

Supplemental Instruction Study Strategies; Using the Information Processing Model

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One of the challenges for students is selecting the appropriate study strategy to fit the requirements of the learning situation. Each class and professor present different challenges for the student. This requires the student to think strategically about the class and be able to self-monitor themselves whether their study plan is working and whether changes need to be made. A term used to describe this proactive approach is the “self-regulated learner” (Weinstein and Stone, 1993).

The following article takes many of the traditional Supplemental Instruction study strategies (those employed during SI sessions and those used by students independently) and organizes them into the categories of the Information Processing Model. The purpose of this is to remind SI Supervisors and Leaders why it is important to employ a wide array of strategies and be strategic in their use. Some strategies are more useful for short-term memory of new material. Others are more essential for long-term memory retention. However, all of them are essential in most classes for overall grade achievement and deep learning of the material.

Affective Domain Issues Impacting Student Learning

One of the difficulties with advocating to students to take such a proactive approach as suggested by Weinstein with self-regulated learning is the student’s view of themselves. The question becomes whether they can really make a difference or not. Many students believe that they are relatively helpless regarding academic performance. A term associated with this issue is “*locus of control*” or “*attribution of efforts with results*.” Which makes the difference, the student’s inner power or the external forces acting upon them? A more extreme attitude to this is viewing the academic world as a lottery. These students see that seems to be little relationship between the effort they expend in school and the grades that they receive. Students buy their weekly lottery ticket (e.g., *show up for class, read the textbook once, take some modicum of lecture notes, study a few hours before the exam*) and hope for the best. Sometimes the strategy works and they win, receiving a passing grade. Sometimes they lose. But they do not believe that spending a lot of effort really makes a difference.

Another affective domain issue impacting student achievement is the type of motivation that drives them for higher grades. The more technical term for this is “*goal orientation*.” Do they strive for higher achievement because they want to (internal) or are they trying to please others such as parents or other significant people in their lives (external). The research is clear that most college students are not able to sustain high grade achievement if they are externally oriented. Success in college requires a personal commitment to the goal and not attempting to satisfy the aspirations of others.

The Self-Regulated Learner

According to research from Weinstein and Stone (1993, pp. 1-2), major variables that separate expert and novice learners: experts know more; knowledge held by experts is better organized and more integrated; experts have more effective and more efficient strategies for accessing and using their knowledge; experts seem to have different motivations for acquiring and using their knowledge; experts evidence more self-regulation in both the acquisition and application of their expertise. They continue by stating that four kinds of knowledge are needed by expert learners: knowledge about themselves as learners (e.g., *their cognitive characteristics*); knowledge about

the cognitive demands of the academic tasks; knowledge of a wide variety of strategies and study skills; and prior knowledge of the content material (pp. 3-5). They conclude by sharing essential steps to establish executive control in studying: create a study plan and revise it on the basis of personal feedback and grades received throughout the academic term; select the specific strategies or methods they will use to achieve their goals; implement the methods they have selected to carry out their plan; monitor and evaluate their progress on both a formative and summative basis; if students are not reaching their goals, they must modify what they are doing; make an overall evaluation of what was done and decide if this is the best way to go about meeting similar goals in the future (pp. 10-11).

Information Processing Model of Learning

A classic model for explaining the way that many students effectively learn material is called the “*Information Processing Model*” (Demo, 1998). It is based on making the analogy that most people learn as computers would: information is inputted, analyzed, and then can be used for a task. Information must first be received, then entered into short-term memory, moved into long-term memory, and finally recalled for use with a task (e.g., *completing examination questions*). While somewhat mechanical, it provides a basic framework to add newer theories of learning that are more sensitive to affective and cognitive learning preferences that attend to individual differences of gender and culture. These are powerful issues that have an important impact upon student achievement.

The following outline provides suggestions of study strategies that students can employ. Some of these strategies can be done alone, other work best in small groups. The strategies have been broken down into the categories defined by the Information Processing Model. The key for student success is the constant process of monitoring themselves regarding comprehension of the material. The final section provides some suggestions for this process.

I. Improve Short-Term Sensory Store or Sensory Register (*Activities to increase initial awareness of new information.*)

- Watch for verbal and visual cues from professor regarding importance of different pieces of information presented during the lecture.
- Move to front of class to clearly hear and to see charts, graphs, and board work.
- Arrive early to class and pay attention to professor’s comments during the first minutes at beginning of class and during the final minute when many students are already stopped taking notes and preparing to depart the class.
- Preread textbook chapter and study new vocabulary words to increase receptivity to newly presented lecture information.
- Study the course syllabus to identify major concepts, schedule of upcoming topics, and other course-related information.
- Experiment with new ways to improve original lecture note taking (e.g., *mind maps, Cornell method*).

II. Methods to Improve Short-Term and Long-Term Memory by use of Learning Strategies

A. Improving Short-Term Memory of New Material

1). Recitation Strategies (*Reinforce material just exposed to by repeating it*)

- In a group with other students take turns reading lecture notes aloud so that others can contribute missing material and for students to discover that the need to improve their note taking approach since they are missing material.
- Throughout the day review new material from the class. Write material on note cards to more easily memorize information
- Use mnemonic devices to increase memorization of new material.

- ❑ Use of abbreviations while taking lecture notes to save time and keep up with both the lecture and visual images on the board by the professor.
- ❑ Employ specific strategies when reading textbook material the first time (e.g., SQ3R, *reading with purpose, integration of lecture notes with textbook*)
- ❑ Mark and underline key concepts in the textbook.
- ❑ Keep list of new words and concepts and look up in textbook glossary.
- ❑ Recopy lecture notes quickly after class is over to increase memorization of material.

B. Improving Long-Term Memory of New Material

1). Elaboration (*Taking new material and extending it*)

- ❑ Create analogies with new information linking it with material already learned.
- ❑ Review lecture and textbook material by paraphrasing, applying, and integrating it with other material.

2). Organization (*Taking new material and reorganizing it into meaningful ways*)

- ❑ Create visual matrix to reorganize material into logical categories.
- ❑ Draw concept maps or continuum lines to show relationships among concepts.
- ❑ Create time lines to display sequences of events.
- ❑ Identify steps for solving problems (e.g., *identifying needed formulas for solving problems, identifying the steps to solve*)

III. Comprehension-Monitoring Strategies

- ❑ Approach each class as a unique learning experience and carefully employ the specific learning strategies required for the academic task. This will probably require frequent changes and modifications throughout the academic term.
- ❑ Create a time management plan to guide studying for each course. Then monitor results from examinations to assess changes to the schedule.
- ❑ Create mock exams to practice answering objective and writing questions under time pressure before the official examinations. Many textbooks have study questions at the beginning or end of the chapter. Part of the SQ3R reading strategy and the Cornell note-taking method is self-testing the material.
- ❑ Provide informal quizzes where students can test one another regarding course comprehension before major exams occur in the class.
- ❑ Conduct a post-exam survey after each major examination where students can discover relationships between the assigned grade and behavior of the student (e.g., *amount of time studied, amount of text book reading, types of questions difficult to answer on exam*).
- ❑ Take advantage of counseling and testing services on campus to discover more about the student (e.g., *academic content testing, student motivation, learning preferences*). This can provide valuable information for the student to consider about their strengths and weaknesses.

Conclusion

The Information Processing Model provides a basic framework for a student to develop a more effective plan for achieving their academic goals in college. This article suggests some learning strategies that many have found helpful. There are many more than these. The most important concept that underlies this approach to learning is that students have significant control over their academic achievement.

For More Information on This Topic:

Dembo, M. H. (1998). *Applying educational psychology* (5th ed.). New York: Longman

Weinstein, C. L., & Stone, G. (1993). Broadening our conception of general education: The self-regulated learner. In N. Raisman (Ed.), *New directions for community colleges: Directing general education outcomes*. San Francisco: Jossey-Bass