TurboTeaching:
Getting Students Actively Engaged in Learning

Donna Lee Wright, EdD, RT(R), FAERS
Midwestern State University
donna.wright@mwsu.edu
Objectives

• Upon completion of this session, participants will:
  – Recognize the benefits and challenges of active learning strategies.
  – Provide several alternatives to traditional lectures and testing.
  – Describe examples of implementing these strategies in Radiologic Sciences courses.
“I hear and I forget. I see and I remember. I do --- and I understand.”

Confucius
What is Active Learning?

Google It!

Active Learning Site Home Page
Offers information on this technique including bibliographies, links, classroom ideas, and workshop...
www.active-learning-site.com/ - 4k - Cached - Similar pages

ACTIVE LEARNING
Many college teachers today want to move past passive learning to active learning to facilitate more meaningful student involvement
Role playing and simulation can be used to explore feelings, attitudes, values and perceptions, explore different subject matter, develop problem solving skills and empathy, practice general, specific and team skills, define a problem, motivate writing, stimulate communication, moral development and decision making, encourage creativity and spontaneity, understand effects of behavior, utilize intellectual potential and generate motivation and enthusiasm while small group activities and group discussions can be used to teach thinking, feeling and applying, exchange opinions, consider a new idea, value or solution, assess levels of skill and understanding, process learning outcomes, stimulate creative thinking, provide an avenue for student participation, give and receive positive feedback and develop
What is Active Learning?

Anything that involves students in doing things and thinking about the things they are doing.
Important Forces

• Traditional teaching methods simply do not work as well as they used to
• Changing student body with differing learning needs (working adults, culturally diverse students)
• Less emphasis placed in transmitting information and more on developing students’ skills
Facts educators would rather not know:

• While instructors are lecturing, students are not paying attention to what is being said 40% of the time.

• In the first ten minutes of lecture, students retain 70% of the information; in the last ten minutes 20%.
Blank slide to force a pause

Reflection Question:
How can YOUR teaching be Turbo-Charged?
We Already Turbo Teach!

- **Positioning** Laboratory experiences are based on simulations
- **Exposure** Laboratory experiences are often based on simulations and actual radiation exposures
- **Clinical** education is the ultimate “active learning” situation
Early RT education was on-the-job positioning and technical factors from radiologists willing to train assistants.

Ed Jerman began teaching x-ray techniques in 1897 and the first military school for RTs was established in 1942.

Formal RT education became widespread in the 1950s - 1960s.

Current renewed interest in active, hands-on RT education options.

Barriers to Active Teaching

- Limited class time
- Increased preparation time
- Difficult to use active learning in large classes
- Lack of needed materials, equipment, or resources
- Risks
  - Students will not participate, use higher-order thinking, or learn sufficient content
  - Faculty members will feel a loss of control, lack necessary skills, or be criticized for teaching in unorthodox ways

http://en.wikipedia.org/wiki/Active_learning
Active Teaching Involves All 3 Domains

- Cognitive
- Psychomotor
- Affective
Examples of Active Teaching Strategies

- Icebreaker / Snoozebreaker Activities
- Personalized Worksheets
  - “How does this apply to ME?”
- In-Class Writing Activities
- Learning Contracts
- PBL / Case Studies
- Portfolio Development
Examples of Active Teaching Strategies

- **Role-Playing / Simulation**
- **Peer Teaching**
- **Brainstorming**
  - Think – Pair – Share
  - 2-3 minutes
- **Designated Note-Sharing Time**
- **Concept Mapping**
- **Debates: Pros & Cons**
Examples of Active Teaching Strategies

- Student-Generated Test Questions
  - “Board Exams”
- Scavenger Hunts*
- Video Lab Practice / Demonstration
- Creating Models
- Self-Evaluation
- Technology-Based Delivery Systems
- Games
Tick – Tick - Tick
Creating Small Groups

• Teacher-Assigned vs. Random vs. Class-Determined

• Outline the activity with specific instructions that are easy to understand, task-oriented and provide specific time limits for the activity

• Manage several small groups conversing within the confines of a classroom
Creating Small Groups

• Roles identify specific responsibilities and helps keep students on task:
  – recorder, mediator, clarifier, encourager, facilitator, reporter, timekeeper, and wildcard

• Announce grading policies for the group and individuals up front
Creating Small Groups

• Silence is okay – think before speaking
• Stick with assigned roles
• Respect contribution of others
• Do not dominate the discussion or interrupt others
• If you do not understand; ask for clarification
Small Groups Can:

• Summarize main points in a text, reading, lecture, etc.
• Generate ideas in preparation for a lecture, exam, etc.
• Assess levels of skills and understanding
• Solve problems that relate theory to practice and to everyday life
Cooperative Learning

• Intentionally selected groups of 3-5 students work interdependently on a well-defined learning task

• Students are held accountable individually for their own performance and the instructor serves as a facilitator / consultant in the group learning process

Traditional vs. Cooperative Learning

- **Traditional Learning Groups**
  - No interdependence among group members
  - No individual accountability
  - Homogeneous membership
  - One appointed leader
  - Each member is responsible for himself / herself

- **Cooperative Learning Groups**
  - Positive interdependence among group members
  - Individual accountability
  - Heterogeneous membership
  - Shared leadership by all group members
  - Group members are responsible for one another

