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Week 1: Learning Foundations & STEM Confidence

Module 4: Spaced Practice

Lesson: Cramming vs. Spacing: What Actually Helps Your Brain Remember

Lesson Overview	
Students explore how memory works by comparing cramming, spaced practice, and retrieval practice. They use their own experiences and new learning to make decisions about how to study in ways that improve long-term retention and reduce stress.	
Learning Targets	Vocabulary
Explain why cramming does not lead to long-term learning. Describe how spaced practice and retrieval practice help memory. Apply these strategies to make better study decisions.	Cramming studying everything right before a test Spaced Practice studying a little at a time over several days Retrieval Practice trying to remember without looking at notes Retention how well you remember over time
Materials	Instructional Notes
Module Student notebooks or paper	This lesson builds student confidence and effective learning habits before moving into science content. Many students believe cramming “works” because it helped them pass tests in the past. Emphasize the difference between short-term performance and long-term learning. Keep explanations tied to student experiences and focus on helping students rethink their current habits.



Learning Experience

8 min	Opening	Display and read the following four student scenarios aloud: • Student A: Aiden realizes the night before the test that he hasn't studied much. He spends five straight hours rereading notes and slides. He is tired, stressed, and trying to get through everything. During the test, some questions feel familiar, but he struggles to fully explain answers. • Student B: Brianna studied for about 30 minutes each day over five days. She didn't always remember everything right away, but she returned to the same ideas multiple times. During the test, she can recall and explain most of what she learned. • Student C: Dani spends several hours rereading his notes and highlighting important parts. He feels confident while looking at the material because it seems familiar. During the test, he recognizes questions but has trouble recalling details without looking. • Student D: Lee studies by closing her notes and testing herself. She often gets stuck and feels frustrated when she can't remember something. She checks her notes, then tries again. During the test, she is able to recall and apply what she practiced. "All four students passed their test. Only ONE of them will still remember the material two weeks later." Students: • Independently choose the student they believe will remember the most and move to that area of the room • In groups: ○ Share personal experiences connected to that study method ○ Decide the strongest reason for their choice • Share 1–2 group explanations with the class Sentence Frames: • "I chose ____ because when I study that way, I usually ____." • "Based on my experience, this would lead to ____ after the test." "What actually helps your brain remember over time?"
15 min	Module	Focus Question: What actually helps your brain remember and use information later? Guiding Questions: • Why might cramming fail after the test? • What happens when you study across multiple days? • How does testing yourself change learning? • What role does sleep play in memory? Quick Checks: • Thumbs up/down: "Cramming builds long-term memory" • Turn-and-talk: "Which strategy would you use first and why?" Sentence Frame: "The most effective strategy is ____ because it improves memory by ____."



15 min	Application	Display a model 6-day study plan and briefly explain: Model Study Plan Example: • Day 1: Learn new material and take notes • Day 2: Review and add to notes • Day 3: Try to recall key ideas without notes, then check • Day 4: Study again and clarify difficult parts • Day 5: Test yourself with questions and identify gaps • Day 6: Review hardest topics and get enough sleep • Spaced Practice → studying across multiple days • Retrieval Practice → recalling without notes • Sleep → strengthens memory and thinking “Now imagine this: It is three days before your big stressful major test. You also have other responsibilities and limited time. Future you has choices to make.” Students: Step 1: Analyze the situation • Individually think: What makes this situation challenging? Step 2: Decide your approach • Decide what Future You should do first • Decide what Future You should avoid Step 3: Create your plan • Write a short plan that includes: ○ Multiple study sessions across days ○ At least one retrieval practice activity ○ When and how you will study Step 4: Explain your reasoning • Describe why your strategy will help memory more than cramming Partner Share: • Share your plan with a partner • Identify one strong idea in their strategy Sentence Frame: “This will work because ____ helps my memory by ____.”
2 min	Reflection	Write one specific change you will make to your study habits this week. Explain why this change will improve your memory.
2 min	Career Connections	In health and science careers, professionals must remember and apply information over long periods of time—not just for a test. Strategies like spaced practice and retrieval practice help them retain critical knowledge needed for real decisions. Why is remembering over time more important than just passing a test?