY OF ARIZONA

2002
As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Stacey Lynn Hartman entitled Postsecondary Learning Strategy Instruction and Student Outcomes and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

Mary McCaslin

Date

Thomas Good

Date

Sheri Bauman

Date

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director

Mary McCaslin

Date
STATEMENT BY THE AUTHOR

This dissertation has been submitted in partial fulfillment of the requirements for an advanced degree at the University of Arizona and is deposited in the University library to be made available to borrowers under the rules of the library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgement of the source is made. Requests for permission for extended quotations from or a reproduction of this manuscript in whole or in part may be granted by the copyright holder.

SIGNED: [Signature]
# TABLE OF CONTENTS

**LIST OF TABLES** ................................................................................................................. ...6

**ABSTRACT** ............................................................................................................................... 8

**CHAPTER 1: INTRODUCTION** ................................................................................................. 9
   - Rationale of the Study ........................................................................................................... 9
   - Statement of the Problem ................................................................................................... 10
   - Purpose of the Study .......................................................................................................... 10
   - Significance of the Study ................................................................................................... 11
   - Definitions of Terms ......................................................................................................... 12

**CHAPTER 2: REVIEW OF THE LITERATURE** ........................................................................ 14
   - Self-Regulated Learning .................................................................................................... 14
   - Learning Strategy Instruction ............................................................................................. 15
      - Scope, Content, and Timeframe ....................................................................................... 16
      - Fit Between Strategy and Other Instruction ..................................................................... 17
      - Methods to Promote Strategy Transfer .......................................................................... 18
      - Fostering Independence ................................................................................................. 20
   - Why Interventions Fail ....................................................................................................... 21
      - Adherence to Routines That Yield Mediocre Results .................................................... 21
      - Poor Cognitive Monitoring ............................................................................................ 22
      - Low Self-Efficacy ............................................................................................................ 22
      - Goal Orientation .............................................................................................................. 24
      - Motivation ....................................................................................................................... 26

**CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY** ................................................ 28
   - Research Design and Questions ....................................................................................... 28
   - Setting ................................................................................................................................. 29
   - Participants ......................................................................................................................... 30
   - Measures ............................................................................................................................. 30
   - Intervention: Learning Strategies Workshops ..................................................................... 32
      - Development of the Workshops ....................................................................................... 33
      - Workshop Content .......................................................................................................... 33
      - Exam Preparation Workshop ......................................................................................... 33
      - Note Taking Strategies Workshop .................................................................................. 34
      - Reading Textbooks Workshop ....................................................................................... 34
      - Test Taking Strategies Workshop ................................................................................... 35
      - Time Management Workshop ....................................................................................... 35
   - Data Collection ................................................................................................................... 36
TABLE OF CONTENTS - Continued

Data Analysis ................................................................. 37
  Research Question One ................................................ 37
  Research Question Two ................................................. 39

CHAPTER 4: RESULTS .......................................................... 40
  Strategies Used by Students ........................................... 40
    Strategy Amount ...................................................... 40
  Strategies Reportedly Used by Students ............................ 41
    The Characteristics of Strategies Used by Students ............ 44
  Obstacles to Strategy Use ........................................... 45
  Student Characteristics and Strategy Use ......................... 57

CHAPTER 5: SUMMARY, DISCUSSION, AND FUTURE RESEARCH ........ 63
  Discussion .................................................................. 63
  Conclusion .................................................................. 65

APPENDIX A: STUDENT OUTCOMES QUESTIONNAIRE ................. 67

APPENDIX B: PARTICIPANT CONSENT FORM ........................... 69

APPENDIX C: WORKSHOP OUTLINES .................................... 71

REFERENCES ................................................................ 81
LIST OF TABLES

Table 1, Demographic Information for the Participating Student Group ........... 30
Table 2, Phrases and Words Used for Coding Participant Survey .................. 38
Table 3, Amount of Strategy Use by Workshop ........................................ 41
Table 4, Strategies Reported by Students, Note Taking ............................ 42
Table 5, Strategies Reported by Students, Exam Prep ............................... 42
Table 6, Strategies Reported by Students, Reading Textbooks .................... 43
Table 7, Strategies Reported by Students, Test Taking Strategies ................ 43
Table 8, Strategies Reported by Students, Time Management ..................... 44
Table 9, Obstacles to Strategy Use, Strategy Difficulty ............................ 46
Table 10, Obstacles to Strategy Use, Strategy Effort ................................ 47
Table 11, Obstacles to Strategy Use, Time Demands ................................ 48
Table 12, Obstacles to Strategy Use, Strategies Not Helpful ....................... 49
Table 13, Obstacles to Strategy Use, Own Strategies Are Better ................. 50
Table 14, Obstacles to Strategy Use, More Comfortable with Own Strategies ... 51
Table 15, Obstacles to Strategy Use, Using High School Strategies ............. 52
Table 16, Obstacles to Strategy Use, No Changes Necessary ...................... 53
Table 17, Obstacles to Strategy Use, Clarity of Instruction ....................... 54
Table 18, Obstacles to Strategy Use, Understanding of Application ............ 55
Table 19, Obstacles to Strategy Use, Length of Instruction ....................... 56
Table 20, Obstacles to Strategy Use, Workshop Met Expectations ............... 56
LIST OF TABLES – Continued

Table 21, Obstacles to Strategy Use, Workshop Worthwhile ................................. 57
Table 22, Obstacles to Strategy Use, Descriptive Statistics ..................................... 58
Table 23, Workshop * Class Standing ..................................................................... 60
Table 24, Workshop * Gender ............................................................................... 60
Table 25, Workshop * GPA ................................................................................... 61
Table 26, Workshop * Academic Ability ............................................................... 61
Table 27, Workshop * Reason for Attendance ...................................................... 62
ABSTRACT

With a pronounced move toward student-centered learning and academic self-regulation, the responsibility of learning is shifting from teacher to student. As a result, students are now being asked to take more responsibility for their learning. Research has made clear that strategic behavior and the use of learning strategies enhances learning. Effective learners are able to self-regulate in order to evaluate when and how to use the appropriate strategies as well as evaluate their success relative to their actions. Students often enter postsecondary education without the knowledge and skills to self-regulate; therefore, learning strategy instruction becomes a key instrument in students' pursuit of academic success. Quantitative examination of the students' outcomes associated with this type of instruction is limited at best. This study examines student outcomes associated with the attendance of learning strategies workshops at the postsecondary level. Findings indicated that participants reported using some, if not all, of the strategies discussed. Additionally the largest percentage of strategies reported were strategies that were supported instructionally by modeling, practice, and feedback. This study did not uncover particular student traits that would lead to students' use of strategies. Strengths and weaknesses of this study are discussed, as are directions for future research.
CHAPTER 1
INTRODUCTION

Rationale of the Study

Student enrollment at postsecondary institutions across the country is on the rise, bringing with it an increase in the number of academically underprepared students entering college. One of the ways that this discrepancy in readiness manifests itself is through skill and strategy deficits. As a consequence, increasing numbers of students are more likely to fail their courses and have lower graduation rates. The disparity that exists between the skills those incoming students possess and the skills that are required for their success at the postsecondary level creates an array of academic, social, and economic issues for the student, the institution, and the community. Thus, while the door to college is open to increasing numbers of students, many leave college without the benefits associated with a degree and without the skills necessary for future success (Hock, Deshler & Schumaker, 1999).

There are a number of ways in which college faculty and learning assistance professionals can help students to achieve academically. One way is to promote student self-regulation through the use of learning strategies (see Cheung & Kwok, 1998; Schumm, 1992). Learning strategies have traditionally been thought of as systematic, meaningful ways of engaging new material. Despite their apparent history of academic success, students at the postsecondary level often are deficient in these systematic ways of learning, remembering, or directing their learning.
Statement of the Problem

One of the ways in which postsecondary institutions attempt to support students academically is to provide assistance in the form of learning strategies instruction. Although some institutions of higher education have developed extensive programs for students wherein they receive intensive instruction over the span of a semester, most institutions provide this instruction in a format that is detached from the student’s regular curriculum, taught by a learning assistance professional, and is composed of general strategies geared toward a homogeneous student population. These programs are generally voluntary for students and offered in one to two-hour segments.

As a general rule, we know little about the effectiveness of this type of program and little about the characteristics of the students who utilize them. The literature that exists on developing self-regulated learning through learning strategy instruction often examines this forum for learning in an idealized setting wherein time and resource constraints are not an issue. However, the reality of the programs offered by most postsecondary institutions is far from ideal. What is lacking in the literature examining postsecondary learning strategy instruction is how we can best offer quality services under existing constraints. This can only come about by examining learning strategy instruction effectiveness in light of realistic shortcomings and educating ourselves about the students that make use of them.

Purpose of the Study

Based on the need for data-driven evaluation of learning assistance programs at the postsecondary level, the purpose of this study is to examine the effectiveness of a
learning strategies workshop program. The goals of the current program evaluation will be to investigate (a) if participation in the workshop program results in students' use of the strategies introduced in that program and (b) whether there are student characteristics associated with that use. The major research questions addressing these goals are:

1. Did student participation in the fall 2001 Learning Strategies Workshop Program result in the use of those strategies by students either inside or outside the classroom setting?
   1a. If students report that they did begin to use some or all of the strategies that were introduced, which of those strategies did they use?
   1b. Did the strategies that students reported to use have a common characteristic(s)?
   1c. What obstacles, if any, were present to prevent students from using the strategies that were discussed?

2. Is there a relationship between the characteristics of the students who attended the workshop and their likelihood of adopting the strategies discussed?

Significance of the Study

The significance of the present study is to add to the limited literature related to the outcomes associated with attending learning strategy workshops at the postsecondary level. Professionals need well-researched practices on which to build these types of programs within the limited available resources of time, space, and funding.
Definition of Terms

Learning strategies. Traditionally, learning strategies have been defined as systematic, purposeful ways of engaging material that is to be learned. For the purpose of this discussion, the term learning strategies has been broadened to include all activities by which learning is achieved. For example, text annotation, copying notes, consulting peers, asking the instructor for clarification are all learning strategies. These strategies allow students to actively engage and process information, thereby influencing mastery of the material and academic achievement.

