

## Tutorial: Cognitive & Learning Strategies

### WHAT ARE COGNITIVE AND LEARNING STRATEGIES?

Cognitive and learning strategies are those procedures that a student uses to succeed with a task that would be difficult without special effort. Strategies can be external aids, like a calculator to help with difficult math problems, a clock and a calendar to help keep track of time, lists to remember things to do, a graphic organizer for complex tasks like writing a story, and the like. Or they can be communication strategies, like asking for help. Or they can be internal mental procedures, like repeating information in ones head or creating associations in order to make the information more memorable. Simple school examples include taking notes during a lecture, asking for clarification of complex material in a text, highlighting important information in a text as one reads, and creating an outline before beginning to write an essay.

Everybody uses strategies when tasks become difficult. For example, most readers, not just those with poor reading comprehension, acquire habits of doing something strategic before, during and after reading a text:

**Before reading a text:** Examples of strategies: previewing the text for orientation to its content; presetting with questions that need to be answered; calling to mind what one already knows about the topic

**During reading:** Examples of strategies: periodically trying to summarize; highlighting important parts of the text; dealing with comprehension breakdowns; taking notes; looking up new words

**After reading:** Examples of strategies: summarizing the text, reacting to the content, taking notes

Most competent readers engage in some such activities – without thinking about it – on those occasions when comprehension is important. These procedures are habitual, based on years of personal experience that have convinced readers that if they do not do something special when reading lengthy texts, they will probably not understand or remember much of what they read.

Preschoolers use simple strategies, largely within the context of physical tasks, like seeking help while cutting with scissors, putting their things away in their cubby so they can find them, and the like. School-age children are expected to be strategic in relation to their abstract cognitive and learning tasks. For example, they are taught to check their work for errors before handing it in; to take organized notes during lectures, and to use systematic study procedures.

Being a strategic thinker and learner presupposes that the student

- has a reasonable understanding of her own abilities so that she can make judgments about what tasks are easy and what tasks are difficult – therefore requiring special effort (*self-awareness*)
- has goals that she wants to accomplish (*goal setting*)
- knows that plans must be made to accomplish goals and can make plans (*planning*)
- can initiate strategic behavior (*initiation*)
- can inhibit impulses that are inconsistent with goal-directed behavior (*inhibition*)
- can pay attention to how she is doing (*self-monitoring*) and evaluate performance in relation to the goals (*self-evaluation*)
- can flexibly revise plans and change strategies in response to feedback (*strategic behavior*)

These are the core components of self-regulation or executive functioning; therefore all of the procedures used to promote self-regulation are important in helping students to become more strategic thinkers and learners. **[See Tutorial in Self-Regulation Routines]**

### **WHY ARE COGNITIVE AND LEARNING STRATEGIES IMPORTANT FOR MANY STUDENTS AFTER TBI?**

Cognitive and learning strategies are important for all students. However the theme is of special importance for students with TBI because they often have cognitive impairments (e.g., weak memory, fluctuating attention, poor organization) and because damage to the frontal lobes makes strategic thinking and learning more difficult for them. That is, they are in greater need of strategies, but being strategic is harder than it would be without the injury. To make the situation even bleaker, many students with brain injury are relatively unaware of their needs – or possibly in a state of emotional denial – making the teaching of compensatory strategies even more difficult. **[See Tutorial in Self-Awareness]** Therefore, teaching strategic thinking and learning needs to be a deliberate and intensive process for these students.

### **WHAT ARE THE MAIN THEMES IN INSTRUCTION AND SUPPORT FOR STUDENTS WHO NEED TO USE COGNITIVE AND LEARNING STRATEGIES?**

Teaching students to be strategic thinkers and learners is a major enterprise, covering a great deal of territory and requiring many years of effective teaching. To focus that teaching, educators should be aware of all of the characteristics of good strategy users. Each of these characteristics then becomes a goal for the student with brain injury.

