

## LEARNING STRATEGIES FOR DISTANCE EDUCATION STUDENTS

*Carol Filcher, Graduate Assistant*  
*Greg Miller, Associate Professor*  
Iowa State University

### Abstract

*The purpose of this article was to identify a potentially useful theoretical framework to classify learning strategies and to determine specific learning tactics that may be useful in a distance education environment. Although a variety of taxonomies describe and classify student learning, McKeachie, Pintrich, Lin, and Smith (1986) proposed a taxonomy that encompasses the cognitive, metacognitive, and resource management aspects of learning. In this article, this model served as the theoretical framework to further identify specific learning tactics that may be useful in a distance education environment. In terms of specific cognitive strategies, note-taking was the only tactic found to distinguish between achievement levels. Metacognitive strategies including planning, monitoring, and self-regulation distinguished between achievement levels of students. Resource management strategies such as learning schedules, quality studying, motivation, and communicating with the instructor also distinguished between achievement levels of students. Although several specific tactics have been identified as predictors of student success, a paucity of research involving adult students in distance education environments was prevalent. Thus, research is needed to test experimentally the proposed theoretical framework and specific learning tactics in a distance education environment.*

### Introduction

Distance education is growing rapidly. According to the U.S. Department of Education's National Center for Education Statistics (1997), 62% of public 4-year institutions offered distance education courses in the fall of 1995. An estimated 25,730 different distance education courses were delivered in the 1994-95 academic year with an estimated enrollment of 753,640 students. Distance education provides access to individuals in different geographical locations, individuals unable to attend classes on campus, and individuals who prefer to control the timing and pace of their learning (Moore, 1989; Willis, 1995a).

Distance education has been successful at providing access to individuals in various situations, but increasingly educators realize the need to address issues of quality. Quality is an important concern because distance education is substantially different from the traditional

classroom. The teaching environment is one in which distance education instructors often must adapt teaching styles, develop an understanding of the delivery technology, and function effectively as a skilled facilitator and content provider (Willis, 1995a). Agricultural faculty recognize that the distance education environment is different and have expressed interest in information and training in the areas of teaching techniques, models of effective teaching, principles of teaching, and designing instruction (Miller & Carr, 1997).

If the teaching environment for agricultural faculty who teach distance education courses is so different and challenging that it necessitates training and assistance in course delivery, imagine how different the learning environment must be. Learning at a distance is fraught with unique challenges. Distance education students are often older and are coordinating various job and family commitments with their learning opportunities (Miller, 1995; Willis, 1995b). In addition, students at a distance usually have limited interaction

because of geographic isolation from the instructor and other students (Miller, 1995; Willis, 1995a). Finally, distance education students must rely on the technology to provide information for learning (Willis, 1995a).

These distinctive differences in the distance environment have prompted faculty improvement workshops to provide information to help educators conquer the technology, but are opportunities available to assist students in succeeding in the distance environment? "In recent years, faculty development strategies have taken a different approach by addressing instructional improvement through skill development, enhancing support services, and ensuring that institutional reward structures reflect the rigorous challenges confronting the effective distance educator" (Willis, 1993, p. 279). Olgren (1998) claims that these faculty programs often emphasize teaching strategies and assume that good teaching will produce good learning. Should faculty be focusing their attention on empowering students to learn?

One such way to empower students is to focus on learning strategies. Learning strategies can be defined as thoughts and behaviors intended to influence the learner's ability to select, acquire, organize, and integrate new knowledge (Weinstein & Mayer, 1986). Learning strategies are designed to teach learners how to learn (Jonassen, 1985). Effective learning involves knowing when to use a specific strategy, how to access that particular strategy, as well as when to abandon an ineffective strategy (Jones, Sullivan Palincsar, Sederburg Olge, & Glynn Carr, 1987). According to Jones et al. (1987), both less proficient and more proficient students are able to develop effective learning strategies.

