Connecting Brain Research With Teaching Practices to Maximize Learning

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with
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Leader as Learner

Leaders embrace learning. They engage in activities that promote staff and student learning. Today is about adding to the knowledge base regarding which practices make a difference.

Reflective Task: Powerful Learning Experiences

- Reflect on a powerful learning experience you have had this year.
- Meet with a colleague. Describe your learning experience vividly. What made it powerful?
- Invite your colleague to share his/her powerful learning experience and explain what made it so.
- Are there certain qualities or attributes that appear to be a part of most powerful learning experiences? Please list these below:
Emotional Learning System
- training room climate
- emotional safety
- personal relevancy

Social Learning System
- belonging to a group
- being respected
- enjoying the attention of others
- interaction with others/interpersonal experiences
- authentic decision-making and problem solving
- valuing tolerance and understanding diversity

Cognitive Learning System
- workplace skill development
- seeks patterns, concepts, themes
- connects new and prior experiences

Physical Learning System
- learning relies heavily on this system
- needs active engagement
- likes challenging tasks that resemble a sport where trainers/leaders coach, inspire, encourage active practice

Reflective Learning System
- involves personal consideration of one’s own learning
- analyzes achievements, failures, what worked, what didn’t, what needs improvement
- entails understanding of one’s learning style and style preferences

Source: Barbara K. Given, 2002, Teaching to the Brain’s Natural Learning Systems, ASCD. To order, call 1-800-933-2723.
Can You Believe This?

- Take your age. _____
- Multiply by 2
- Add 5
- Multiply by 50
- Subtract 365
- Add the loose change in your pocket under a dollar
- Add 115

The first two figures represent your age.

The last two is the amount of change in your pocket.

Next Steps:

Why does this work?
# Maximizing Student Learning

<table>
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<tr>
<th>Theater</th>
<th>Implications</th>
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| Emotional | • Consider student interests when designing learning experiences  
• Create emotionally safe, inviting learning environments  
• Link content with students’ life experiences |
| Social | • Provide opportunities for cooperative learning structures (in pairs, trios, small groups)  
• Promote a valuing of diversity/multiple perspectives  
• Structure decision making, problem solving tasks  
• Focus attention on social/emotional skills  
• Develop projects that offer opportunities for public service |
| Cognitive | • Provide tasks which require pattern seeking  
• Create multiple opportunities to develop academic skills using a variety of intelligences  
• Develop interdisciplinary units |
| Physical | • Structure academic tasks wherein students are actively engaged  
• Provide opportunities for physical movement  
• Teach about the relationship between physical movement and stress reduction |
| Reflective | • Foster opportunities to reflect in writing, drawing, speaking  
• Invite students to analyze their work; identify strengths, what needs improvement  
• Sensitize students to learning styles and their impact on interpersonal relationships/tasks |
AGENDA

Welcome, Introductions, Overview, “Five Theaters of the Mind,” Agenda, Outcomes

Revisiting the Brain as a Foundation for Teaching and Learning

* sensory memory
* role of emotions
* short term memory
* long term memory

Helping Assure Every Child Succeeds

Reflections, Personal Next Steps, Feedback
OUTCOMES

Participants will have the opportunity to:

- discuss key ingredients of powerful learning experiences
- analyze five “Theaters of the Mind” and their implications for student success
- re-explore the brain as an information processing system and the implications for maximizing student learning
- reflect upon personal next steps

A personal outcome I hope to have addressed:
Promoting Attention

It has been said that “in small ways we can make big differences in learning.” The following simple training tips will help learners focus their attention.

- Provide advance organizers
- Post outcomes or key results areas
- Use bracketing
- Eliminate distracters in the training room
- Ask for expectations
- Generate previous experiences that relate to the training topic
- Consider using K W L charts (What do you KNOW? What do you WANT to know? and after the session: What have you LEARNED?)
- Use one to three minute pauses
Approximate Ratio of Prime Time to Down Time During Learning Episode

Lesson Length

Source: David A. Sousa
The capacity of short-term memory appears to develop with age. The number of spaces increases by one unit every other year beginning at age three.

Juan-Pascual Leon, 1970
Rehearsal

Rehearsal performs two functions:

1. Maintains information in short-term memory.
2. Mechanism by which we transfer information to long-term memory.

There are two types of rehearsal:

1. **Rote Rehearsal** -- deliberate, continuous repetition of material in the same form in which it entered short-term memory.
2. **Elaborative Rehearsal** -- elaborating or integrating information, giving it some kind of meaning -- creating chunks of reminders.
### Rehearsal Strategies

- Visualization
- Creating a story
- Mnemonics
- The Link System
- Acting Out a Process
- Role Play
- Create a Model
- Develop a Song, Rap, Poem, or Skit
- Interactive Notebooks
- Split-Page Notetaking
- Quick Writes
- Create Questions
- Jigsaw Activities
- Think, Pair, Share
- Games
- Reciprocal Teaching
- Develop a Graphic
- Implementation with Trainer Feedback
Eight Types of Intelligence

“It is of the utmost importance that we recognize and nurture all of the varied human intelligences, and all of the combinations of intelligences. We are all so different largely because we all have different combinations of intelligences. If we recognize this, I think we will have at least a better chance of dealing appropriately with the many problems that we face in the world.”

Howard Gardner (1987)

**Linguistic** -- reading, writing, speaking, listening

**Logical/Mathematical** -- working with numbers and abstract patterns

**Visual/Spatial** -- working with images, mind mapping, visualizing, drawing

**Musical** -- rhythm, melody, patterned sound, song, rap, dance

**Bodily/Kinesthetic** -- processing information through touch, movement, dramatics

**Interpersonal** -- sharing, cooperating, interviewing, relating

**Intrapersonal** -- working alone, self-paced instruction, individualized projects

**Naturalist** -- spending time outdoors, sorting, classifying, noticing patterns

Frames of Mind, Howard Gardner, 1985
In Their Own Way, Thomas Armstrong, 1987
See also Educational Leadership, October 1992
Review Task

Please think back on our session.

Using your notes, materials, or memories, please address the following questions.

“What are some things that you heard, saw or did that “squared” with your beliefs?”

“What are some questions still going around in your head?”

“What are three points you want to remember?”

Note: Review is a powerful form of practice. It increases the probability that information will reach the long term memory and facilitates retrieval of information in the future.
Average Retention Rates

Please arrange the following strategies from least (at top) to greatest (at bottom) impact with respect to their capacity to foster retention:

- lecture
- practice by doing
- teach others
- discussion group
- audio-visual
- demonstration
- reading
Homework Review

- Inside-Outside Circles
- Pairs Check
- Graffiti
- Think Pair Share
- Sitters and Movers
- Mix Freeze Pair
- Sticker Partners
- Homework in a Capsule
- Clock Partners
Personal Action Plan

Reflect upon your learnings in this session. Include things you already knew that were reinforced. What are some key points you wish to remember?

What are some personal next steps you wish to take? This could include how you will use the strategies in your own work, or how you will use them in your work with others.