Traditional vs. Cooperative Learning – cont’d

- **Traditional Learning Groups**
  - Only the task is emphasized
  - Social skills are assumed and ignored
  - Instructor ignores the groups
  - No group processing occurs

- **Cooperative Learning Groups**
  - Task and process are emphasized
  - Social skills are taught directly
  - Instructor observes and facilitates
  - Group processing occurs

Learning Contracts

• Didactic or Clinical
• Learning expectations, resources, experiences, documentation, designated evaluators, evaluation criteria and timelines
• Students felt greater job satisfaction and a sense of career accomplishment
  – Were more involved in continuing education opportunities,
  – Overall positive attitude
Although both PBL and CBI apply learned theories to real-life situations, PBL is different from CBI.
Problem-Based Learning

• Based on realistic patient situations or scenarios to stimulate students to acquire and apply information to solve problems

• Situations are presented before information is covered in class / lab

• Requires students to search for holistic answers
Case-Based Instruction

• Based on realistic patient situations or scenarios to stimulate students to acquire and apply information to solve problems
• Situations are presented after information is covered in class / lab
• Requires students to search for holistic answers
Scavenger Hunt

- Internet-Based
- Physical
  - Hide various parts of an x-ray tube (styrofoam, paper, cardboard) in the building. Students must discover the parts and assemble them. First done correctly wins.
  - Hide terms written on pieces of paper around the room. Students must find the paper slips then write definitions. First done correctly wins.
• Most popular learning games are based on established games such as Monopoly, Pictionary, Bingo, Scrabble, and Jeopardy.

• Keep the game consistent with the course objectives, develop clear and concise rules, allow adequate time to complete the game and debrief the game.
Games

• **Warning**: This activity can be very time consuming for the teacher
• Involve the students by giving them the categories and having them write the questions
• Google PowerPoint Games
• [Chest Millionaire](#)
Game Rules

• The rules must be explicit and consistently enforced
• Competition must also be controlled so that it does not interfere with the learning process
• Teachers are facilitators, providing instruction and guidance when necessary
Include blank slides to force a pause & give time for questions
Lectures
"It's a clear case of RLS: Repetitive Lecture Syndrome."
To Lecture or Not to Lecture

• Advantages
  – Provides information to a large number of students
  – Covers a large amount of material quickly
  – Is cost effective and efficient use of class time
To Lecture or Not to Lecture

• Disadvantages
  – Provides less opportunity for students to process information and develop problem-solving skills
  – Students lose interest quickly and lack an opportunity to provide feedback
  – Students cannot skip content they know or work at a self-directed pace
  – Promote a teacher-centered environment instead of a student-centered environment
  – **Students are passive learners**, depending solely on the faculty to teach them information instead of actively involving themselves in the learning process
“This PPT slide perfectly illustrates my main points – which you could have seen and understood if I had remembered to bring the spare projection bulb . . .”
To PowerPoint or Not to PowerPoint

• **Disadvantages**
  • Students don’t process information and develop problem-solving skills
  • Students lose interest quickly
  • Less opportunity to provide feedback
  • Students cannot skip content they know or work at a self-directed pace
  • Promotes a teacher-centered environment instead of a student-centered environment
  • **Students are passive learners**, depending solely on the faculty to teach them information instead of actively involving themselves in the learning process
To PowerPoint or Not to PowerPoint

- **Student copy**
  - **Disadvantages**
    - Provides less opportunity for students to ________ _____ and develop ________________
    - Students lose ________________ and lack an opportunity to ________________
    - Students cannot skip content they know or work at a ________________
    - Promote a _____________________________ instead of a ________________
    - Students are _________________________, depending solely on the faculty to teach them information instead of ________________ in the learning process
Attention Span

• Research has shown that people can't focus on lectures for longer than about 12 - 15 minutes

• Minds will wander

http://www1.umn.edu/ohr/teachlearn/tutorials/powerpoint/lecturing.html
Include blank slides to force a pause & give time for questions
Active Lecture Tips

• AKA Participatory Lectures
• Pose an Opening Question
• Use Visual Enhancement
• Pacing
  – Allow time to absorb information
• Two Minute Paper
  – Muddiest Point
  – Most Important Point
Active Lecture Questions

• Avoid general, yes/no questions

• Ask questions that are thought provoking or evaluate a current ethical dilemma to encourage students to explore their own thoughts and feelings

• Require students to use advanced reasoning techniques to defend their answers

Armentor, MSU Exit File Paper, 2002
Active Lecture Questions

• Base the questions on the course objectives to keep the students on topic and to enhance the educational value of the discussion
• Stop the discussion before the end of class and summarize the major points
• If key points have not naturally emerged in the discussion, teachers can include those points to ensure that all of the objectives have been met
Blank slide to force a pause

Reflection Question: Based on your BINGO card, Active Learning is NOT . . .
Reflection Question:
How can YOUR teaching be Turbo-Charged?
In Conclusion

• Active learning methods and models are limited only by the imagination and creativity of the instructor.

• Teachers should be aware that not all strategies are going to work every time they are used.
In Conclusion

• Each group of students will react differently based on their own values, attitudes, feelings and motivations.

• Teachers should not be afraid to try new techniques to make courses more interesting.
“What we have to learn to do, we learn by doing.”

Aristotle