Defining Active Learning

Day 1 Learning Objectives
• Describe the principal characteristics of active learning
• Discuss how active learning practices were incorporated into courses at two different institutions
• Become familiar with where to find exemplary teaching and learning resources as models for course materials

EXPLORATION ACTIVITY
Three instructors taught an introductory physics course during the same semester:
• Prof. A emphasized concepts, careful, logical presentations;
• Prof. B used demonstrations and took extra preparation time;
• Prof. C had a problem solving emphasis.
All used the same textbook and covered the same chapters. All professors received similar evaluations. Pre-test scores on a validated standardized test for each class were the same.
Predict which (if any) professor’s class showed the greatest gain in post-test score.

What was the definition of active learning as presented by Bonwell & Eison (1991)?

A. Instructional activities that involve students measuring their learning compared to a defined standard
B. Instructional activities that present key lesson materials in a well-designed logical sequence for student review
C. Instructional activities involving students in doing things and thinking about what they are doing
D. Instructional activities that involved students participating in authentic-style research experiences


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Charles Bonwell & James Eison, 1991
Active Learning: Creating Excitement in the Classroom, ASHE-ERIC Higher Education, Report No. 1
What is Active Learning?

**Our Working Definition:**
1. Students participate in classroom activities (either “Doing” or “Observing”) in addition to/instead of listening to direct instruction;
2. Activities provide opportunities for student reflection on learning or facilitate student/instructor interaction and assessment of learning;
3. Peer-to-peer interaction occurs as students complete the activity.

**Active Learning vs. Traditional Lecturing**

1. Failure rates (DFW) in active learning classes less than in traditional format, 34% → 22% (n=67 studies; 29,300 students)

2. Students in active learning classes outperformed those in traditional classes by ~6% on exams (n=158 studies)

3. Helps all students, reduces performance gaps

**Active Learning Resources in the Geosciences**

[Image of various active learning resources related to geosciences]