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Learning With Mind, Heart, and Body

While the old academic model addressed primarily the intellectual aspects of learning, the prevailing model suggests that we learn with our mind, heart and body. This more holistic view underscores the importance of considering all of the learner's issues.

—Eric Jensen, *Completing the Puzzle*

It has been said that smart people are those who can store information quickly and can retrieve it from storage quickly (Sprenger, 2002). Underachievers are those who process information quickly and retrieve it from storage slowly; overachievers are those who process information slowly but retrieve it from storage quickly. How, then, can we help students to process information in a faster and more efficient way so that on the days when they need to use the information, they can retrieve it quickly? In this chapter and the chapters to follow,

we will look at ways to help students be more successful by using these activation and retrieval systems.

INCOMING INFORMATION

While most of this book deals with the cognitive system of the brain, learning does not begin there. All learning seems to begin in the self-system of the brain. This is the system that decides whether or not to engage in the learning. "If the task is judged important, if the probability of success is high, and a positive affect is generated or associated with the task, the individual will be motivated to engage in the new task" (Marzano, Pickering, & Pollock, 2001). In order to make this decision, the brain examines the incoming information in regard to the following questions:

Is the incoming information important? It is necessary to note here that information can be important to the teacher and to the students, but unless the individual student believes the information is important, this system will not view it as important. As teachers, we must not only let our students know the importance of the learning, but how it will be important to them personally. Marzano et al. (2001) explain it this way:

What an individual considers to be important is probably a function of the extent to which it meets one of two conditions: it is perceived as instrumental in satisfying a basic need, or it is perceived as instrumental in the attainment of a personal goal.

In working with students from poverty or from the inner city, this is an especially important aspect of the learning. Merely telling these students that the learning is important because they will need it for college is probably not going to provide motivation to learn. These students tend to live in the here and now, since that is all they have. How will the information help them

to survive, to keep from being cheated, or to be elevated in stature in front of their friends? In the PBS series *Good Morning, Miss Toliver,* this aspect of the self-system is handled very well. For example, when the teacher of these inner-city middle school students, Kay Toliver, is teaching fractions, she uses the example of pizza slices. Knowing fractional parts will help her students to judge which pizza slice is the best buy.

Have I had success in the past with this type of learning? One of the most important aspects of the self-system is self-efficacy. Self-efficacy is the belief that one can do something because of past success. This is somewhat different from self-esteem, which is the belief in oneself. Self-efficacy is based on concrete proof, not just "I think" and "I feel." For this reason it is important that we provide opportunities for students to experience success—even in incremental steps. The old adage "Success breeds success," is absolutely true. Marzano (2001) expands self-efficacy to say that it includes not only ability but also power and the necessary resources to be successful. Consistency in providing the necessary prerequisite skills and the necessary resources for success prior to an assignment helps to build self-efficacy in our students. How can we do this? Never give an assignment in which you will take a grade without providing the following:

- A matrix or rubric or other written form that tells students exactly what they must do to be successful. When we do this, there are no "gotchas" in the learning. Students don't need to guess our expectations, and they are more assured that there will be consistency in grading. In my book *What Every Teacher Should Know About Student Assessment,* I talk about how to build a matrix and a rubric. Form 1.1 is an example of a matrix for math homework. The information on the left-hand side contains the categories involved in the assignment. The checklist on the right contains the attributes that make the assignment a quality product.

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Form 1.1   Homework Matrix

Components of the Assignment	Point Value	Characteristics of Quality
Problem solving		❑ Problem written correctly ❑ All work shown ❑ Work is neat and easy to read
Answers to problems		❑ Correctly answered ❑ Work has been checked for accuracy
Overall quality of work		❑ Work is handed in on time ❑ Work is legible ❑ Work shows evidence of thought

- Adequate time to practice the learning. Jensen (1997) says it is important for the brain to know that it knows the learning. We help the brain to know by providing information in various modalities (auditory, visual, and kinesthetic) and by practicing the learning sufficiently in terms of number of times practiced and time provided for the practice.

- Specific feedback. By specific feedback I mean feedback that not only tells students the strengths of their work but the weaknesses as well. Specific feedback provides dialogue on how the student is doing in regard to learner goals and classroom goals. Specific feedback offers suggestions and leads students to problem solve when things are not going well or when they reach an impasse in the learning. Avoid blanket statements like "Good job" because these statements do little to improve learning.

- How do I feel about the learning (classroom, teacher, other students, and subject matter)? If you have ever been in a classroom in which the emotional climate was one of tension or fear, you already know why this aspect of learning is so important. Our species has survived because our brain attends to information by priority. If we are under threat, whether physical, emotional, or otherwise, our brain pays attention to the threat over all other incoming stimuli. As Jensen (1997) says,

The brain stem is the part of the brain that directs your behavior under negative stress; and is the most responsive to any threat. When threat is perceived, excessive cortisol is released into the body causing higher-order thinking to take a backseat to automatic functions that may help you survive.

Jensen (1997) places threats into categories that assist in our understanding of how threat affects the classroom (our brain likes information in categories or other patterns). The following categories are presented with an analysis (by me) of how they might affect our classrooms.