Learning strategies are important in today's lifelong learning environment. Today's society is facing a technological revolution where technology and information are constantly changing. This society is requiring that the

workforce continually gain new knowledge to remain productive (Weisburg & Ullmer, 1995, p. 634). "It is clear that someone that has learned how to learn and someone that continues to learn throughout his/her lifetime will be a productive member of the workforce" (Drucker, 1994, as cited in Weisburg & Ullmer, 1995). Distance education provides an avenue by which individuals can access this new information and continue to learn for the rest of their lives.

While studies on effective learning strategies continue to emerge, the relevancy of these studies has not been determined for specific educational contexts such as distance education (Rothkopf, 1988, as cited in Bernt & Bugbee, 1990). Conversely, Schuemer (1993) contends that studies have shown that teaching and learning theories can be easily applied to distance education. Can studies on learning strategies conducted in traditional settings be applied to adult learners, the field of agriculture, and the distance education milieu?

### **Purpose and Objectives**

The purpose of this paper is to identify potentially useful learning strategies for distance education environments. The specific objectives of this study include:

1. To identify a theoretical framework to classify learning strategies,
2. To determine the potential usefulness of specific learning tactics for off-campus learners in colleges of agriculture.

### **Methods**

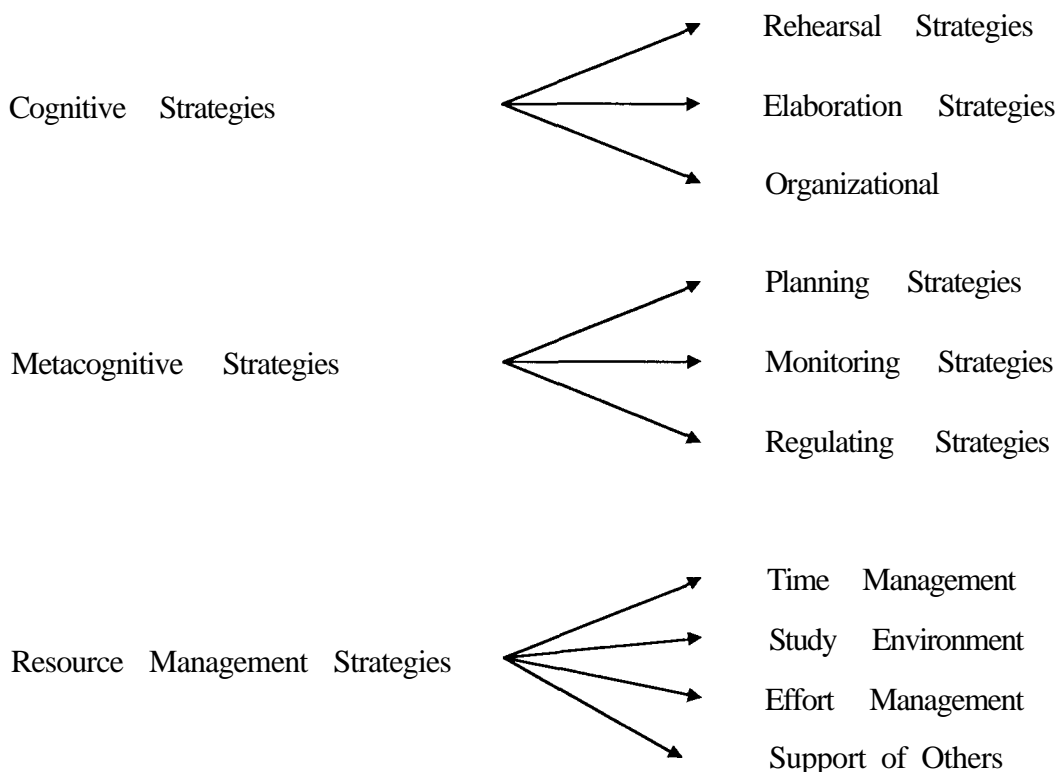
A library search was used to obtain information for this study. Literature searches using the Educational Resources Information Center (ERIC) and Psychological Abstracts (PsychLit) databases were conducted to determine the most appropriate theoretical framework. Once

the theoretical framework was chosen, additional literature searches were conducted to identify studies that had determined the success of specific learning tactics.

