10-Minute Active Learning Strategies to Incorporate Into STEM Classrooms

- After covering some material in lecture, ask a question of your class, ask them to reflect for a moment, and turn to their neighbor and discuss their thoughts. Call on pairs to respond.

- Conduct a minute-paper exercise over material that is likely to cause confusion. Leave a few minutes at the end of class to have students anonymously answer in writing the following questions:

  - What do you think the main point of the lecture was?
  - What confusion do you have or pressing question after hearing this material?

Collect these papers as students leave. At the beginning of the next class, restate the main point and clarify points of confusion.

- Have students generate and submit questions about readings they are assigned before class; have them answer each other’s questions in small groups during class.

- Put students in groups during class and have them generate questions about the material covered that day. Call on groups to share their questions.

- When introducing a new problem-solving method, give students a copy of a worked-out problem or derivation and have them explain to one another or to you each step in order to help them focus on the why instead of the how of the method.

- **Think-aloud pair problem solving:** Have students work in pairs to either solve a problem or explain a worked-out problem. One student is the explainer and the other is the questioner; have them switch places after an allotted amount of time.

- Do active review of previous class time at the beginning of the next class. For about a minute, have students write down from memory some of the main points made in the previous session, then get into pairs to expand their list for another minute. Finally, call on various groups to recite what they remember. Launch your lecture from there.

- Prepare and give students an exam wrapper after they get their next test back. This tool helps them reflect on how they prepared and what they can do differently (or the same) in their study for the next exam.

- When working through a difficult problem in class, verbalize your own thinking and strategies as you work through the problem step by step, instead of presenting a worked-out solution.