Harnessing CATs and CoLTs

Classroom Assessment and Collaborative Learning Techniques

Workshop II for the Academic Staff of

The University of Alberta

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University of Alberta Quiz – Looking back at 2008 . . .	
1. What was the total number of individual students enrolled in 2008?	
2. What percentage of the total number of 2008 enrolled students were:	
a. Female?	
b. Part –time students?	
c. Postgraduate students?	
d. Over 25 years old?	
e. First Nations members?	
f. Canadian citizens?	
g. International students?	
3. What percentage of the 2008 students reported speaking a language other than English at home/as their native language?	
4. What percentage of the academic staff was born overseas?	
5. What percentage of total university funding relies on teaching/learning?	
6. **In terms of enrolment size, where does U. Alberta rank in Canada?**	

Goals matter . . .

Goal Ranking & Matching Exercise

What do you hope to learn through your participation in this morning's workshop? How can it best address your needs and expectations? This is a Classroom Assessment Technique (CAT) designed to help you identify your goals and expectations and share them with the presenters–and each other.

1. On the lines below, please list three or four learning goals you hope to achieve–things you hope to learn or questions you hope to answer–through participating actively in this workshop.

List your <u>Learning Goals</u> for this workshop

_____

_____

_____

_____

2. Now, rank your goals in terms of their relative importance <u>to you</u>. Make the most important goal #1, the next most important #2, and so on.
3. Next, working with your group of 3-4 colleagues, determine quickly whether you have any first- or second-ranked goals in common. Determine which one or two key goals are most widely shared.
4. Prepare to report out which goals were shared within your group and to what extent. For example, "Three out of four of us wanted to learn X."

Reference: Angelo, T. A. & Cross, K. P. (1993). Classroom Assessment Techniques: A Handbook for College Teachers, 2nd edition. San Francisco: Jossey-Bass, pp. 290-294.

Collaborative Learning Technique #1

Buzz Groups

Useful for stimulating engagement in discussions and, and encouraging students to rehearse, express, and compare their ideas, opinions, and/or reactions with others.

Estimated Time and Effort Required for

Faculty to prepare this CoLT	***LOW***
Students to use this CoLT	***LOW***
Faculty to assess/follow up	***LOW***
Complexity	***LOW***
Risk of Failure	***LOW***

Duration & Location ***10-20 minutes/In class or online***

Group Size & Structure ***Triads to Quintets Informal/Little or no pre-organizing***

Description

Buzz groups give students the opportunity to exchange ideas, opinions, and information in a low stress environment. Because buzz groups can build interest in and enthusiasm for a subject, they are useful in introducing a new topic and in assessing students' prior knowledge or beliefs about that topic. Buzz Groups can also serve as in-class lead ins to out-of-class assignments.

Procedure

1. The instructor prepares a list of open-ended discussion questions that will tap students' ideas, prior knowledge, or opinions about the topic at hand. These should be questions for which there is no one correct answer.

2. In the context of a semi-structured, time-limited conversation, small groups of students discuss their responses to the prepared questions. It may be useful to assign roles such as time keeper, summariser, and reporter.

3. Groups summarize their responses – including the range of agreement and diversity – and report them to the instructor in writing and/or, if useful, to the entire class, orally. Alternately, in a large class, the instructor can sample responses from a few groups.

Learning how to learn matters . . .

Defining Features Matrix

Comparing Confusable Concepts

Directions: In the left-hand column below are features we could use to identify, distinguish, and classify reptiles and amphibians. Place plus signs "+" next to features that typically characterize reptiles and/or amphibians. Place minus signs (-) next to features which do not.

DEFINING FEATURES	Reptiles	Amphibians
Are vertebrates		
Are tetrapods (four-limbed)		
Are exothermic (warm-blooded)		
Usually lay eggs in water		
Usually lay eggs on land		
Usually have scaly, dry skin		
Usually have damp, smooth skin		
Some are native to WV		
Many species are endangered		

Prior knowledge and beliefs matter . . .

Statistics for Everyday Life – Spring 2004 - Angelo

First Concept Review: *Standard Deviation*

Circle the one variable in each row that you would expect to have the <u>largest</u> relative standard deviation:

1. adult humans' heights	**adult humans' weights**
2. domestic dogs' weights	**domestic cats' weights**
3. language skills of 12-year-olds	**math skills of 12-year-olds**
4. hours students spend <u>in</u> this classroom	**hours students spend studying <u>for</u> this class**

Current Events BKP*

***Introduction to US Foreign Policy* course**

True ***False*** **1. As of today, credible evidence has been found demonstrating a close working relationship between Saddam Hussein's regime and al Queda.**

True ***False*** **2. As of today, credible evidence has been found that Saddam Hussein's regime possessed weapons of mass destruction (WMDs) in Iraq.**

True ***False*** **3. During the most recent Iraq war, most citizens of most US coalition partners (e.g., Spain, Britain, Italy) supported the US-led invasion of Iraq**

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* Background Knowledge Probe

Collaboration toward shared goals matters . . .

