Active and Collaborative Learning Techniques

SUMMER 2018
SESSION I
CAROLIEN ANNINK

PARTICIPANT LEARNING OUTCOMES

By the end of this three-workshop series participants will be able to:

- Describe the importance of collaborative and active classroom activities for successful student learning
- Name 8-10 techniques that support collaborative and active learning (CoAlts)
- Design 3 lesson plans incorporating 3-5 CoAlt classroom activities
- Present an action-research project plan, on teaching with CoAlts

ACTIVE LEARNING VS TRADITIONAL LECTURES

- New York Times article (Sep 2015): Are College-lectures Unfair?

1. Students over all **perform better** in active-learning courses than in traditional lecture courses.
2. Women, minorities, and low-income and first-generation students **benefit more**, on average, than white males from more affluent, educated families.

"Given that active-learning approaches benefit all students, but especially those who are female, minority, low-income and first-generation, shouldn't all universities be teaching this way?"

http://www.nytimes.com/2015/09/13/opinion/sunday/are-college-lectures-unfair.html?smid=fb-share&_r=0

ACTIVE LEARNING VS TRADITIONAL LECTURES

Nature, July 2015

Why we are teaching science wrong, and how to make it right

- *In the United States, which keeps the most detailed statistics on this phenomenon, about 60% of students who enrol in a STEM field switch to a non-STEM field or drop out[2] (see 'A persistence problem').That figure is roughly 80% for those from minority groups and for women.*
- *Students gain a much deeper understanding of science when they actively grapple with questions than when they passively listen to answers.*
- http://www.nature.com/news/why-we-are-teaching-science-wrong-and-how-to-make-it-right-1.17963

"At this point it is unethical to teach any other way."

CLIP
U. OF VERMONT MEDICAL SCHOOL

Vermont Medical School Says Goodbye To Lectures

NPR – August 3, 2017

- https://www.npr.org/sections/health-shots/2017/08/03/541411275/vermont-medical-school-says-goodbye-to-lectures, August 3, 2017

"DFW Rates" in 20 Largest Spring 2016 Semester Courses

	All Students			Asian			Black			Hispanic			White		
Course	All A-C Grades	All A-W Grades	"DFW"	A-C Grades	A-W Grades	"DFW"	A-C Grades	A-W Grades	"DFW"	A-C Grades	A-W Grades	"DFW"	A-C Grades	A-W Grades	"DFW"
ENGL102	1797	2599	30.9%	250	350	28.6%	479	728	34.2%	550	807	31.8%	452	609	25.8%
MATH080	649	2056	68.4%	45	120	62.5%	231	749	69.2%	217	756	71.3%	129	356	63.8%
COMM108	1455	1773	17.9%	213	245	13.1%	454	557	18.5%	421	526	20.0%	319	380	16.1%
PSYC102	1264	1751	27.8%	170	224	24.1%	394	583	32.4%	339	488	30.5%	311	393	20.9%
MATH096	667	1234	45.9%	78	132	40.9%	206	390	47.2%	204	405	49.6%	154	252	38.9%
ENGL101	814	1217	33.1%	123	160	23.1%	242	378	36.0%	198	319	37.9%	213	306	30.4%
SOCY100	913	1177	22.4%	128	154	16.9%	291	385	24.4%	261	340	23.2%	191	244	21.7%
MATH117	735	1029	28.6%	118	153	22.9%	213	292	27.1%	190	289	34.3%	188	256	26.6%
BIOL150	506	869	41.8%	86	130	33.8%	149	278	46.4%	136	251	45.8%	120	185	35.1%
ENGL101A	598	839	28.7%	83	99	16.2%	208	297	30.0%	201	295	31.9%	94	124	24.2%
HLTH100	553	777	28.8%	103	127	18.9%	155	237	34.6%	148	211	29.9%	118	159	25.8%
MATH165	397	694	42.8%	80	129	38.0%	137	237	42.2%	94	185	49.2%	70	118	40.7%
BIOL101	453	638	29.0%	64	95	32.6%	106	171	38.0%	131	186	29.6%	134	162	17.3%
ARTT100	503	620	18.9%	67	76	11.8%	165	199	17.1%	151	193	21.8%	103	131	21.4%
MATH110	384	613	37.4%	50	73	31.5%	117	192	39.1%	94	169	44.4%	110	159	30.8%
BSAD101	493	573	14.0%	91	99	8.1%	100	121	17.4%	140	169	17.2%	148	166	10.8%
ECON201	388	550	29.5%	62	89	30.3%	94	144	34.7%	105	146	28.1%	112	146	23.3%
NUTR101	422	549	23.1%	77	91	15.4%	111	147	24.5%	103	142	27.5%	118	150	21.3%
BIOL213	496	545	9.0%	81	87	6.9%	202	226	10.6%	91	100	9.0%	102	111	8.1%
BIOL212	398	533	25.3%	61	83	26.5%	154	206	25.2%	87	120	27.5%	88	111	20.7%
Top 20	11304	17273	34.6%	1608	2194	26.7%	3430	5481	37.4%	3241	5251	38.3%	2596	3675	29.4%