Postsecondary institution. Formal instructional programs with a curriculum designed primarily for students who have completed requirements for a high school diploma or equivalent. This discussion refers to programs of an academic focus.

Self-Regulated Learning. Refers to the process of learning wherein students actively use strategies to pursue goals. Self-regulated learners monitor and assess their learning, actions, and performance and when necessary, redraw strategic plans.

Undergraduate students. Students registered at postsecondary education institutions who are working in an academic program leading to a baccalaureate degree.

Metacognition. Monitoring one's own knowledge or comprehension. Involves the knowledge, awareness, and control of one's own learning and the regulation of the outcomes associated with it.

Cognitive strategies. Strategies designed to help students organize the information they are required to learn. Methods generally require students to organize or transform information as in mind mapping, outlining, and summarizing.
Volition. A student's post-decisional active management and self-control of intentional factors undertaken to ensure that determined goals are met.

Attributions. Beliefs about why things happen, the causal explanation of events. Attributions can vary along dimensions of locus of control, stability, and controllability.

Self-Efficacy. A person’s self-appraisal of what s/he is capable of doing. This information comes from a variety of sources including past experiences, vicarious learning, and verbal persuasion.
CHAPTER 2
REVIEW OF THE LITERATURE

Chapter 2 is a literature review relevant to the present study. The first section provides an overview of self-regulated learning. The second section examines the elements necessary for effective learning strategy instruction to promote self-regulated learning. The third section provides a review of literature examining why learning strategy interventions fail.

Self-Regulated Learning

Current research appears to suggest that all students use regulatory processes to some degree but there are individual differences in knowledge base about Self-Regulated Learning, knowledge about when to engage that knowledge, and skills to act accordingly (Boekaerts, 1995; Winne, 1995; Zimmerman, 1990). Those students characterized as self-regulated learners are distinguished by (a) an awareness of links between regulatory processes and learning outcomes, and (b) use of strategies to reach academic goals (Zimmerman, 1990). Winne (1995) provides a description of the self-regulated learner as follows:

When they begin to study, self-regulating learners set goals for extending knowledge and sustaining motivation. They are aware of what they know, what they believe, and what the differences between these kinds of information imply for approaching tasks. They have a grasp of their motivation, are aware of their affect, and plan how to manage the interplay between these as they engage with a task. They also deliberate about small-grain tactic and overall strategies, selecting some instead of others based on predication about how each is able to support progress toward chosen goals. (p. 173)
The basic elements of strategy use for the self-regulated learner are fairly consistent although strategic use by the self-regulated learner has been broken down into a number of different sub-processes by researchers. First, students must have knowledge of various learning strategies. Second, they must pick the appropriate strategy after deliberating its effectiveness in relation to the learning task at hand. Finally, they must possess motivational (e.g., the desire) and volitional (e.g., maintain the desire) components that enable them to implement the learning strategy in order to meet their goal, whether it be acquiring knowledge, solving problems, or completing a homework assignment. If obstacles arise throughout this process, the self-regulated learner will make adjustments to or redraw strategic plans. Despite its seemingly complex nature, Self-Regulated Learning does prompt us to examine learning from the students' perspective and to consider their limitations as well as their obstacles.

Learning Strategy Instruction

Students do not develop Self-Regulated Learning skills without some degree of input or assistance. In contrast to earlier strategy programs where students were merely introduced to learning strategies and left to assume responsibility for their implementation, today's educators play an increasingly important role. Existing literature on learning strategy instruction discusses a number of elements that should be considered if self-regulated learning is to be promoted at the postsecondary level. Effective strategy instruction takes into account the following: characteristics of the intervention, fit between the intervention and other instruction, elements to facilitate transfer, and fostering student independence.
Scope, Content, and Timeframe

There are a number of considerations in designing learning strategy instruction for the postsecondary student. Hofer, Yu, and Pintrich (1998) suggest that due to the diversity of learning strategies interventions, designs need to consider the scope, content, and timeframe of the program.

The first consideration in designing learning strategy instruction is scope. Scope refers to the number and kind of different strategies that students will be exposed to during the program. Research on this subject appears to indicate that the fewer strategies introduced, the better the student outcomes (Knight, 1993). Instructional programs that focus on a minimal number of strategies appear to have the largest effect on student performance (Hattie, Biggs, & Purdie, 1996). A large number of strategies may not only dilute the intervention, but may use up valuable time that should be spent on instructional methods like opportunities for practice and discussion that work to encourage students to use the selected strategies after the intervention has ended.

A second consideration in instructional design involves content. Content is the selection of particular strategies, like previewing. The strategies chosen should reflect the goals of the intervention and careful decisions must be made regarding which strategies to teach within the allotted timeframe. Hofer et al. (1998) suggest that multistrategy programs that teach more than one or two strategies should include a range of strategies so that students have both the skill and the will to use them properly.

The timeframe of the program is the third consideration in the design of learning strategy instruction. Interventions may last an hour, a week, or a full semester. For the
postsecondary student, the length of strategy instruction is often short, often lasting only an hour or two at best. Often this is due to the nature of support services at the college level. However, it stands to reason that when the quality of instruction is held constant the greater the length of time spent on instruction, practice and feedback, the greater the student outcomes like academic achievement.

Fit Between Strategy and Other Instruction

In addition to using a strategy on demand, one of the goals of strategy instruction is to foster the use of strategies in the classroom. Therefore, authentic tasks are critical in strategy instruction. MacArthur and his colleagues (1996) suggest that if students acquire strategies in the context of artificial school tasks, it is unlikely that they will generalize them to meaningful tasks in other contexts. Therefore, the knowledge regarding the purposes of different types of strategies and where best to use them is best acquired by learning the strategies in the context of authentic tasks.

A design consideration related to the authenticity of academic tasks addresses whether the instruction will be embedded into the curriculum or detached from it. An abundance of research highlights the relative effectiveness of instruction that is embedded into the course content or curriculum (see Davidson & Smith, 1990; Rigney, 1980). By integrating instruction into the curriculum, it becomes clear to students that strategies can and should be utilized in different contexts. Embedded instruction, usually offered by the course or classroom teacher, also affords the opportunity to provide instruction over an extended period of time. Unfortunately, this is not the norm at the postsecondary level where the emphasis is on communicating discipline-specific content
and strategies (Hofer et al., 1998). For these reasons, it is often learning assistance professionals who provide learning strategy instruction in the college setting. Although this may suggest that a detached format of instruction is less effective, there are advantages to this format when it allows for individualized instruction.

**Methods to Promote Strategy Transfer**

In addition to using a strategy on demand, another goal of strategy instruction is to develop students' awareness of the appropriate settings in which to use particular strategies. A great deal has been learned about how to promote maintenance and transfer of strategies across settings and it is crucial that this information be implemented into instructional models. Study strategies and tactics work well with only certain tasks and under specific conditions. Therefore, learners confronting unfamiliar tasks must pair tasks with effective strategies (Zimmerman, 1995). In order to accomplish this, students need specific information about the contextual conditions for learning strategy use.

Recent literature suggests moving from instruction on general cognitive strategies to instruction on domain-specific strategies for several reasons: (1) students often have difficulty relating strategy information to real-life tasks unless the connection specifically is made for them, and (2) students may be more motivated to learn when the strategy utility becomes clear through the link between strategy and task (Montague, 1997; Salomon & Perkins, 1989). For students to apply a strategy, they must know when and where to use the strategy, how to select a procedure to meet a demand, how to “think” as well as perform the physical behaviors, and how to monitor and evaluate the use of a strategy (Rogan, LaJeunesse, McCann, McFariand & Miller, 1995). Providing
information concerning the match-up of strategies and tasks promotes success, whereas simply reminding students to be aware of the strategy before they begin is not necessarily effective (Cox, 1994).

Instructors can do a great deal to ensure that students not only know where, when, and how to use strategic procedures but are motivated to do so (Davidson & Smith, 1990; Harris & Pressley, 1991; Hofer et al., 1998; King-Sears, 1997; Knight, 1993; Rogan et al., 1995). Instructors should remind students that the characteristics of different tasks require particular strategies. For example, if students are being tested on their ability to effectively engage recognition memory as in a multiple-choice exam, the strategy should reflect this skill. One route is the creation and use of flash cards.

Modeling the use of a strategy/strategies throughout instruction is also an important instructional design to assist students in learning new strategies. This may involve an overt "think aloud" demonstration of the cognitive and metacognitive thinking that is required for the correct use of the strategy (Davidson & Smith, 1990; Hock, Deschler & Schumaker, 1993; King-Sears, 1997; Knight, 1993). Modeling by the instructor serves to provide students information on how and in what context strategies can be used. Furthermore, by having students model the use of a strategy for the instructor, it is possible to check students' understanding.

Other key elements of instruction include opportunities for students to practice newly learned strategies and to receive instructor feedback. These components enhance learning and motivation by conveying learning progress, they also promote strategy transfer and maintenance (Schunk & Zimmerman, 1998). Instructors can provide students
with opportunities to become comfortable with strategy use by structuring opportunities for practice correctly. Secondly, instructors can use practice to build student self-efficacy through feedback (see Bandura, 1997; Schunk & Rice, 1987). Student practice and the use of constructive feedback provide the instructor opportunities to highlight student achievement so that students can see readily their own success (Knight, 1993). Through these successes, students become more confident, independent, proactive learners who not only set continually higher goals for themselves, but also assume greater responsibility for their own learning. Without appropriate instruction which includes these types of support, the responsibility falls upon the learner to confront unfamiliar tasks, and to figure out which strategy or tactic is most useful with that particular task (Zimmerman, 1995).

Fostering Independence

Fostering independence is another important goal of strategy instruction. Strategy instruction should focus on developing student independence by students mastering strategies and developing the awareness to self-regulate those strategies (MacArthur et al., 1996). Instructors can do a number of things to foster student independence with regard to strategy use. First, students are encouraged to develop and retain ownership of strategies. When students are actively involved in the decision-making process underlying strategy construction, they may feel ownership over the strategies developed and continue to use them (Butler, 1998). Second, instructional supports like direct instruction, modeling and guided practice, discussed above, should be gradually removed. Student questions can also be redirected back to students and students should be
encouraged to self-monitor their performance. During monitoring, students can compare current progress to their goals, thereby generating internal feedback about the success of their efforts (Butler, 1988).

