Creating Core Memories

Lesson 1
Elementary
Time 30-45 mins

Objectives:
1. Students will be able to identify the following key terms: core memory, hippocampus, the limbic system.
2. Students will be able to relate to their 5 senses and creating core memories.

Materials:
Inside Out Core Memories: https://www.youtube.com/watch?v=pecha-7QOVo
Changing Core Memories: https://www.youtube.com/watch?v=cYvaQ37EcvU
5 Senses Chart
Post it notes
Dry Erase boards and markers
Celebration materials (sprinkles, candles, streamers, balloons, ornaments, etc.)

Key Terms:
- Core Memory
- Hippocampus
- Limbic System

Why?
Understanding and naming our core memories creates a stronger self and class identity. If teachers provide authentic opportunities for students to create positive core memories we increase care, concern, and the call to action in our learning communities. Our brains hold the power to recall, recount, and relive some of our most defining moments. On the flip side, we must also note the natural function of pruning, and how it helps the brain prepare for deeper complexity and sophistication. When educators make the effort to listen to these personal core memories it invites stronger dialogue and purpose among the class. The brain learns through stories. It retrieves what is relevant, useful, and interesting. Make these moments happen in your classroom!
**Instructions**

**Part 1: Hook**

a. Have celebration materials (sprinkles, candles, streamers, balloons, ornaments, etc.) on the front table. “Pick one of these materials in your head—think about a time that you have seen this material?”

b. Engage in a class discussion revolving around when they have seen the different materials. Encourage discussion about different memories, digging deep into the emotions/feelings behind them (does the memory make you happy? Sad?)

**Part 2: Discussion and Video**

a. Class discussion about specific moments/holidays that students remember related to the materials

Class discussion about core memory

Guiding Questions:

- Who or what reminds you of this material? Why?
- What emotions/feelings arise when you see this item?
- Where are our memories stored?

b. Watch two “Inside Out” Videos and pay attention to 5 senses

c. Break up into partners and utilize “5 senses materials” to talk about 5 senses in their own core memories

- Join, share your partner’s core memory
- Talk about how emotions and senses (from hippocampus/limbic system) help create and retain Core Memories

**Part 3: Exit Ticket**

If time allows:

- Students write the symbol of their Core Memory on a post-it note
- Students gather on the carpet or stand up to willingly share and guess one another’s Core Memory.

(i.e. Jane volunteers to share her symbol and then Tom guesses what the core memory might be

(i.e.) If core memory is watching the Indy 500 then the symbol could be the smell of the gasoline or the opening remarks, “Drivers start your engines!”

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**Bonus Brain-Aligned Strategies:**

“Mingle - Mingle” partner share game

Call on a student to pick the special word. Students can be creative and silly with words like “taco, unicorn, X-Box, etc.” After students know the special word they will stand up and sing the chant “mingle, mingle, mingle!” over and over until the special word is said. When the teacher shares the special word, all students will freeze and turn to the person closest to him or her. Partners will share his or her symbol and guess what the core memory is. Students can also act out the symbol and have the partner guess it.

Utilize these videos and articles to supplement teacher or student understanding:

https://www.edutopia.org/blog/film-festival-brain-learning
http://channel.nationalgeographic.com/brain-games/
http://faculty.washington.edu/chudler/neurok.html
https://www.youtube.com/user/SensisDigital
https://www.edutopia.org/article/integrating-sel-classroom
Recall your own "core memory" - it could be a birthday party, scoring your first goal in a soccer game, your first vacation, ANYTHING! Work with your partner to share this memory and help each other sort out what sights, smells, feelings, tastes, and sounds you remember.
Lesson 1
Secondary
Time 30-45 mins

Objectives:
1. Students will be able to identify the following key terms: core memory, hippocampus, limbic system, myelin, and neuroplasticity.
2. Students will be able to relate to their 5 senses and creating core memories.

Why?
Understanding and naming our core memories creates a stronger self and class identity. If teachers provide authentic opportunities for students to create positive core memories we increase care, concern, and the call to action in our learning communities. Our brains hold the power to recall, recount, and relive some of our most defining moments. On the flip side, we must also note the natural function of pruning, and how it helps the brain prepare for deeper complexity and sophistication. When educators make the effort to listen to these personal core memories it invites stronger dialogue and purpose among the class. The brain learns through stories. It retrieves what is relevant, useful, and interesting. Make these moments happen in your classroom!

Materials:
"Inside Out" Core Memories:
https://www.youtube.com/watch?v=pecha-7QOVo
"Inside Out" Changing Core Memories:
https://www.youtube.com/watch?v=cYvaQ37EcvU
Sentis Video
https://www.youtube.com/watch?v=ELpfYCZa87g
5 Senses Chart
- Post it notes
- Dry Erase boards and markers
- Celebration materials (sprinkles, candles, streamers, balloons, ornaments, etc.)

Key Terms:
- Core Memory
- Limbic System
- Myelin
- Neuroplasticity

Creating Core Memories
**Instructions**

**Part 1: Hook**
- a. Have celebration materials (sprinkles, candles, driver’s license, keys, pet leash, etc. - know your kids) on front table/tables
  "Pick one of these materials in your head - think about a time that you have seen this material?"
- b. Time students for two minutes to make as many connections to the material as possible (have them record these in a notebook or on scrap paper)
- c. Once the two minutes is up, ask student to circle their top three most vivid connections.
- d. Launch a discussion setting (inside outside circle, Socratic-seminar, pair share, etc)

**Guiding Questions:**
- Who or what reminds you of this material? Why?
- What emotions/feelings arise when you see this item?
- How does this item define a time or memory in your life?
- Why are we able to connect to one item in so many different ways?
- Where are our memories stored?