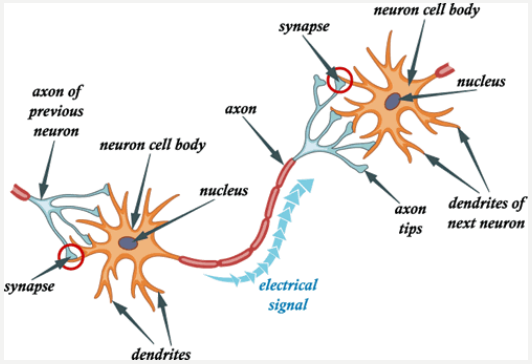
Legend:
# of students
>55% DFW rate
>40% DFW rate
>35% DFW rate
>30% DFW rate

Something needs to be done. What can you do? At the classroom level?

EDUCATIONAL RESEARCH

- Cognitive theory – "Schemata"

- Neuroscience – neurons, nerve cells, cell body, axon, dendrites, synaptic axon terminals, synapses



STUDIES SHOW

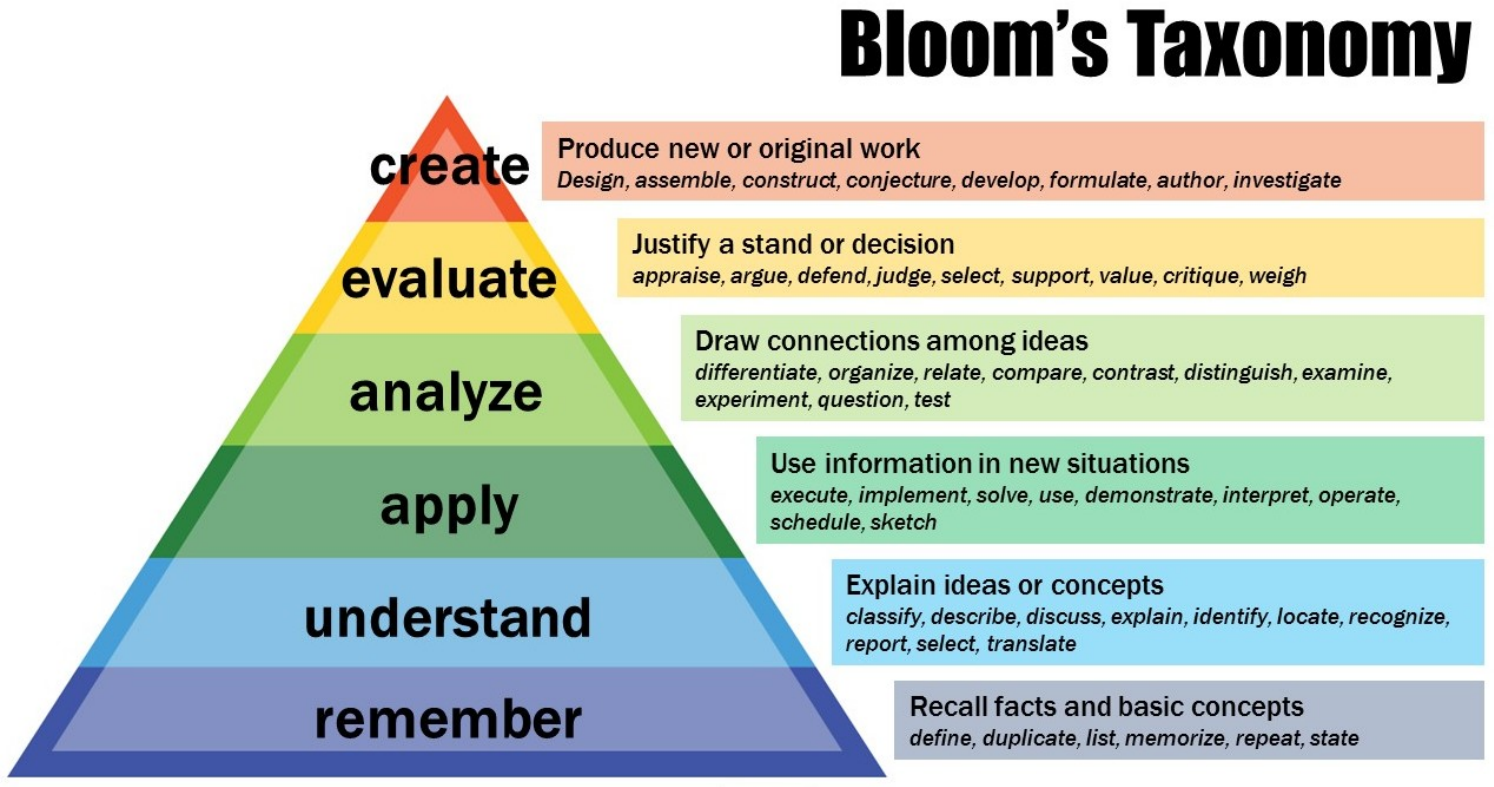
- Cognitive gain – improving reaching SLOs & higher-order thinking
- Student engagement, attitudes, persistence, personal development
- Good educational practice: 7 principles of good HE
- Beneficial for a wide range of students
- Valued by students and teachers

AND…

Major conclusions of **modern cognitive learning theory**:

- Students must be actively engaged in building their own minds.