Think-Pair-Share

A useful Collaborative Learning Technique for stimulating engagement in discussions, checking students' understanding of concepts, and encouraging students to rehearse, express, and compare their understandings with those of others

Estimated Time and Effort Required for

Academic staff to prepare this CoLT	***VERY LOW***
Students to use this CoLT	***VERY LOW***
Academic staff to assess/follow up	***VERY LOW***
Complexity	***VERY LOW***
Risk of Failure	***VERY LOW***

Duration & Location ***5-15 minutes/In class***

Group Size & Structure ***Pairs or triads/Informal/No pre-organizing needed***

Description and Purpose

The name of this CoLT, "Think-Pair-Share," captures the essential steps. In response to a question posed by the teacher, students think and perhaps write on their own for a few minutes, quickly pair up with classmates, and then share, discuss, and compare their responses in pairs before responding to the teacher or sharing with the entire class.

This technique provides students with the opportunity to formulate responses and practice communicating them with their peers. Since *Think-Pair-Share* can dramatically improve students' willingness and readiness to participate, it's often used as a "warm up" or "step up" to a whole class discussion.

Procedure

1. Pose an engaging question to the class, giving students ample time to think about the question individually and to devise individual responses.
2. Ask students to pair with another student nearby to share responses and, if useful, to create a joint response by building on each other's ideas.
3. Ask the pairs to share their responses with the whole class. If time is limited and/or the class is large, randomly call on student pairs.
4. If appropriate, provide the class with the correct or expert response, allowing them to check

and, if needed, correct their individual and pair responses.

Collaborative Learning Technique #3

Jigsaw

This CoLT is particularly effective in helping students master a large body of information that can be divided into discrete, though related, sub-topics. It puts into practice the adage, "To teach is to learn twice." Variations of the Jigsaw have long been used by medical and law students.

Estimated Time and Effort Required ***MEDIUM***
Complexity ***MEDIUM***
Risk of Failure ***MEDIUM***

Duration & Location ***30 minutes to several hours/In class or out of class***

Group Size & Structure ***Triads to Quintet/Some pre-organizing required***

Description

The name of this CoLT refers to jigsaw puzzles, in which a number of disparate pieces are brought together to form a coherent picture. Students learn best by teaching other students, and in the Jigsaw, each member of a team assumes responsibility for becoming the master and the teacher of one specific part of a topic, issue, or problem. This CoLT can help students learn new subject matter and/or provide opportunities for them to practice solving complex problems. It's particularly useful in courses where students are required to master a large body of information. Jigsaw also creates opportunities for equal participation and achievement; since each student has the chance to be in the spotlight. It requires that students assume responsibility for their learning, gives them double exposure to material, and allows for peer coaching. It also requires positive interdependence, since all members of the group need each other – and need to collaborate effectively – in order to put all the pieces together and succeed individually.

Procedure

1. The instructor presents a list of related topics to be learned, making the division of the material into component parts clear. The number of topics should be equal to or a small multiple of the number of students in each group; and usually no more than 3-5 per person.

2. With the proviso that all assigned topics must eventually be learned by all students, learners may be given the option to identify topic preferences.

3. Students work in "expert" groups -- with the other students who have selected or been assigned the same topic(s) -- to master their common topic(s). They also must determine the best ways to help others learn the material they've mastered.

4. Once the expert groups have mastered their material, the class splits into new groups in which each student serves as the only expert on a specific topic(s). In these new "tutorial" or "study" groups, topic experts take turns teaching the material and leading the discussion.

5. When student groups indicate that they have gained a full knowledge and understanding of the topics covered, the professor holds a full class discussion on all topics or gives an assignment, quiz, or exam to assess their individual and collective learning.

Assessment, Standards and Feedback matter . . .

A Sample Assessment/Grading Rubric

Title of piece: _____ Author: _____ Date:

(1) Responds fully to to the assignment	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(2) Expresses its purpose clearly and persuasively	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(3) Is directed toward and meets the needs of a defined audience	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(4) Begins and ends effectively	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(5) Provides adequate supporting arguments, evidence, examples, and details	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(6) Is well-organized and unified	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(7) Uses appropriate, direct language	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(8) Correctly acknowledges and documents sources	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(9) Is free of errors in grammar, punctuation, word choice, spelling, and format	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
(10) Maintains a level of excellence throughout	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
Shows originality and creativity in realizing (1) through (7)	EXCELLENT	VERY GOOD	Adequate	FAIR	Poor
OVERALL EVALUATION	**EXCELLENT**	**VERY GOOD**	**Adequate**	**FAIR**	**Poor**

Discussion Assessment Rubric – Example

This rubric can be used for self-assessment, to provide feedback for improvement, and/or for grading purposes related to participation in face-to-face or online discussions.

