



**Department of Forestry** 



# IMMEDIATE FEEDBACK ASSESSMENT

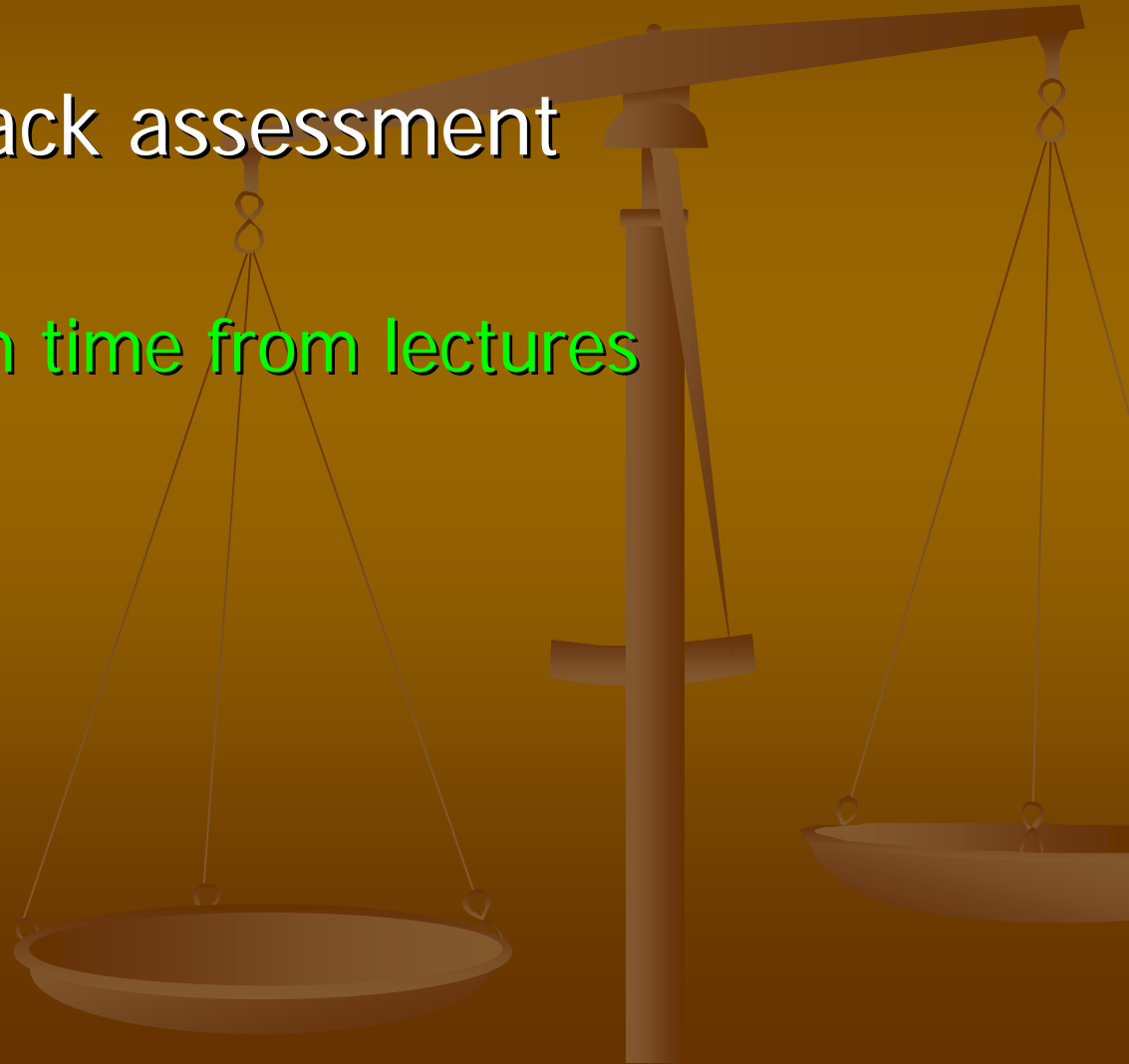
**Freeing  
Classroom Time  
From Lecture**

