

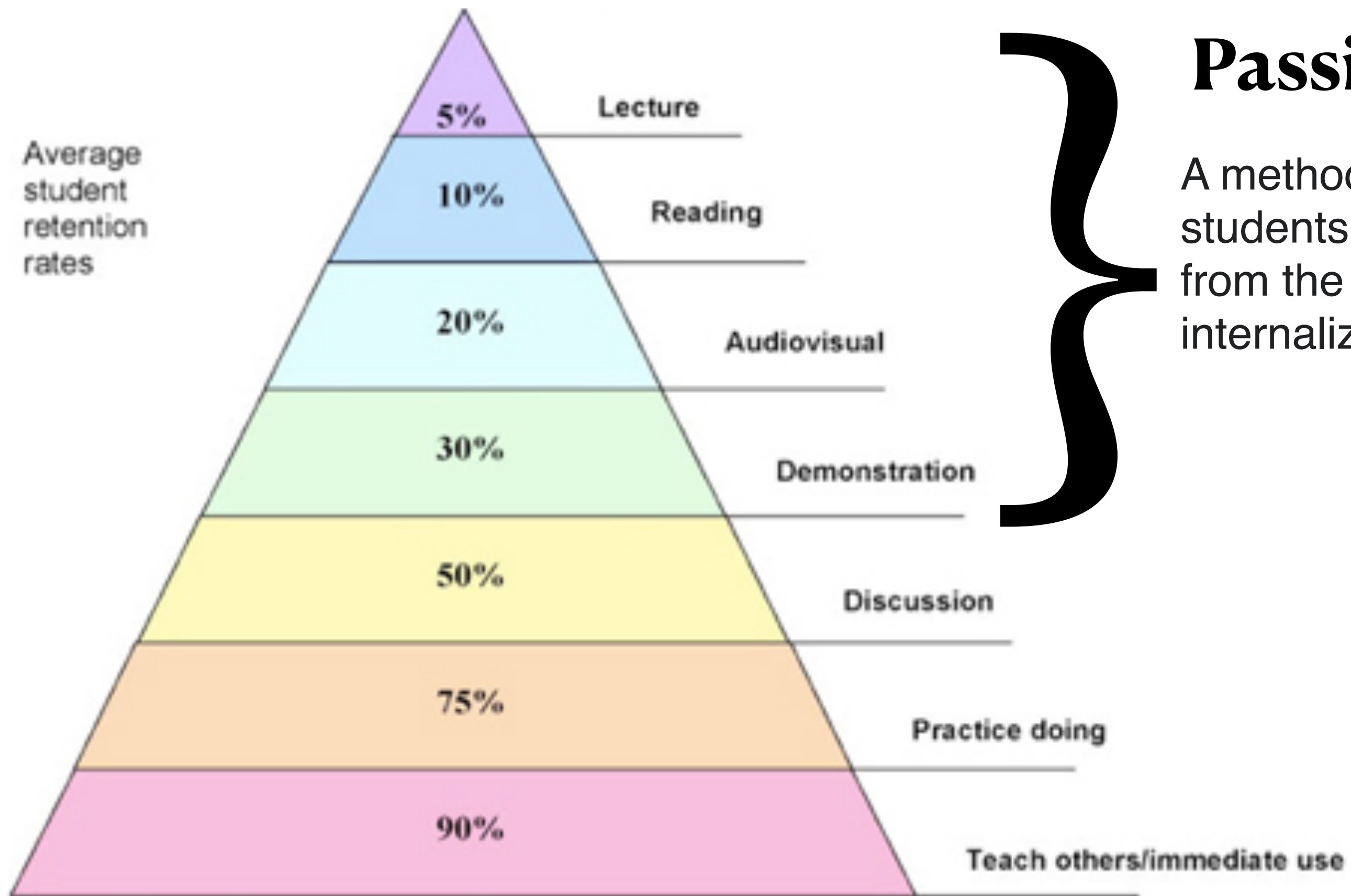
Active Learning vs. Passive Learning

Teaching Skills To Cultivate



By: Korash Assani

The Learning Pyramid



Source: National Training Laboratories, Bethel, Maine

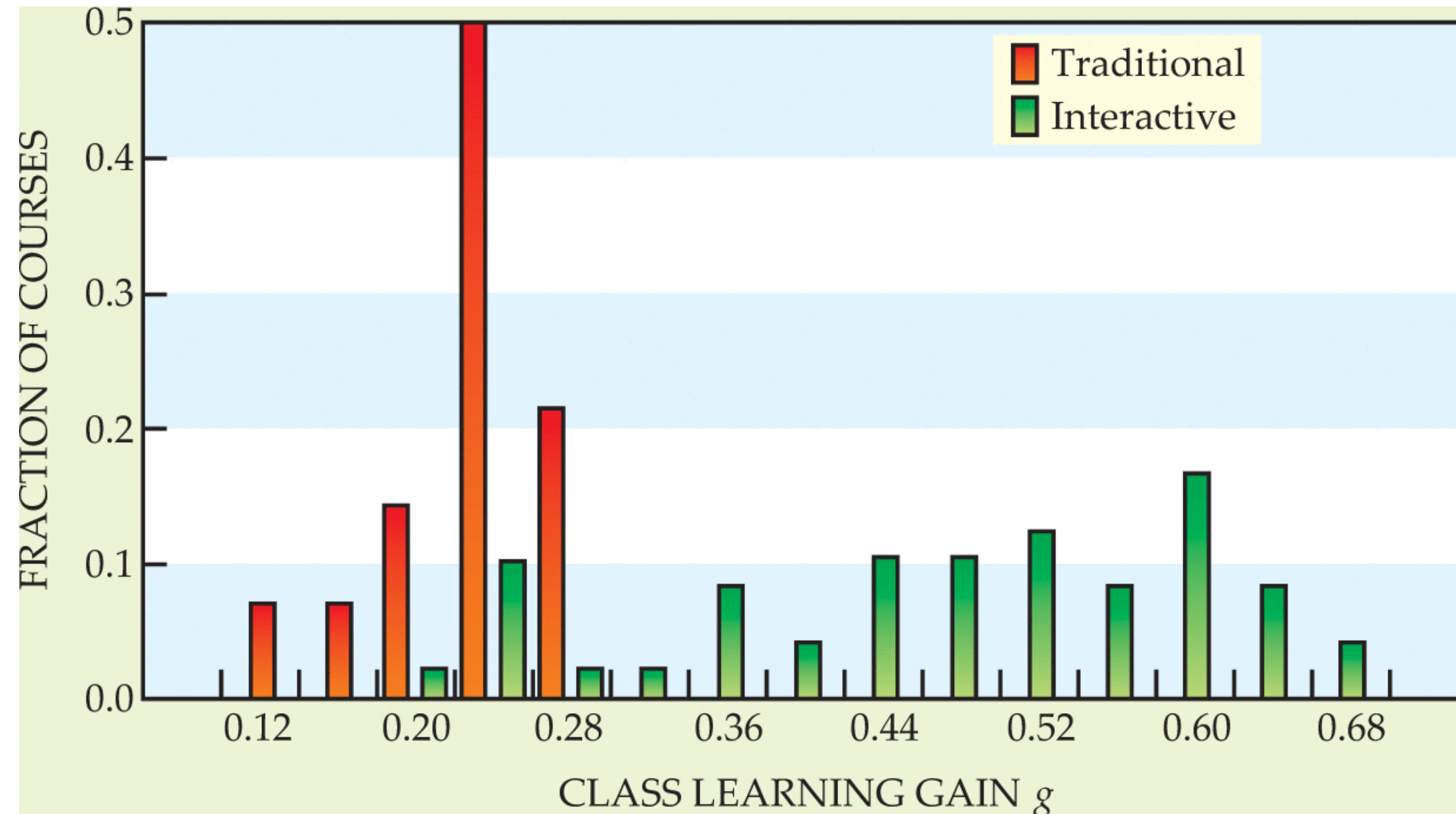
Passive Learning

A method of learning in which students receive information from the instructor and internalize it.