Why Interventions Fail

Despite instructional elements designed to assist students in learning and using new strategies, students often fail to utilize effective strategies inside and outside the classroom (Alexander & Judy, 1988; Perkins & Salomon, 1989; Pressley, 1986). There are a multitude of reasons for this failure, including students' adherence to primitive routines that yield mediocre results, poor cognitive monitoring, low student self-efficacy, and insufficient student motivation.

Adherence to Routines That Yield Mediocre Results

Well-practiced routines that produce a product, any product, can inhibit the use of learning-enhancing strategies (Garner, 1990). Typically these are automated, unconscious routines, like repetition either through recopying or rereading. These strategies and routines are usually inefficient and adopted relatively early in a student's academic career and often become "the way" that student studies regardless of the task at hand. Students engaged in this type of primitive routine typically do not engage in deep processing wherein they integrate, restructure, construct, or evaluate information (Garner, 1990). Students often bring these routines to the postsecondary environment because these behaviors are deeply ingrained and because they have proven to be at least moderately effective. However, they are often insufficient to promote success once the student is
immersed in the postsecondary environment when academic demands change due to increased workload and student responsibility.

**Poor Cognitive Monitoring**

If students do not notice what they are or are not learning, then they are unlikely to seek a strategic remedy (Garner, 1990). If they harbor the illusion of comprehension, it follows that they will see no need to engage in an additional learning activity. It is also known that certain situations are more likely to elicit or impede cognitive monitoring than others. Students are more likely to fail to use cognitive monitoring in situations where: they do not need to act on explicit instructions or descriptions, memory resources are strained, the task is viewed as unimportant, and when a learner is not devoting conscious attention to the task (Garner, 1990).

**Low Self-Efficacy**

Students may be reluctant to utilize strategies when they perceive themselves as incompetent. The term self-efficacy refers to a student's perception of his or her ability and degree of control with regard to a particular learning situation. Self-efficacy is hypothesized to influence choice of activities, effort expended, motivation, persistence, and achievement (Bandura, 1997; Schunk, 1990). In appraising their self-efficacy, students take into account a number of factors including task difficulty, perceived ability, and expended effort as well as other situational and social factors like instructor assistance.

Compared with students who doubt their learning capabilities, those with high self-efficacy for accomplishing a task participate more readily, work harder, persist
longer when they encounter difficulties, achieve at a higher level, engage in more metacognition, and use more cognitive strategies (Bandura, 1997; Pintrich & DeGroot, 1990; Schunk, 1995). Additionally, it has been suggested that those students with a high degree of self-efficacy visualize success scenarios that provide positive guides and supports for performance, while those with low self-efficacy visualize failure and dwell on what can go wrong (Bandura, 1993). It is important to note that it is not the actual outcome, or consequences of their behavior that is involved in self-efficacy, but the student’s perception of his capability that influences his actions.

In a model presented by Dale Schunk (1990), self-efficacy has a reciprocal relationship with goal setting. When students set intermediate goals for themselves, that are specific or proximal in time, they can perceive their learning progress more effectively and this, in turn, enhances self-efficacy. Goals set too high or too low, however, do not enhance self-regulated learning or achievement beliefs. Students perceive little progress toward lofty goals, which lowers self-efficacy and leads them to work halfheartedly and give up readily when they encounter difficulty. In contrast, easy goals do not produce high self-efficacy because they do not inform students about what they are capable of doing (Schunk, 1990).

Learners can acquire information which forms their sense of self-efficacy from a number of sources that define how ordinary people view the cause of certain events (Schunk, 1995). Some of the more obvious influences would include the impact of previous learning and testing situations. However, self-efficacy can also be influenced by a number of other factors including: social comparison, where a student sees
himself/herself surpassed by others; and through the framing of feedback, when the way in which a student is socially evaluated alters the course of his or her attainments (Bandura, 1993). Information from these sources does not necessarily alter students' feelings of self-efficacy, but it is nonetheless often noted and appraised (Schunk, 1990).

**Goal Orientation**

Another barrier to strategy use in the classroom is the presence of goals that do not support strategic activity (Gardner, 1990). In achievement contexts, individuals are motivated to reach particular goals like gaining social recognition, pleasing one's parents, outperforming classmates, and obtaining good grades. The adoption of these goals set in motion a particular way of interpreting and responding to the world (Archer, 1994).

Goal orientations have been categorized in a number of ways, including learning-orientation versus grade-orientation and performance-orientation versus mastery-orientation. In these distinctions there is a common element that characterizes the two orientations: an orientation toward learning for its inherent value (higher value) versus another of instrumental orientation (one of seemingly "lesser" value or degree). Goal orientations also vary across settings. A student may have a grade orientation (getting a good grade) in a class that appears to have little practical value and adopt a learning orientation (mastering subject knowledge) in a class in which the student has established a vested interest.

Schraw, Christy, Thorndike, & Bruning (1995) examined the relative impact of different goal configurations on classroom achievement. Their data revealed: (1) higher course achievement for students high on the learning dimension, (2) high-learning
dimension students reported using more strategies than students with a low-learning orientation; and, (3) students high on the learning dimension reported that they used more metacognitive knowledge than those low on that dimension. Findings suggested that differences in achievement, strategy use, and metacognitive knowledge were due, at least in part, to a student's goal orientation.

Different goals are thought to arise from a number of sources including students' expectations for success and failure and their self-beliefs about their own academic ability. Students who adopt the "lesser" or performance-based goals may also do so because the costs of mastery goals like task involvement, persistence, and higher-order thinking may simply require too much effort. As a consequence, students choose goals like extrinsic reinforcement and social controls that are more easily attained and less effortful (Paris & Newman, 1990). These goal distinctions not only influence students' level of self-regulation, but their use of strategies as well. A 1994 study by Archer found that learning-oriented college-level students were motivated to examine and reflect upon learning tasks and their learning skills as compared to their grade-oriented peers who did not manifest, or manifest soon enough, an interest in the strategies and skills necessary for learning. Additional analyses revealed that by mid-term in the semester, grade-oriented students had not made the necessary adjustments between demands of learning tasks and modifying learning strategies.

Goals also can be influenced by a student's learning environment. Meese (1994) states that learning situations that emphasize self-improvement, discovery of new information, and the usefulness of learning material can induce learning or mastery goals...
because these high-effort conditions result in high self-efficacy. In contrast, those situations that involve interpersonal competition, tests of intellectual skills and normative evaluation can elicit performance goals.

Motivation

Knowledge of cognitive and metacognitive strategies is usually not enough to promote student achievement; students also must possess motivation to use the strategies as well as regulate their cognition and effort. Motivation loosely defined, relates to why people think and behave as they do (Weiner, 1992). It has been suggested that when students understand that they are agents who are capable of self-determination of their goals, they will develop the motivation necessary for self-regulation (Zimmerman, 1990). Weed, Ryan, and Day (1984) confirmed that students who only received strategy instructions and who assumed an internal control for failure recalled significantly more on the post-test than did students with an external control for failure. In the same study, results showed that on the uninstructed post-test, students who only received strategy instructions and who generally attributed success and failure to luck were significantly less likely to continue using the effective strategy.

Motivation can be linked to a number of factors. In nearly all Self-Regulated Learning literature, motivation is strongly linked to goal setting and/or self-efficacy factors. Social cognitive approaches to Self-Regulated Learning have focused on perception of self-efficacy as the ultimate source of students' motivation (Zimmerman, 1990). Without specific information about the contextual conditions of strategy use and a strong sense of self-efficacy, students may be unable to sustain motivation in the face of
extended periods of time (Zimmerman, 1995). Motivation may also be tied to characteristics of the task as opposed to any deep-seated interest (Alexander, 1995).

Often when a strategy is newly learned, it requires more effort to carry out than a familiar strategy often resulting in less motivation, even when the new procedure is more effective (Pressley, 1995).

In sum, literature on the topic of self-regulated learning and the use of learning strategies suggests that students' use of newly learned strategies is a complex and multi-faceted occurrence. There are a number of elements that should be present in learning strategy instruction in order for students to master the “what,” “how,” and “when” elements of strategy use, however, there still remains a number of both internal and external obstacles for students to overcome before new strategies are adopted.
CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

In Chapter 3, the design, methods, and procedures used in the proposed study will be described. The chapter is organized into seven sections: (a) research design and questions, (b) setting, (c) participants, (d) measures, (e) interventions, (f) data collection, and (g) data analysis.

Research Design and Questions

The goal of the program evaluation was to investigate whether participation in the Fall 2001 Learning Strategies Workshop Program offered by the University Learning Center (ULC) had an effect on student study behaviors, i.e. did students report that they used the strategies that were presented during the intervention. A secondary goal was to determine if the use or non-use of those strategies was associated with any student characteristics. An ex post facto design was used to describe the relationship between participation in the program and student strategy use, and between student characteristics and strategy use.

Participants included enrolled students who attended one or more ULC Learning Strategies Workshops in the fall 2001 semester and voluntarily completed a follow-up survey. No comparison or control group was utilized for this study. The major research questions, which addressed the goals of the program evaluation, were:
1. Did student participation in the fall 2001 Learning Strategies Workshop Program result in the use of those strategies by students either inside or outside the classroom setting?

la. If students report that they did use some or all of the strategies that were introduced, which of those strategies did they use?

lb. Did the strategies that students reportedly used have a common characteristic(s)?

c. What obstacles, if any, were present to prevent students from using the strategies that were discussed?

2. Is there a relationship between the characteristics of the students who attended the workshop and their likelihood of adopting the strategies discussed?

Setting

The gathering of data was conducted as part of a program evaluation effort initiated by the ULC in the fall 2001 semester on a Southwestern university campus. This postsecondary institution is a land grant university that serves over 27,000 undergraduate students. The ULC is an academic unit designed to support the objectives and mission of the university. Through the ULC, students are provided with access to programs centered around academic skill development, tutoring, and academic counseling. Most of the services of the ULC, including the Learning Strategies Workshop Program are available to all enrolled students and are free of charge. Workshops are offered in the following subject areas: time management, note taking, reading textbooks, exam preparation, and test-taking strategies.
Participants

The participants in this evaluation project were undergraduate students who attended one or more of the learning strategies workshops offered by the ULC in the fall 2001 semester. There were no limitations imposed in terms of class standing, reason for attending, academic standing, or age.