**Dave Wagner  
Department of Forestry  
University of Kentucky**

# Persuasive Goals Today

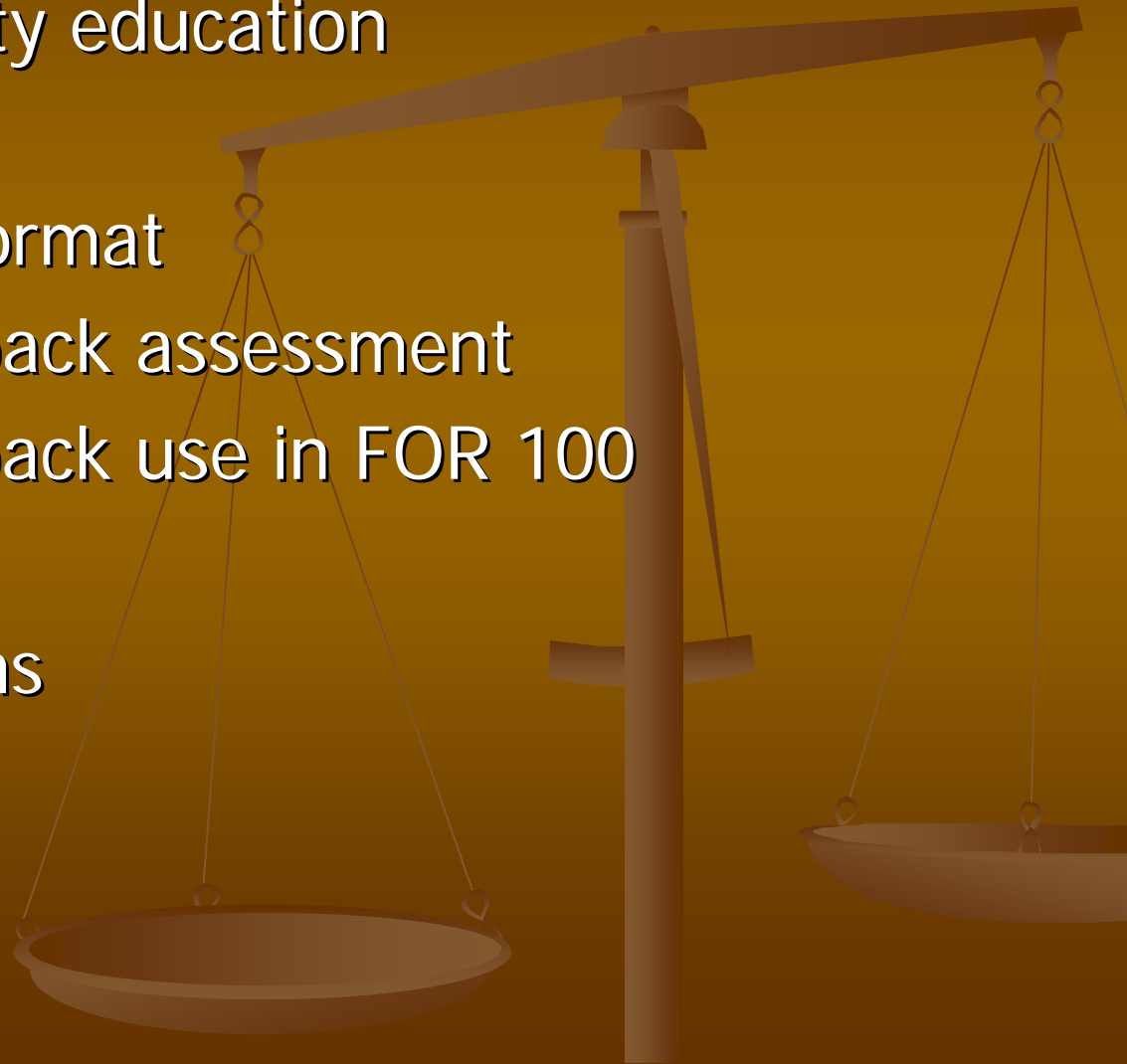
## Immediate feedback assessment

- Students prefer
- Frees classroom time from lectures



# Preview

- Goals of university education
- Lecture format
- Active learning format
- Immediate feedback assessment
- Immediate feedback use in FOR 100
- Outcomes
- Recommendations



# Goals of University Education

- Knowledge transfer
- Long-term retention
- Development of complex cognitive behaviors



(e.g., Bloom 1956, Fink 2003)

# Lecture Format

- Traditional method of choice
- Efficient knowledge transfer
- Short-term retention
- Lower-level cognitive skills



(McLeish 1968; Blackburn et al. 1980; Saunders 1980; Gardiner 1994; Fink 2003)