**Part 2: Discussion and Video**
- a. Class discussion about specific times/holidays/experienced that they remember related to the materials (can be ANY emotion-happy, sad, etc.)

**Part 3: Exit Ticket:**
- Write a metaphor, simile or hyperbole for key terms or phrases that are important to you.

**Bonus Brain-Aligned Strategies:**
"Mingle - Mingle" partner share game
- Call on a student to pick the special word. Students can be creative and silly with words like "taco, unicorn, X-Box, etc." After students know the special word they will stand up and sing the chant "mingle, mingle, mingle!" over and over until the special word is said. When the teacher shares the special word, all students will freeze and turn to the person closest to him or her. Partners will share his or her symbol and guess what the core memory is. Students can also act out the symbol and have the partner guess it.

Utilize these videos and articles to supplement teacher or student understanding:
- https://www.edutopia.org/blog/film-festival-brain-learning
- http://faculty.washington.edu/chudler/neurok.html
- https://www.youtube.com/user/SentisDigital
- https://www.edutopia.org/article/integrating-sel-classroom
5 Senses Chart

Recall your own "core memory" - it could be a birthday party, scoring your first goal in a soccer game, your first vacation, ANYTHING! Work with your partner to share this memory and help each other sort out what sights, smells, feelings, tastes, and sounds you remember.
Islands of Personality

Objectives:
1. Students will be able to analyze the main idea and details of a core memory.
2. Students will be able to create his or her own personality island.

Materials:
- Core Memory Chart (see lesson #1)
- Post-it notes
- Paper plates
- Magazines
- Scissors
- Glue

Inside Out Islands of Personality
https://www.youtube.com/watch?v=3weU3tST3EM&list=PLg3djftwsUDIyFPYepet525IDOH31EssQ

Key Terms:
- Core Memory
- Islands of Personality
- Main Idea and Details

Why?
It is important for kids to be able to start to recognize and define their personalities, as well as understand how those aspects of their personalities came to be. This type of language is meant to help foster a strong sense of identity, while also allowing students to understand different perspectives and personalities of their peers. A better understanding will create a stronger, more trusting learning community. This lesson can also support tolerance, acceptance, and appreciation from other extracurricular activities (sports, theater, clubs, etc.)
Instructions

**Part 1: Hook**

a. Ask students to refer to core memory lesson (see lesson #1). Students could pull out core memory chart, reference it on the anchor chart, or mentally recall the core memory.

b. Using a piece of scrap paper students will have 30 seconds to write down all and any words that come to mind when thinking about that core memory. Encourage students that there is no right or wrong!

d. Show the main idea (hockey) in the center and all other details about this island stemming from the center (ex. images for main idea: sun, flower, table, pizza, etc.)

e. Then have students analyze their words written during hook to generate the main idea of their core memories

f. Draw or write the Core Memory of the same image and model (sun, flower, table, pizza, etc.)

**Part 2: Discussion and Video**

a. Play clip and ask students to notice how the islands of personality are formed

b. Turn to a partner and discuss what makes an island of personality while standing and mirroring each other’s movements (see brain aligned strategies below) Islands of personality formed through core memories (ex. "goof-ball island, family island, hockey island, honesty island, and friendship island")

c. Discuss how the main idea of a Core Memory creates an aspect of our personalities

Model Riley’s hockey island with a visual on the board or anchor chart

**Part 3: Exit Ticket**

Students create their own island of personality from the discussion. Students will write the title of this island in the center of their paper plate and use magazine cutouts to display details of their island. Display each island on an ocean like a bulletin board or hang from the ceiling.

**Bonus Brain-Aligned Strategies:**

Artistic Influence: Make this a long-term art project! Have students create multiple "Islands of Personality" for a character, historical figure, or for themselves out of art materials. Partner with your art teacher to design curricula across disciplines!

Brainiac Word Wall: Create a word wall with student definitions paired next to dictionary definitions. Charge students with the task to bring this word wall to life with hand created pictures, examples, and photographs.
**Objective:**
Students will be able to analyze relevant aspects of personality for a specific character or historical figure being studied.

**Materials:**
- Core Memory Chart (see lesson #1)
- Post it notes

**Key Terms:**
- Core Memory
- Islands of Personality
- Myelin

**Inside Out Islands of Personality**
https://www.youtube.com/watch?v=3weU3tST3EM&list=PLg3djftwsUDIyFPYepet525IDOH3IEssQ

**Why?**
It is important for kids to be able to start to recognize and define their personalities, as well as understand how those aspects of their personalities came to be. This type of language is meant to help foster a strong sense of identity, while also allowing students to understand different perspectives and personalities of their peers. A better understanding will create a stronger, more trusting learning community. This lesson can also support tolerance, acceptance, and appreciation from other extracurricular activities (sports, theater, clubs, etc.)
Instructions

Part 1: Hook
a. Ask students to refer to core memory lesson (see lesson #1). Students could pull out core memory chart, reference it on the anchor chart, or mentally recall the core memory.
b. Using a piece of scrap paper students will have 30 seconds to write down nouns, verbs, and adjectives that come to mind when thinking about that core memory.
*Encourage students that there is no right or wrong!