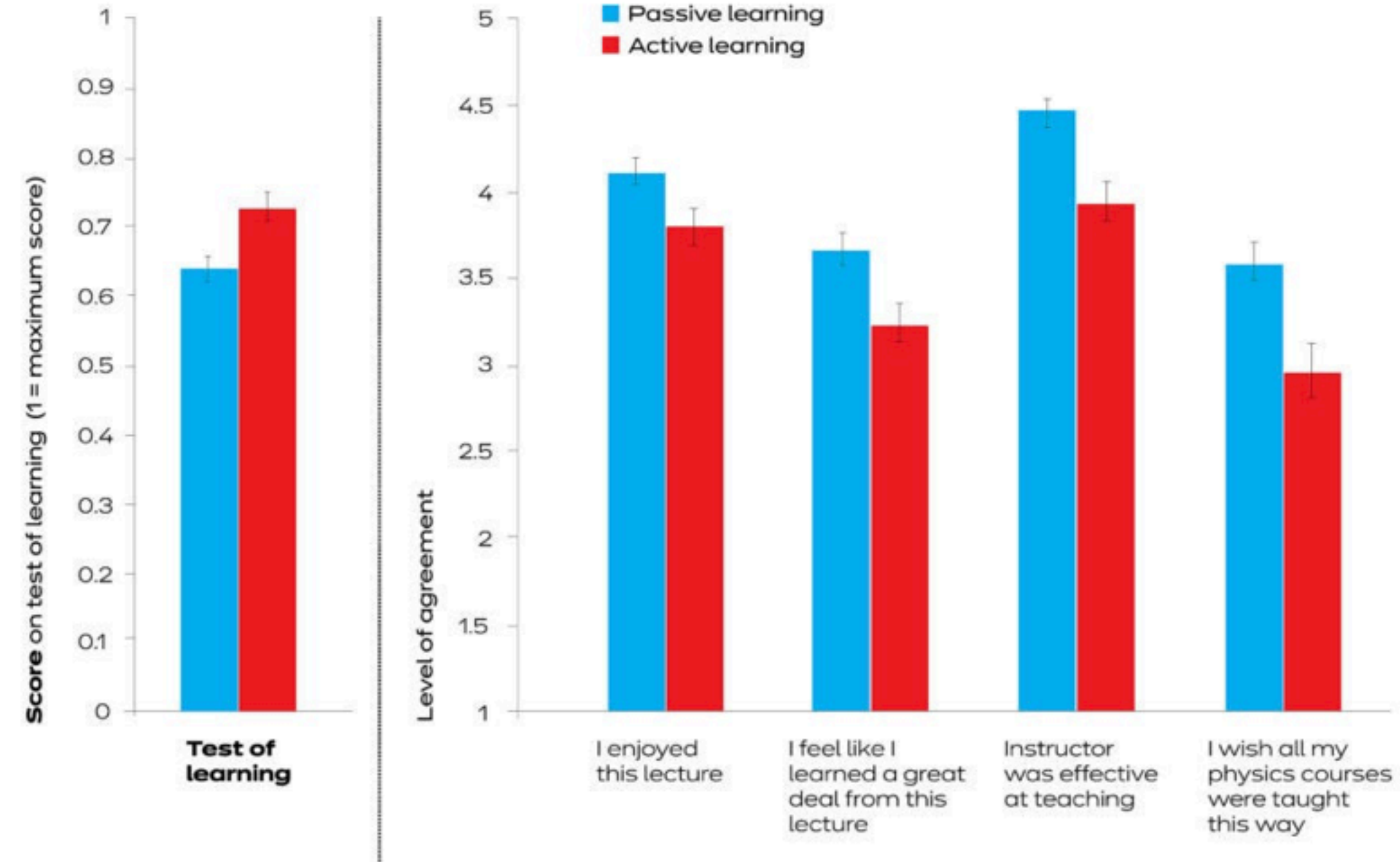
Active Learning

"a method of learning in which students are actively or experientially involved in the learning process and where there are different levels of active learning, depending on student involvement." Bonwell & Eison 1991

What's to Gain?