# Active Learning



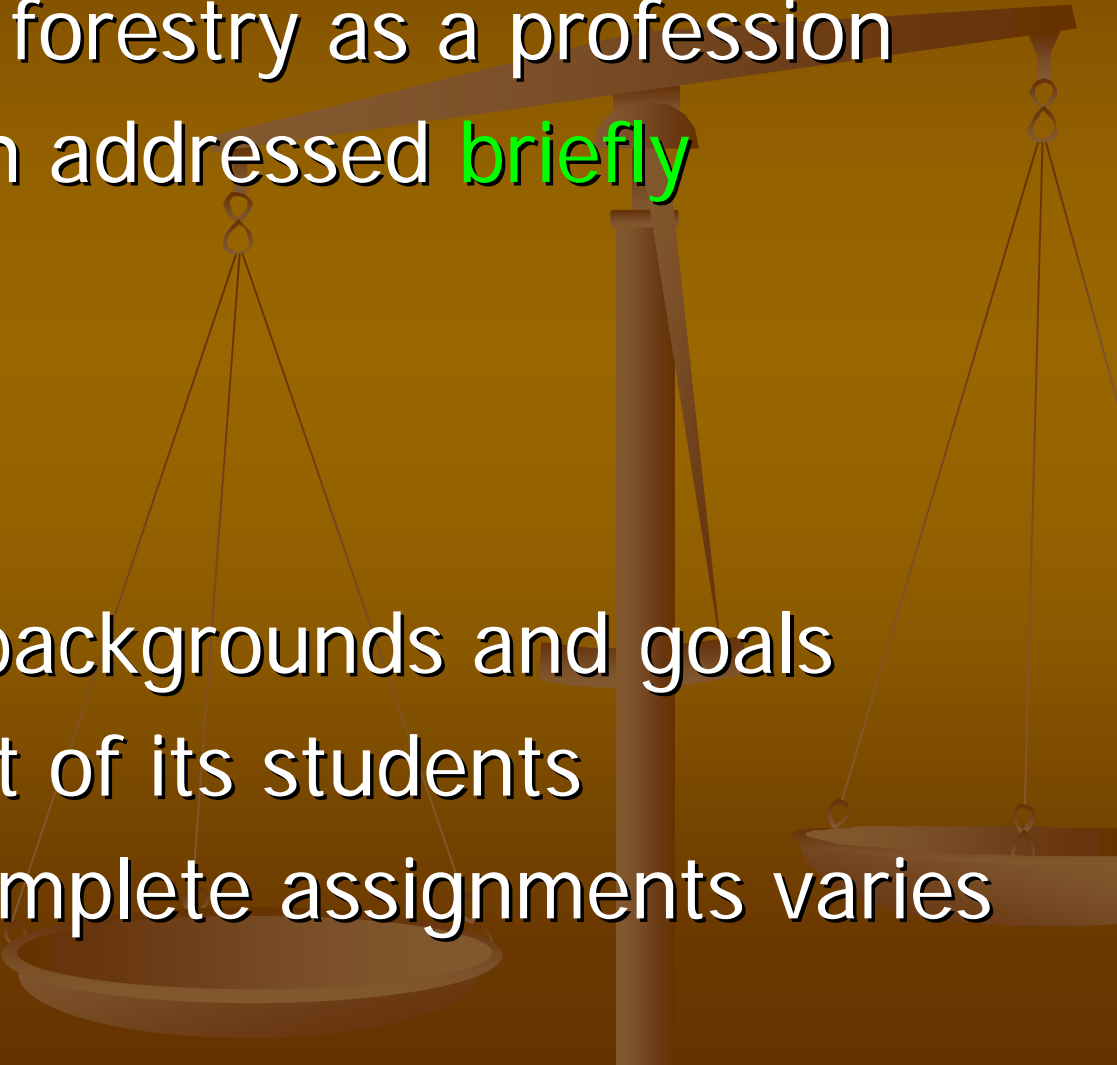
- Improves retention
- Enhances complex cognitive development
- Reduces knowledge transfer efficiency?
  - Less information in each course?
  - Students acquire basic facts on their own?
    - Must complete preparatory assignments
    - Must understand preparatory assignments
    - How to facilitate completion and understanding?

# Immediate Feedback Assessment

- Improves comprehension of reading/writing
  - Validates accurate knowledge
  - Corrects misconceptions
- Several categories of tools available
  - Computer-based response systems
  - Games
  - Scratch-off response forms

(e.g., Sullivan et al. 1971; Epstein et al. 2001; Epstein Educational Enterprises 2005; Brosvic et al. 2006; Hardin County Teachers 2006; Keller 2006; Skiba 2006; Beuckman et al. 2007)

