### ACTIVE LEARNING LIST

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| **Mud cards**            | Mud Cards are one way to gather End-of-Class Feedback and are a variation of the One-Minute Paper technique (Angelo & Cross) specifically designed to determine gaps in student comprehension. Their use:  
- Allows student reflection which increases retention  
- Assists students in using time to study effectively  
- Provides information to instructor in time to correct misconceptions by the next class meeting  
- More effective than asking for questions  
- Assists instructor in planning course for next offering | **General Procedure**  
- Hand out 3x5 cards near end of lecture  
- Specifically ask for feedback – “In the next 3 minutes, please reflect on the lecture & write down the point you found the muddiest & need clarification about.”  
- Collect the cards  
- Review cards & decide on format for addressing the muddy points: post questions & answers on course web page, answer questions at start of next class meeting, prepare a handout, send an email to the class, etc. | In 1989 Frederick Mosteller’s article, “The ‘Muddiest Point in the Lecture’ as a Feedback Device,” appeared in the journal *On Teaching and Learning*  

| **Immediate In Class Feedback (Concept tests)** | - Occurs in class as teaching/learning happens  
- Provides instructor an indication of student understanding  
- Provides instructor the opportunity to adjust the lecture on-the-spot if necessary  
- Provides student with an indication of his/her understanding to help with study later  
- Can be used in conjunction with peer instruction, a collaborative learning technique made popular by Eric Mazur of Harvard [http://mazurwww.harvard.edu/education/pi.html](http://mazurwww.harvard.edu/education/pi.html)  
- Key to this technique is the question used (Mazur terms them ConcepTests) | - Ahead of lecture, develop a question that is  
- Conceptual, not a calculation  
- Multiple Choice  
- Brief (1 minute thinking time)  
- Designed to surface student misconceptions  
- Display the question to the class & ask them to think for 1-2 minutes  
- Students indicate their answer  
- Raised hands  
- Finger signals  
- Flashcards  
- Electronic system (PRS)  
- If desired ask students to discuss answer among themselves (Think-Pair-Share) & indicate answer again  
- Based on student understanding, explain correct answer & move on, give a mini-lecture & ask question again, etc. | Eric Mazur, Harvard [http://mazurwww.harvard.edu/education/educationmenu.php](http://mazurwww.harvard.edu/education/educationmenu.php) |

| **PRS system (Method for Obtaining In Class Feedback)** | PRS (Personal Response System) is one way of collecting immediate in class feedback. This method is  
- Anonymous  
- Simultaneous  
- Provides continual feedback to both students & teacher  
- Assists with student motivation & alertness  
- Answers can be archived  
- Answers can be tracked to individual student | A multiple choice question is posed  
Using an infrared wireless transmitters that looks like a television remote control, all students can answer the question and record their responses with a simple click of a button. Results are instantly charted and can be displayed only for the instructor to view, or displayed for the whole class | [http://www.educue.com](http://www.educue.com) |
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| **Think-Pair-Share (Turn to your partner)** | Increases students’ motivation to pay attention in class, obtains reflective and concise thoughts from students, provides students practice explaining difficult concepts to each other  
- Takes little class time  
- Small amount of faculty preparation to develop the question and possible answer(s) beforehand | - Pose an open-ended question or problem  
- Students think for 1 minute  
- Students pair up and share their answers for 2-3 minutes; perhaps coming up with a joint answer  
- Ask for a few students to briefly summarize answers, or have the class vote on an answer  
- Indicate the correct or possible answers | http://www.wcer.wisc.edu/nise/CL1/CL/doingcl/thinkps.htm |
| **Pausing for Enhanced Retention** | - Focuses on assimilating and clarifying the information  
- Minimal to no effort on the instructor’s part  
- Loss of only 6 minutes of lecture time | - During a lecture, the instructor pauses for two minutes every 12 to 18 minutes  
- The students work in pairs to discuss and rework or fill in their notes  
- No interaction occurs between students and instructor during these pauses | (Ruhl, Hughes and Schloss, 1987 in Active Learning: Creating Excitement in the Classroom, Bonwell & Eison, 1991 ASHE-ERIC Higher Education Reports) |
| **Question-Answer Pairs** | - Increases students’ motivation to read before class, deepens students’ level of analysis of the reading, provides students practice explaining difficult concepts  
- Takes little class time  
- Little faculty preparation or effort required | - Assign a pre-class reading  
- Students read the assignment and come to class with 1 or 2 written questions with answers  
- Students pair up; Student A asks Student B a question, Student B responds, Student B asks Student A a question, Student B responds  
- Faculty may be asked by students to verify accuracy of answers  
- Students can be asked to turn in questions/answers | http://www1.umn.edu/ohr/teachlearn/MinnCon/active.html |

*Simulation,  
Debate,  
Case Study,  
Expert Panel,  
Film Clip,  
Demonstration,  
Active Learning Lecture (See Attached For Active Learning Techniques)  
Projects & Presentations,  
Oral Report,  
Written Product Review,  
Prototype Design & Presentation,  
Video Report  
Self-Study*  

*Research Report  
Experiments  
Interviews & Reports (Oral, Written, Video)  
Skits*