Prather et al. 2009

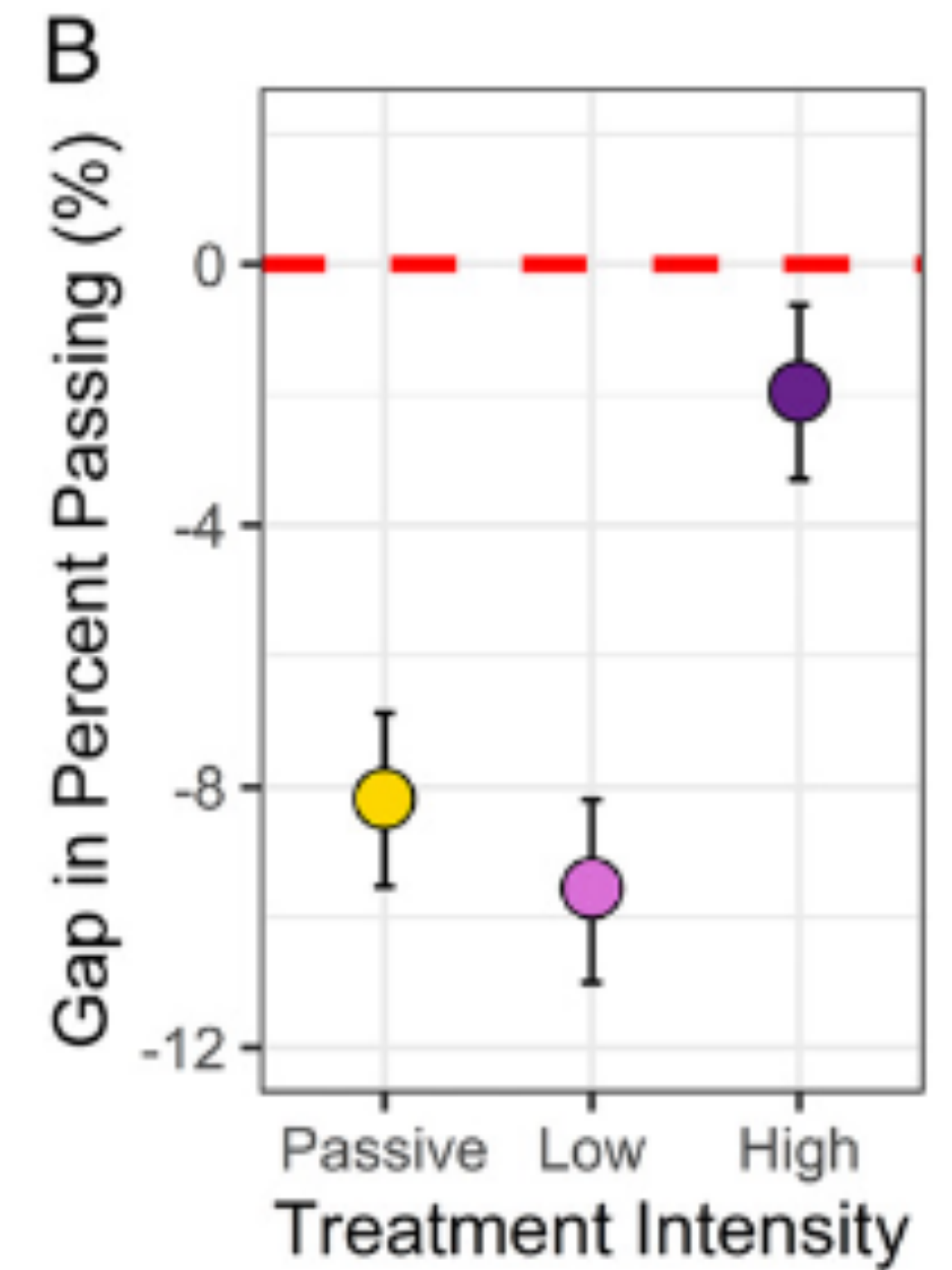
