


Session Objectives

- ❶ Identify various active learning activities (ALAs) that can be used in classroom settings.
- ❷ Develop active learning strategies which are consistent with desired educational outcomes.
- ❸ Develop a plan to implement ALAs for their own classes.
- ❹ Develop assessment strategies to measure the impact of ALAs on students' learning and satisfaction.

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Using Active Learning to Develop Critical Thinking Skills at Auburn University



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Introduction

- Reasons for using active learning activities in the classroom.
- Strategies that can be used as active learning activities.
 - Traditional strategies
 - Technology-assisted strategies
- Development and implementation of the Active Learning Activity (ALA) Approach.
- Evaluation of the ALA approach.

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Slide 2

MB20 When I opened this file, your text information is on top of the photo of AU campus.
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Background

- Pharmacy graduates are expected to effectively manage their practice settings and expand their roles.
- HSOP curricular outcome: manage the pharmacy within the organization's business plan including: human resources, facilities, inventory/formulary, and dispensing process
- I am responsible for teaching Management I and II courses at Auburn.

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Our Course Objectives: Examples

- Recommend appropriate strategies that can be used to motivate employees.
- Provide appropriate recommendations to improve pharmacy operations.
- Use pharmacoeconomic literature to provide formulary recommendations.

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Worksheet: Q1

- Give 1-2 examples of your course objectives.

6

Bloom's Taxonomy

- Knowledge
- Understanding
- Application
- Analysis
- Synthesis
- Evaluation

Our course objectives are set at the application or higher learning levels.

Bloom B. S. (1956). Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain. New York: David McKay Co Inc. 7

At what level does your selected objective target?

1. Knowledge
2. Understanding
3. Application
4. Analysis
5. Synthesis
6. Evaluation

Level	Percentage
1	16%
2	16%
3	16%
4	16%
5	16%
6	16%

To accomplish your selected objective, what is your teaching strategy?

1. Pure lecture
2. 75% lecture, 25% activities
3. 50% lecture, 50% activities
4. 25% lecture, 75% activities
5. Pure activities

Strategy	Percentage
1	20%
2	20%
3	20%
4	20%
5	20%

Slide 8

MB1 When I view this slide, the chart is on top of the page number (9). It makes it slightly difficult to see the 6 under the chart representing the evaluation level.

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Slide 9

MB2 Similar comment here. The page number (10) is a slight distraction from the chart (and it is in between the 4 and 5 levels).

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Literature Review

- **Active Learning**
• Any instructional method that actively engages students in the learning process.
- **Collaborative Learning**
• An instructional method where students work together in small teams towards common goals.
- **Immediate Feedback**
• An interactive process that provides learners with insight into their performance.

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Active Learning

- Requires students to engage in meaningful activities and to think critically about what they are doing.
- Research found that students learn and retain new information better when they engage in active learning.

Bonwell CC, Eison JA. Active Learning: Creating Excitement in the Classroom. Washington, DC: George Washington University; 1991.
Prince M. Does active learning work? a review of the research. Journal of Engineering Education. 2004;93(3):223-231.

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Collaborative Learning

- Focuses on how students interactions influence learning outcomes.
- Students are responsible for facilitating successful learning for themselves as well as others.
- Research consistently found that collaboration enhances academic achievements, student attitudes and retention.

Gokhale AA. Collaborative learning enhances critical thinking. Journal of Technology Education. 1995;7(1):22-30.
Johnson DW, Johnson RT, Smith KA. Cooperative learning returns to college: what evidence is there that it works? Change. 1998;30(4):26-35.

Slide 10

MB3 Should be either "in small teams" [removing the a] or "in a small team" [making teams singular in tense].

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Slide 11

MB4 The second citation (the one for the journal article) lacks a period at the end of the page numbers.

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Slide 12

MB5 This just sounds a little odd when I read it out loud. How would you feel about using "...as well as for themselves" or "Students are responsible...for themselves as well as others"? Maybe it's just me and how I'm hearing it.

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Immediate Feedback

- Refers to various types of feedback that become immediately accessible to the student as the student engages in the learning process.
- Feedback motivates students and provides information that they can use to correct or improve their learning.
- Research has shown that immediate feedback is more effective than delayed feedback.

McClenaghan BA, Ward DS. Health and physical education. In: Maher CA, Forman SG, eds. A Behavioral Approach to Education of Children and Youth. Hillsdale, NJ: Erlbaum Association; 1987:131-151.

Kulik JA, Kulik CC. Timing of feedback and verbal learning. Rev Educ Res. 1988;58(1):79-97.

Enhancing the Lecture

- Lectures have strengths and limitations. MBQ
- An enhanced lecture: a MBQ series of short, mini-lectures punctuated by specific active learning activities.
- Active learning activities can range from simple to complex tasks.
- Examples: the pause procedure, short writes, think-pair-share, formative quizzes, and lecture summaries.
- Technology can be used to enhance the lecture.

Bonwell CC, Sutherland TE. The active learning continuum: choosing activities to engage students in the classroom. In: Sutherland TE, Bonwell CC, eds. Using Active Learning in College Classes: a Range of Options for Faculty. San Francisco, CA: Jossey-Bass; 1996.

Let's Discuss

- What active learning strategies do you use in your classroom?

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Slide 14

MB7 lecture: a (to match the examples: the bullet below)
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MB6 limitations. (needs a period)

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The Active Learning Activity (ALA) Approach

- The ALA approach is a formalized approach.
- Used to deliver in-class active learning activities (ALA's).
- Utilized in PPDME I and II courses.
- ALA's are integrated into specific class sessions.
- ALA's are worth 5% of student grades.