In this investigation, 27 enrolled undergraduate students (n = 27) participated in the Learning Strategies Workshop Program and returned at least one survey. Seventeen women and ten men submitted a total of 43 surveys that were at least partially completed. Of those 27 students, 11 were freshmen, seven were sophomores, four were juniors and five had senior class standing. In addition, 15 students reported that they attended the workshop(s) for voluntary reasons whereas 11 students reported that they were required to attend. One student selected both voluntary and required as reasons for attending. There was no comparison group utilized for this study. Table 1 illustrates the demographic characteristics of the participating students.

Measures

The student outcomes survey (Appendix A) was developed to gather data about student characteristics, their use of the learning strategies introduced, if any; and obstacles which may have impeded their use (e.g. strategy characteristics, instructional elements, etc.). Students who indicated that they were interested in participating in the study received this survey for each workshop they attended. Ninety-two surveys were mailed to students agreeing to participate in the evaluation. Of those, 43 were returned yielding a 46.7 % response rate.
Table 1

Demographic Information for the Participating Student Group

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
<th>Males</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N= 17</td>
<td>N= 10</td>
<td>N= 27</td>
</tr>
<tr>
<td>Class Standing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshmen</td>
<td>10</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Sophomore</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Junior</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Senior</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Attendance *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required</td>
<td>5</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Voluntary</td>
<td>11</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Self-Rating of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Ability *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Average</td>
<td>8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>High</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Self-Reported GPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1.99</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.0-2.99</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3.0-3.99</td>
<td>10</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>4.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* category contains one omitted or unreadable response

The student outcomes survey is a 20-item likert-type inventory developed by the researcher, also an employee of the ULC, for the purpose of obtaining information on the student outcomes associated with attending the program. The other two educational
specialists who were to deliver the workshops examined the survey in its rough draft form to see if they felt that it adequately addressed the issues of concern by the ULC.

The survey consists of three sections. The first section solicits information about the participant including class standing, gender, reported GPA, self-rating of academic ability, and reason for attending the workshop (voluntarily versus mandatory). The second section of the survey questions participants on their use, if any, of the strategies discussed. The third section assesses the effectiveness of the workshop and a number of obstacles that would prevent students from adopting new strategies. These obstacles include instructional variables, strategy characteristics, and student variables. Participants were directed in writing to read the survey carefully and circle the appropriate response. The response options on this portion of the survey were “Strongly Disagree, Disagree, Agree, Strongly Agree, and Don’t Know.” Items in this section include “The strategies in this workshop were difficult to use,” and “I am more comfortable with the strategies that I already use even if they don’t work as well as the ones discussed in the workshop.”

Intervention: Learning Strategies Workshops

The intervention program that will be examined by this study is the Learning Strategies Workshop Program offered by the ULC. As outlined previously, workshops are offered in the following subject areas: time management, note taking, reading textbooks, exam preparation, and test-taking strategies. Each workshop lasted approximately 60 minutes. The ULC has been offering workshops of this nature for over 10 years. The workshops are designed to support the ULC’s mission to “integrate students into the University’s academic community and to prepare students to become
effective, independent learners.” Between the dates of September 10 and October 31, 2001, 24 workshops were offered: five time management, five reading textbooks, five note taking strategies, five exam preparation, and four test-taking strategies workshops.

Development of the Workshops

Three learning assistance professionals who were scheduled to present the workshops met to brainstorm and record their ideas for the design of the workshops. These meetings lasted approximately three hours over two meeting times. The goal was to standardize the workshops into a common format so that each student who attended received comparable instruction and content.

Workshop Content

Although the specific content of each workshop varied depending on the subject, each workshop was designed to contain common elements. These elements included: an overview, student introduction, student self-assessment, discussion of problems in the subject area, and the introduction of a minimum of two new strategies in that area, combined with opportunities for practice and instructor feedback. Appendix C includes the specific content of the workshops. Appendix D contains copies of the handouts administered to students who attended the workshop(s).

Exam preparation workshop. The exam preparation workshop discussed basic exam preparation tips. Students were encouraged to adapt their study methods to the type of exam that will be given, the modes of thinking that will be tested, and the kinds of questions that will be asked. One of the key points in exam preparation is developing and following a basic study plan. Students were encouraged to schedule study time and set
reasonable study goals for each upcoming exam. Students were also encouraged to evaluate their success in relation to their study methods after each exam and contemplate how they would approach the next exam differently. Common problems that students reported in this area include: students study for each exam in the same manner, students do not allow enough time for preparation, students can not identify what information would be on an upcoming exam, students do not use the resources available to them (ex. tutoring, office hours, peers, etc.), and students do not evaluate their progress and continue to repeat the same mistakes in exam preparation.

*Note taking strategies workshop.* The note taking strategies workshop was designed to focus on taking and using class notes effectively. This lesson discussed things that need to occur before, during, and after lecture for proper note taking to take place. Topics covered included having the right materials, listening and watching for important points in lecture, organizing notes into a format, and reviewing notes that have been taken. Activities in this lesson allowed students the opportunity to practice using the Cornell Method of note taking, and to create mind maps to reorganize information into a pictorial format. Common problems that students reported in this area include: notes are disorganized, notes do not contain the proper information, students rely too heavily on provided outlines or internet notes, and students do not know how to pick out the important points of a lecture.

*Reading textbooks workshop.* The reading textbooks workshop centered around two strategies that were designed to assist students in getting more from their textbooks, previewing and annotating. Previewing is a component of many reading strategies,
including SQ4R (survey, read, recite, review, reflect). It allows students brief exposure to new text in hopes that they will: (a) activate prior knowledge, (b) become familiar with both the concepts that will be discussed and the organization of the text, and (c) assist in the comprehension and retention of the material when the student returns to fully read the text. Annotation is a system of text marking designed to assist students in summarizing and coding material and provides an effective alternative to highlighting. Common problems that students reported in this area include passive reading (i.e. not paying active attention to the text), insufficient knowledge of what is important in the text, and highlighting too much text.

**Test taking strategies workshop.** The test taking workshop covered techniques for taking different kinds of tests including multiple choice, essay, and computational exams. Students were educated in basic test taking tips including answering easy questions first, reading all possible answers before choosing, and picking the key words from questions. Common problems that students reported in this area include: students do not employ effective test taking strategies, students do not read questions carefully and miss pertinent information, students do not allow themselves enough time to finish the exam, and students experience a high level of test anxiety.

**Time management workshop.** The time management workshop discussed the importance of time management skills and allowed students the opportunity to reflect on their current skills, discuss the advantages to good time management, discuss time management tips, and obtain a greater understanding of procrastination. In the activities portion of the lesson, students were instructed to create a weekly schedule, make a long-
term calendar, create a daily to-do list, and think of productive tasks that can be done in small periods of wait-time. Common problems students reported with managing time include: little knowledge of how their time is actually spent, procrastination on important tasks, little knowledge of how to create and follow a schedule, too much time socializing, and not scheduling study time or scheduling enough study time.

Data Collection

At the beginning of each workshop, students were told that the ULC was conducting a follow-up evaluation of its workshop program and that participation in the evaluation was voluntary. Those students who expressed an interest in participating were given a form requesting their name and address. Those students returning the initial form were mailed a letter and survey approximately two weeks after the workshop (see Appendices A and B). Although the completion of the initial form and the subsequent survey were voluntary, students were offered one chance to win a $50 gift certificate to the campus bookstore for every survey completed and returned. Due to the small number of students attending the workshops and the historically poor response rate of surveys and questionnaires, offering students an incentive for completed survey was used to insure that the largest possible sample of student responses could be obtained. The obtained response rate for this study was 46.7%.
Data Analysis

The data were analyzed to address each of the research questions:

*Research Question One*

Research question one asked if student participation in the fall 2001 Learning Strategies Workshop Program resulted in the use of those strategies by students either inside or outside the classroom setting. For this question both qualitative and statistical analysis were conducted for each of the three subquestions.

1a. If students report that they did begin to use some or all of the strategies that were introduced, which of those strategies did they use?

1b. Did the strategies that students reported to use have a common characteristic(s)?

1c. What obstacles, if any, were present to prevent the students from using the strategies that were discussed?

For subquestion 1a, the qualitative method of content analysis was conducted so that the information obtained from the survey could be analyzed systematically. Statements in relation to the value and implementation of the strategies presented during the workshops were coded and analyzed. The three workshop presenters analyzed survey responses for words or phrases that related to the use of strategies discussed in the workshop that the student attended. Table 2 outlines the workshop attended and words and phrases associated with strategy use.
### Table 2

**Phrases and Words Used for Coding Workshop Survey**

<table>
<thead>
<tr>
<th>Workshop Title</th>
<th>Phrases and Words Used for Coding Strategy Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note Taking</td>
<td>important points in lecture, Cornell Method, mapping, leaving space in notes, watching, listening, using abbreviations</td>
</tr>
<tr>
<td>Time Management</td>
<td>weekly schedule, day planner, avoiding procrastination, to-do lists, time bandits, using waiting time, saying “no”, rewarding self</td>
</tr>
<tr>
<td>Reading Textbooks</td>
<td>previewing, annotating, strategies for difficult readings (alternate text, reading aloud)</td>
</tr>
<tr>
<td>Exam Preparation</td>
<td>study plan, using resources (office hours, tutors, study groups), concept cards, studying over a longer period of time, reviewing notes daily, getting enough sleep, review old tests, looking at old tests for mistakes</td>
</tr>
<tr>
<td>Test-Taking Strategies</td>
<td>strategies for taking different kinds of tests, strategies to use when you don’t know the answer, stress management, reading over the whole test, answer easy questions first, draw pictures, outline, look for answer elsewhere in test, don’t talk to others before test, process of elimination</td>
</tr>
</tbody>
</table>

For subquestion 1b, qualitative analyses were used to determine if common characteristics existed among the strategies that students reportedly used. Student
responses were analyzed to determine if the majority of reported strategies were either tied to instructional elements like demonstration, practice and/or feedback or shared qualities of the strategies themselves (i.e. simple strategies, strategies that require little time, etc.).