Category	4	3	2	1
Quality of information	Information provided clearly relates to the main topic and adds new insights. Includes several relevant supporting details and/or examples	Information clearly relates to the main topic. It provides at least 1 relevant supporting detail or example	Information clearly relates to the main topic. No relevant supporting details and/or examples are given	Information has little or nothing to do with the main topic or simply restates the main concept
Resources	Consistently provides relevant resources and references, even if not requested to do so	Occasionally provides resources and refs, even if not requested to do so	Provides relevant resources and references when requested to do so	Does not provide relevant resources and references, even if requested
Critical Thinking	Demonstrates critical thinking (CT) consistently by reflecting on and questioning premises and conclusions of self and others.	Demonstrates CT, reflection and questioning occasionally and/or mainly in relation to the ideas of others.	Responds to CT questions, but does not engage independently in critical thinking, reflection or questioning	Does not respond to CT questions posed by the facilitator or other participants.
Participation	Actively & regularly encourages and facilitates interaction among all discussion participants	Responds actively and productively to other participants when prompted	Rarely interacts or responds to other discussion participants	Responds to the discussion facilitator only when prompted
Use of Appropriate Disciplinary/ Professional Language	Appropriate vocabulary, style and tone are used consistently throughout the discussion	Appropriate vocabulary, style and tone are used frequently throughout the discussion	Appropriate vocabulary, style and tone are used occasionally in the discussion	Appropriate vocabulary, style and tone are rarely used
TOTAL				

Adapted by T.A. Angelo from an example developed by Amy Finch, PhD & Liane Connelly, PhD, RN, (2001) of Fort Hays State University, Hays, Kansas, USA.

For more examples of rubrics, see: Walvoord, B.E. & Anderson, V. (1999). Effective Grading: A Tool for Learning and Assessment. San Francisco,CA: Jossey-Bass, 1998.

Less can be more . . .

The Minute Paper

Please answer each question in 1 or 2 sentences:

1) What was the most useful or meaningful thing you learned during this session?

2) What question(s) remain uppermost in your mind as we end this session?

Reference: Angelo, T. A. & Cross, K. P (1993). Classroom Assessment Techniques: A Handbook for College Teachers, 2nd edition. San Francisco: Jossey-Bass, pp. 148-153.

A Revision of Bloom's Taxonomy

(From Anderson & Krathwohl, 2001)

CREATE
Generate, Plan, Synthesize, Produce the New

EVALUATE
Critique or Judge based on Explicit Standards/Criteria

ANALYZE
Break Down, Relate Parts & Whole, Organize

APPLY
Follow Procedures to Solve Problems or Carry Out Tasks

UNDERSTAND
Connect New Learning to Prior Knowledge by Interpreting, Classifying, Comparing, Summarizing, etc.

REMEMBER
Elaborate, Encode, and Retrieve Information from Long-term Memory

Why Give Learners Feedback?

- **To Improve performance & academic success**
- **To increase interest & motivation to learn**
- **To illuminate and undermine misconceptions**
- **To promote self-assessment**
- **To Develop Independence**

To Use Feedback Well, Learners Need M.O.M.

- **Motivation – *Reasons to use it***
- **Opportunities – *For safe, guided practice***
- **Means – *Knowledge & skills for improvement***

The Order in which We Give Feedback Matters.

Consider the Following five steps:

1st - Good News: What was done *well*

2nd - Bad News: What still needs *improvement*

3rd - Options: What *can be done* to improve it

4th - Plans: What the learner *intends* to do

5th - Commitments: What both parties *agree* to do,
how, to what standard, and by when

Connections and Applications matter . . .

Groupwork Exercise

Sharing What Has Worked & Learning Lessons from Success

DIRECTIONS: Focus on **a specific unit, lesson, concept, or skill** that you teach particularly well. With that successful experience in mind, **take the next 5 minutes** to jot down answers to the following questions.

As you write, prepare to explain your example to your colleagues in the small group in no more than 3 minutes.

1. **What course is your example taken from?**

2. **What exactly were you trying to teach?**
   (What was your teaching goal or objective?)

3. **How did you teach it?**
   (What, specifically, did you do that promoted success?)

4. **How did you know that students had learned it?**
   (How did you assess/evaluate/test their achievement of your goal?)

5. **What did you learn, as a teacher, from that experience?**

6. **What's the "big lesson" (general principle) about effective teaching and/or assessment that your example illustrates?**
   (How would you explain this to a beginning teacher not from your discipline?)

Pro and Con Grid

DIRECTIONS: **Considering everything you know about CATs & CoLTs at this point, what do you see as the most significant *pros* and *cons* – or costs and benefits – of using these approaches with your students. List at least three important *cons* (costs) and at least three *pros* (benefits) below. Then list any unanswered questions you'd like to follow up.**

Cons/Costs of

Pros/Benefits of

Unanswered questions to follow-up

Collaborative Learning Technique #4

Analytic Teams

Listening to a lecture, watching a video, or reading an assignment can be passive activities for students. One way to engage students more fully is to form structured teams to analyze and discuss various aspects of the task.

Estimated Time and Effort Required for

Faculty to prepare this CoLT	***MEDIUM***
Students to use this CoLT	***MEDIUM***
Faculty to assess/follow up	***MEDIUM***
Complexity	***MEDIUM***
Risk of Failure	***LOW***

Duration & Location ***15-60 minutes/In or out of class***

Group Size & Structure ***Quartets or Quintets/Formal/Some pre-organizing needed***

Description

This CoLT analyzes, or breaks down processes we expect individual students to engage in when critically reading, listening, or viewing into several specific tasks that are then distributed among different individuals or teams. This division of labor allows students to concentrate on learning and performing one aspect at a time of these complex critical thinking processes and to see how re-combining the different tasks through groupwork can contribute to their understanding and learning. In preparing this technique, the most challenging aspect is determining how to follow up on the groupwork in a way that will help students meaningfully synthesize the various information and opinions they have heard.

Procedure

1. Form student groups of four or five, assigning each individual in the team, or each team, one of the following roles:

   Summarizers - Prepare a summary of no more than seven most important points
   Questioners - Prepare at least three substantive questions about the material.
   Proponents -- List at least three points you agreed with and state why.
   Critics - List at least two points you disagreed with or found unhelpful and state why.
   Example givers - Give at least three examples of key concepts presented.

   Make certain that students understand the purpose of the exercise and the intended outcomes.

2. Present the lecture, show the video, or assign the reading. The actual listening, viewing, or reading can take place in or out of class or, in some cases, on line.
3. Give teams some class time to prepare to present their analyses, whether as oral or written presentations. Again, these can be done online. Specify and limit what each team will be responsible for presenting, to avoid unhelpful repetition. Assign clear time/length limits.
4. Follow up group presentations with individual assignments that build on and extend this exercise.

A Sample

Groupwork Evaluation Form

Overall, how effectively did your group work together on this assignment?
(circle the appropriate response)

1	2	3	4	5
not at all	poorly	adequately	well	extremely well

2. **How many of the five group members participated actively most of the time?**
(circle the appropriate number)

0 1 2 3 4 5

3. **How many of you were fully prepared for the groupwork most of the time? (circle the appropriate number)**

0 1 2 3 4 5

4. **Give one specific example of something you learned from the group that you probably wouldn't have learned on your own.**

Give one specific example of something the other group members learned from you that they probably wouldn't have learned without you.

Suggest one specific, practical change the group could make that would help improve everyone's learning.

Reference: Angelo, T.A. & Cross, K.P. Classroom Assessment Techniques: A Handbook for College Teachers, 2nd edition. San Francisco: Jossey-Bass, 1993, pp. 349-351.

Connections and Applications matter . .

Applications Card

DIRECTIONS: Please take a moment to recall the ideas, techniques, and strategies we've discussed -- and those you've thought up -- to this point in the session. Quickly list as many possible applications as you can. Don't censor yourself! These are merely possibilities. You can always evaluate the desirability and/or feasibility of these application ideas later.

Interesting IDEAS/TECHNIQUES from this session	***Some possible APPLICATIONS of those ideas/techniques to my work***

Reference: Angelo, T.A. & Cross, K.P. (1993). Classroom Assessment Techniques: A Handbook for College Teachers, 2nd edition. San Francisco: Jossey-Bass, pp. 236-239.

A Few Key References on Improving Teaching & Learning

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Workshop II Evaluation Form

1. **Please rate the overall quality of this session on the scale below:**

1	2	3	4	5
very poor	poor	acceptable	good	excellent

2. **Please rate the overall usefulness of the session below:**

1	2	3	4	5
useless	not very	somewhat	very	extremely

3. **Please rate the effectiveness of the presenter below:**

1	2	3	4	5
not at all	not very	somewhat	very	extremely

4. **What did you learn that you can apply to your work? (Please be specific.)**

5. **How could the session have been more useful to you? (Please be specific.)**

6. **What kinds of follow up would be most helpful to you?**