Active Learning Techniques

Tool	Explanation	Reason to use it	When/How to use it
1. Dusting Off the Cobwebs	Write down what you recall from last class and then go over with classmates	➢ Can help to jog memory ➢ People remember difference concepts and can share with one another	➢ Can use as feedback, attendance, or as a cheat sheet for tests ➢ Allows the instructor to determine what is missing from the students' comprehension and
2. One-minute paper	Students would get the chance to write down as much as (s)he can about given words/topics	➢ To get students recalling as much information as possible	➢ Allows the instructor to determine how familiar students are with the topic ➢ Allows students to see how much they know or don't know about a topic
3. Guided Questions	Can use two-column format where one side lists questions and the other side has space for responses	➢ Allows students to develop own notes based on what they regard as most important	➢ The instructor can use this technique when watching a video inside/outside class. Students can get all the pertinent information especially since they are being guided by questions. ➢ Engages students by nudging them to look for and think about answers

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4. Pause and Predict	Play a video and pause at various segments to ask probing questions about what the students expect to happen next	➢ Gets students predicting and expressing opinions. ➢ Gives students a chance to reflect	➢ During interactive lecture
5. Role-playing	Allows students to demonstrate applications/concepts	➢ Another way for students to remember class topics ➢ Allows for a visual that students can associate with the applications or concepts ➢ Opportunity to include movement and imagination	➢ To teach a particularly difficult concept ➢ To incorporate a different kind of engagement, spark student learning
6. No Tech/Low tech Clickers	Students are given a sheet of paper with A,B,C,D in each of the 4 quadrants. They will fold the sheet into 4 and hold up their answer to the questions being asked	➢ Encourages full participation and communication ➢ Can aid in identifying those who may be struggling	➢ Students can answer multiple choice questions (trivia game) and see how many points they earn ➢ During interactive lecture ➢ Before/at the end of class to check prior learning or learning from that day

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7. Think-Pair-Square-Share	Students will independently think about the topic, pair up and discuss their findings, then search for another pair and further discuss.	➢ Students have an opportunity to share ideas and gain confidence in the topic being discussed ➢ Students take the responsibility for learning and engage with each other	➢ During interactive lecture ➢ During review lessons/units
8. Reorder Steps	Place steps of a process on separate cards and have students place them in the right order	➢ Assess student understanding of the ordering of topics ➢ Engage students in creating order and checking their own understanding as well as collaborate	➢ Once students order the steps of a process correctly, they can then be asked to apply those steps to a problem ➢ During interactive lecture ➢ For review ➢ For evaluation (no paper/pencil/computer test, nothing to take home to grade!)
9. Fix the Mistake	Give students diagrams or statements and have them fix the mistake seen	➢ Allows students an opportunity to see the various mistakes that could be made and to figure out why it is incorrect ➢ Requires close reading or observation	➢ In a math class, students can be given a series of math problems with mistakes on them. The students would be charged with identifying the errors, explaining why they're wrong, and then showing the work to correct them.

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10. Stoplight	Use as end of class survey to see what students Learned (green light), Questioned (yellow light), or Did not learn (red light)	➢ Another source of feedback to determine if the lesson was successful	➢ At the end of class or at the end of a part of a lesson/lecture

Damerell, J., & Long, S. (2014, August). *Active Learning = (Thinking × Time) + (Acting × Applying) + (Creating × Communicating)*. Workshop presented at the STEM/Applied STEM Institute for Faculty: Course Redesign for Active & Collaborative Learning, Rochester, NY.

11. Brainstorming	Process for generating creative ideas and solutions through intensive and freewheeling group discussion	➢ Allows students to collaborate with one another and can be considered class participation	➢ The students can come up with ideas when introducing a new topic to the class (ex. The instructor is teaching probability but wants students to first brainstorm where they see probability being used in real-life.)
12. Brain Dump	Used to allow students to quickly write down everything they can remember about a specific topic in a short period of time	➢ It is a way to find out if students are actually retaining the learned material from previous class sessions	➢ Students can be asked to brain dump at the beginning of class as a way for the instructor to gauge how much information was retained/processed or lack thereof.

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13. Exit Ticket	A strategy that requires students to write responses to questions posed at the end of class. Helps students reflect on what they have learned and any questions they may have. This is generally a 2-3 minute activity.	➢ This is a way for students to write down any questions they may have regarding the material or write down what they actually learned from class.	➢ This is a way to give students an opportunity to express their concerns or show their understanding. Especially helpful for students who tend to keep their thoughts to themselves due to a fear of public speaking.
14. Reflection	A longer activity dedicated to metacognition.	➢ To allow students to reflect on their thinking processes as well as to provide feedback to the instructor about the materials presented.	➢ This can be done in a journal, or an assignment to be turned in, asking students to reflect on their classroom experience, ways to improve their grades, etc.

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