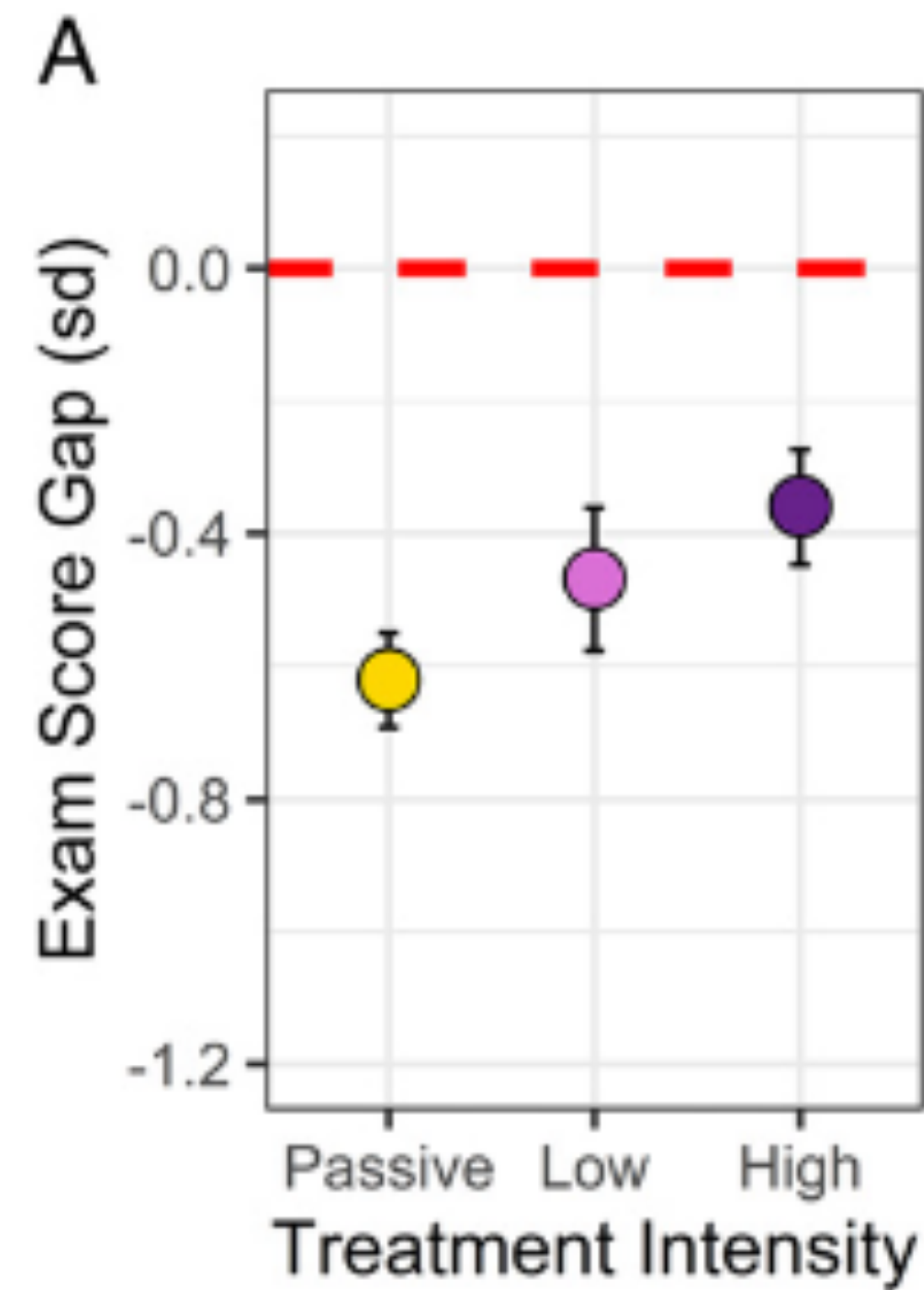
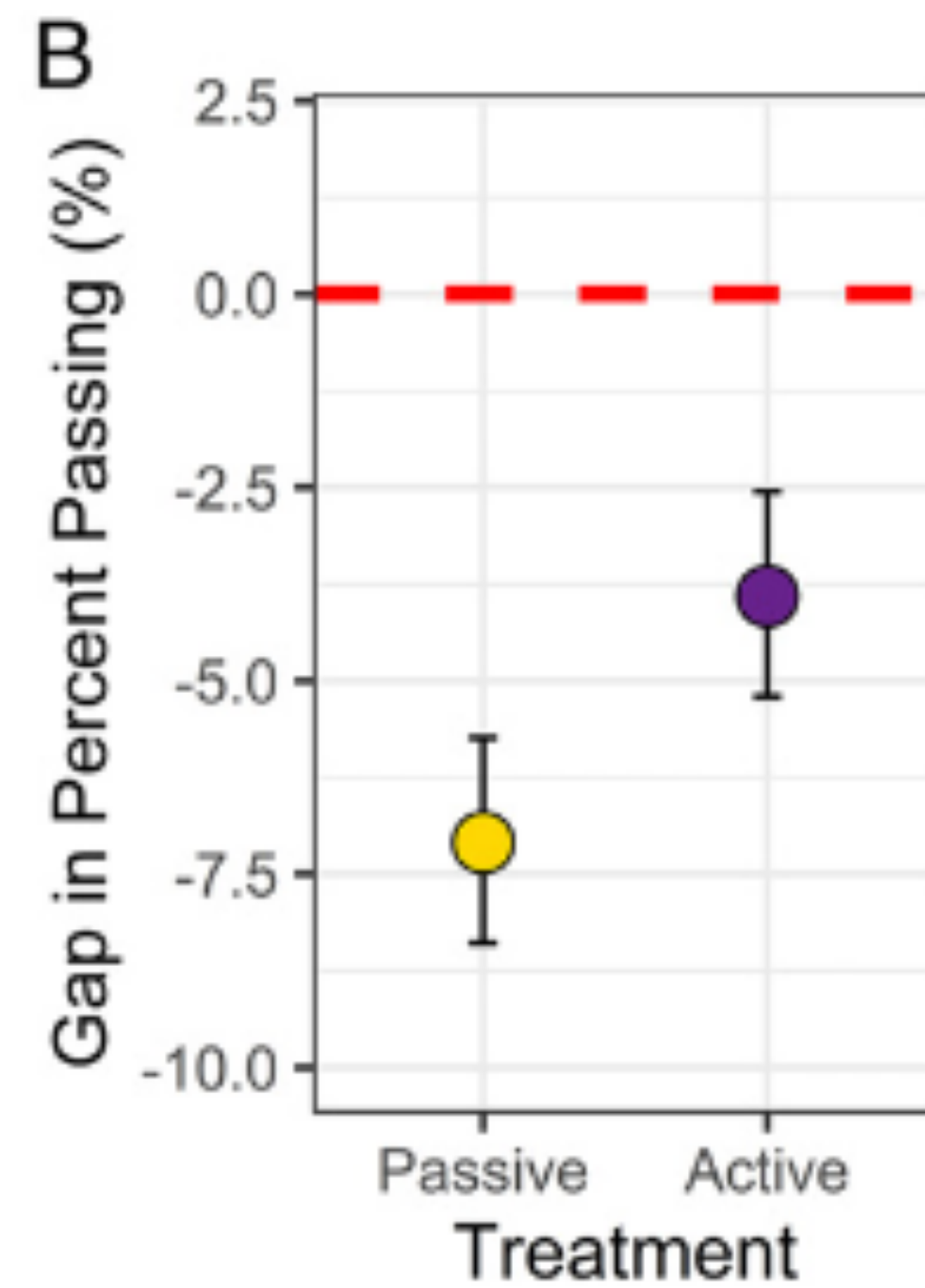