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Activities in PPDME I

Date	Session	Active Learning Activity
Aug 27	Paying for health care	Selling insurance policy
Aug 28	Reimbursing health care providers	Reimbursing health care providers
Sep 4	Pharmacy benefit management companies	Copay structure
Sep 11	Medicaid	Medicaid case
Oct 8	Operations management	Medication errors and operations management I
Oct 9	Quality management	Medication errors and operations management II
Oct 15	Medication use process overview, workflow, and workload	Workflow ALA
Oct 29	Pharmacoeconomics: concepts and formulary development	Pharmacoeconomics exercise
Nov 12	Organizational structure and behavior	Organizational structure and behavior
Nov 13	Performance appraisal	Performance appraisal
Nov 19	Motivation	Motivation and reward systems

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Slide 16

MB9 The ALA Approach model figure is covering the text "university" on the slide
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Slide 18

MB10 Just FYI, I cannot see the page number for this slide because the table is covering it
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Example

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Implementation

- Students work in teams of 2-4 to complete each ALA.
- Generally, students are required to analyze a real world scenario and recommend a solution to the problem.
- Students are allowed to use all available resources including class notes, readings, and internet or ask teaching assistants and the instructor.

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Implementation^{MB11}

- The instructor interacts with students^{MB12}, probe for understanding and answer questions.
- A student volunteer presents^{MB13} his/her team's answers to the ALA questions in front of the class.
- Each team submits^{MB14} the completed ALA to the instructor.

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Slide 21

MB14 needs to be submits

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MB13 needs to be presents

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MB12 The three verbs in this bullet (interact, probe, and answer) need to be plural (interacts, probes, and answers).

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MB11 This is size 57 font and on the previous slide, the same heading is only size 46 font

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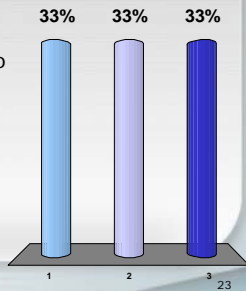
Grading

- Students either receive a credit for their participation or do not receive a credit.
- Teaching assistants are responsible for grading these ALAs.
- Time commitment to grading is low.

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Are you interested in implementing the ALA approach in your classroom?

1. Yes, definitely
2. No, I don't think so
3. Maybe a modified version



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What outcomes would you like to see before deciding whether you would use the ALA approach?

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Measurements

1. Students' satisfaction
 - End-of-semester evaluation
 - Session evaluations
2. Students' attendance
3. Students' performance on the examinations at different cognitive levels.

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End-of-Semester Evaluation

- Students were asked to rate the extent of their agreement for the "ALA helped them learn the materials" statement.
- The response categories ranged from 1 (strongly agree) to 5 (strongly disagree).
- Fall semester: 47% strongly agreed and 37% agreed with the statement (mean = 1.77).
- Spring semester: 45% strongly agreed and 33% agreed with the statement (mean = 1.83).

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Session Evaluations

- Positive comments
 - ALAs were helpful in applying the concepts to real-life scenarios.
 - ALAs reinforced the lecture.
 - ALA clarified the concepts covered in class.
 - ALAs were enjoyable.
 - We liked ALAs.
- Comments for future improvement
 - Should provide additional time to complete ALAs

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Slide 27

MB15 Did you mean "...in applying"?
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2. Student Attendance

- The Office of Teaching, Learning and Assessment conducted a survey of 2nd year students at the end of Spring 2008.
- The level of attendance in PPDME II was the highest among all three courses.
- 73% had never missed or missed only one session.

Westrick SC, Helms K, McDonough S, Breland ML. Factors influencing pharmacy students' attendance decisions in large lectures. *American Journal of Pharmaceutical Education*. In press. 28 MB14

3. Students' Performance on Examinations

- I conducted a simple study in classroom using pre-and post-tests.
- Twenty questions were used in both pre and post-tests.
- These 20 questions were used to measure students performance in two topics.

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Study Design

	Lower cognitive levels	Higher cognitive levels
Topic with an ALA	Gain in scores A (posttest score-pretest score)	Gain in scores B
Topic without an ALA	Gain in scores C	Gain in scores D

*5 questions in each cell

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MB16 Citation is on top of the slide page number
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Results

Table 3: Students' average gain in scores calculated from pretest and posttest

Topic	Bloom's Taxonomy of Cognitive Domain		Comparison t-test ^c
	Lower level ^a Mean (SD)	Higher level ^b Mean (SD)	
Reimbursing health care providers (ALA-present topic)	1.64 (1.20)	1.40 (1.39)	1.61
Managed care organizations (ALA-absence topic)	2.50 (1.17)	2.06 (1.41)	2.75**

^aKnowledge and comprehension
^bApplication, analysis, synthesis, and evaluation
^cPaired sample t-test was used to compare the gain in scores between the lower and higher levels.
 **p < .01

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How Does the ALA Approach Enhance Learning?

- During the completion of ALAs, students' prior knowledge is activated and drawn upon.
- If inconsistencies exist, students have opportunities to self-correct their thinking.
- Prior ALA experience with transferring information to a higher cognitive level helps students transfer their learning to higher cognitive levels in examination.

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Strengths and Areas for Further Enrichment

- + Structured learning activities
- + Two-way feedback
- + Student-faculty interactions
- Time requirement to complete ALAs
- Interactions with a satellite location

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Slide 31

MB17 The table is partially covering the heading for this slide
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Slide 32

MB18 needs a period
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Questions & Comments

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