Part 2: Discussion and Video
a. Play clip and ask students to notice how the islands of personality are formed
- Review with students the key terms learned in the “Core Memory” lesson (Myelin, Neuroplasticity).
b. Write the key terms on the board to assist with their memories.
c. Have students turn to a partner and discuss what makes an Island of Personality while standing and mirroring each other’s movements (see brain aligned strategies below). -Ask for volunteers to share what they and their partner discussed.
d. Prompt students if needed to see the connection between Core Memories and Islands of Personality being memories that deeply involve their senses, memories/traits that they use frequently (building a myelin sheath around certain neural connections), and the ability to change these (neuroplasticity).
e. Make a list of characters or historical figures that you are currently studying on the board. Explain to students that they will each be choosing one of these characters/figures to identify one of their Islands of Personalities based on Core Memories and/or traits that they display.
They will cite textual evidence and relate it to the key terms to back up their thinking, but can otherwise be creative.

Part 3: Exit Ticket
a. Students create a multimedia work representing the science of emotion behind a historical figure or character’s Core Memory/Island of Personality. Examples of technology mediums could include Discover Education Board, PowerPoint, Wordle, etc.

Bonus Brain-Aligned Strategies:
Making this a long-term art project! Have students create multiple “Islands of Personality” for a character, historical figure, or for themselves out of art materials.
Partner with your art teacher to design curricula across disciplines!
Hang multimedia work around the room and have a gallery walk!
Objective:
Students will be able to name their different emotions and analyze the different roles each emotion plays in their lives.

Materials:
- Materials that can be manipulated (i.e. slime, play-doh, silly putty, etc.)
- Materials that cannot be manipulated (i.e. keys, a rock, etc.)

Key Terms:
- Neuroplasticity
- Emotions

Inside Out Meet Riley’s Emotions
https://www.youtube.com/watch?v=1S0RKRRyqhQ

Sentis Video: Neuroplasticity
https://www.youtube.com/watch?v=XSzsI5aGcK4

Why?
"If you can name it, you can tame it" is a common phrase - and for good reason! Many of our children believe that our "negative" emotions such as sadness and anger are inherently bad. This discourages them from sharing their emotions, leaving them vulnerable to isolation, depression, and anxiety.

Our students need to know that all emotions are valid and more so all emotions are important! This lesson will help kids explore that, as well as learn that they can change their thinking about their emotions as we utilize and comprehend the powers of neuroplasticity.
Instructions

Part 1: Hook
- Have different materials visible, some that are easily changed (i.e. play-doh, slime, putty, etc.), and some that cannot be changed (i.e. a rock, toy car, key, etc.). (For extra novelty, hide these items in bags!)
- Make sure that the items that can be changed are grouped together and the items that cannot be changed are also grouped together.
- Ask for two volunteers to come and feel/describe the items. Have two other volunteers be the “recorders” for the two students describing the items.
- The goal is to have them articulate the characteristics of each group of items as other classmates scribe them on the board.
- Once the items are described, have the class categorize the two groups in one word/phrase. The goal is to have them identify that one group is a group of items that is malleable/can change form, and one is not.

Part 2: Model and Video
Ask students to STAND if they think that the group that can be changed is like our brains (use the students’ language for how they described that group), and tell them to sit on the floor/squat if they think that our brains are like the group that cannot be changed (use the students’ language).

Students gather in a circle, pass around materials while prompting discussion about how items may relate to our brains. Explain the scientific language of neuroplasticity while discussing that our brains can change (refer to definition on Teacher Reference Sheet). Write definition on board.
- Play Sentis Video about Neuroplasticity
- Students return to seats and pass out a piece paper (or type if technology is available for all students)
Play Inside Out Meet Riley’s Emotions video to introduce our main emotions: Joy, Sadness, Fear, Disgust, and Anger
- Students get into pairs or groups of three and cite textual evidence of an emotion being shown from text you are currently studying in class (novel, historical figure, article, etc.). Have students explain this scene or part of the text and identify where the emotion is shown.
- Come back together as a class and have partners/groups share their textual evidence citing the emotions. Discuss as a class how we think about our emotions (i.e. do we always see sadness as a bad thing?). Relate this back to neuroplasticity, discussing the purpose for ALL emotions and trying to change our thinking about them.

1.

Part 3: Exit Ticket
Have students return to their groups. Depending on which emotion the students’ group chose to showcase, have them discuss and write down their group’s responses to the following discussion questions (If they chose a situation where the character showed sadness, have them answer questions 1-3).

Bonus Brain-Aligned Strategies:
Paths of Neuroplasticity: To showcase another way of neuroplasticity, utilize Hot Wheels cars/tracks! Discuss the different “roadways” in terms of neuroplasticity.
Use wiki-stix, playdoh, drawing, etc. to model neuroplasticity for the character’s situation
Objective:
Students will be able to name their different emotions and analyze the different roles each emotion plays in their lives.

Materials:
- Materials that can be manipulated (i.e. slime, play-doh, silly putty, etc.)
- Materials that cannot be manipulated (i.e. keys, a rock, etc.)