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Potential Physical Harm. We cannot control most of the physical threats our students may receive outside the classroom, but we certainly have control over the seven to eight hours that they are within our classrooms. Set class norms and include in your classroom specific instruction on working with others. Insist that students are respectful of others and never tolerate put-downs or remarks that could be deemed as racial, sexual, or hurtful in nature.

Intellectual Threats. These threats occur when students' ideas are laughed at or put down. They also occur when students do not know the answer or give an incorrect answer. While it is impossible to prevent incorrect answers, you can create a climate in your classroom that says it is OK if you don't know the answer. What is not OK is not to try. When you ask questions, be sure that you provide adequate wait time and that the wait time is consistent. For example, it is easy to cut short the wait time for a reluctant learner and to provide more wait time for a student who usually knows the answer. Try counting to yourself to be sure that you give the same amount of time to all students. Also, accept and compliment partial answers or the part of the answer that was correct. Remember the information provided earlier on self-efficacy? If you are having trouble with student motivation, self-efficacy is probably at the heart of the problem.

Emotional Threats. One of the greatest fears of adolescents is the fear of being embarrassed in front of peers. In the past, due to behavioral psychology that used a system of rewards and punishments, teachers often used this type of threat to control students. We now know that the downside is not worth any of the positives from this philosophy. Once you embarrass an adolescent, you will create an enemy in the classroom and someone who will not learn to potential.

Cultural-Social Threats. Don't allow or participate in disrespect for any one group in the classroom. Isolating students or

putting students in groups according to ethnicity is another way that we show bias in the classroom. Teachers often show cultural bias by including only materials and information that show one race or that show only males or females in specific roles.

Resource Restriction. This type of threat occurs when we do not provide adequate tools, time, or resources to carry out assignments. State and national testing has lead to a nation that is trying to "cover the material for the test" instead of making sure that students understand before moving on.

While we want students to experience some stress in the classroom (e.g., from work that is challenging), we do not want them to experience negative stress or stress over time. Gazzaniga (1992) says, "It's not stress that's bad, it's uncontrollable stress that's bad."

PROCESSING INFORMATION

Once the brain has decided to pay attention to the incoming information, the metacognitive system takes over. This is the system that sets goals for the learning and that monitors the progress of the learning. This system is important if the student is to complete a task or engage in the learning over time. If a student has difficulty understanding or completing a task, it is this system that decides whether to problem solve or simply acquiesce. As teachers, we can assist this system of the brain by:

1. Setting goals for the learning (based on state and national goals) and providing those goals in a format so that our students know the expectation. I like to post the goals in the room so that my students can see them. College students get a copy of the goals for each lesson. For young students, I recommend that the goals be sent home to parents in an informative letter. By doing this, I am modeling the process and I am making my students aware that they are working toward goals that are deemed important.

2. Next, ask students to set personal goals. Remember that the learning has to have personal meaning to the learners. From time to time ask students to review their personal goals to help them examine their own progress. You might use a notebook for setting goals or a simple model like the one in Form 1.2.

3. Provide specific and consistent feedback to students to help them identify where they are in terms of goals.

4. Directly teach students how to problem solve, so that when they are not meeting their learning goals they can change direction or determine changes that need to be made in order to be specific. Payne (2001) says that an effective way to deal with students from poverty is to get them to write down what they did, what went wrong, and what they will do differently next time. While Payne was talking specifically about dealing with behavior problems, this same technique can help students learn to monitor and adjust their work. Model for your students how you use positive self-talk to help when they are having difficulty with learning. For example, a math teacher might show students how to work a math problem by using a step-by-step process and then what to do when a mistake is made, using self-talk to work through the process. Students tend to know a great deal about negative self-talk but may not have been exposed to this powerful tool when it is put in a positive context.

THE COGNITIVE SYSTEM

Most of what we do in the classroom revolves around the cognitive system of the brain. According to Marzano (1998), the cognitive system is organized into four categories:

1. Storage and retrieval: "The storage and retrieval processes provide an individual with access to the knowledge that has been stored in permanent memory

Form 1.2   Sample Model for Setting Goals

Unit Eight: The Boston Tea Party

State Goals: Students will understand events in history in the context of the times

Students will connect events in history with human behavior

As we look at this important event in history and its significance to the Revolutionary War, what are your personal goals for the unit? To write your goals, think about what you already know about the Boston Tea Party and the Revolutionary War. What would you like to know about this event? What do you need to know about this event?

My personal goals are:

and a way of storing new knowledge so that it might be issued at a later date" (Marzano, 1998).

2. Information processing: "The information processing functions manipulate knowledge that has been stored so that it might be utilized for specific tasks" (Marzano, 1998).

3. Input/output: These functions use knowledge to understand communication through hearing, writing, reading, and so on, with the outside world.

4. Knowledge use: This part of the cognitive system uses knowledge to carry out specific tasks. Procedural goals are carried out through this part of the cognitive system.

These categories within the cognitive system will be discussed as we look at how the brain takes in information, processes it, sends it to long-term storage, and then retrieves it when needed.