Using Brain Targeted Teaching to Increase Student Engagement
Using Brain Targeted Teaching (BTT) to Increase Student Engagement
Goals of Breakout Session

How the Brain Works

- Emotional Climate
- Physical Environment
- Learning Design

Applications in Schools
Husband's Brain

Wife's Brain
Brain-Targets

• I will structure the remaining activities and discussions around three to four of six brain-targets developed by Dr. Mariale Hardiman, professor and director of the Neuro-Education Initiative at Johns Hopkins University - School of Education.

• As I work through the brain-targets, I will make reference to other professionals and their contributions to how neuroscience is impacting best practices for learning and education.
Why Follow the Brain-Targeted Teaching Model?

The emerging field of neuro-education focuses educators on how students learn rather than what they learn based on narrow achievement goals.

Educators can translate usable findings on cognition and learning into effective instructional practices.
Findings from Brain-Targeted Teaching Research:

"Data suggest student outcomes include deeper conceptual understanding and better extension of knowledge, more engaged and happy students, and strong state test performance."

—Dr. Peter Berticci, 2006
Let’s get a bird’s eye view of the these targets and how they fit in with each other.
Brain Target #1: Establishing the *Emotional Climate* for Learning
BTT 1: Emotional Climate for Learning

• Research has shown that constant stress may cause damage in the hippocampus and frontal cortex, affecting memory and information processing (McEwen & Sapolsky, 1995)

• In *Teaching with Poverty in Mind*, Eric Jensen writes, “In chronically stressed kids, the combined effects on the hippocampus and the amygdala may be precisely what facilitates *emotional* memory (the aspect of memory that encompasses highly salient memories of events such as divorce, abuse, trauma, death, or abandonment) and reduces *declarative* memory (the aspect of memory that stores standard knowledge and learning.)
Let’s Look to the Brain
Partner Activity

• Partner A should describe to partner B an experience that he/she is willing to share that was fairly negative and impacts him/her to this day. (2 minutes)

• Now, partner B should describe the same thing to partner A. (2 minutes)
Emotional Connections to Learning

• In the book, “Mindsets” by Carol Dweck, she says, “Someone with a fixed mindset who experiences failure can be haunted by the trauma.” (Dweck, 2006)

• Because we are preoccupied by scarcity, because our minds constantly return to it, we have less mind to give to the rest of life.” (Mullainathan & Shafir, 2013). The authors in Scarcity: Why Having Too Little Means So Much call this “Bandwidth.” The authors also suggest that the experience of poverty reduces anyone’s bandwidth.
So, What Do We Do About Emotions?

• Building student-staff **relationships** and relationships among students so students feel safe, appreciated, important, and supported.

• Research also speaks about giving students **HOPE**

• **Behavior-specific praise** is more effective in reinforcing and shaping behaviors than generalized praise.

• Find a **growth-mindset** way to compliment them [students]. For example, praise effort.
So, What Do We Do About Emotions?

• Think of ways to **increase students bandwidth**.

EX. *Use the 10:2 method.* For every 10 minutes of instruction allow the students 2 minutes to process and respond to the instruction. This can be done in various ways by having them write what they have learned, questions they may have, or by discussing the content with a fellow student.

• Letting students know **what is expected** of them academically and socially in the classroom.

EX. Provide students with a syllabus and referencing it during the year...NOT just at the BEGINNING of the year

• Help students **disengage from an emotional event**

EX. *Communicate your experience.* Express what you are feeling in whatever ways feel comfortable to you — such as talking with family or close friends, keeping a diary or engaging in a creative activity (e.g., drawing, molding clay, etc.).

• Connect students with **caring adults**

EX. Create a mentoring program or assign students a “check & connect” advisor
So, What Do We Do About Emotions?

Other ideas suggested by Dr. Hardiman:

• Offer Control and Choice
• Address Social and Emotional Needs
• Have students practice reflection and mindfulness exercises
• Use humor
• Engage in the Arts
Routines, rituals, consistency . . .
Never a wasted minute! Never.
Brain Target 1 Best Practices

- Predictability: Routines, rituals, consistency
- Personal connection between teacher and student
- Trust and acceptance
- Safe classroom environment
- Positive language & encouragement to shape behaviors
- Supportive corrective language
- Peer mediation/ Sharing circles
- Class meetings: Control and choice
- Humor
- Arts integration
- Celebration
- Student self-evaluation, reflective practices

**ACTIVITY:**
Which one of these do you (or your school) already do well? Which could you (or your school) do more of?
BTT 2: Create the Physical Learning Environment

• Attention and Novelty
• Lighting
• Sound
• Scent
• Movement
• Order and Beauty

“The physical environment of a school is indeed an unspoken but powerful messenger.”

--Mariale Hardiman, 2012
Extremes
“It’s all about the restrooms!”

“Appearance is part of the substance.”-- Tom Peters

• This?

• OR THIS?
For us, it’s all about the classrooms!

• (Although tidy restrooms are nice, too.)

• Barren?

• Cluttered?
Elementary typically gets it right.