Question 1c sought to obtain information relevant to the reasons why students would not adopt strategies discussed in the workshop. Responses were analyzed to determine what obstacles, if any, were reported by students. Codes were developed for survey items 8-20 by selecting one word from each item that best characterized either the obstacle to strategy use (items 8-18) or the student’s perception (19-20). Those codes in order from items 8 -20 are as follows: difficult (DIFF), effective (EFF), time (TIME), help (HELP), better (BET), comfortable (COMF), high school (HS), change (CHANGE), clear (CLEAR), apply (APPLY), grasp (GRASP), met (MET), and worthwhile (WORTH).

Research Question Two

Research question two asked if a relationship existed between the characteristics of the students who attended the workshop and their likelihood of adopting the strategies discussed. Statistical analyses were conducted to determine if a relationship existed between variables. These statistics included descriptive statistics, correlational coefficients, and measures of association between ordinal variables including Somers’ d and Kendall’s tau-b.
CHAPTER 4

RESULTS

The purpose of this chapter is to provide a description of the effectiveness of learning strategies instruction at the postsecondary level. This chapter is organized as follows: (a) strategies reportedly used, (b) common characteristics of newly adopted strategies, (c) frequency of reported obstacles to strategy use, (d) relationships between student characteristics and strategy use.

Strategies Used by Students

*Strategy Amount*

To determine what, if any, strategies introduced during the workshop were used by students, two methods of analysis were conducted. First, a count by workshop was conducted to determine the number of students reporting that they used none, some, or all of the strategies discussed. Table 5 shows that all students reported using at least some of the strategies discussed during the workshop they attended while a smaller percentage reported using all of the strategies discussed. An average of 81% of the responses indicated that students used some of the strategies discussed, while 19% of responses indicated that they used all of the strategies discussed.
Table 3

Amount of Strategy Use by Workshop

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Some</th>
<th>All</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note Taking</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Time</td>
<td>0</td>
<td>9</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Textbooks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam</td>
<td>0</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Preparation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test-Taking</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Strategies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>35</td>
<td>8</td>
<td>43</td>
</tr>
</tbody>
</table>

Strategies Reportedly Used by Students

Secondly, analysis was conducted to determine which strategies students reportedly used. Content analysis was conducted on question 7 of the student outcomes survey to determine what workshop strategies were used and the number of students who reportedly used them. Nine surveys were analyzed for time management strategies, eleven surveys were analyzed for reported time management strategies, four surveys were analyzed for reported reading textbook strategies, twelve surveys were analyzed for reported exam preparation strategies, and seven surveys were analyzed for reported note taking strategies. Tables 4 through 8 present the findings of these analyses.
Table 4

*Strategies Reported by Students, Note Taking*

<table>
<thead>
<tr>
<th>Strategy Reported</th>
<th>Number of Student Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding a good seat in lecture</td>
<td>1</td>
</tr>
<tr>
<td>Mind mapping</td>
<td>4</td>
</tr>
<tr>
<td>Cornell Method</td>
<td>2</td>
</tr>
<tr>
<td>Leaving space in class notes for additions</td>
<td>1</td>
</tr>
<tr>
<td>Picking out important points in lecture by using visual and verbal cues</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5

*Strategies Reported by Students, Exam Prep*

<table>
<thead>
<tr>
<th>Strategy Reported</th>
<th>Number of Student Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating/using a study plan</td>
<td>6</td>
</tr>
<tr>
<td>Using available resources including old tests, professor/teaching assistant, study groups, tutoring, etc.)</td>
<td>6</td>
</tr>
<tr>
<td>Concept Cards</td>
<td>2</td>
</tr>
<tr>
<td>Reviewing notes frequently</td>
<td>2</td>
</tr>
<tr>
<td>Creating a study guide</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 6

Strategies Reported by Students, Reading Textbooks

<table>
<thead>
<tr>
<th>Strategy Reported</th>
<th>Number of Student Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previewing</td>
<td>2</td>
</tr>
<tr>
<td>Annotating</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 7

Strategies Reported by Students, Test Taking Strategies

<table>
<thead>
<tr>
<th>Strategy Reported</th>
<th>Number of Student Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used a strategy specific to the type of exam that was given (multiple choice, essay, computational)</td>
<td>5</td>
</tr>
<tr>
<td>Stress Management</td>
<td>3</td>
</tr>
<tr>
<td>Answer easy questions first</td>
<td>3</td>
</tr>
<tr>
<td>Budgeting your time</td>
<td>1</td>
</tr>
<tr>
<td>Reading over the entire test before beginning</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 8

*Strategies Reported by Students. Time Management*

<table>
<thead>
<tr>
<th>Strategy Reported</th>
<th>Number of Student Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating/using a weekly schedule</td>
<td>7</td>
</tr>
<tr>
<td>Creating/using to-do lists</td>
<td>4</td>
</tr>
<tr>
<td>Avoiding time bandits</td>
<td>1</td>
</tr>
<tr>
<td>Using wait time effectively</td>
<td>3</td>
</tr>
</tbody>
</table>

*The Characteristics of Strategies Used by Students*

Student reports of strategy use were analyzed to determine if the strategies used by students shared some common characteristic or characteristics. In the first finding, students reported using a greater number of strategies that were not only discussed in the workshop, but strategies that were modeled for students and that students were encouraged to practice during the workshop. For example, during the Time Management Workshop, students were encouraged to create a weekly schedule and to practice creating to-do lists. Students reported using those strategies more than avoiding time bandits and using wait time effectively, which were only discussed during the workshop. These findings are consistent with literature on learning strategy instruction discussed earlier namely that the instructional elements of modeling, student practice, and feedback promote strategy use.
Secondly, it was expected that students would report using simpler strategies over those that were more complex, meaning that they required more time and effort to master. This was not necessarily the case. In general, students reported using a wide variety of strategies. This may be due, at least in part, to the fact that the more complex strategies were paired with modeling and practice as discussed previously.

Obstacles to Strategy Use

Items eight through twenty were analyzed to determine what obstacles, if any, were present to prevent students from using the strategies that were discussed in the workshop(s) they attended. Tables 14 through 26 illustrate the student responses to those statements. For each of the items there are a large number of missing responses. It should be noted that the responses may have differed with an increase in response rate.

Items 8 through 10 included statements that revolved around strategy characteristics (i.e., was there some quality of the strategy or strategies themselves which would discourage students from using them?). Item 8 of the student outcomes survey asked students to respond to the statement that the strategies discussed in the workshop were too difficult to use. The largest percentage of students, 39.5%, disagreed with this statement while 18.6% strongly disagreed. Only one student, making up 2.3% of the responses, indicated a strong agreement with that statement. Therefore, in general, students indicated that the strategies discussed in the workshops were not too difficult to use.
Table 9

*Obstacles to Strategy Use, Strategy Difficulty*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>1</td>
<td>2.3</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Disagree</td>
<td>17</td>
<td>39.5</td>
<td>65.4</td>
<td>69.2</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>8</td>
<td>18.6</td>
<td>30.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Disagree</td>
<td>17</td>
<td>39.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>26</td>
<td>60.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>17</td>
<td>39.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 9 of the student outcomes survey asked students to respond to the statement that the strategies discussed in the workshop required too much effort to use. This item was in reference to the notion that students' motivation to use new strategies may be tied to characteristics of the task (Alexander, 1995). As noted previously in the discussion, when a strategy is newly learned, it requires more effort to carry out than a familiar strategy. This often can result in less motivation, even when the new procedure is more effective (Pressley, 1995). The largest percentage of students, 25.6 %, disagreed with this statement while 23.3 % strongly disagreed. Five students, making up 11.6 % of the responses, indicated a strong agreement with that statement. Therefore, in general, students indicated that the effort required to use the strategies discussed in the workshops was not a significant obstacle.
Table 10

*Obstacles to Strategy Use, Strategy Effort*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>5</td>
<td>11.6</td>
<td>19.2</td>
<td>19.2</td>
</tr>
<tr>
<td>Disagree</td>
<td>11</td>
<td>25.6</td>
<td>42.3</td>
<td>61.5</td>
</tr>
<tr>
<td>Strongly</td>
<td>10</td>
<td>23.3</td>
<td>38.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>26</td>
<td>60.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>17</td>
<td>39.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 10 of the student outcomes survey asked students to respond to the statement that the strategies discussed in the workshop required too much time to use. Like Item 9, this question is tied to the motivation of the student to make a change in the way that s/he approaches learning. The largest percentage of students, 30.2 %, disagreed that the strategies discussed required too much time while 16.2 % strongly disagreed. Six responses, making up 14 % of the responses indicated agreement with that statement. Therefore, the largest percentage of respondents indicated the time required to implement the strategies discussed in the workshop s/he attended was not an obstacle to prevent their use.