Key Terms:
- Neuroplasticity
- Emotions

Why?
"If you can name it, you can tame it" is a common phrase - and for good reason! Many of our children believe that our "negative" emotions such as sadness and anger are inherently bad. This discourages them from sharing their emotions, leaving them vulnerable to isolation, depression, and anxiety. Our students need to know that all emotions are valid and more so all emotions are important! This lesson will help kids explore that, as well as learn that they can change their thinking about their emotions as we utilize and comprehend the powers of neuroplasticity.
Instructions

Part 1: Hook
a. Have different materials visible, some that are easily manipulated (i.e. play-doh, slime, putty, etc.) and some that are not easily manipulated (i.e. a rock, toy car, key, etc.). (For extra novelty, hide these items in bags!)
   Be sure that the items that can be changed are grouped together and the items that cannot be changed are also grouped together.

b. Ask for two volunteers to feel/describe the items. Ask for two other volunteers be the “recorders” for the two students describing the items.
   The goal is to have them articulate the characteristics of each group of items as other classmates scribe them on the board.

c. Once the items are described, have the class categorize each of the two groups into one word/phrase. 
   The goal is to have them identify that one group is a group of items that is malleable/can change form, and one is not.

Part 2: Model and Video
a. Ask students to STAND if they think that the group that can be changed is like our brains (use the students' language for how they described that group), and tell them to sit on the floor or squat if they think that our brains are like the group that cannot be changed (again, use the students' language)

b. Students gather in a circle, pass around materials while prompting discussion about how items may relate to our brains.

c. Play SentiS Video about Neuroplasticity. Assess for understanding by asking for a student to explain neuroplasticity in their own words.

d. Instruct students to return to their seats while you pass out a piece paper to each student.

e. Play Inside Out Meet Riley’s Emotions video to introduce our main emotions: Joy, Sadness, Fear, Disgust, and Anger. Discuss initial reactions to the information.

f. Then, have students get into pairs (or groups of three). Instruct them that on their pieces of paper they are to cite textual evidence of an emotion being shown from text you are currently studying in class (novel, historical figure, article, etc.).

g. Come back together as a class and have partners/groups share their textual evidence citing the emotions. Discuss as a class how we think about our emotions (i.e. do we always see sadness as a bad thing?). Relate this back to neuroplasticity, discussing that we can purposefully change the way that we think about our emotions. Encourage them to keep thinking about this as you go through future lessons.

Part 3: Exit Ticket
Have students return to their groups. Depending on which emotion the students’ group chose to showcase, have them discuss and write down their group’s responses to the following discussion questions (If they chose a situation where the character showed sadness, have them answer questions 1-3).

Bonus Brain-Aligned Strategies:
Paths of Neuroplasticity: To showcase another way of neuroplasticity, utilize Hot Wheels cars/tracks! Discuss the different “roadways” in terms of neuroplasticity.

Use wiki-stix, playdoh, drawing, etc. to model neuroplasticity for the character’s situation.
Objectives:

Students will be able to create a tailored list of applicable stress regulation strategies.

Materials:
- Cardstock for bookmarks
- Magazines (try to choose magazines with pictures and words that would be used for "Stress Regulation Strategies" - if magazines are not available, newspapers or online pictures/words can work as well)
- Scissors
- "Inside Out" Mind Workers
https://www.youtube.com/watch?v=E9NMUGhJ7FE

Key Terms:
- Neurohormones (Serotonin and Dopamine)
- Frontal Lobe
- Pruning
- Brain Regulation Strategies

Why?

Coming off of our lesson about how all emotions are valid, and how we have the power to change our thinking about them, it is important for our students to learn how we can re-regulate our brains when we are feeling negative emotions such as sadness and anger. It is powerful for kids to learn about the neurohormones responsible for us feeling happy, and that we can do things that help to release those neurohormones, therefore regulating our brains.

It is a crucial time for students to be prepared for the neurological changes that will happen as adolescents, and that their brains will go through a process of getting rid of half of their neural connections! The more that we can normalize the adolescent years and prepare students for the different emotions, the better equipped they will be to face those tough transition years ahead.
**Instructions**

**Part 1: Hook**
Bring in something that is meaningful to you that represents your childhood/being a kid. (This could be a blanket, a stuffed animal, and toy, etc.) Pass this around the room and ask students to notice and wonder why you brought this in.

Explain to students that this item represents being a kid to you. Then ask students to draw or write some things that represent being a kid to them (this could be playing outside with friends, having a toy, etc.)

**Part 2: Discussion and Video**

a. Have students gather in a circle. Play the "Inside Out" Mind Workers video. Encourage students to react and share their thoughts on what this video might mean.

b. Use an anchor chart to discuss with students that at some point within the next few years that their brains will go through something called "pruning" (see Teacher Cheat Sheet). This means that our brains will start to get rid of connections that they don't need any more and start to "leave" childhood. When this happens, they might experience different emotions because of the neurohormones released.

c. **Guiding Questions:**
   - Have students get into pairs (or groups of three) to answer the following discussion questions together. Write discussion questions on the board for whole class OR pass out handouts with discussion questions.
   - What are the mind workers doing with the vacuum?
   - The female mind worker says, "When Riley doesn't care about a memory it fades". Why would our brain allow for this fading/pruning to occur?
   - Can you think of something that you loved as a young child that you no longer remember all the details? (i.e. A favorite toy, a talent, or a phone number?)
   - Why does Riley get angry while video chatting her friend? How could her emotions have changed so quickly?
   - Can you think of a moment when you felt a negative emotion and did not understand why you felt that way?

d. Come back together as a whole group. Explain to students that this video seemed a bit scary and disheartening, but that there is good news for our brain! Brain regulation strategies are available for us to use at any time we are feeling dysregulated (or that our mind is being "vacuumed"). Use an anchor chart to brainstorm different ways that we can help ourselves cope. See brain regulation strategies list attached for examples.

e. Students return to their seats and pass out cardstock for bookmarks. Have magazines, papers, pens, and other art materials to allow students to create their own "Brain Regulation Strategies Bookmark" with their own personal regulation strategies to use when they feel overwhelmed.