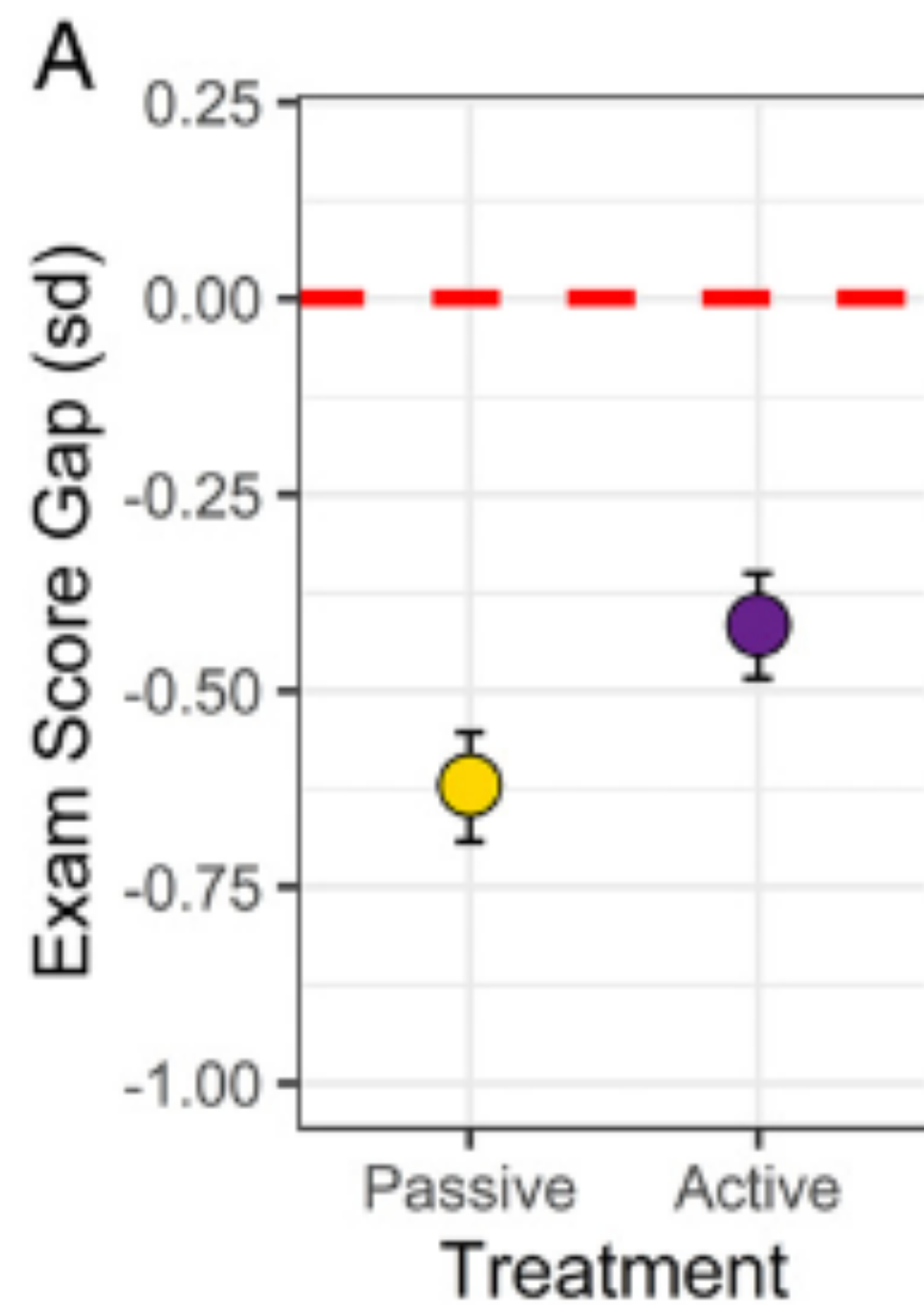


Deslauriers et al. 2019

Flipped Classroom in Astronomy: Galloway et al. 2016:

- Benefits knowledge learning gain ($\bar{g} = 0.41$)
- Significant reduction in overall fail rates (11-15%)

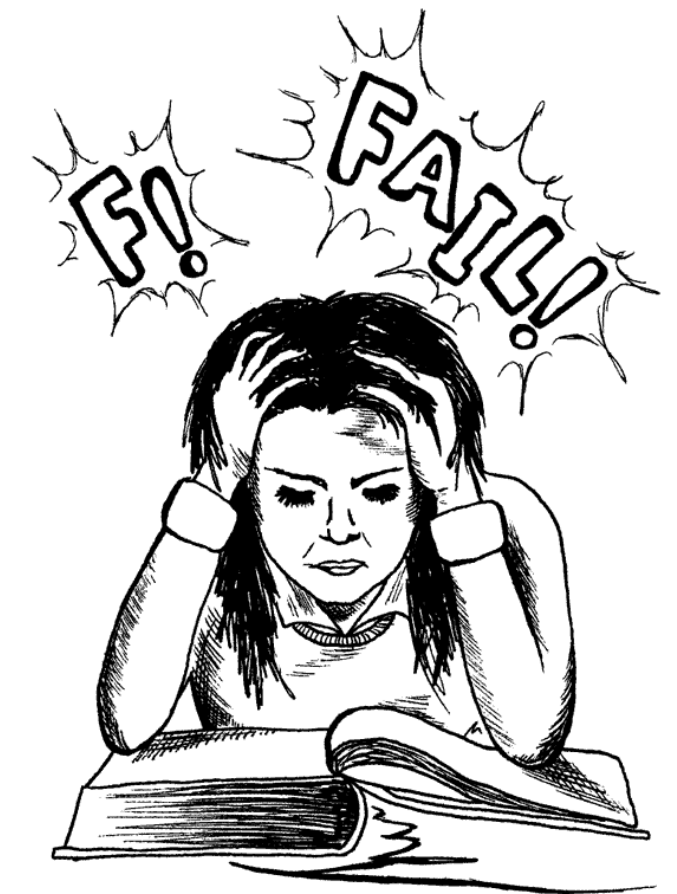
Promoting equity in higher education STEM courses



Increasing or Decreasing student anxiety?

Active Learning has the potential to both increase and decrease student anxiety (e.g., Downing et al. 2020, Cooper et al. 2018c)

- Can increase anxiety if there is fear of negative evaluation in active learning activities (Social Situations, Graded Assignments)
- Active learning decreases student anxiety if they perceive it as enhancing their performance
 1. Offers additional access for help from instructors & can learn from other students
 2. Provides different approaches to learning



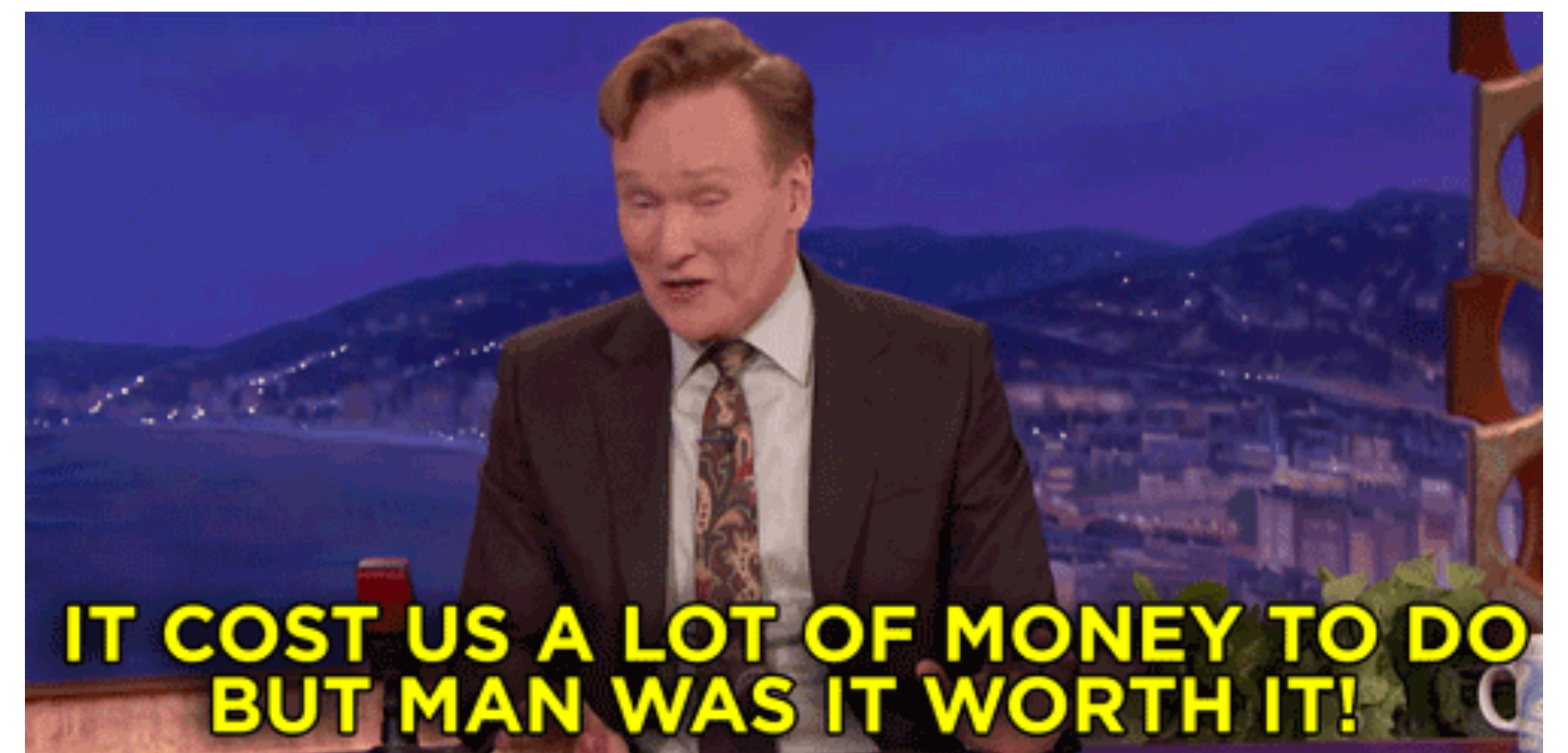
An inclusive active-learning classroom

- Knowing other students in groups helped reduce fear of negative evaluation
- “Cold Calling” -> “Warm Calling” (Downing et al. 2020)
 - Give students time to think about answers with group
 - Instructors being transparent about why calling on students who did not volunteer
- Instructors responses to student answers -> “Error Framing”
- Build relationships with students, engaging students in activities, having one-on-one conversations with students outside class



What's to lose?

- Time Consuming
- Requires more spontaneous and flexible lesson plans
- Limits the amount of material that can be presented at one time
- Creates the potential for distractions if the students are not monitored
- Pre-class preparation needed



Summary

- Active learning increases learning and decreases failure rates in college science courses (e.g., Freeman et al. 2014)
- Underrepresented Groups experience narrower achievement gaps in active-learning classrooms (Theobald et al. 2019)
- With thoughtful implementation, active-learning classrooms can decrease student anxiety (e.g, Downing et al. 2020)

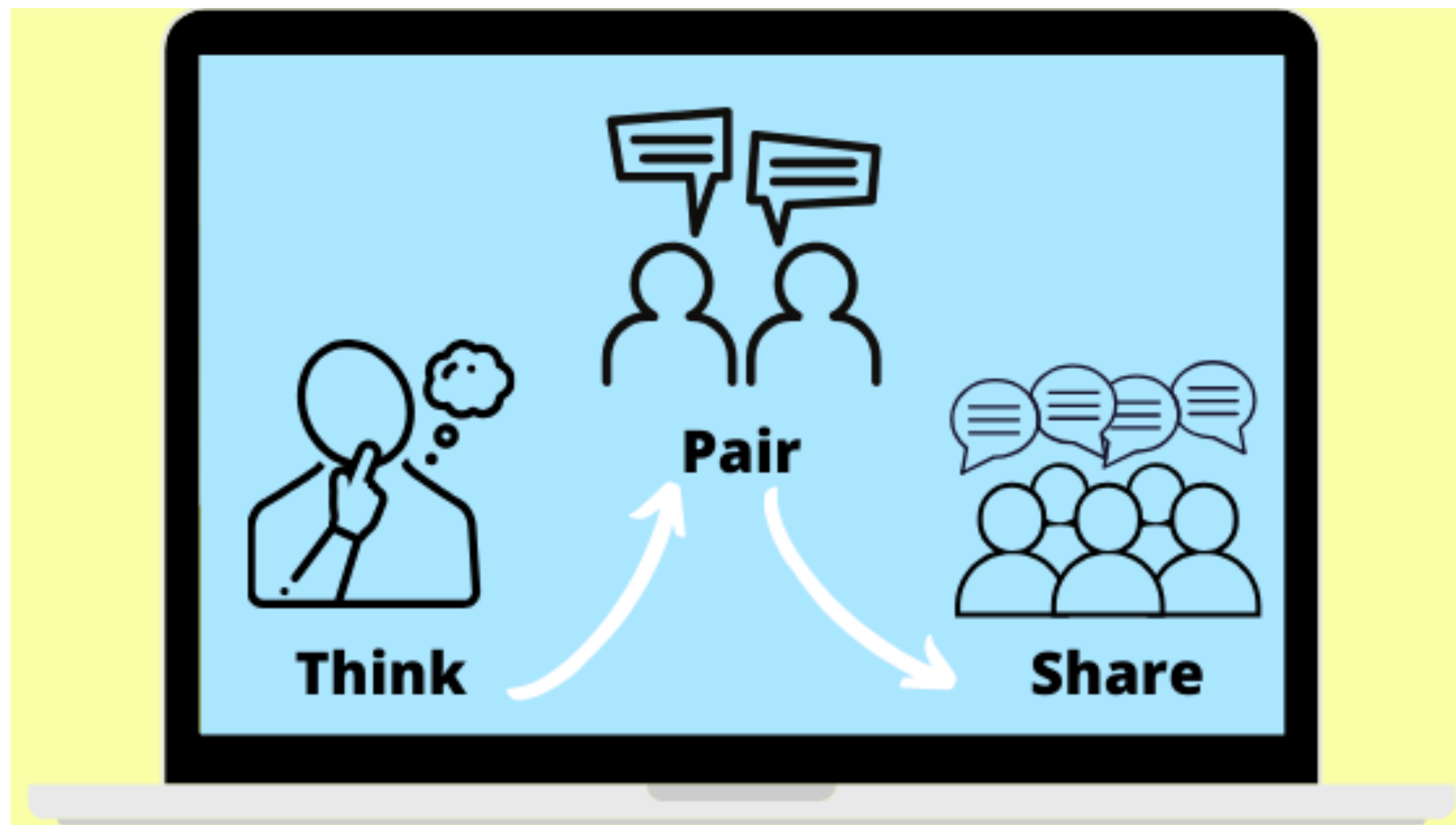


Sources

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Active Learning Activities

Example: Think-Pair-Share



Restructuring Classrooms

Example: Flipped Classrooms

- Designed to actively engage students with material and each other
- Emphasizes student self-direction
- Ongoing access to content
- More Teacher-Student Interaction