Responses to items 8-10 suggest that students did not view strategy characteristics as a significant obstacle to prevent their use. Strategies were not perceived by students to be too difficult, or require too much effort or time to use.
Table 11

*Obstacles to Strategy Use. Time Demands*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>6</td>
<td>14.0</td>
<td>23.1</td>
<td>23.1</td>
</tr>
<tr>
<td>Disagree</td>
<td>13</td>
<td>30.2</td>
<td>50.0</td>
<td>73.1</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>7</td>
<td>16.3</td>
<td>26.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>26</td>
<td>60.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>17</td>
<td>39.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Items 11 through 15 of the survey made statements that spoke to students' willingness to make changes in their study and learning behaviors. Item 11 of the student outcomes survey asked students to respond to the statement that the strategies discussed in the workshop would not help them (academically). The largest percentage of students, 32.6 %, disagreed with this statement while 25.6 % strongly disagreed. Therefore, in general, students indicated a belief that the strategies discussed in the workshops would assist them academically. Students often see changing study behaviors as a risk requiring an investment in both time and effort. Although there is the chance that new strategies will lead to gains in academic achievement, students also realize that they may in fact lead to failure. It stands to reason that in order for students to adopt a newly learned strategy, there must be the belief that the new behavior will be of benefit and therefore worth that investment.
Table 12

*Obstacles to Strategy Use, Strategies Not Helpful*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>14</td>
<td>32.6</td>
<td>56.0</td>
<td>56.0</td>
</tr>
<tr>
<td>Strongly</td>
<td>11</td>
<td>25.6</td>
<td>44.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>25</td>
<td>58.1</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>18</td>
<td>41.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 12 of the student outcomes survey asked students to respond to the statement that the strategies they already used were better than the ones discussed in the workshop. The largest percentage of students, 25.6 %, disagreed with this statement while 23.3 % strongly disagreed. Five student responses, making up 11.6 % of the responses indicated an agreement with that statement. Therefore, in general, students acknowledged that the strategies they were currently using might not be the most effective or appropriate in comparison with the strategies introduced during the workshop.
Table 13

*Obstacles to Strategy Use, Own Strategies Are Better*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>5</td>
<td>11.6</td>
<td>19.2</td>
<td>19.2</td>
</tr>
<tr>
<td>Disagree</td>
<td>11</td>
<td>25.6</td>
<td>42.3</td>
<td>61.5</td>
</tr>
<tr>
<td>Strongly</td>
<td>10</td>
<td>23.3</td>
<td>38.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Disagree Strongly</td>
<td>10</td>
<td>23.3</td>
<td>38.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>26</td>
<td>60.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>17</td>
<td>39.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 13 of the student outcomes survey asked students to respond to the statement that they are more comfortable with the strategies that they already use, even if those strategies do not work as well as the ones discussed in the workshop. The largest percentage of students, 39.5%, disagreed with this statement while 7.0% strongly disagreed. Five student responses, totaling 11.6% agreed with that statement. This item ties directly to the obstacle of students' adherence to study routines that yield mediocre results. The responses to this item, however, appear to indicate that many students are willing to make a change in the way that they approach learning, or at least consider it.
Table 14

Obstacles to Strategy Use, More Comfortable with Own Strategies

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>5</td>
<td>11.6</td>
<td>20.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Disagree</td>
<td>17</td>
<td>39.5</td>
<td>68.0</td>
<td>88.0</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>3</td>
<td>7.0</td>
<td>12.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>25</td>
<td>58.1</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>18</td>
<td>41.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 14 of the student outcomes survey asked students to respond to the statement that they are still using the same strategies that they used in high school. The largest percentage of students, 25.6%, agreed with this statement. A slightly smaller portion of students either disagreed, 18.6%, or strongly disagreed, 2.3%. Therefore, it is safe to assume that approximately half of the respondents have carried their academic routines through to the postsecondary level. This may be relevant for a number of reasons. First, students may have adopted study strategies at the high school level which have continued to serve them well, even in the face of new academic challenges including increased workload. Second, it may indicate that students realize that those strategies are no longer helpful and are seeking out alternative methods.
Table 15

*Obstacles to Strategy Use, Using High School Strategies*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>11</td>
<td>25.6</td>
<td>55.0</td>
<td>55.0</td>
</tr>
<tr>
<td>Disagree</td>
<td>8</td>
<td>18.6</td>
<td>40.0</td>
<td>95.0</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>2.3</td>
<td>5.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>20</td>
<td>46.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>23</td>
<td>53.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 15 of the student outcomes survey asked students to respond to the statement that they do not need to make changes in the way that they study. The largest percentage of students, 27.9 %, disagreed with this statement while 23.3 %, strongly disagreed. Only one student response, totaling 2.3 %, agreed with that statement.

Responses to items 8-15 indicate that the majority of students responding to the survey indicated a readiness and willingness to change the way that they currently approached learning tasks. As noted previously, knowledge of strategies necessary but not sufficient to bring about strategy use. Students must also possess the motivation to use the strategies.
Table 16

Obstacles to Strategy Use, No Changes Necessary

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>1</td>
<td>2.3</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Disagree</td>
<td>12</td>
<td>27.9</td>
<td>52.2</td>
<td>56.5</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>10</td>
<td>23.3</td>
<td>43.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>23</td>
<td>53.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>20</td>
<td>46.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Items 16 through 18 of the student outcomes survey questioned students on instructional variables that would pose as obstacles to their use of learning strategies. Item 16 asked students to respond to the statement that the workshop facilitator was clear on how to use the strategies that were discussed. The largest percentage of students either strongly agreed (30.2%) or agreed (23.3%) with this statement. Significantly fewer students either disagreed (4.7%) or strongly disagreed (4.7%). Therefore, responses indicated that the instruction itself was clear and easily understood.
Table 17

*Obstacles to Strategy Use, Clarity of Instruction*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>4.7</td>
<td>7.4</td>
<td>7.4</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>23.3</td>
<td>37.0</td>
<td>51.9</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>13</td>
<td>30.2</td>
<td>48.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>27</td>
<td>62.8</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>16</td>
<td>37.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 17 of the student outcomes survey asked students to respond to the statement that they understood how they could apply the strategies that were discussed to the classes they were currently taking. As noted earlier, students need specific information about the contextual conditions for learning strategy use in order to transfer their knowledge of learning strategies from the workshop to the classroom. The largest percentage of students, 27.9 %, strongly agreed that they understood how to apply the strategies discussed. Slightly fewer responses (23.3 %) agreed with this statement. Fewer students either disagreed (4.7 %) or strongly disagreed (4.7 %).
Table 18

*Obstacles to Strategy Use, Understanding of Application*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>2</td>
<td>4.7</td>
<td>7.7</td>
<td>7.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>4.7</td>
<td>7.7</td>
<td>15.4</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>4.7</td>
<td>7.7</td>
<td>15.4</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>23.3</td>
<td>38.5</td>
<td>53.8</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>12</td>
<td>27.9</td>
<td>46.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>26</td>
<td>60.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>17</td>
<td>39.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Item 18 of the student outcomes survey asked students to respond to the statement that the length of the workshop was adequate to get a good grasp of what was being discussed. As noted earlier, timeframe is an important detail in the design of learning strategy instruction. The largest percentage of students either agreed (37.2 %) or strongly agreed (23.3 %) that the hour of instruction was adequate to get a good grasp of the new strategies. Fewer responses (4.7 %) disagreed with this statement. These responses are encouraging in that traditionally shorter interventions, despite being the norm at postsecondary institutions typically are viewed as less effective than longer, more intensive instruction.
Table 19

Obstacles to Strategy Use, Length of Instruction

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>2</td>
<td>4.7</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>37.2</td>
<td>57.1</td>
<td>64.3</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>10</td>
<td>23.3</td>
<td>35.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>28</td>
<td>65.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>15</td>
<td>34.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Items 19 and 20 were designed to assess student satisfaction with the instruction they had received. Item 19 asked students to respond to the statement that the workshop met their expectations. The largest percentages of students either agreed (37.2 %) or strongly agreed (18.6 %). Of the total number of responses, only 7.0 % disagreed.

Table 20

Obstacles to Strategy Use, Workshop Met Expectations

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>3</td>
<td>7.0</td>
<td>11.1</td>
<td>11.1</td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>37.2</td>
<td>59.3</td>
<td>70.4</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>8</td>
<td>18.6</td>
<td>29.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>27</td>
<td>62.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>16</td>
<td>37.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The final item of the survey asked students to respond to the statement that the workshop was worth their time. The vast majority of students either agreed (32.6 %) or
strongly agreed (25.6 %). A significantly smaller portion of students (7.0 %) disagreed with this statement.

Table 21

Obstacles to Strategy Use, Workshop Was Worthwhile

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>3</td>
<td>7.0</td>
<td>10.7</td>
<td>10.7</td>
</tr>
<tr>
<td>Agree</td>
<td>14</td>
<td>32.6</td>
<td>50.0</td>
<td>60.7</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>11</td>
<td>25.6</td>
<td>39.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>28</td>
<td>65.1</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>15</td>
<td>34.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition to frequency counts of responses, descriptive statistics were conducted to calculate means, medians, modes, standard deviations, and variances for items 8 through 20. Table 27 presents these findings.

Student Characteristics and Strategy Use

To determine if there was a significant relationship between student characteristics and the likelihood of strategy use, three measures of association were conducted. Spearman Correlation, Kendall's tau-b, and Pearson's R were conducted for a series of comparisons between individual student characteristics (class standing, gender, reported GPA, self-reported academic ability, and reason for attending) and students reported use of learning strategies.
Table 22

*Obstacles to Strategy Use, Descriptive Statistics*

<table>
<thead>
<tr>
<th>Item</th>
<th>Code</th>
<th>N Valid</th>
<th>N Missing</th>
<th>Mean</th>
<th>Med</th>
<th>Mode</th>
<th>St Dev</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>DIFF</td>
<td>26</td>
<td>17</td>
<td>3.23</td>
<td>3.00</td>
<td>3</td>
<td>.652</td>
<td>.425</td>
</tr>
<tr>
<td>9</td>
<td>EFF</td>
<td>26</td>
<td>17</td>
<td>3.19</td>
<td>3.00</td>
<td>3</td>
<td>.749</td>
<td>.562</td>
</tr>
<tr>
<td>10</td>
<td>TIME</td>
<td>26</td>
<td>17</td>
<td>3.04</td>
<td>3.00</td>
<td>3</td>
<td>.720</td>
<td>.518</td>
</tr>
<tr>
<td>11</td>
<td>HELP</td>
<td>25</td>
<td>18</td>
<td>3.44</td>
<td>3.00</td>
<td>3</td>
<td>.507</td>
<td>.257</td>
</tr>
<tr>
<td>12</td>
<td>BET</td>
<td>24</td>
<td>19</td>
<td>3.13</td>
<td>3.00</td>
<td>3</td>
<td>.680</td>
<td>.462</td>
</tr>
<tr>
<td>13</td>
<td>COMF</td>
<td>25</td>
<td>18</td>
<td>2.92</td>
<td>3.00</td>
<td>3</td>
<td>.572</td>
<td>.327</td>
</tr>
<tr>
<td>14</td>
<td>HS</td>
<td>20</td>
<td>23</td>
<td>2.50</td>
<td>2.00</td>
<td>2</td>
<td>.607</td>
<td>.368</td>
</tr>
<tr>
<td>15</td>
<td>CHANGE</td>
<td>23</td>
<td>20</td>
<td>3.39</td>
<td>3.00</td>
<td>3</td>
<td>.583</td>
<td>.340</td>
</tr>
<tr>
<td>16</td>
<td>CLEAR</td>
<td>27</td>
<td>16</td>
<td>3.26</td>
<td>3.00</td>
<td>4</td>
<td>.903</td>
<td>.815</td>
</tr>
<tr>
<td>17</td>
<td>APPLY</td>
<td>26</td>
<td>17</td>
<td>3.23</td>
<td>3.00</td>
<td>4</td>
<td>.908</td>
<td>.825</td>
</tr>
<tr>
<td>18</td>
<td>GRASP</td>
<td>28</td>
<td>15</td>
<td>3.29</td>
<td>3.00</td>
<td>3</td>
<td>.600</td>
<td>.360</td>
</tr>
<tr>
<td>19</td>
<td>MET</td>
<td>27</td>
<td>16</td>
<td>3.19</td>
<td>3.00</td>
<td>3</td>
<td>.622</td>
<td>.387</td>
</tr>
<tr>
<td>20</td>
<td>WORTH</td>
<td>28</td>
<td>15</td>
<td>3.29</td>
<td>3.00</td>
<td>3</td>
<td>.659</td>
<td>.434</td>
</tr>
</tbody>
</table>

