Active Learning: Creating Excitement in the Classroom

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PREFACE

Thirty years ago, McKeachie wrote in the *Handbook of Research on Teaching* (Gage, 1963, P. 1125), "College teaching and lecturing have been so long associated that when one pictures a college professor in a classroom, he almost inevitably pictures him as lecturing." Few would argue with the statement that the vast majority of today's professoriate were primarily lectured to as both undergraduates and as

Active Learning

I. In the context of the college classroom, what are the major characteristics associated with active learning?

    A. Some of the major characteristics associated with active learning strategies include:

        1. Students are involved in more than passive listening

        2. Students are engaged in activities (e.g., reading, discussing, writing)

II.   **Why is active learning important?**

A. The amount of information retained by students declines substantially after ten minutes (Thomas, 1972).

B. Research comparing lecture versus discussion techniques was summarized in the report *Teaching and Learning in the Classroom: A Review of the Research Literature* prepared by the National Center for Research to Improve Postsecondary Teaching and Learning (McKeachie, et. al., 1987). The review concluded that

> In those experiments involving measures of retention of information after the end of a course, measures of problem solving, thinking, attitude change, or motivation for further learning, the results tend to show differences favoring discussion methods over lecture. (p. 70)

C. Numerous researchers and national reports also discussed the use of active learning strategies in the classroom. Consider the following statements:

> All genuine learning is active, not passive. It is a process of discovery in which the student is the main agent, not the teacher.
>
> (Adler, 1982)
>
> Students learn what they care about and remember what they understand.
>
> (Ericksen, 1984, p. 51)
>
> Learning is not a spectator sport. Students do not learn much just by sitting in class listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, apply it to their daily lives. They must make what they learn part of themselves.
>
> (Chickering and Gamson, 1987, p. 3)
>
> The sort of teaching we propose requires that we encourage active learning and that we become knowledgeable about the ways in which our students hear,

III.   What obstacles or barriers prevent faculty from using active learning strategies?

Six commonly mentioned obstacles to using active learning strategies include:

A. You cannot cover as much course content in the time available;

B. Devising active learning strategies takes too much pre-class preparation;

C. Large class sizes prevents implementation of active learning strategies;

D. Most instructors think of themselves as being good lecturers;

E. There is a lack of materials or equipment needed to support active learning approaches;

F. Students resist non-lecture approaches.

IV. How can these barriers be overcome?

A. We believe that there are two primary sets of obstacles that prevent faculty from using active learning strategies in the classroom: (1) the six potential obstacles noted above, and (2) the fact that using active learning strategies involves risk

B. With respect to the six commonly reported obstacles, the following should be noted:

1. Admittedly, the use of active learning strategies reduces the amount of available lecture time that can be devoted to content coverage. Faculty who regularly use active learning strategies typically find other ways to ensure that students learn assigned course content (e.g., using reading and writing assignments, through their classroom examinations, etc.)

2   The amount of pre-class preparation time needed to implement active learning strategies will be greater than that needed to "recycle old lectures;" it will not necessarily take any more time than that needed to create thorough and thoughtful new lectures.

3. Large class size may restrict the use of certain active learning strategies (e.g., it is difficult to involve all students in discussion in groups larger than 40) but certainly not all. For example, large classes can be divided into small groups for discussion activities, writing assignments can be read and critiqued by students instead of the instructor, etc.. See Weimer (1987) for several excellent articles on how this can be done.

4. Most instructors see themselves as good lecturers and therefore see no reason to change. Though lecturing is potentially a useful means of

transmitting information, teaching does not equal learning; this can be seen clearly in the painful disparity between what we think we have effectively taught, and what students indicate they have learned on the examination papers that we grade.

5. The lack of materials or equipment needed to support active learning can be a barrier to the use of some active learning strategies but certainly not all. For example, asking students to summarize in writing the material they have read or to form pairs to evaluate statements or assertions does not require

D. Though the classroom use of active learning strategies will always involve some

E.   Instructional approaches can be usefully classified in terms of instructor risk they entail. Figure 3 classifies some teaching techniques in terms of these two criteria:

Figure 3

A Classification of Instructional Strategies By Levels of Instructor Risk

F.   Because lecture classes have been the prevailing instructional approach seen most often by faculty when they were undergraduate and graduate students, many faculty have had limited personal experience with, and few role models for, active learning alternatives. To help identify your personal levels of risk and the active learning strategies you might be willing to try in future classes, complete the self-assessment that follows as Figure 4:

Figure 4

A SURVEY OF CLASSROOM TEACHING METHODS

DIRECTIONS: There are many different ways faculty make use of class time. We would like you to describe the teaching strategies you have used *in the class you teach most often*.