**Part 3: Exit Ticket**
Have students choose one brain regulation strategy that they can use in the classroom/school if they are feeling overwhelmed and write it down on a notecard to hand to the teacher.

**Bonus Brain-Aligned Strategies:**

**Q & A Search:**
Imbed a small brain interval by taping discussion question cards on the bottom of a few students' chairs. After the video, ask students to search for the hidden cards. Students can choose to share the question out loud or pass to a friend. This brain interval offers novelty, movement, and choice for the students to better engage in the discussion questions.
## Brain Regulation Strategies (Examples)

<table>
<thead>
<tr>
<th>Activities</th>
<th>Activities</th>
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<tbody>
<tr>
<td>Use a fidget</td>
<td>Paint your nails</td>
</tr>
<tr>
<td>Listen to music</td>
<td>Look at the sky</td>
</tr>
<tr>
<td>Breathing exercises</td>
<td>Clean/organize something</td>
</tr>
<tr>
<td>Run</td>
<td>Knit or sew</td>
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<tr>
<td>Yoga</td>
<td>Meditate</td>
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<tr>
<td>Go for a walk</td>
<td>Bake or cook</td>
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<tr>
<td>Go for a bike ride</td>
<td>Rip paper into tiny pieces</td>
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<tr>
<td>Read a book</td>
<td>Hug a pillow or stuffed animal</td>
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<tr>
<td>Doodle</td>
<td>Dance</td>
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<tr>
<td>Journal</td>
<td>Do something that you have been procrastinating</td>
</tr>
<tr>
<td>Count slowly forward or backward</td>
<td>Create something new</td>
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<tr>
<td>Drink water</td>
<td>Go to a friend's house</td>
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<tr>
<td>Wrap up in a blanket</td>
<td>Watch a movie or TV show that makes you laugh</td>
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<tr>
<td>Hum or sing</td>
<td>Make a playlist of your favorite songs</td>
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<tr>
<td>Diffuse essential oils</td>
<td>Do something nice for someone else</td>
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<tr>
<td>Draw/paint</td>
<td>Rearrange your room</td>
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<tr>
<td>Do a craft</td>
<td>Write yourself a positive letter</td>
</tr>
<tr>
<td>Talk to someone</td>
<td>Do a puzzle</td>
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<tr>
<td>Color in a coloring book</td>
<td>Ask your friends to play a game</td>
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<tr>
<td>Take a shower or bath</td>
<td>Write a poem</td>
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<tr>
<td>Ask for a break</td>
<td>Do a wordsearch or crossword puzzle</td>
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<tr>
<td>Push against a wall</td>
<td>Listen to a podcast or book on tape</td>
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<tr>
<td>Ask for a hug from someone you trust</td>
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<tr>
<td>Play with an animal</td>
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<td>ROYGBIV I Spy: Look for each color of the rainbow around the room</td>
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<tr>
<td>Write in your planner</td>
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</tbody>
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Leaving the Adolescent Brain

Lesson 4
Secondary
Time 30-45 mins (with optional extension to multiple days)

Objectives:
1. Students will be able to create a tailored list of applicable stress regulation strategies.
2. Students will be able to create and present an argument with research-based claims and transition words.

Materials:
Inside Out Bing Bong: Leaving the Adolescent Brain
https://www.youtube.com/watch?v=tXj6IBXEy2M

Teen Brain Anatomy
https://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/work/anatomy.html

Interview with Jay Giedd
https://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/interviews/giedd.html

Teen Brain
https://www.youtube.com/watch?v=EGdIlpaWi3rc

The Teenage Brain Explained
https://www.youtube.com/watch?v=hiduiTq1ei8

Web Quest Links:
Sleep:
https://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/from/

More electives/extracurricular activities:
https://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/work/

Better nutrition in schools
https://health.usnews.com/health-news/health-wellness/articles/2016-01-05/teens-your-brain-needs-real-food

Key Terms:
- Neurohormones (Serotonin and Dopamine)
- Frontal Lobe
- Brain Regulation Strategies

Why?
Coming off of our lesson about how all emotions are valid, and how we have the power to change our thinking about them, it is important for our students to learn how we can re-regulate our brains when we are feeling negative emotions such as sadness and anger. It is powerful for kids to learn about the neurohormones responsible for us feeling happy, and that we can do things that help to release those neurohormones, therefore regulating our brains.