# FOR 100: Background

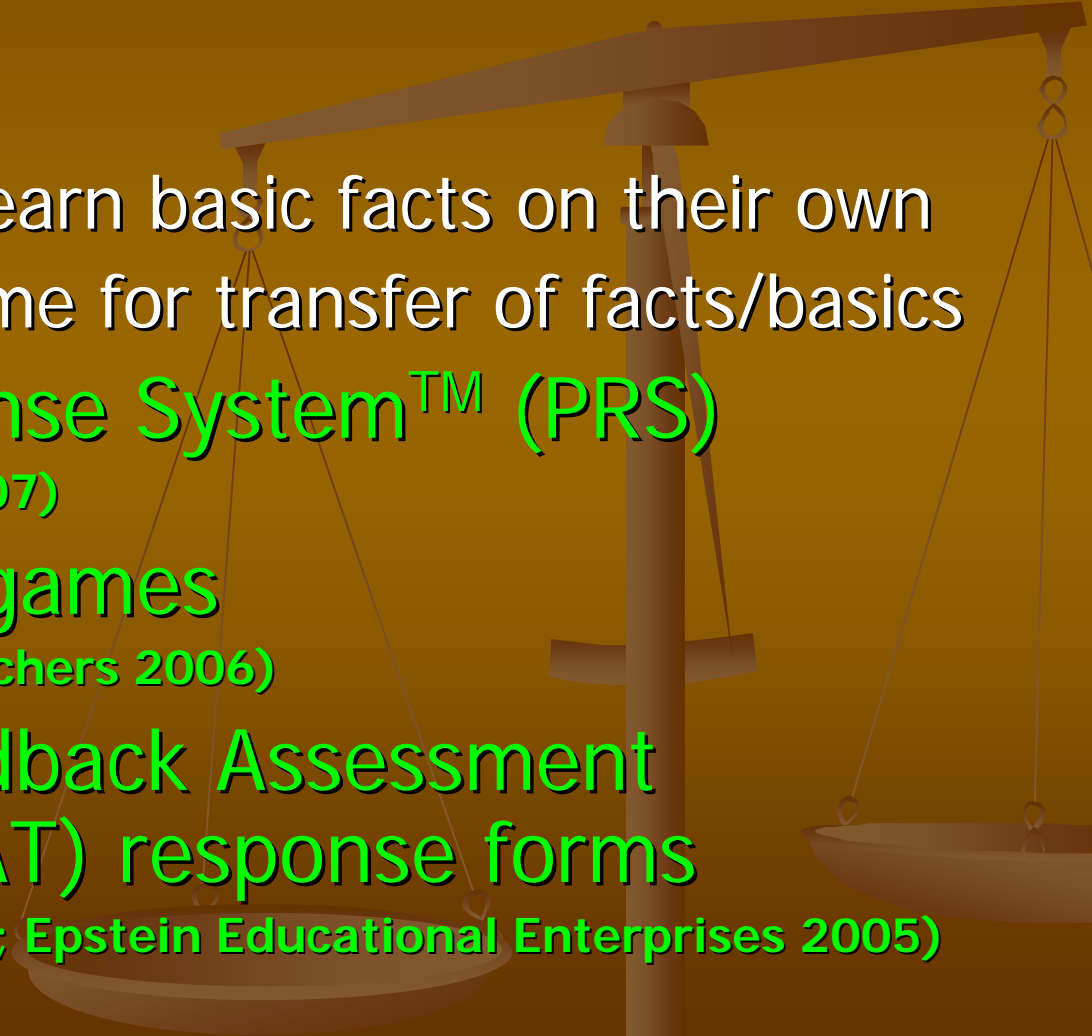
- Broad survey of forestry as a profession
  - ~20 topics, each addressed **briefly**
  - Varied student backgrounds and goals
  - Elective for most of its students
  - Motivation to complete assignments varies
- 

# FOR 100: Active Learning

- Some examples:
  - Soil texture
  - GPS
  - Timber cruising
  - Wood-strength testing
  - Papermaking
  - Fire journals
  - "Forestry in the News"
  - Immediate feedback assessment
- Impacts?
  - Enhanced learning?
  - Better completion of preparatory assignments?
  - Less course content!



# FOR 100: Immediate Feedback (Spring 2007)

- Goals
    - Help students learn basic facts on their own
    - Reduce class time for transfer of facts/basics
  - **Personal Response System™ (PRS)**  
(GTCO CalComp 2007)
  - **Jeopardy-style games**  
(Hardin County Teachers 2006)
  - **Immediate Feedback Assessment Technique (IF-AT) response forms**  
(Epstein et al. 2001; Epstein Educational Enterprises 2005)
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# FOR 100: Personal Response System™