- Achievement, motivation, satisfaction
- Positive interdependence and individual accountability

LEARNING OUTCOMES



Where do we want our students to be on the pyramid?
College expectation- Higher level thinking

MC ELITE SUMMER 2018 COLLABORATIVE AND ACTIVE LEARNING CATEGORIES

Overview groups of techniques we will discuss:

- **Discussion** Techniques
- Techniques for **Reciprocal Teaching**
- **Problem Solving** Techniques
- Techniques using **Graphic Information Organizers**

SESSION 1: DISCUSSION TECHNIQUES

Learning activities

to practice critical thinking
& higher level thinking skills

- Round Robin
- Think-Pair-Share
- Buzz Groups
- Talking Chips
- Three-step Interview

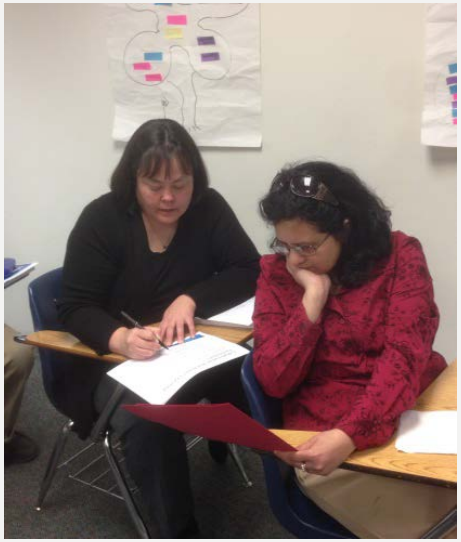
TECHNIQUE 1: ROUND ROBIN

Procedure:

Pose prompt: "When I hear… it makes me think of….(one word!)

