Lecturing for Deeper Learning

Effective, Efficient, Research-based Strategies

Prepared for the Academic Staff of
The University of Alberta

Thursday 16 April 2009 – 10:30 AM-12:00 Noon

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Key questions we *might* consider

1. **What <u>are</u> lectures good for? (And what aren't they good for?)**
2. **Why lecture at all, given the other available delivery options?**
3. **How can lectures best promote deep, long-lasting learning?**
4. **How can we <u>efficiently</u> make our lectures more effective?**

Terms and Concepts that *might* be of use

- **Teaching objectives/Learning outcomes**
- **Prior knowledge**
- **Active engagement**
- **Wait time**
- **Attention span**
- **Cognitive load**
- **Metacognition**
- **Novice-Expert differences**

- **The 80/20 Rule (aka, The Pareto Principle)**

Four Short-Answer Questions on Lecturing

1. **What, if any, are the key differences between giving an academic conference presentation and lecturing?**

2. **If lectures are an effective teaching method, how can we explain how little content even our best students typically retain or learn from them?**

3. **What kind(s) of learning are you trying to promote through your lectures? In just a sentence or two, using everyday language, please describe the intended learning outcomes of your lectures.**

4. **What are the 2 or 3 most challenging aspects of lecturing, in your experience?**

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.

Two Mnemonic Scaffolding Suggestions

Overall, if you want students to learn *MORE:*

***M*otivate** – Help students see why you love the subject

***O*rganize** – Make it virtually impossible for a motivated, hardworking but average student to fail to learn

***R*ehearse** – Provide opportunities for practice and feedback

***E*laborate** – Guide learners in applying and extending what they've learned beyond the information given

In lectures, to increase the odds that each student ***SEES*** your main points clearly:

***S*tate** – the main idea or concept in clear simple terms in a sentence or two–or ***S*how** it

***E*xplain** – that main idea or concept and why it matters more fully and in different terms – use visuals if possible

***E*xemplify** – provide 3 or 4 different examples -- use various media (show) and relevant "stories" (tell)

***S*ummarize** – have students restate the main idea or concept in their own words

Seven Levers for Deeper Learning

Research suggests that virtually all students can learn more – and more deeply – if we help them to . . .

Become explicitly aware of their own relevant prior knowledge, beliefs, preconceptions, and values – and be willing to <u>un</u>learn, as needed

Set and maintain realistically high and personally meaningful learning goals and expectations for academic success

Learn <u>how</u> to learn effectively – given their own individual histories, talents, preferences, and goals – so they become increasingly self-directed and independent learners

Understand the criteria, standards, and methods used in assessing and evaluating their learning and get useful, timely feedback on their performance against those standards

Seek and find connections to and real-world applications of concepts and skills they are learning in class

Collaborate regularly and productively with other learners and with teachers to achieve meaningful, shared learning goals

Invest as much actively engaged time and high-quality effort as possible in their academic work

Prior knowledge and beliefs matter . . .

Thanks to Dr. David McConnell, Prof. of Geology at the University of Akron, for the example above.

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 largest relative standard deviation:

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

The Seven C's

Design Criteria for More Effective Lectures

- ***Constructively-aligned***
- ***Conceptual***
- ***Connected***
- ***Concise***
- ***Clear***
- ***Coherent***
- ***Consequential***

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. Classroom Assessment Techniques: A Handbook for College Teachers, 2nd edition. San Francisco: Jossey-Bass, 1993, pp. 148-153.

*The "Muddiest" Point**

What was the "muddiest" point in this session?

(In other words, what was least clear to you?)

Reference: Angelo, T. A. & Cross, K. P. Classroom Assessment Techniques: A Handbook for College Teachers, 2nd edition. San Francisco: Jossey-Bass, 1993, pp. 154-158.

Lecture Preparation Questions

1. **What are your intended learning objectives/outcomes for this lecture? [How will you communicate them?]**

2. **What prior work leads in/connects to this lecture?**

3. **How will you and the students prepare for it?**

4. **How will you get, manage, and sustain attention?**

5. **How will you help students manage cognitive load?**

6. **What work will students do during the lecture?**

7. **How will you check understanding and achievement of learning objectives/outcomes?**

8. **What will the lecture lead/connect to? Next steps?**

Preparing Effective Lectures Efficiently

The Wrap Up

To make your lecture preparation time more effective and more efficient:

- **Set limits to your preparation time**
- **Remember the "80/20 rule"**
- **Contextualise and connect the lecture**
- **Start with the end–intended learning outcomes– and design backwards**
- **Identify and prioritise no more than 5-7 key points**
- **Privilege the beginning and the end**
- **Manage attention span and cognitive load**
- **Prepare to be, or at least to act enthusiastic**
- **Have Plan B ready, just in case**

Remember: ***It's what the <u>learners</u> do that matters most.***

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 re-evaluate the usefulness of these 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 Print References on Improving Teaching & Learning With a Focus on Effective, Efficient Lecturing

Anderson, L. & Krathwohl, D.R. (Eds.) (2001). A Taxonomy for Learning, Teaching, and Assessment: A Revision of Bloom's Taxonomy of Educational Objectives (Abridged ed.). New York: Allyn & Bacon.

Biggs, J. (1999). Teaching for Quality Learning at University: What the Student Does. Buckingham, England: SRHE/Open University Press.

Bligh, D. (1998). What's the Use of Lectures? 5th Edition. Exeter, England: Intellect.

Boice, R. (1996). First-Order Principles for College Teachers: Ten Basic Ways to Improve the Teaching Process. Bolton, MA: Anker Press.

Bransford, J.D., Brown, A.L, & Cocking, R.R. (Eds.). (1999). How People Learn: Brain, Mind, Experience, and School. Washington, DC: National Academy Press.

Exley, K. & Dennick, R. (2004). Giving a Lecture: From Presenting to Teaching. London: RoutledgeFalmer.

Mazur, E. (1997). Peer Instruction: A User's Manual. Upper Saddle River, NJ: Prentice Hall.

McKeachie, W.J & Associates. (2002). Teaching Tips: Strategies, Research, and Theory for College and University Teachers, 11th Edition. Boston, MA: Houghton Mifflin.

Race, P. (2001). The Lecturer's Toolkit: A Practical Guide to Learning, Teaching, and Assessment (2nd edition). London: Kogan Page Limited.

Ramsden, P. (2003) Learning to Teach in Higher Education, (2nd Ed.). London, New York: RoutledgeFalmer.

Sawyer, R. K. (2006). The Cambridge Handbook of the Learning Sciences. Cambridge: Cambridge University Press.

Stanley, C.A. & Porter, M.E. (Eds.). (2002). Engaging Large Classes: Strategies and Techniques for College Faculty. Bolton, MA: Anker.

A Few Potentially Useful Websites

The Active Learning Site. http://www.active-learning-site.com/index.html

The Carnegie Foundation for the Advancement of Teaching. http://www.carnegiefoundation.org/home.htm

The Center for Academic Transformation at RPI. http://www.center.rpi.edu/

The National Institute for Science Education (NISE). http://www.wcer.wisc.edu/nise/

University of Queensland. Teaching Large Classes: AUTC Project. http://www.tedi.uq.edu.au/largeclasses/

University of California, Berkeley Office of Educational Development. Tools for Teaching: Preparing to Teach the Large Lecture Course. http://teaching.berkeley.edu/bgd/largelecture.html

Session 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?**