Used for

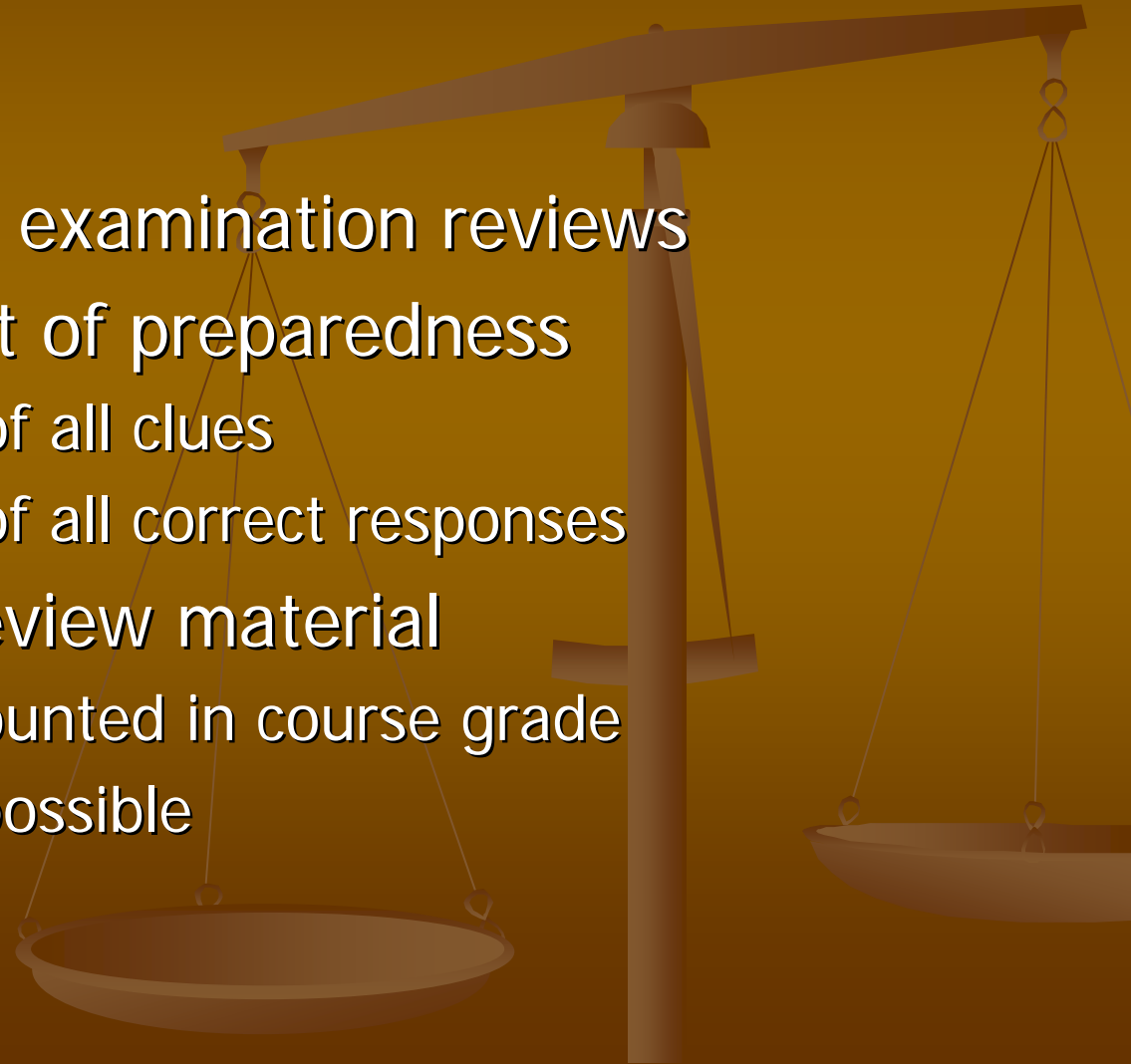
- Do we go on?
- Anonymous expression of opinions

(Skiba 2006; GTCO CalComp 2007)

# FOR 100: Jeopardy-Style Games

Used for

- Midterm & final examination reviews
- Self-assessment of preparedness
  - Transparency of all clues
  - Transparency of all correct responses
- Incentives to review material
  - Participation counted in course grade
  - "Extra credit" possible