### Findings

According to Pintrich (1988), a variety of taxonomies are available for describing and classifying students' learning strategies including those developed by Dansereau (1985), Pressley (1986), Weinstein and Mayer (1986), and McKeachie, Pintrich, Lin, and Smith (1986). Dansereau (1985) developed a theoretical framework for learning strategies that emphasized primary and support strategies. The primary strategies focused on learning strategies needed for text-based materials and support strategies needed for developing a mental environment. Although Dansereau provided a clear framework, the primary strategies were isolated to text-based

applications. Pressley (1986) examined goal-specific, monitoring, and higher order learning strategies. While Pressley investigated the use of specific strategies, he did not provide a clear, conceptual framework to apply these learning strategies to other learning environments. The taxonomy developed by Weinstein and Mayer (1986) outlined learning strategies from a cognitive perspective. This cognitive approach identified specific strategies and methods available to learners to assist them with selection, acquisition, construction, and integration of knowledge (Weinstein & Mayer, 1986). In 1986, McKeachie et al. incorporated elements of several learning models, including the cognitive approach established by Weinstein and Mayer (1986), into a taxonomy of learning strategies. The taxonomy proposed by McKeachie and others encompasses the cognitive, metacognitive, and resource management aspects of learning (Figure 1).



**Figure 1. Taxonomy of Learning Strategies**

According to McKeachie et al. (1986) and Weinstein and Mayer (1986), cognitive strategies are important for understanding how information is processed and encoded in a learning environment. Metacognitive strategies allow a student to monitor his/her performance through planning, monitoring, and self-regulation (McKeachie et al., 1986). Resource management strategies assist the student in managing the learning environment and available resources (McKeachie et al., 1986). McKeachie et al.'s (1986) taxonomy is a clear, concise, and comprehensive model that provides the theoretical framework for this study and identifies general learning strategies and specific learning tactics that may be examined in a distance education environment.

### Cognitive Strategies

The cognitive component of McKeachie's taxonomy focuses on the methods by which students actively process information and structure this information into memory (Weinstein & Mayer, 1986). This active constructive process allows the learner to interpret information and connect it to existing cognitive structures (Schuemer, 1993). Specific cognitive strategies, in the model proposed by McKeachie et al. (1986), include rehearsal, elaboration, and organization.

Rehearsal strategies are employed by learners to remember material using repetition (Olgren, 1998). Specific rehearsal tactics include "repeating the material aloud, copying the material, taking selective verbatim notes and underlining the most important parts of the material" (Weinstein & Mayer, 1986, p. 3 18). In a study conducted on adult learners in distance education, Bernt and Bugbee (1990) examined specific tactics such as underlining/highlighting, memorizing material, and mentally rehearsing important ideas.

No significant differences were found between students at different achievement levels

and their reported use of these specific tactics (Bernt & Bugbee, 1990). In addition, the high achievement students reported the lowest percentage of memorizing material that was not understood (Bernt & Bugbee, 1990).

Elaboration is the process by which the learner builds an internal connection between what is being learned and previous knowledge. Specific tactics include paraphrasing, summarizing, creating analogies, generative note-taking, and question answering (McKeachie et al., 1986; Weinstein & Mayer, 1986). Miller (1997b), determined that 87% of the students in distance education courses delivered by videotape utilized an elaborative strategy by taking notes while viewing the videotape. Furthermore, Miller (1997a) determined that students who took notes were more likely to earn an "A" in their course.

Bernt and Bugbee (1990) determined that elaboration strategies were used by 50-75% of the students in educational environments at different achievement levels; however, no significant differences were found between failing students, low passers, and high passers on specific tactics such as trying to see how material applies to work situations, relating new material to familiar ideas, and translating material into their own words.

Organization is the process by which the learner organizes and builds connections with the information received in the learning environment (Olgren, 1998). Specific tactics associated with organization include the process of selecting the main idea through outlining, networking, and diagramming the information (McKeachie et al., 1986; Weinstein & Mayer, 1986).

In the research study conducted by Miller (1997b), 2 1.2% of the distance education students in videotaped situations employed organizational strategies by outlining class notes. However, Bernt and Bugbee (1990) found no significant differences between failing, low passing, and high passing students who reported very frequently or

almost always organizing/condensing notes and summarizing with charts, diagrams, and outlines.

### Metacognitive Strategies

The metacognitive component of the theoretical model focuses on the skills students use to plan their strategies for learning, to monitor their present learning, and to estimate their knowledge in a variety of domains (Everson, Tobias, & Laitusis, 1997). The purpose of such strategies is to improve self-regulation by encouraging students to test their understanding (Pace, 1985, as cited in Jonassen, 1985). The metacognitive strategies outlined by McKeachie et al. (1986) are similar to those of Everson et al. (1997) and include planning, monitoring, and regulating.

Planning includes such tactics as setting goals, skimming the material, and generating questions (McKeachie et al., 1986). According to Bernt and Bugbee (1990), 89% of the high passing students reported very frequently or almost always skimming each chapter before reading it. Conversely, only 35% of the failing students and 29% of the low passing students reported using this tactic (Bernt and Bugbee, 1990).

Monitoring and regulating are activities that utilize self-regulation (McKeachie et al., 1986). Monitoring involves the process by which learners check themselves for comprehension of knowledge or skills (Weinstein & Mayer, 1986). This process of self-monitoring has been found to contribute to improved acquisition, generalization, and transfer of knowledge (Wang & Lindvall, 1984, as cited in McCombs, 1988). Examples of this self-monitoring include self-testing, attention-focus, and employing test-taking tactics (McKeachie et al., 1986). Regulating involves such processes as adjusting reading rate, re-reading, reviewing, or utilizing test-taking tactics. The results of a study conducted by Zimmerman and Martinez Pons (1986) on 10<sup>th</sup> grade students indicated that self-regulated learning strategies

could be correlated with academic achievement. Miller (1997b) determined that 43.9% of distance education students engaged in self-regulation by viewing videotapes for distance courses more than once. Furthermore, Miller (1997a) was able to use this self-regulation strategy to predict student achievement as students who earned an “A” were more likely to view the videotape more than once.

### Resource Management Strategies

The resource management strategies concern the quality and quantity of the task involvement (McKeachie et al., 1986). Strategies include resource management, study environment management, effort management, and support of others (McKeachie et al., 1986).

Resource management involves the process of developing well-defined goals and scheduling the course to obtain the best results. Scheduling is the process by which the student defines a specific time or creates a daily ritual, a weekly pattern, or some other type of arrangement (Eastmond, 1995). In fact, Eastmond (1995) conducted a qualitative study and determined that most students scheduled distance education courses into their agenda and developed study patterns to help them succeed. A quantitative study conducted by Miller (1997a) determined that students who earned an “A” were more likely to view the videotape in a distance education course as they received the tape. In this case, the students scheduled the video tape arrival as the designated time to complete the coursework.

Study environment management is the development of a setting that is conducive to learning. According to McKeachie et al. (1986), “the nature of the setting is as important as the fact that the student recognizes that this particular location is set aside for studying” (p. 29). Thus, the student must designate a defined, quiet, and organized area in which to study. In a study conducted by Bernt and Bugbee (1990), 72-75% of students reported very frequently or almost

always studying in a quiet place without interruption. However, no significant differences in achievement were attributed to environment. It is interesting to note that Bernt and Bugbee (1990) determined that high achievement students did not spend more time studying. The study by Miller (1997a) concurred with this finding by determining that students receiving “A’s” also did not spend more time studying.

Effort management is the process by which a learner utilizes tactics such as attribution to effort, mood, self-talk, persistence, and self-reinforcement (McKeachie et al., 1986). However, these specific tactics are merely components of a more important tactic, motivation. Distance learners must be motivated. They are geographically isolated from the traditional learning environment and have accepted responsibility for their own learning (McCombs, 1988; Moore, 1989). Few studies have shown the importance of motivation in the distance education environment. One study, conducted by Oxford, Park-Oh, Ito, and Sumrall (1993), determined that motivation was the most significant determiner of achievement in teaching a second language using satellite television. Conversely, many motivational models exist for college student learning (McKeachie et al., 1986). For example, a study conducted by Sinkavich (1991) determined that motivation was one of the factors that had a significant impact on classroom performance.

Support of others is the final strategy associated with this taxonomy of learning strategies. Students must learn to utilize this support by seeking help from other students and the instructor (McKeachie et al., 1986). In a study conducted by Miller (1997b), only 6.8% of the students studied with one other person, only 4.5% studied with a group of students, and only 18.9% of students called the instructor in a videotaped distance education course. However, Miller (1997a) determined, that students who called the instructor were more likely to earn an “A” in the videotaped distance education course. Eastmond

(1995) confirmed the importance of the student-instructor interaction as students contacted their instructors while working through the assignments for the course.

### **Conclusions/Recommendations**

This review and synthesis of the literature indicates that there is a paucity of learning strategy research involving adult students in a distance education environment. Although McKeachie et al.'s (1986) taxonomy of learning strategies was developed as a macrolevel approach to learning, only a few tactics have actually been measured in learning strategies research.

In terms of specific cognitive strategies, note-taking was the only tactic found to distinguish between achievement levels. Otherwise, no significant differences were found in the literature between student achievement levels based on students' level of use of specific tactics. Distance education students may have mastered most of the tactics identified by McKeachie et al. (1986) earlier in their educational careers and might routinely use these tactics for learning. If so, the lack of variability in the use of cognitive strategies may be a plausible explanation as to why this group of tactics has thus far not been very useful in discriminating among student achievement levels.

The metacognitive strategies and resource management strategies may provide adult students with the most promising tools to enhance their success in distance education courses. Metacognitive strategies include planning, monitoring, and self-regulation. Planning tactics such as skimming the material and monitoring/self-regulation strategies such as self-testing and test-taking tactics have been utilized by high-achieving students (Zimmerman & Martinez Pons, 1986; Bemt & Bugbee, 1990; Miller, 1997a; Miller, 1997b)

The literature indicates that several

resource management strategies may be useful predictors of distance education student achievement. These tactics include establishing a learning schedule, ensuring that the time spent studying is of high quality, maintaining a high level of motivation, and communicating with the instructor.

Research is needed to test experimentally the theoretical framework proposed by McKeachie et al. (1986) in the adult distance education environment. Research in this area should strive to answer the following questions:

Can the most promising tactics (note-taking, skimming material, self-testing, test-taking strategies, developing study patterns, maintaining a high level of motivation, and communicating with the instructor) be used to enhance students' achievement of intended learning outcomes in an adult distance education setting?

Is the theoretical framework, proposed by McKeachie et al. (1986), effective for explaining the relationship between learning strategies and students' achievement in the distance education environment?

Answers to these questions may provide useful information on how distance education students might apply these learning strategies, whether the strategies affect their ability to achieve intended learning outcomes to a greater degree, and result in an increased level of satisfaction with students' off-campus course experiences.

## References

- Bernt, F.M. & Bugbee, A.C. (1990). Study practices of adult learners in distance education: Frequency of use and effectiveness. Paper presented at the Annual Meeting of the American Educational Research Association, Boston, MA. ERIC Document Reproduction Service No. ED 323 385.
- Dansereau, D. (1985). Learning strategy research. In J. Segal, S. Chipman, & R. Glaser (Eds.), Thinking and learning skills: Relating instruction to research. Vol 1 (pp. 209-239). Hillsdale, NJ: Erlbaum.
- Eastmond, D.V. (1995). Alone but together: Adult distance study through computer conferencing. Cresskill, NJ: Hampton Press, Inc.
- Everson, H.T., Tobias, & S. Laitusis, V. (1997). Do metacognitive skills and learning strategies transfer across domains? Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL. ERIC Document Reproduction Service No. ED 410 262.
- Jonassen, D.H. (1985). Learning strategies: A new educational technology. Programmed Learning and Educational Technology, 22(1), 26-34.
- Jones, B.F., Sullivan Palincsar, A., Sederburg Olge, D., & Glynn Carr, E. (Eds.). (1987). Strategic teaching and learning: Cognitive instruction in the content areas. Alexandria, VA: Association for Supervision and Curriculum Development.
- McCombs, B.L. (1988). Motivational skills training: Combining metacognitive, cognitive, and affective learning strategies. In C.E. Weinstein, E.T. Goetz, & P.A. Alexander (Eds.), Learning, and study strategies: Issues in assessment, instruction, and evaluation. (pp. 141-169). San Diego, CA: Academic Press, Inc.
- McKeachie, W. J., Pintrich, P.R., Lin, Y., and Smith, D. (1986). Teaching and learning in the college classroom: A review of the research literature. Ann Arbor, MI: National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan.
- Miller, G. (1995). Off-Campus study in

agriculture: Challenges and opportunities. Journal of Agricultural Education, 36(2), 1-7.

Miller, G. (1997a). Predicting student achievement in agriculture courses delivered by videotape. Proceedings of the 24<sup>th</sup> National Agricultural Education Research Meeting, 24, 478-484.

Miller, G. (1997b). Studying agriculture through videotape: Learner strategies and cognitive styles. Journal of Agricultural Education, 38(1), 21-28.

Miller, G. & Carr, A. (1997). Information and training needs of agricultural faculty related to distance education. Journal of Applied Communications, 8 1 (1), 1-9.

Moore, M. G. (1989). Distance education: A learner's system. Lifelong Learning, 12(8), 8-11.

Olgren, C.H. (1998). Improving learning outcomes: The effects of learning strategies and motivation. In C. Campbell Gibson (Ed.), Distance learners in higher education: Institutional response for quality outcomes (pp. 77-96). Madison, WI: Atwood Publishing.

Oxford, R., Park-Oh, Y., Ito, S., & Sumrall, M. (1993). Learning a language by satellite television: What influences student achievement? System, 2 1(1), 3 1-48.

Pintrich, P.R. (1988) A process-oriented view of student motivation and cognition. In J. S. Sork & L.A. Mets (Eds.), Improving teaching and learning through research. New Directions for Institutional Research. No. 57 (pp. 65-79). San Francisco: Jossey-Bass.

Pressley, M. (1986). The relevance of the good strategy user model to the teaching of mathematics. Educational Psychologist, 2 1, 13 9-161.

Schuemer, R. (1993). Some psychological aspects of distance education. Fern University, Hagen (Germany). Institute for Research into Distance Education. ERIC Document Reproduction Service No. ED 357 266.

Sinkavich, F. J. (199 1). Metamemory, study strategies, and attributional stvle: Cognitive processes in classroom learning. ERIC Document Reproduction Service No. ED 33 1 846.

U.S. Department of Education. National Center for Education Statistics. (1997). Distance education in higher education institutions, NCES 98-062, Washington, DC.

Weinstein, C.E., & Mayer, R.E. (1986). The teaching of learning strategies. In M. Wittrock (Ed.), Handbook of research on teaching (pp. 3 15-327). New York, NY: Macmillan,

Weisburg, M. & Ullmer, E. J. (1995). Distance learning revisited: Life-long learning and the National Information Infrastructure. In Proceedings of the 1995 Annual National Convention of the Association for Educational Communications and Technology (AECT) (pp. 628-647). Anaheim, CA. ERIC Document Reproduction Service No. ED 383 3345.

Willis, B. (1993). Distance education: A practical guide. Englewood Cliffs, NJ: Educational Technology Publications.

Willis, B. (1995a). Distance education: An overview. In Distance Education at a Glance: Guide #1. University of Idaho, Engineering Outreach. [On-line] Available at: <http://www.uidaho.edu/evo/dist1.html>.

Willis, B. (1995b). Strategies for learning at a distance. In Distance Education at a Glance: Guide #9. University of Idaho, Engineering Outreach. [On-line] Available at: <http://www.uidaho.edu/evol/dist9.html>.

Zimmerman, B. J., & Martinez Pons, M.

(1986). Development of a structured interview for assessing student use of self-regulated learning

strategies. American Educational Research Journal. 23(4): 614-628.

Journal Paper No. J-1 8427 of the Iowa Agriculture and Home Economics Experiment Station, Ames, Iowa. Project No. 3265, and supported by Hatch Act and State of Iowa funds.