• Why should atmosphere be less important in high school?
Wall space for references . . .

\[
\sin \theta = \frac{\text{Side Opposite}}{\text{Hypotenuse}}
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\cos \theta = \frac{\text{Side Adjacent}}{\text{Hypotenuse}}
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\tan \theta = \frac{\text{Side Opposite}}{\text{Side Adjacent}}
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**Periodic Table of Elements**

**The 8 Parts of Speech**

- Adjectives
- Adverbs
- Interjections
- Conjunctions
- Nouns
- Prepositions
- Verbs
- Pronouns

*Cause* → *Effect*

- *Why?*
- *What happens*
- *Example:*
- *Stay up late* → *Super tired* the next day

*Clue Words:*
- "Because," "since," "so" "if," "then," "as a result," "therefore," "consequently"

*When we read:*
- We think about how one story event (cause) leads to another (effect)

*YOU TRY:*
- Identify an example of cause/effect from your book.
... and for student exemplars!
Optimize seating arrangements for different purposes and plan collaborative groups to “even the playing field.”
Time-saving organizers . . .
Let students use talents and creativity to decorate, developing ownership and pride in their school.
Brain Target 2 Best Practices

- Use horizontal and vertical spaces to add color and beauty while reflecting the current learning unit and student work.
- Change classroom displays frequently.
- Establish order and engage students in routine care of the classroom.
- Use soft background music when student are performing routine tasks.
- Soften harsh lights with lamps; use natural light.
- Create flexible seating arrangements and design space to facilitate movement.
- Allow for water breaks.
- Decorate the room with plants, terrariums, or other common household items.
Physical Environment Commitment

• On the front of a post-it:
  • Write one strategy that demonstrates how you could impact the physical space in your building/classroom to move toward student success.

• Share with an elbow partner
BTT 3: Designing the Learning Experience

How the Brain Works

Emotional Climate
Physical Environment
Learning Design

Brain Targets
Evaluation and Assessment
Application of Knowledge
Mastery of Content, Skills, and Concepts

Big Picture Learning Design

Applications in Schools

Emotional Climate
Physical Environment
Mastery of Content, Skills, and Concepts
<table>
<thead>
<tr>
<th>Student Outcome(s)</th>
<th>Instruction</th>
<th>Student Performance and/or Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aligned with Standards</td>
<td>Lesson Procedures</td>
<td></td>
</tr>
</tbody>
</table>

Align student outcomes with student performance/product before "backwards mapping" to instruction.

Identify and agree upon evaluation criteria!
Suggestions for Designing the Learning

Suggests you:

• Show the Big Picture
• Ensure learning builds on what students already know
• “Know how to prime students’ brains for what is coming up in the unit.
• Show students the conceptual ‘chunks’ in the unit through a mind map, graphic organizer, or concept web.”
Other Suggestions...

• Don’t let the text book do the walking or talking
• “A goal without a plan is just a wish.” Antoine de Saint-Exupéry
• Choose wisely
• Evaluate student work and student understanding
• Use the Backward Design approach (Wiggins & McTighe)
• Read, Read, and Read More about your content area and subject
Brain Target 4: Teaching for Mastery

How the Brain Works

- Emotional Climate
- Physical Environment
- Learning Design

Brain Targets

- Evaluation and Assessment
- Application of Knowledge
- Mastery of Content, Skills, and Concepts
- Emotional Climate
- Physical Environment
- Big Picture Learning Design

Applications in Schools
Brain Target 4: Teaching for Mastery

Objective: To develop ways to enhance long-term retention of important content through diverse and creative lessons

Challenge: To determine what methods of presentation and activities best promote retention of important content

Possible Solution: To actively retrieve what has been learned through:

1. Memory
2. Integrate the Arts
3. Various Learning tasks
Brain Target 4: Teaching for Mastery

Ways to actively retrieve what has been learned:

➢ Integration of the arts into instructional activities
  ▪ Create graphic designs, songs, works of visual art, and films

➢ Argue different points of view

➢ Summarize knowledge in multi-media presentations

➢ Discuss content in-person or online
Brain Target 4: Teaching for Mastery

Memory of Information:
• Memory is better for pictorial representations and for information that arouses either positive or negative emotions
• There are numerous activities that improve memory for information including:
  1. Rehearsal
  2. Elaboration
  3. Enactment of information
  4. Mnemonics
  5. Interleaving
Activity: **How did you know these things?**

1. Please Excuse My Dear Aunt Sally

2. “I” before “E”...

3. Can you recall where you were the day of the 9-11 terrorist attacks?

4. 954-817-6130

5. 122-67-1098

- What does #1 mean?
- What is the rest of #2
- Answer #3
- What is #4
- What is #5
Student Engagement Activity
How We Learn: Learning Pyramid

1% Fill out worksheet
10% Reading Assignment
20% Lecture
30% Using only visuals
50% Lecture with visuals
70% Discussion with others
90% Having a personal experience – Making connections (hands on)
95% Teaching someone else
98% Use art, drama, music, movement – Integrated curriculum with content

The learning pyramid originates from the National Training Laboratories (NTL) for Applied Behavioral Science.
Six Target Areas of the Brain

1. Emotional Climate
2. Physical Environment
3. Learning Design
4. Teaching for Mastery
5. Teaching for Application
6. Evaluating Learning
Check Out

Based on the Brain Targeted Teaching (BTT) components discussed today, share something you (or your school) could focus on.
Resources


Thank You!!

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