# FOR 100: IF-AT Response Forms

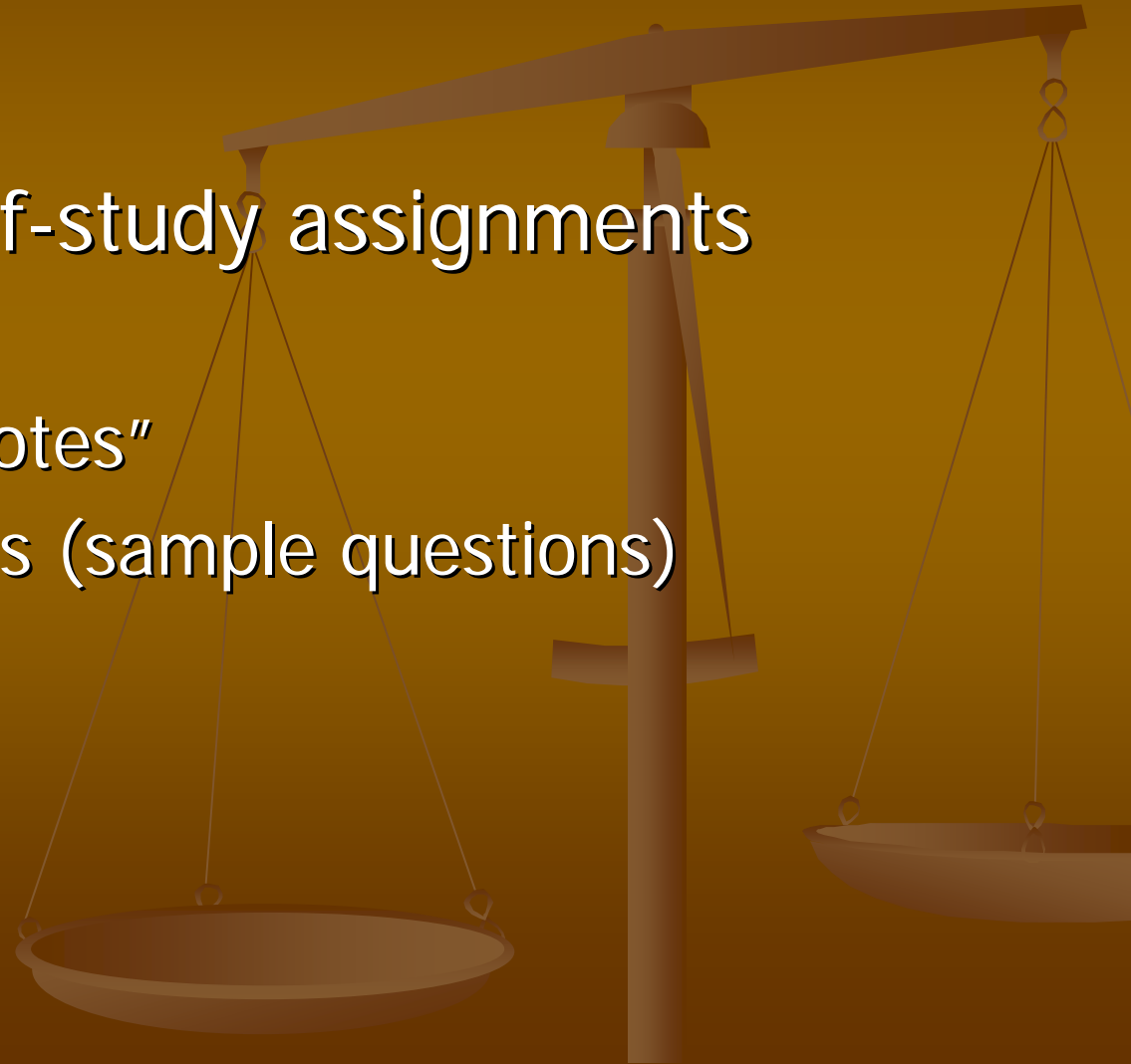
Used for quizzes to

- Foster on-topic discussion  
(4-5 students per team)
- Validate information learned correctly
- Correct misconceptions

(Epstein et al. 2001; Epstein Educational Enterprises 2005)

# FOR 100: **Integration** of Immediate Feedback

- Preparatory, self-study assignments
  - Text readings
  - Web “pointer notes”
  - Web worksheets (sample questions)



# FOR 100 – Spring 2007

[Welcome to Forestry!](#)

[Departmental Seminar Schedule](#)

[Greatest Good DVD Viewing Instructions](#)

Wednesday office hours are canceled for the rest of the semester. I continue to be available for the Tuesday and Thursday office hours, and by appointment.