Step 1: Carefully read the list of teaching strategies (i.e., the left-hand column) and indicate with a check mark (3) if you used this teaching method the **last time** you taught this class.

Step 2: Then indicate with a check mark (%) whether you would be willing to try this teaching method the **next time** you teach this class.

Teaching Strategy	Last Time	Next Time
I lectured during the entire class period.	( )	( )
I showed a film or video for the entire class period.	( )	( )
During lecture, I gave a short, ungraded quiz to check student comprehension of material	( )	( )
I assigned a short writing activity without having class discussion afterward (e.g., writing end-of-class summaries, providing questions over material)	( )	( )
I had students complete a survey instrument	( )	( )
I had students complete a self-assessment activity (e.g., complete a questionnaire about their beliefs, values, behaviors)	( )	( )
I took the class on a field trip	( )	( )
I assigned a laboratory exercise that was done by students	( )	( )

I lectured with at least 15 minutes of time devoted to recitation or asking questions designed to check student understanding of material (interaction between teacher-student/student-teacher)   ( )   ( )

I led a class discussion focused on a visual/audio stimulus (e.g., a picture, cartoon, graph, song)   ( )   ( )

I had students engage in a brainstorming activity (i.e., a group activity designed to generate as many ideas as possible)   ( )   ( )

I lectured with at least 15 minutes of time devoted to class discussion (interaction between student-student, with occasional questions/remarks by teacher)   ( )   ( )

I assigned a short writing activity that was followed by at least 15 minutes of class discussion   ( )   ( )

I assigned an in-class reading activity that was followed by a significant class discussion lasting 15 minutes or more   ( )   ( )

I assigned a small group discussion or project (e.g., case study work)   ( )   ( )

I had students complete a problem solving game or simulation in groups   ( )   ( )

I assigned individual student presentations (e.g., speeches, reports)   ( )   ( )

I assigned small group presentations (e.g., debates, panel discussions, plays)   ( )   ( )

I assigned a student-centered class discussion (e.g., students developed the questions and lead the discussion that followed)   ( )   ( )

I led a role playing activity   ( )   ( )

G.   An *enhanced lecture* is defined as a series of short, mini-lectures punctuated by specific active learning events designed to meet class objectives. Using this model, the enhanced lecture could fall anywhere on the active learning continuum, depending on the complexity and frequency of the strategies used. A simple enhanced lecture could involve two to three pauses during the lecture to allow students to compare notes or ask questions. Those instructors who are familiar and comfortable with more complex strategies might choose to incorporate into the class period lengthy group activities focused on skill development, punctuated with brief mini-lectures that summarize a previous activity or create a transition for the next activity. Again, the extent to which these active learning strategies are incorporated into the lecture depends on the course objectives and the instructor's teaching style. For example, one construct for developing course objectives and associated active learning strategies (for more examples, see Appendix One) would be to ask the questions, as a result of this course:

3. If the things you feared most were to happen, what could you do to correct the situation?

I. According to Gorham (1988) the following behaviors promote student learning:
   1. Appropriate use of humor
   2. Praising student performance
   3. Engaging students outside of the classroom
   4. Appropriate level of self-disclosure
   5. Encouraging students to talk
   6. Asking questions about student viewpoints or feelings
   7. Following up on topics raised by students even if not directly related to class material.
   8. Referring to "our" class and what "we" are doing.

J. You can successfully overcome each of the major obstacles or barriers to the use of active learning strategies, and reduce the possibility of failure, by gradually incorporating teaching strategies that increase student activity level and instructor risk into your regular teaching style. *Choose what is appropriate for you within the context of your discipline!*

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Appendix One

Use "thumbs up, thumbs down or thumbs sideways". Make a statement about the content and tell students to put their thumbs up if they agree with the statement - thumbs down if they disagree or thumbs sideways if they don't know. Discussion on why the choices were made follows.