*Note.* Item codes refer to specific student obstacles to strategy use and are as follows: DIFF= strategies too difficult to use, EFF= strategies required too much effort, TIME= strategies required too much time, HELP= strategies would not help me (academically), BET= strategies already using are better, COMF= more comfortable with strategies already using, HS= using strategies from high school, CHANGE= don’t need to make changes, CLEAR= workshop instructor was clear on how to use strategies, APPLY= understood how to apply strategies, GRASP= length of workshop was sufficient, MET= workshop met expectations, WORTH= workshop was worthwhile.
Spearman Correlation, Kendall's tau-b, and Pearson's R are all measures of association, designed to show the strength of a relationship between two variables. All three tests were conducted with a minimum of ordinal level data and based on normal approximation. The alpha level was set at .05. As can be seen from the findings of these analyses, no test of association revealed any relationships between a student characteristic and the reported use of learning strategies. This is due, at least partially, to the fact that all students reported using at least some, if not all, of the strategies discussed. Tables 9 through 13 present the findings of these analyses.

Table 23

Workshop * Class Standing

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp Std Error</th>
<th>Approx T</th>
<th>Approx Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendall's tau-b</td>
<td>-.131</td>
<td>.125</td>
<td>-1.040</td>
<td>.298</td>
</tr>
<tr>
<td>Spearman Correlation</td>
<td>-.158</td>
<td>.149</td>
<td>-1.022</td>
<td>.313</td>
</tr>
<tr>
<td>Pearson's R</td>
<td>-.217</td>
<td>.134</td>
<td>-1.423</td>
<td>.162</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 24

*Workshop * Gender

<table>
<thead>
<tr>
<th>Value</th>
<th>Asymp Std Error</th>
<th>Approx T</th>
<th>Approx Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendall's tau-b</td>
<td>-.080</td>
<td>.139</td>
<td>-.574</td>
</tr>
<tr>
<td>Spearman</td>
<td>-.088</td>
<td>.154</td>
<td>-.553</td>
</tr>
<tr>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson's R</td>
<td>-.082</td>
<td>.154</td>
<td>-.511</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 25

*Workshop * GPA

<table>
<thead>
<tr>
<th>Value</th>
<th>Asymp Std Error</th>
<th>Approx T</th>
<th>Approx Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendall's tau-b</td>
<td>.028</td>
<td>.126</td>
<td>.222</td>
</tr>
<tr>
<td>Spearman</td>
<td>.032</td>
<td>.149</td>
<td>.203</td>
</tr>
<tr>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson's R</td>
<td>.019</td>
<td>.147</td>
<td>.122</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 26

**Workshop * Academic Ability**

<table>
<thead>
<tr>
<th>Value</th>
<th>Asymp Std Error</th>
<th>Approx T</th>
<th>Approx Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendall's tau-b</td>
<td>.002</td>
<td>.139</td>
<td>.013</td>
</tr>
<tr>
<td>Spearman Correlation</td>
<td>.002</td>
<td>.154</td>
<td>.013</td>
</tr>
<tr>
<td>Pearson's R</td>
<td>-.005</td>
<td>.154</td>
<td>-.029</td>
</tr>
</tbody>
</table>

N of Valid Cases: 43

### Table 27

**Workshop * Reason for Attendance**

<table>
<thead>
<tr>
<th>Value</th>
<th>Asymp Std Error</th>
<th>Approx T</th>
<th>Approx Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendall's tau-b</td>
<td>.173</td>
<td>.143</td>
<td>1.195</td>
</tr>
<tr>
<td>Spearman Correlation</td>
<td>.192</td>
<td>.158</td>
<td>1.252</td>
</tr>
<tr>
<td>Pearson's R</td>
<td>.208</td>
<td>.156</td>
<td>1.362</td>
</tr>
</tbody>
</table>

N of Valid Cases: 43
In analyzing the data, one additional finding was of note. A correlation coefficient was calculated to determine the relationship between self-reported GPA and self-reporting of academic ability, items 3 and 4. The results of this test revealed a value of 0.278, with an r-squared value of 0.077. These numbers indicate a weak positive relationship between variables with 7% of shared variance. In other words, as students’ reported GPA increases, so does their reported level of academic ability. However, the degree of the relationship between the two variables is very small. The evidence for this relationship can be seen in surveys where many high GPA students reported low or average ratings of academic ability and where many low GPA students reported average or high academic ability. These results may be due to a number of factors including students’ level of self-efficacy or attributions for academic success.
CHAPTER 5
DISCUSSION AND CONCLUSIONS

Discussion

Final data analyses revealed that students who attended the workshop(s) reported using at least some, if not all, of the strategies discussed. The strategies used most frequently tended to be supported instructionally by both modeling and practice. However, students did report using other simpler strategies. In general, students did not report many of the hypothesized obstacles to strategy use. Survey results indicated that although many of the students were using strategies they used in high school, they were open to making a change in the way that they studied and saw value in the strategies themselves. The greatest proportion of responses also indicated that they were satisfied with the instruction they received. These findings are encouraging. Offering academic assistance in the form of one-hour workshops, although common, is far from ideal. It is worthwhile to know that positive student outcomes are reportedly associated with this type of instruction and therefore, it is worthy of support. The participating group of students was diverse suggesting that students across gender, class standing, reason for attendance, academic ability level and GPA could benefit from attending. However, this study did not uncover data to support that a particular student disposition or characteristic would predict learning strategy use.

One additional finding revealed a weak correlation between self-reported GPA and academic ability. One reason for this finding may involve student attributions (see Weiner, 1992). Attributions are beliefs about why things happen, or the causal
explanation of events that influence future motivation. These beliefs can vary along dimensions of locus of control, stability, and controllability. Locus of control involves internal and external attributions for success. Those with an internal locus of control feel that they have considerable control over the outcomes in their lives, as in attributions of ability and effort. Examples of external locus of control where the outcome is beyond the individual's control would include beliefs such as luck and fate. Stability attributions fall along a continuum of stable to unstable, or in other words, the likelihood that the causes of certain events will change. The third dimension, controllability, reflects the degree to which a person believes they have control over the outcomes of certain events. It is hypothesized that high GPA students (3.0-3.99) often reported medium or low academic ability, perhaps due to internal attributions of ability or effort. Self-reported low (.99-1.99) GPA students often reported a medium or high academic ability rating, perhaps due to external attributions either institutional or instructional in nature. This was true for medium GPA (2.0-2.99) as well. Since the survey was not designed to assess student attributions for academic performance, additional research would be required to uncover any causal beliefs.

There are a number of limitations associated with this study. First, the study was conducted using data obtained at a large research university in the Southwestern United States. Therefore it may not be representative of the general undergraduate population of students attending similar programs at other postsecondary institutions. The external validity of the study was also impacted given that the group was self-selected. Third, even though data were originally obtained over the course of a semester, the sample size
was relatively small. Only a very small percentage of the approximately 28,000 undergraduate students enrolled at the university only 104 students attended a workshop. Of those 104 students, only 27 completed questionnaires making it difficult to ascertain if the present study would yield different results if an increased percent of students were to participate. Fourth, completion of the follow-up survey was entirely voluntary and therefore may have been subject to some response bias. Fifth, in an effort to obtain as many participants as possible from a somewhat small pool of students attending the workshops, students were offered a chance to receive a monetary-based reward for the completion of the follow-up survey. Although it could be argued that the monetary incentive diminished the response rate, the number of responses was nonetheless higher than the average. Sixth, there was an extensive amount of missing responses to survey items, particularly in items 8-20, perhaps influencing the outcome of this study. Finally, students' prior knowledge of learning strategies, or lack thereof, was not accounted for prior to the workshop.

Conclusion

With a pronounced move toward student-centered learning and academic self-regulation, the responsibility of learning is shifting from teacher to student. As a result, students are now being asked to take more responsibility for their learning. Research has made clear that strategic behavior and the use of learning strategies enhances learning. Effective learners are able to self-regulate in order to evaluate when and how to use the appropriate strategies as well as evaluate their success relative to their actions. Students often enter postsecondary education without the knowledge and skills to do this;
therefore, learning strategy instruction becomes a key instrument in students’ pursuit of academic success.

Quantitative examination of the students’ outcomes associated with this type of instruction is limited at best. Program evaluation efforts provide information on student outcomes, generate feedback that can lead to an improvement of services, and provide data to administrators. This study provides a basis from which to expand. Future studies would do well to continue to examine the outcomes of these types of student services as well as examining the students that use them.
Dear Student,

Our records indicate that you attended a learning strategies workshop offered by the University Learning Center in the fall 2001 semester. In order to evaluate the effectiveness and quality of our programs, we ask that you take a moment to complete the following survey. Please read each question carefully and respond by circling the appropriate response. Thank you for your participation.