[Assignment due in Class 26 April.](#)

[Peer Evaluation of FOR 100 Teammates \(due at 1st class session following your oral presentation\)](#)

General Course Materials	Oral Presentations	Previous Exams
<a href="#">Syllabus</a>	<a href="#">Oral Presentation Instructions</a>	<a href="#">Midterm Spring 2004</a>
<a href="#">Short Paper Instructions</a>	<a href="#">Instructor's Evaluation of Individual Presentation</a>	<a href="#">Final Spring 2004</a>
<a href="#">Revised Course Schedule</a>	<a href="#">Instructor's Evaluation of Team Presentation</a>	
	<a href="#">Team Presentations Schedule</a>	
Pointer Notes	Worksheets	Helpful Links
<a href="#">Course Introduction</a>		<a href="#">Forest Biology &amp; Dendrology</a>
<a href="#">Chapter 1 Forest Policy</a>	<a href="#">Course Introduction &amp; Chapter 1 Forest Policy</a>	<a href="#">Forestry Digital Images</a>
<a href="#">Chapter 2 Careers</a>	<a href="#">Chapter 2 Careers</a>	<a href="#">ForestryUSA.com (Forestry Jobs)</a>
<a href="#">Chapter 3 Forest Regions</a>	<a href="#">Chapter 3 Forest Regions</a>	<a href="#">Kentucky Division of Forestry</a>
<a href="#">Chapter 4 Tree Growth &amp; Physiology</a>	<a href="#">Chapter 4 Tree Growth &amp; Physiology</a>	<a href="#">Modern Language Association's Citation Examples</a>
<a href="#">Chapter 5 Forest Soils</a>	<a href="#">Chapter 5 Forest Soils</a>	<a href="#">National Interagency Fire Center</a>
<a href="#">Chapters 6 &amp; 7 Forest Ecology</a>	<a href="#">Chapters 6 &amp; 7 Forest Ecology</a>	<a href="#">Online PowerPoint Courses</a>
	<a href="#">Chapter 8 Entomology</a>	<a href="#">University of Kentucky Writing Center</a>
<a href="#">Chapter 8 Forest Pathology</a>	<a href="#">Chapter 8 Forest Pathology</a>	<a href="#">University of Victoria's Writer's Guide</a>
<a href="#">Chapters 9 &amp; 10 Stewardship &amp; NIPFs</a>	<a href="#">Chapters 9 &amp; 10 Stewardship &amp; NIPFs</a>	<a href="#">U.S. Fish &amp; Wildlife Service Digital Images</a>
<a href="#">Chapter 11 Forest Measurements</a>	<a href="#">Chapter 11(1) Forest Measurements (General)</a>	
	<a href="#">Chapter 11(2) Pacing and Compassing</a>	

# FOR 100: **Integration** of Immediate Feedback

- Preparatory, self-study assignments
  - Text readings
  - Web “pointer notes”
  - Web worksheets (sample quiz/exam questions)
- Class sessions
  - Brief review (Personal Response System™)
    - Open floor for student questions
    - Focused explanations of selected concepts
  - IF-AT quiz (scratch-off forms)
    - Partial credit for correct response if not on first attempt
    - 20% of course grade
  - Opening review and quiz: 30-45 minutes
  - → 30-45 minutes for
    - Follow-up discussion of difficult concepts
    - Elaboration in directions not covered by text or course web pages
    - Semester-long discussion of open-ended forestry topics


(Epstein Educational Enterprises 2005; GTCO CalComp 2007)

# FOR 100: **Impact** of Immediate Feedback

- Student responses to: “. . . rate the overall quality and contribution to your learning . . . .”
  - Mean scores 3.0 to 3.9 (13 items, 4.0 highest possible)
  - IF-AT quizzes: 3.9
  - Jeopardy-style review games: 3.9
  - Personal Response System™: not rated
- **Consistent with previous research, but . . . .**
  - **N = 16**
  - **Exams & course grades: no statistical effect**

(*e.g.*, Sullivan et al. 1971; Webb et al. 1994; Kluger/DeNisi 1998; Epstein et al. 2001; Epstein et al. 2002; Dihoff et al. 2003; Dihoff et al. 2004; Brosvic et al. 2005; Brosvic et al. 2006; Beuckman et al. 2007)

# FOR 100: **Impact** of Immediate Feedback

- Class time freed from lectures
    - Information content restored to the course
    - Addition of semester-long discussions
      - Veneer production and use
      - Proposed sale of U.S. National Forest land parcels
      - Questions generated by FOR 100 students on first day of class
  - **More time for complex intellectual skills!**
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# FOR 100: **Additional Benefits** of Immediate Feedback?

## ■ IF-AT

- Serious discussion of course topics
- Most students completed assignments!

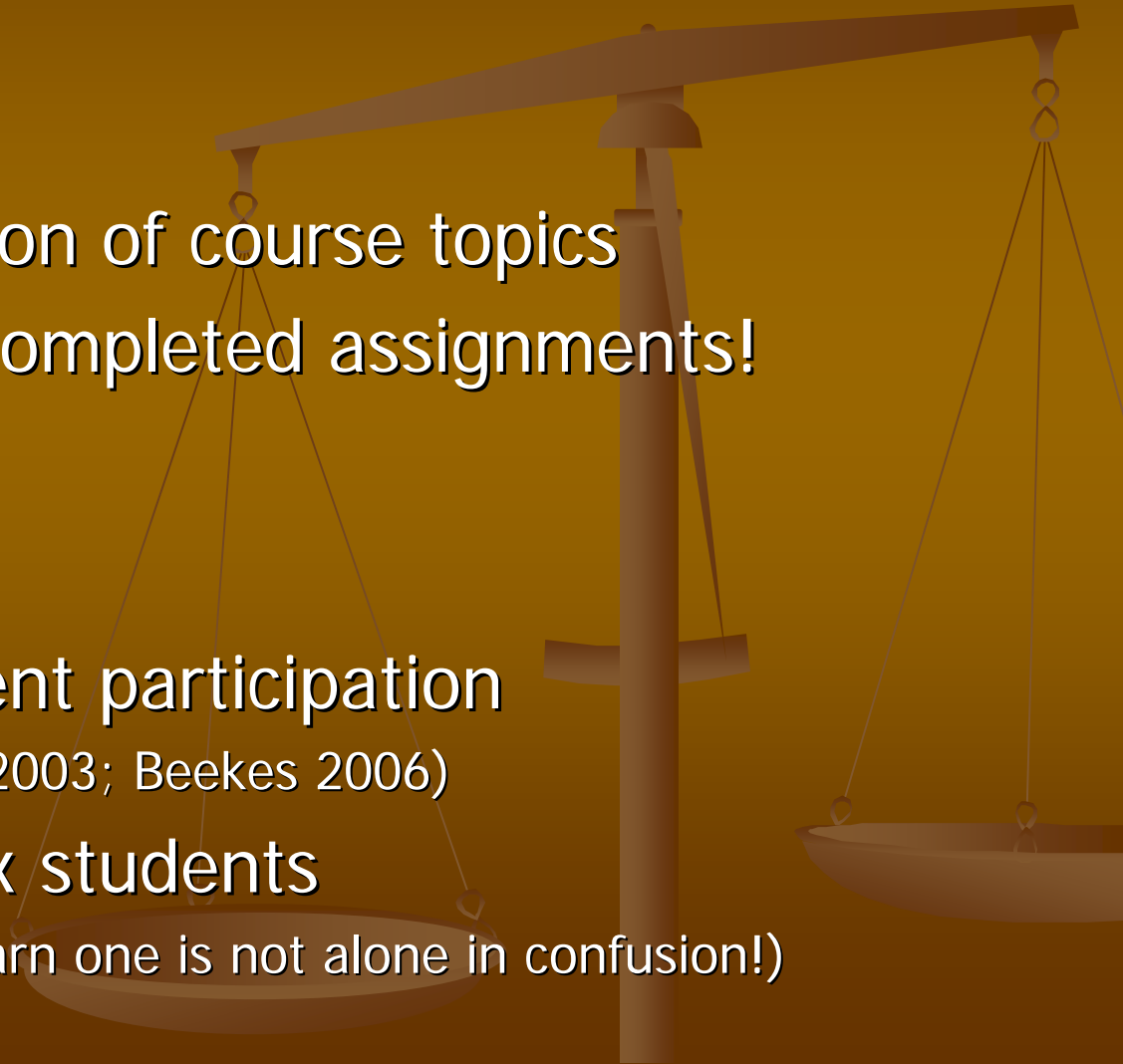
## ■ PRS

- Increased student participation

(e.g., Elliot 2003; Beekes 2006)

- Seemed to relax students

(Relief to learn one is not alone in confusion!)



# FOR 100: **Potential Problems** of Immediate Feedback?

- PRS responses sometimes frivolous
  - Jeopardy reviews and IF-AT quizzes
    - Easy grades for nonparticipating team members
    - Only certain question formats
- 

# Closing and Recommendations



- Most observations here are anecdotal
- FOR 100 students rated immediate feedback highly
- **Immediate feedback freed substantial time from lecture**
- Same outcome in two other spring 2007 courses
  - GEN 100 (The Development of Modern Agriculture)
  - ABT/BIO/ENT/FOR 461 (Introduction to Population Genetics)
- Recommendations
  - Research: Do benefits of team IF-AT discussions outweigh “free rides” given to nonparticipating team members?
  - Try it! - It will give you **extra classroom time** (especially IF-AT forms)

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