Break the students up in small groups (four to five) and assign a role-playing task to highlight different methods/circumstances illustrated by the text or lecture. The students must plan and then act out a short scenario which illustrates the method assigned to their group.

Round table exercise: write a response to a question, then pass it to the person on your left until all in the group have had the opportunity to respond. Responses can also be passed between groups.

Cooperative paraphrase exercise as part of a discussion between pairs ("What I understand you to have said is...........").

Stop and have students engage in a short write ("What do you think and/or feel about what has been said?")

After reading a short essay describing and discussing a concept that is relevant to the task at hand each student reflects on the application of this concept to her life. She then shares with another student her ideas. Feedback (questions of clarification, paraphrasing, etc.) is required before the second student can share his thoughts. Then both students draw conclusions and share those conclusions.

Have students work in small groups to complete a cognitive map (a diagram showing relationships between elements) of concepts addressed in class. Large group discussion follows.

Have students work in small groups to complete an ungraded mini-test over concepts addressed in class. Discussion of the answers follows.

Distribute clearly worded questions, relevant to the topic introduced in the first ten minutes of class, to small groups. Each group discusses their topic, using notes and text, and presents a brief answer to the class. The remaining time is used to summarize and integrate the responses.

to exchange places within the groups, i.e., each reporter ends up in a different group, and continues the exercise sharing input from his/her previous group.

After lecturing for 10-12 minutes with material and information brought by the instructor from sources beyond the class assigned readings, pause for 3-5 minutes. Students, working in ad hoc pairs with someone seated next to them, share what they have understood from the lecture and prepare a two-three statement summary, which a few groups can share subsequently with the entire class (on a voluntary basis).

Require groups of students to determine how to "act out" a concept under discussion: i.e. independent assortment of alleles or electron transport. This would follow the introductory information in the lecture.

During a discussion of a specific technique (i.e., software development), review the basics of the technique. Assign short group tasks to solve a specific problem in phases. Stop the group and discuss the results. Then assign a more complex task until you get the students to solve the entire problem. Use the last few minutes to review the task and assign individual homework using the same technique.

Have a structured group discussion following a film, focusing on controversial issues, ethics, etc.. Provide specific questions to be answered by small groups, each having a facilitator and recorder/reporter.

Have question/answer period where students are assigned to bring one question raised in the course of reading their assignments, on a 3x5 card. Don't use too often - the questions become pretty dull!

Have the students form small groups (four to five people) and provide each group with a real-life example related to the course content. The students critique the example using what they have learned. For instance, in a research course they could be given a real survey that they can redesign and improve.

Activities to include in the last ten minutes of a lecture.

Hand out 4X6 cards to the students (one per student) and ask them to write down on the cards (one side) the major points covered in the class or the purpose of that specific class. Then, I have them discuss what they have written with a partner for about two minutes. Then, I ask them to write a revised version of the points or purpose on the reverse side of the card, which they hand in as they are leaving class.

Have students working in pairs or groups develop an outline of the day's presentation.

Have students develop an alternative way to present the lecture material

Have students form groups of three or four. Introduce a problem related to today's content. Ask groups to solve the problem, proposing three <u>alternative</u> strategies towards its resolution.

Divide the class into groups of three to five, depending on size of class. Ask each group to propose three goals which they would like the class to accomplish at the next meeting.

Have students form groups and write one or two good multiple choice questions and present these questions (via overhead) to the class. Discuss the questions.

Have students review each other's notes to enhance learning.

Have students answer the discussion questions at the end of the assigned chapter. They then explain their answers to the class.

Have students summarize the main topics of discussion in one or two paragraphs and then relate them to yesterday's discussion.

Have students evaluate each other's work-- in this time frame, something very small (notecards for research papers, for example), making sure they have grading instructions. To ensure low risk: create short, structured specific roles. Make sure student's know each other's names.

Have students keep a journal, taking a few minutes to write down their feelings and thoughts regarding various topics.

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Possible Applications:

As you reflect upon the session to this point, how might you apply what you have heard to your courses or classroom?

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