



**Objectives:** Students will be able to:

- 1) Describe the Reticular Activating System (RAS).
- 2) Calculate the pros and cons of their study conditions.
- 3) Explain neuroplasticity and neural pathways.
- 4) Apply multisensory learning to study strategies.

**MATERIALS NEEDED:** Handout for S-C Brain Science—5

	<p><b>Video – S-C Brain Science, Pt 5: Optimizing Learning</b>  <b>[PLAY]</b> video. Ty guides Ze through Five Steps for Optimizing Learning that tap into strategies for maximizing focus, retention, and multisensory studying.]</p>	12 min		
<p><b>Can you relate?</b></p> <p>On a scale of 1-10, how much can you relate to studying but it not "sticking"?</p>	<p><b>Can you relate?</b>      [After watching the video, <b>CLICK</b> to next slide and ask students:]</p> <ul style="list-style-type: none"> <li>• On a scale of 1-10, how much can you relate to studying but it not "sticking"? [Scale includes descriptions.]</li> </ul>	2 min		
<p><b>Step 1: Reticular Activating System (RAS)</b>  <small>(REVIEW of 5 Steps for Optimizing Learning)</small></p> <p>Ty says, "Our RAS screens out about 99% of incoming info. Only about 1% gets by the RAS."</p> <ul style="list-style-type: none"> <li>• How do distractions while studying—phone messages, videos, noise— affect the RAS and learning?</li> </ul>	<p><b>Step 1: Reticular Activating System (RAS)</b>      [Begin review of the Five Steps for Optimizing Learning and ask students:]</p> <ul style="list-style-type: none"> <li>• How do distractions while studying—phone messages, videos, noise— affect the RAS and learning? [Brains can only process about 1% of incoming info at a time. Distractions often override schoolwork when trying to focus.]</li> </ul>	2 min		
<p><b>Step 2: Conditions for Learning</b></p> <p>Calculate your usual study conditions:</p> <p>(+1 for each OPTIMIZER)      (-1 for each INHIBITOR)</p> <table border="1"> <tr> <td> <p><b>FOCUS OPTIMIZERS</b></p> <ul style="list-style-type: none"> <li>Study at a desk/table</li> <li>Quiet space or music without lyrics</li> <li>Phone on DND or put away</li> <li>Have water close at hand</li> <li>Study for 30 mins, then break</li> </ul> </td> <td> <p><b>FOCUS INHIBITORS</b></p> <ul style="list-style-type: none"> <li>Study on a couch or bed</li> <li>Listen to music w/ lyrics</li> <li>Phone messages/notifications</li> <li>Fallen asleep while studying</li> <li>Take a break anytime</li> </ul> </td> </tr> </table> <p>Is your total + or - ?</p>	<p><b>FOCUS OPTIMIZERS</b></p> <ul style="list-style-type: none"> <li>Study at a desk/table</li> <li>Quiet space or music without lyrics</li> <li>Phone on DND or put away</li> <li>Have water close at hand</li> <li>Study for 30 mins, then break</li> </ul>	<p><b>FOCUS INHIBITORS</b></p> <ul style="list-style-type: none"> <li>Study on a couch or bed</li> <li>Listen to music w/ lyrics</li> <li>Phone messages/notifications</li> <li>Fallen asleep while studying</li> <li>Take a break anytime</li> </ul>	<p><b>Step 2: Conditions for Learning</b>      [Ask students to calculate their typical study conditions. Add +1 for focus optimizers and -1 for focus inhibitors. Survey the room for students' total scores.]</p>	4 min
<p><b>FOCUS OPTIMIZERS</b></p> <ul style="list-style-type: none"> <li>Study at a desk/table</li> <li>Quiet space or music without lyrics</li> <li>Phone on DND or put away</li> <li>Have water close at hand</li> <li>Study for 30 mins, then break</li> </ul>	<p><b>FOCUS INHIBITORS</b></p> <ul style="list-style-type: none"> <li>Study on a couch or bed</li> <li>Listen to music w/ lyrics</li> <li>Phone messages/notifications</li> <li>Fallen asleep while studying</li> <li>Take a break anytime</li> </ul>			
<p><b>Step 3: Neuroplasticity</b></p> <p>What age ranges do you think your brain develops and learns the most?</p> <p><b>Answer:</b></p> <ul style="list-style-type: none"> <li>• Ages 0-6 for the visual, auditory &amp; motor cortex</li> <li>• Ages 11-16 for the prefrontal cortex</li> </ul>	<p><b>Step 3: Neuroplasticity</b></p> <ul style="list-style-type: none"> <li>• What age ranges do you think your brain develops and learns the most? [See slide for <b>answer</b>.]</li> <li>• What are some of the brain functions of the prefrontal cortex? [See slide for review of <b>S-C Brain Science, Episode 2</b>.]</li> </ul>	4 min		
<p><b>Step 4: Neural Pathways</b></p> <p>Ty says, if you walk a path once, your footprints don't last. But if you walk it over and over, you create lasting pathways. <b>THINK-PAIR-SHARE:</b></p> <ul style="list-style-type: none"> <li>• Share a time when you practiced and improved on something (e.g., athletics, academics). How did practice affect improvement?</li> </ul>	<p><b>Step 4: Neural Pathways</b>      [Review how neural pathways are similar to footprint paths. <b>Think-Pair-Share:</b>]</p> <ul style="list-style-type: none"> <li>• Share a time when you practiced and improved on something (e.g., athletics, academics). How did practice affect improvement?</li> </ul>	5 min		
<p><b>Step 5: Multisensory Learning</b></p> <p>Ty says, "The key to learning is to build neural pathways throughout your brain."</p> <ul style="list-style-type: none"> <li>• Can you fill in the blanks for each of the different brain sections?</li> </ul>	<p><b>Step 5: Multisensory Learning</b>      [Ask students if they can fill in the blanks to define the different brain sections, and then CLICK for <b>answers</b>. Review how the amygdala is involved in learning and ask:]</p> <ul style="list-style-type: none"> <li>• <b>Think-Pair-Share:</b> When you are preparing for a test, which emotion can you relate to most—anger, happiness, panic, or something else? Why?</li> <li>• Can you name at least four multisensory study strategies Ty recommended to make the most of test prep and learning? [See slides for <b>answers</b>.]</li> </ul>	5 min		
<p><b>Self-Reflection</b></p> <p>On a scale of 1-10, how would you rate yourself on the "Studying Harder" to "Studying Smarter" scale? [Scale includes descriptions.]</p>	<p><b>Self-Reflection</b></p> <ul style="list-style-type: none"> <li>• On a scale of 1-10, how would you rate yourself on the "Studying Harder" to "Studying Smarter" scale? [Scale includes descriptions.]</li> </ul>	4 min		
<p><b>Risk/Benefit Analysis</b></p> <p>Ty asked Ze, "Do you think you'll use any of these strategies?" How would you answer that question</p> <p>As Exe from a previous episode asked, "What are the risks?" and "What are the benefits?"</p>	<p><b>Risk/Benefit Analysis</b></p> <ul style="list-style-type: none"> <li>• Ty asked Ze, "Do you think you'll use any of these strategies?" How would you answer that question</li> <li>• As Exe from a previous episode asked, "What are the risks?" and "What are the benefits?"</li> </ul>	4 min		
<p><b>Wrap Up</b></p> <p>Which optimizing learning strategy(ies) are you considering incorporating into your life and studying habits?</p>	<p><b>Wrap Up</b></p> <ul style="list-style-type: none"> <li>• Which optimizing learning strategy(ies) are you considering incorporating into your life and studying habits?</li> </ul>	3 min		