- 1. Goals:** Good strategy users have goals to which strategies are relevant.
- 2. Metacognition: Self-Knowledge:** Good strategy users know that their performance needs to be enhanced (in certain areas), that strategies enhance performance, and that they are capable of using strategies.
- 3. Metacognition: Awareness of Task Difficulty:** Good strategy users are capable of perceiving the difficulty level of tasks and the consequent need for special effort.
- 4. Metacognition: Strategy Specific Knowledge:** Good strategy users know when, where, how, and why to use specific strategies.
- 5. Initiation/Responsibility:** Good strategy users take responsibility for their successes and failures, and initiate strategic behavior when it is necessary.
- 6. Self-Monitoring:** Good strategy users can monitor the effectiveness of their performance with strategies so that improved performance can be its own reward and ineffective performance can be changed.
- 7. Flexibility:** Good strategy users know several strategic procedures and can select the procedure that is useful for a specific problem.
- 8. Automaticity:** Good strategy users use strategies as a matter of routine so that many strategic procedures become automatic and require little effort or planning.
- 9. Working Memory:** Good strategy users have adequate working memory so that they can think about the task at hand and strategic procedures at the same time.
- 10. Impulsiveness:** Good strategy users are not so impulsive that they act before taking critical information into account and considering strategies.

**11. Anxiety:** Good strategy users are not so anxious about performance that they neglect strategies because of an overriding fear of failure.

**12. Support:** Good strategy users receive support from teachers, parents, and others for the use of strategies.

**13. Content Knowledge:** Good strategy users know enough about the subject that they can meaningfully apply strategies within that domain of content.

Implicit in this list of characteristics of good strategy users is the fundamental idea that teachers and parents must not take over all aspects of executive functions/self-regulation for students with disabilities. It is tempting for teachers to unconsciously do exactly that: “I, the teacher, will take responsibility for (1) knowing what you are good at and what you need help with, (2) setting your goals, (3) planning how to achieve the goals, (4) ensuring that you start your work, (5) ensuring that you are not distracted, (6) monitoring and evaluating your performance, and (7) trying new strategies in the event of failure.” If this is how teachers (and parents) behave, they will give themselves great practice in strategic behavior, but deny the student the practice that she needs: the teacher improves; the student doesn’t. This is not to say that students should be left to their own devices. Rather, teachers and parents provide the supports necessary for the student to experience success, but then pull back on those supports as it becomes possible to do so – the entire time holding in mind this model of what it is to be a strategic thinker and learner.

The 13 points outlined above are goals of strategy intervention. Critical features of the strategy teaching process include the following:

**1. Context Sensitivity:** Cognitive and educational strategy interventions need to be delivered within the context of relevant curricular (school) content; if not, transfer to real-life activities is unlikely.

**2. Direct and Intensive Instruction:** Strategic academic skills require direct instruction along with a large number and variety of authentic application trials. Strategies should not be implicit – quietly embedded in academic instruction in the hope that the student will discover them. Rather the strategic procedures should be explicitly described, modeled, taught, and promoted. The student should be clear about the reason for the strategy.

**3. Emphasis on Strategic Thinking:** Even as strategies are being taught explicitly, there should be ongoing emphasis on the reality that strategies are clever solutions to difficult problems and that using strategies is being smart about achieving ones goals. That is, there should be a general focus on being a strategic student, not just a specific focus on acquiring specific strategies.

**4. Long-Term:** The shaping of effective cognitive and academic strategic habits and skills requires years of high quality instruction and successful practice. Each school year should pick up where the previous year ended with respect to strategies and both maintain the strategies of the previous year and add elaboration or new strategies.

**5. Intensive:** Strategy intervention needs to be part of the daily regimen. Ideally similar strategies should be taught across many content areas and also related services (e.g., speech-language therapy, occupational therapy).

**6. Personally Meaningful, with a Focus on Correct Attribution:** Students need to know that they are responsible for their academic success and that their strategic efforts will be meaningfully rewarded. This requires large numbers of experiences of seeing improved performance and success using strategies.

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