- Explain brainstorm, taking turns, stating one word, no discussion
- Write on board or ask for volunteer scribe
- Each student takes a turn and answers aloud
- Moving from student to student
- Finish with going over list, point out the knowledge already in the classroom

TECHNIQUE 2: THINK-PAIR-SHARE



Procedure:

- Pose question to class
- Give students few minutes to think and prepare response
- Ask student to pair with neighbor
- Students exchange their responses

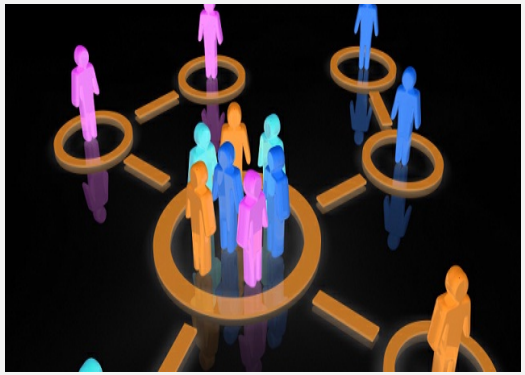
Excellent way to have students actively think about e.g. a lecture, the reading, a video, etc.

Instructor formulates the question.

Don't go over 5 minutes. Move on or have a quick "what did you say"?

Question could be at different Bloom levels: recall info from lecture, compare info, analyze etc.

TECHNIQUE 3: BUZZ GROUPS



Procedure:

- Form groups
- Announce discussion prompt
- Announce (and enforce) time limit
- Guide exchange of ideas
- Check on staying on task
- Gather in whole group for further discussion

Moving from pairs to small groups – teaching students to get comfortable speaking up. Formulation of the prompt is very important = instructor's job. Time is important! Not too long.

Buzz Groups

TECHNIQUE 4: TALKING CHIPS

Procedure:

- Form groups - oversee donation of chips
- Give each student 3-5 chips
- Instruct students: Pay (put in circle) 1 chip for each contribution to discussion
- Inform students, Discuss using all chips, no more, no less.

Faculty practices discussing using this technique by short video:
https://www.youtube.com/watch?v=qjGir7y7hmc

- *What is Dr. Flores' main assertion? Believe in the generational jump, through education.*
- *How does she proceed supporting this main claim?*
- *What factors does she assert are play a role for the gap*
- *Better targeted interventions due to more DATA*

TECHNIQUE 5: THREE-STEP INTERVIEW

Procedure:

- Fours, same size, As, Bs, Cs, Ds
- Step 1: Pair up ABs and CDs
- Interview each other, using questions instructor provides, taking notes, switch roles half way
- Step 2: regroup in 4s: A, B, C, D
- Step 3: All students summarize/present their partner's response to the ABCD group

Questions could be about lecture, read chapter, post-test, personal experiences, etc.

HOMEWORK

Learning opportunity in between sessions:

Use the worksheet to document.

- Select one of the discussion techniques, design a lesson incorporating it, and (if you are teaching) try it out in class.
- Use the worksheet to document your experiences OR fill out the worksheet using speculations about plusses and deltas while implementing
- Be prepared to present your work at next session

ACTION-RESEARCH WORKSHEET

Planning sheet – Implementation of Technique(s) for Student Success

Choose one **course** you teach this semester (& which section if you have more than 1, in which you want to experiment using this CoAlt:

At which **chapter or topic** will you use the technique?

Will you compare this experience with a **control group**, either last semester's cohort, or this semester and other section?

What is your **prediction** and how will you **measure the effect** of implementing your one technique?
e.g. more enthusiasm/motivation; more participation; higher quiz/test outcomes; better written work

Journal – Note your observations implementing the technique and your experiences during implementation. What were your outcomes and how did you measure them? What or how would you adapt the technique for the future?

Week 1

Week 2

Week 3