This lesson is particular important for this age group, as many are experiencing pruning and the changes in their brains/bodies. The more that we can normalize these adolescent years and prepare them with healthy brain habits and regulation strategies, the better equipped they will be during these transition years.
**Instructions**

**Part 1: Hook**

a. Play video: "Inside Out" Bing Bong

Bing Bong Signifies Leaving the Adolescent Brain

- Post these questions around the room and give students 90 seconds at each station with a partner to answer the following questions:

  - What or who was your Bing Bong?
  - Could it be an object (like a blanket or teddy bear) or something abstract?
  - What does Bing Bong symbolize?
  - Why is it important for Riley to let go of Bing-Bong?
  - Why did Bing Bong jump off the wagon?
  - What makes it so sad for the audience (especially parents and adults) as we watch this part?
  - Do we really ever lose Bing Bong? Explain.
  - Do you have a core memory of an experience from your imagination? What is it like?

**Part 2: Overview**

a. After the students have watched the video and answered the questions around the room, explain to them the process of pruning (see Teacher Cheat Sheet). Engage in a discussion about the fact that their brains are going through a lot of changes, and so they might be experiencing or come to experience many different emotions. Discuss how it is important for us all to always be utilizing brain regulation strategies (see attached examples for reference).

b. Instruct students that they will be partaking in a WebQuest activity that will help them to gather information and research about healthy brain habits and regulation strategies. Have students get into pairs/group of three (see Bonus Brain-Aligned Strategies for pairing)

c. Students (in their pairs/groups) will research the following topics through the WebQuest links: School Start-Up times, Importance of Sleep, Nutrition, and the Brain, Stress Response System.

If you are choosing to do this lesson in one day, please end with step d. If you are choosing to stretch this lesson into an argumentative project, please skip step 3 and continue with step e.

d. (If you are choosing to do this lesson in one day) Towards the end of class, have student pairs/groups pick one topic to share out.

e. (If you are choosing to continue this lesson into an argumentative project) Towards the end of class on Day 1, have each student group state their topic/thesis (as their exit ticket).

f. Day 2 and beyond (time allotted for project up to your discretion) Have students regroup into their pairs/groups and work together to organize an argumentative project to present to the class on their chosen topic. Projects can be presented in essay format, a speech, PowerPoint, video, or other means to argue their topic.

**Part 3: Exit Ticket**

Students will individually write an argumentative piece highlighting the evidence extracted from each source. Students can choose to present essays to the class, another grade level, the administration or parents. While students present, classmates will fill out a feedback form with "two stars and a wish". Stars represent something learned or done well and wishes represents constructive feedback for improvement.

**Bonus Brain-Aligned Strategies:**

**Pairing students:** place numbered post it notes underneath each chair before class. Make sure to have two of each number for student to know their partner. Set a timer for 30 seconds for students to find his or her partner in the room. This method is very novel promoting engagement and curiosity. Students will also activate the RAS (reticular activating system) giving a healthy dose of energy and alertness for the activity.

**Project presenting:** have the students present to a different audience that connects with them! Another class, a principal, etc. Giving students the platform to speak their mind connects them to their learning deeper, as well as forms connections with those they present to!
# Brain Regulation Strategies (Examples)

- Use a fidget
- Listen to music
- Breathing exercises
- Run
- Yoga
- Go for a walk
- Go for a bike ride
- Read a book
- Doodle
- Journal
- Count slowly forward or backward
- Drink water
- Wrap up in a blanket
- Hum or sing
- Diffuse essential oils
- Draw/paint
- Do a craft
- Talk to someone
- Color in a coloring book
- Take a shower or bath
- Ask for a break
- Push against a wall
- Ask for a hug from someone you trust
- Play with an animal
- ROYGBIV I Spy: Look for each color of the rainbow around the room
- Write in your planner
- Paint your nails
- Look at the sky
- Clean/organize something
- Knit or sew
- Meditate
- Bake or cook
- Rip paper into tiny pieces
- Hug a pillow or stuffed animal
- Dance
- Do something that you have been procrastinating
- Create something new
- Go to a friend's house
- Watch a movie or TV show that makes you laugh
- Make a playlist of your favorite songs
- Do something nice for someone else
- Rearrange your room
- Write yourself a positive letter
- Do a puzzle
- Ask your friends to play a game
- Write a poem
- Do a wordsearch or crossword puzzle
- Listen to a podcast or book on tape
Contagious Emotions and Stress Response System

Lesson 5
Elementary
Time 30-45 mins

Objectives:
1. Students will be able to describe how mirror neurons affect our mood and brain state.
2. Students will be able to model and educate others about healthy stress response strategies.

Materials:
- Inside Out Family Dinner Scene
  https://www.youtube.com/watch?v=Cjgdiy_SGjA
- Mirror Neurons Part 1
  www.youtube.com/watch?v=XzMqPYfeA-s&list=RDQMDzvo_A7NaXY
- Mirror Neurons Part 2
  www.youtube.com/watch?v=xmEsGQ3JmKg&index=2&list=RDQMDzvo_A7NaXY
- Chocolate/candy (a chocolate chip, Hershey kiss, etc.)

Key Terms:
- Mirror Neurons
- Stress Response System

Why?
Mirror neurons are a crucial part to understand our interactions with others, which is a foundational aspect of building classroom community.

This lesson is meant to build on the previous lessons and teach students another way to recognize how emotions are impacting their learning. The brain regulation strategies created in the previous lesson are something that should not be taught in isolation (as we know the more we utilize something, the stronger that neural connection will be!), so you will see that they are incorporated into this crucial lesson.
**Instructions**

**Part 1: Hook**
- a. Place chocolate/candy on a front table where students can see. You can either demonstrate yourself or ask a student to volunteer in order to slowly and deliberately eat the chocolate/candy piece.