Workshop Title ___________________________ Workshop Date ___________________________

<table>
<thead>
<tr>
<th></th>
<th>Workshop Title</th>
<th>Workshop Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Your class standing
   - FR
   - SO
   - JR
   - SR
   - GRAD
   - Other

2. Your gender
   - M
   - F

3. Your approximate GPA
   - 0-1.99
   - 2.0-2.99
   - 3.0-3.99
   - 4.0

4. Your rating of your academic ability
   - Low
   - Average
   - High

5. Your attendance to the workshop
   - Required
   - Voluntary

6. Did you use any of the strategies discussed in the workshop
   - None
   - Some
   - All

7. If you indicated that you did use some or all of the strategies discussed, which did you use? Please indicate:

   Please indicate your level of agreement with the following statements:

   Select from the following: SD=
   - Strongly Disagree, D=
   - Disagree, A=
   - Agree, SA=
   - Strongly Agree, or Don’t Know

8. The strategies discussed in the workshop were too difficult to use
   - SD
   - D
   - A
   - SA
   - Don’t know

9. The strategies discussed in the workshop require too much effort
   - SD
   - D
   - A
   - SA
   - Don’t know

10. The strategies discussed in the workshop require too much time to use
    - SD
    - D
    - A
    - SA
    - Don’t know
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>The strategies discussed in the workshop would not help me</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>12.</td>
<td>The strategies that I already use are better than the ones discussed</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>13.</td>
<td>I am more comfortable with the strategies that I already use even if they don’t work as well as the ones discussed in the workshop</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>14.</td>
<td>I am still using the study strategies that I used in high school</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>15.</td>
<td>I don’t need to make changes in the way that I study now</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>16.</td>
<td>The workshop facilitator was clear on how to use the strategies that were discussed</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>17.</td>
<td>I understood how I could apply the strategies that were discussed to the classes I am taking.</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>18.</td>
<td>The length of the workshop was long enough to get a good grasp of what was being discussed.</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>19.</td>
<td>The workshop met my expectations.</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td>20.</td>
<td>The workshop was worth my time.</td>
<td>SD D A SA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
</tbody>
</table>
Dear Student,

The University Learning Center is committed to providing quality assistance to students. Please assist us in evaluating the effectiveness of our learning strategies workshop program by completing and returning the questionnaire in the envelope provided. In return, you will be entered in a drawing for a $50 UA Bookstore gift certificate on November 12, 2001. Please provide us your contact information on the bottom of this sheet and include it in the return envelope so that we can contact you about the drawing outcome. Thank you for your participation.

Our records indicate that you attended a __________________ workshop on __________________

Please complete the following:

Name__________________________________________________________

Address________________________________________________________

Phone__________________________________________________________

Email__________________________________________________________
Want to win $50?

What did you learn in this workshop? How could we improve it? The University Learning Center wants to know! We’ll send you a questionnaire via mail regarding this workshop, complete it and return it and you’ll be entered to win a $50 gift certificate to the UA Bookstore. Drawing will take place November 12.

Name

Mailing Address

Email

Workshop you attended
Exam Preparation Workshop Notes
Fall 2001

1) Introduction
   • Introduce self
   • Introduction to campus resources

2) Overview
   • Workshop topics/overview
     • Assessing your exam prep skills
     • Key elements of exam prep
     • 8-day study plan
     • Concept Cards

3) Have students introduce themselves and mention one strategy in this area that works for them

4) Assessment- Exam Prep A Self-Check (handout)
   • Have students reflect on the skills they have in this area and those they may need to develop

5) Common Problems students have with exam preparation
   • Brainstorm with students and write on board

6) Briefly discuss the benefits of good exam preparation skills
   • Learn more in less time
   • Reduces stress
   • Have adequate study time

7) Discussion 1- Key Elements of Exam Prep (handout)

8) Discussion/Activity 2- Creating and Using a Study Plan
   • Discuss the benefits of using a study plan
     • Reduces stress
     • More productive- allows you the time you need to get things done
     • Allows time to ask questions and get more information
• Discuss 8-Day Study Plan
• Have students practice creating a study plan for an upcoming exam
• Instructor feedback

9) Activity 2- Creating and Using Concept Cards
• When concept cards work, and when they don’t
• Discuss steps in creating, and using cards
  • One concept per card
  • When possible, use your own words
  • Shuffle cards frequently
  • Take out the ones you know
  • Use them to self-test but don’t cheat!
  • Incorporate pictures, colors, etc.
  • Make some cards everyday- don’t let them pile up
• Have students create five concept cards for an upcoming exam
• Instructor feedback
Note Taking Workshop Notes
Fall 2001

10) Introduction
- Introduce self
- Introduction to campus resources

11) Overview
- Workshop topics/overview
  - Self-Assessment
  - Common problems with note taking
  - Mini-lecture
  - Annotating notes
  - Cornell method
  - Mind mapping

12) Have students introduce themselves, the classes they are currently taking, and mention one strategy in this area that works for them

13) Self-Assessment- analyze your notes (handout)
- Have students reflect on the note taking skills they currently have and those they may need to develop

14) Common Problems students have in note taking
- Brainstorm and write on board

15) Mini-Lecture
- Read mini-lecture (provided)
- Make sure to vary loudness, pace, turn away, etc.
- Ask students questions following the lecture to determine if their notes contain adequate information

6) How to annotate your notes
- What to annotate (test questions, things you don’t understand, write summaries, etc)
- Review steps to annotation

16) The Cornell Method
- What the Cornell Method entails
- Advantages to using Cornell
- Adapting Cornell to your needs/ using Cornell for different classes
17) Practice Using the Cornell Method
   • Have students take a page of notes from class and write three possible exam questions and write a 2-3 sentence summary
   • Ask for student reactions
   • Instructor Feedback

18) Mind Mapping
   • Explain steps to mind mapping

19) Practice creating mind maps
   • Give students the opportunity to create a few mind maps using the handout you provide
   • After they’ve completed that, ask them to map one concept from one of their classes
   • Ask for 3-4 volunteers to put their maps on the whiteboard
   • Instructor Feedback

20) Closing
Reading Textbooks Workshop Notes
Fall 2001

21) Introduction
- Introduce self
- Introduction to campus resources

22) Overview
- Workshop topics/overview
  - Assess your reading skills
  - Problems with reading textbooks
  - Previewing
  - Annotating
  - What to do when reading gets tough

23) Have students introduce themselves, the classes they are currently taking, and one strategy in this area that works for them

24) Self-Assessment (handout)
- Have students reflect on the reading skills they currently have and those they may need to develop

25) Common Problems students have in reading college textbooks
- Brainstorm and write on board

26) Discussion 1- Previewing
- Review advantages to previewing
- Previewing does not replace reading
- Review steps to previewing (handout)

27) Activity 1- Previewing Activity
- Instruct students to turn to a chapter they will be reading in a few weeks
- Give students 5 minutes to preview a chapter
- Ask a few students what information they got from previewing
- Instructor feedback

28) Discussion 2- Annotating
- What annotating is
- Advantages over highlighting
- Steps to Annotating (handout)
29) Activity 2- Practice Annotating
   • Give students 5 minutes to annotate a portion of the test they’ve just previewed
   • Ask students for their reactions to annotating
   • Instructor feedback

30) Strategies for when reading gets tough (handout)

31) Closing
Test Taking Strategies Workshop Notes
Fall 2001

32) Introduction
• Introduce self
• Introduction to campus resources

33) Overview
• Workshop topics/overview
  • General Test Taking Tips
  • Keys to taking different kinds of tests
  • Stress Management

34) Have students introduce themselves, the classes they are taking, and mention one strategy in this area that works for them

35) Activity 1 - Pop Quiz

36) Common Problems students have with taking tests
• Brainstorm and write on board

37) Briefly discuss the benefits of good test taking skills
• Can help if you don’t know the answer
• Reduces stress
• Helps you to get organized
• Can sometimes lead you to the answer

38) Discussion 1 - Tips for Taking Terrific Tests (handout)

39) Discussion/Activity 2 - Taking Different Kinds of Tests
• Multiple Choice
• Essay
• Computational (math, science)
• Foreign language
• Ask students what kinds of questions they find most challenging and why

40) Activity 3 - Test Taking Skills: What to do when you don’t know the answer
• Have students complete Psychology 101 exam, have them make a note of what strategies they are using to answer the questions
• Review questions and discuss different strategies that students should be using
  • Identifying what the question is asking/ key words
• Estimate
• Look for pairs of questions asking for similar or opposite answers
• Look for the answer somewhere else in the test
• Etc

41) Discuss Stress Management
• Eating well
• Getting enough sleep
• Avoid talking to others before test
• Arrive a few minutes early
• Have necessary materials

42) Closing
43) Introduction
- Introduce self
- Introduction to campus resources

44) Overview
- Workshop topics/overview
  - Assess your time management skills
  - Problems with time management
  - Benefits from time management
  - Creating your ultimate schedule
  - Making to-do lists
  - Time bandits

45) Have students introduce themselves, the classes they are taking, and mention one strategy in this area that works for them

46) Assessment- Are You Using Your Time Wisely? (handout)
- Have students reflect on the time management strategies they are already using and those they may need to develop

47) Common Problems students have in managing their time
- Brainstorm and write on board

48) Briefly discuss the benefits of good time management
- Get more done
- Reduces stress
- Have time for self
- Have adequate study time
- Gets you organized

49) Discussion 1 “Making a schedule”
- Benefits of scheduling
- Using a dayplanner, making a commitment to updating/checking it daily
- Making use of small gaps of time
- Put sample schedule up on board/ overhead

50) Activity 1 - Walk students through creating a weekly schedule
- schedule fixed activities like class, meetings, and work first
• schedule **routine activities** like exercise, sleep, travel, grooming, laundry/household chores
• schedule **priorities** like study time
• whatever is left is **free time** for meeting with friends, watching tv, computer games, etc
• **Instructor Feedback**

51) Activity 2- Making and Using to-do lists
• Have students come up with a fictional to-do list
• Discuss prioritizing
• Discuss combining tasks
• Discuss delegating or trading tasks with other people
• Discuss postponing tasks
• **Instructor Feedback**

52) Activity 3- Identifying and Avoiding Time Bandits
• What are some typical activities that rob you of your time? (write on board)
• Ex. Tv, phone, friends, computer, email, etc
• Discuss ways to get time back from these activities

53) Closing
REFERENCES


Pressley, M. (1986). The relevance of the good strategy user model to the teaching of mathematics. Educational Psychologist, 21(1,2), 139-161.


