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| **Active Learning Approach** | **Pros** | **Cons** | **Significant effects on learning, retention, and conceptual understanding using**  ***cognitive retrieval***  **(recalling information from long-term memory)** |
| Think, Pair, Share | -Can be used throughout lecture  -Easy to set up  -Doesn’t take a long time | -How can you hold students accountable?  -How can you get everyone to participate? | “*When you periodically give your student something to do that requires using recently presented information*, their working memories have a chance to rehearse the information, increasing its chances of being stored in long-term memory.”  (p. 117, Teaching and Learning STEM) |
| Muddiest Points |  |  | “Teachers need to stop doing so many of the learning tasks for students. Teachers should not always be organizing the content, generating the examples, *asking the questions, answering the questions*, *summarizing the discussion*, solving the problems, and constructing the diagrams.”  (p. 119, Teaching and Learning STEM) |
| Clickers/Polls | - |  | The effect of retrieval practice increases “when recall activities are challenging, *rapid feedback on the response is provide*d and the retrievals are spaced out over intervals…”  (p. 116, Teaching and Learning STEM) |
| Collaborative Learning (groups informally solve a problem in class) |  |  | “Learning requires attentiveness. *It is difficult or impossible for students to pay attention to anything for very long while they are passive.”*  (p. 117, Teaching and Learning STEM) |

JTFD Workshop #3 Handout

Resource: “How Well Does Active Learning Work? Why Does It Work?” *Teaching and Learning STEM* by Brent and Felder