- b. While you or the student is eating the piece, ask students to describe what they are seeing/feeling. The goal is to have the students recognize that they can almost "feel" what the volunteer eating the chocolate/candy piece is feeling, so you may prompt students if needed.

- c. After students have recognized that they can "feel" what the volunteer is feeling, explain Mirror Neurons (see Teacher Cheat Sheet).

**Part 2: Discussion and Video**
- a. Tell students that you are going to play a humorous scene from Inside Out. Ask them to pay close attention to how the mom and dad's brain states change based on Riley's mood, and how this might be showing mirror neurons. Play Inside Out Family Dinner Scene.

- b. When the video is complete, ask students: "How were Riley's mom and dad feeling at the beginning of dinner, versus when they realized Riley's attitude change?" (Students should recognize that the mom and dad were feeling happy at the beginning of the scene but then their brains "mirrored" Riley's mood when they recognized that she was feeling negative)

- c. (optional) Act it out! Create a seemingly organic situation where your mood suddenly changes to angry or sad. You could pretend to spill a drink on your papers or yourself and get angry or sad at the situation, tell the students about the "horrible" day you are having (you could make up flat tire, forgetting lunch, etc.

- d. Brain Regulation Strategies! Discuss with students that the strategies they learned in Lesson #4 (The Adolescent Brain) are important in order to continuously monitor in order to be able to regulate our brains. Explain that brain regulation strategies help them when they recognize that their brains are mirroring another person's attitude.

- e. Have a chalk talk on the board of things students like to do when they are feeling overwhelmed/their brain regulation strategies (i.e. breathing, distraction, reading, doodling, take a break, etc.) Relate this to how we are in control of our brains, and if we can sense that we are mirroring negative emotions we can control what we do.

- f. Discuss that we can also do things to help that person, such as validation, take a break, give the person space, etc. Break students off into pairs to practice validation strategies (see Validation scenarios and strategies sheet attached)

**Part 3: Exit Ticket**
- Students will write a short paragraph or draw a short scene describing a time when he or she felt sad or angry from another person (this could also connect to a novel character or historical figure). Next students will write an applicable brain regulation to combat the negative situation. For extra novelty, these brain strategies can be recorded on a popsicle stick to pull out and match each paragraph. You then can the popsicle sticks in a jar and refer to them throughout the year. Display these scenarios in the classroom.

**Bonus Brain-Aligned Strategies:**
- Act it out (continued): Ask another faculty member or parents to step in and model the effects of mirror neurons to the class. Provide this person with a scenario of sadness or anger that the students will believe. After the encounter share your emotions with the class (emotions should match the scenario). Discuss how our mirror neurons were impacted by another person.
Validation

Validation is an important part of co-regulating with someone (helping them regulate their emotions). It is a great way to build connection and relationship with others. The basis of validation is making sure that the person knows their feelings are valid/warranted. Validation offers no judgment, simply listening to learn. On this sheet you will find examples of validating phrases, as well as scenarios to practice using these phrases. You will also find some examples of invalidating phrases—these are phrases that involuntarily make the other person feel as though their feelings are unimportant or unwarranted, and drive disconnection.

**Validating Phrases**

- "That must be really frustrating."
- "I can understand why you feel that way."
- "I can't imagine what this feels like for you."
- "I think I would feel the same way if I were in your shoes."
- "I imagine that you are feeling pretty frustrated, right?"
- "That feels like that is a really big challenge right now."
- "Of course you’re scared to do that, new things are scary for everyone!"

**Invalidating Phrases**

- "I think you’re overreacting."
- "At least _______."
- "Don't worry, tomorrow will be better."
- "Get over it."
- "Look on the bright side..."
- "That happened to me, and I got over it."
- "This isn't that big of a deal."
- "You're tougher than that!"
- "Stop complaining, you're being so negative."
- "Well maybe that wouldn't have happened if you hadn't been doing _________."

**Validation Scenarios**

1. A friend’s family dog ran away. Your friend is extremely upset and talks to you about it. They say, "I can't believe she ran away, I am so scared for her! I miss her so much, what if something happens to her?"
   Validating response: "Of course you're scared, that's such a scary thing! That makes perfect sense to me. I'm here for you."
   Invalidating response: "Don't worry about it, worrying doesn't change anything!"

2. Your friend's family had a trip to Kings Island planned this past weekend, but it got rained out and they couldn't go. Your friend tells you "I'm so mad that it rained! I wanted to go to Kings Island and it's the only weekend we could go, it's not fair!"
   Validating response: "Oh boy I would be upset too! Those trips don't come up often, and I know how excited you were."
   Invalidating response: "It's just an amusement park! At least it wasn't something important!"

3. 

4. 

Your Turn to Try!

<table>
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Contagious Emotions and Stress Response System

Lesson 5
Secondary
Time 30-45 mins

Objectives:
1. Students will be able to describe how mirror neurons affect our mood and brain state.
2. Students will be able to model and educate others about healthy stress response strategies.

