

STEM - FIT

FORUM FOR INCLUSIVE TEACHING

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TIPS AND TOOLS FOR INCLUSIVE TEACHING

CONCEPT

Attention

To educate students, we must first capture their attention. In fact, a critical piece of higher education is teaching students how to focus their attention and mitigate distraction. Research on the sustained attention spans of students indicates that student attention typically wanes within the first 5-10 minutes of lecture, and sometimes as soon as the first 30 seconds. So how do we leverage normal fluctuations in attention to achieve better learning outcomes? Cognitive neuroscientists would argue that we must first learn about the different types of attention and then employ tools to direct attention accordingly. In the resources section, a study by Keller et al. describes external (perceptual) versus internal (memory-based) attention, which can vacillate between on-topic (course-based) attention and off-topic (non-course-based) attention. Our goal should be to maximize on-topic external attention that also stimulates connection to course-related internal attention (memories of prior knowledge from your course or others). Listening to lecture largely demands on-topic external attention. Below, we include ideas for facilitating on-topic internal attention, as well as improving external attention. How does this relate to inclusion? Students from stigmatized groups are more likely to be distracted by off-topic internal attention focused on their identities, abilities, and social environment in the classroom. Thus, directing attention appropriately is an equity-centered approach to improving learning outcomes.

TIPS AND TOOLS

Embed active learning strategies into your class.

- Encourage hand-written notes. Studies have shown that the act of hand-writing notes stimulates more senses and enhances learning when compared to taking digital notes. For students who are able to, suggest they take hand-written notes. You may consider providing skeletal notes as a form of encouragement. This activity can improve on-topic external attention.
- Pose questions & provide time for reflection. Break lectures up by asking students questions and providing quiet time for thinking. Including time for reflection can foster on-topic, internally focused attention. “Think-pair-share” is a collaborative learning strategy that asks students to first contemplate a question on their own before discussing their ideas with a peer. This approach integrates multiple learning modalities and constructively directs internal attention.
- Include no-points retrieval activities. Retrieval practices are those that ask students to recall information without looking at their notes. These practices stimulate on-topic internal attention while mimicking how the brain must function during an exam. The purpose of not awarding points (or even reviewing their individual work) is to remove the pressure of being assessed—which can elicit negative off-topic internal attention that negatively impacts learning, like fear of failure and/or focus on stereotype threat. Some examples include pausing lecture and asking students to draw a structure or process or to write a series of multiple-choice questions on the lecture material to exchange with a peer. These activities stimulate learning, help students identify gaps in their knowledge, and guide on-topic internal attention.

Discuss the science of attention to promote metacognition.

- Describe the science of attention to students. Understanding the different types of attention can improve students' abilities to allocate their own attention during lectures and while studying. This is a type of metacognitive activity. Metacognition—thinking about one's own thinking—has been shown to 1) help students better understand their own learning processes, 2) identify their strengths and challenges, and 3) apply strategies to adapt and improve their learning.

RESOURCES

Keller and colleagues (2020) discuss different dimensions of attention and outline four scenarios of a clicker-based, active learning exercise that may result in different fluctuations of attention at different points during the activity. <https://www.lifescied.org/doi/full/10.1187/cbe.20-05-0106>

See our STEM-FIT Canvas Course for more resources:
<https://csus.instructure.com/courses/71792>