Materials:
Mirror Neuron Article

Inside Out Family Dinner Scene
https://www.youtube.com/watch?v=Cjgdiy_SGjA

Mirror Neurons Part 1
www.youtube.com/watch?v=XzMqPYfeAs&s=list=RDQMDzvo_A7NaXY

Mirror Neurons Part 2
www.youtube.com/watch?v=xmEsGQ3JmKg&index=2&list=RDQMDzvo_A7NaXY

Chocolate/candy (a chocolate chip, Hershey kiss, etc.)

Key Terms:
Mirror Neurons
Stress Response System

Why?
Mirror neurons are a crucial part of us understanding our interactions with others, which is a foundational aspect of building classroom community. This lesson is meant to build on the previous lessons and teach students another way to recognize how emotions are impacting their learning. The brain regulation strategies created in the previous lesson are something that should not be taught in isolation (as we know the more we utilize something, the stronger that neural connection will be!), so you will see that they are incorporated into this lesson.
**Instructions**

**Part 1: Hook**

a. Place chocolate/candy on a front table where students can see. You can either demonstrate yourself or ask a student to volunteer in order to slowly and deliberately eat the chocolate/candy piece.

b. While you or the student is eating the piece, ask students to describe what they are seeing/feeling. The goal is to have the students recognize that they can almost “feel” what the volunteer eating the chocolate/candy piece is feeling, so you may prompt students if needed.

c. After students have recognized that they can “feel” what the volunteer is feeling, explain Mirror Neurons (see Teacher Cheat Sheet).

**Part 2: Discussion and Video**

a. Tell students that you are going to play a humorous scene from Inside Out. Ask them to pay close attention to how the mom and dad’s brain states change based on Riley's mood, and how this might be showing mirror neurons. Play Inside Out Family Dinner Scene.

b. When the video is complete, ask students: “How were Riley’s mom and dad feeling at the beginning of dinner, versus when they realized Riley’s attitude change?” (Students should recognize that the mom and dad were feeling happy at the beginning of the scene but then their brains “mirrored” Riley’s mood when they recognized that she was feeling negative.)

c. (optional) Act it out! Create a seemingly organic situation where your mood suddenly changes to angry or sad. You could pretend to spill a drink on your papers or yourself and get angry or sad at the situation. Tell the students about the “horrible” day you are having (you could make up flat tire, forgetting lunch, etc.).

d. Brain Regulation Strategies! Discuss with students that the strategies they learned in Lesson #4 (The Adolescent Brain) are important to continuously monitor in order to be able to regulate our brains. Explain that brain regulation strategies help them when they recognize that their brains are mirroring another person's attitude.

e. Have a chalk talk on the board of things students like to do when they are feeling overwhelmed/their brain regulation strategies (i.e. breathing, distraction, reading, doodling, take a break, etc.) Relate this to how we are in control of our brains, and if we can sense that we are mirroring negative emotions we can control what we do.

f. Discuss that we can also do things to help that person, such as validation, take a break, give the person space, etc. Break students off into pairs to practice validation strategies (see Validation scenarios and strategies sheet attached).

**Part 3: Exit Ticket**

Each pair should write down their validation scenario and the brain regulation strategy that they chose for the situation on a note card to hand into the teacher.

OR

Students will write a short paragraph or draw a short scene describing a time when he or she felt sad or angry from another person (this could also connect to a novel character or historical figure).

**Bonus Brain-Aligned Strategies:**

Have students make their own notecards, bookmarks, or sheets of paper with brain regulation strategies! Relate this to a historical figure or character that you are studying in class and identify a scenario where they were mirroring another person’s emotions, as well as what brain regulation strategy they could have done.
Validation

Validation is an important part of co-regulating with someone (helping them regulate their emotions). It is a great way to build connection and relationship with others. The basis of validation is making sure that the person knows their feelings are valid/warranted. Validation offers no judgment, simply listening to learn. On this sheet you will find examples of validating phrases, as well as scenarios to practice using these phrases. You will also find some examples of invalidating phrases- these are phrases that involuntarily make the other person feel as though their feelings are unimportant or unwarranted, and drive disconnection.

Validating Phrases

- "That must be really frustrating."
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- "I think I would feel the same way if I were in your shoes."
- "I imagine that you are feeling pretty frustrated, right?"
- "That feels like that is a really big challenge right now."
- "Of course you're scared to do that, new things are scary for everyone!"

Invalidating Phrases

- "I think you're overreacting."
- "At least ______."
- "Don't worry, tomorrow will be better" "Get over it."
- "Look on the bright side..."
- "That happened to me, and I got over it."
- "This isn't that big of a deal."
- "You're tougher than that!"
- Stop complaining, you're being so negative."
- "Well maybe that wouldn't have happened if you hadn't been doing _________."

Validation Scenarios

1. A friend has failed a test, and comes up to you. They say "I studied so hard for this test, I cannot believe that I failed! I'm never going to do well!"
   Validating response: "Wow, I would be upset too if I put that much effort in! It makes sense that you're frustrated."
   Invalidating response: "Whatever, I'm sure you'll do fine on the next one."

2. One of your friends just found out that they didn't make it onto the school basketball team. They say to you, "I can't believe that I didn't make the team - this is so stupid!!"
   Validating response: "Man, of course you're upset, I know how hard you've been working for this! I'd be really hurt."
   Invalidating response: "Just practice more next time, I bet that will help!"

Your Turn to Try!

3. 

Validating response: 
Invalidating response: 

4. 

Validating response: 
Invalidating response: