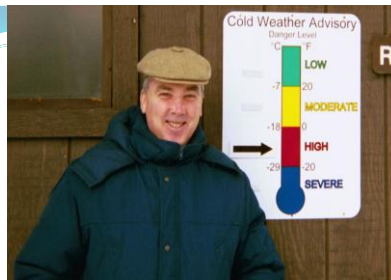


## Adapt, Evolve or Become Extinct Making Educational Change Work FOR You

Robert G. Carroll, Ph.D.  
Brody School of Medicine, East Carolina University  
Greenville, North Carolina, USA



2012 IAMSE WAS Series  
Sept 20, 2012

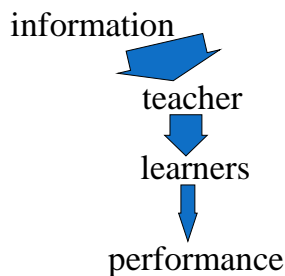


Professor of Physiology  
Assistant Dean for Academic Affairs in the Basic Sciences  
Editor, *Advances in Physiology Education*  
Founding Secretary of IAMSE  
Former NBME Physiology Committee member

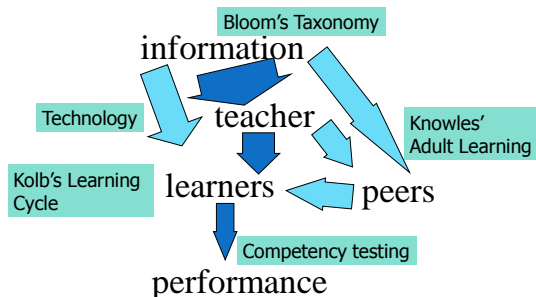
## Educational Change

- Driven by findings from educational research
- Change is tough (Machiavelli)
- Understanding why the changes are desirable can reduce resistance

## One Model of Education



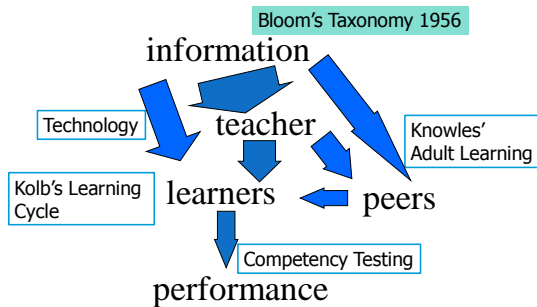
## Educational Research has/is Changing Things



## Seminar Outline

- Incorporating existing educational paradigms
  - Bloom's taxonomy
  - Knowles' Adult Learning Theories
  - Kolb's 4-Stage Learning Cycle
  - Role of competency testing
  - Impact of technology
- Implications for teaching
- Summary and discussion: Managing Change

## Impact of Educational Research



## Original Terms

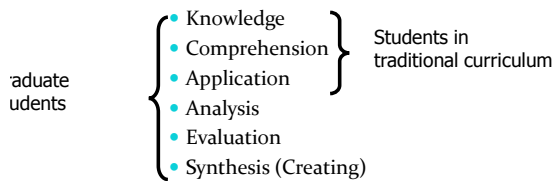
- Evaluation
- Synthesis
- Analysis
- Application
- Comprehension
- Knowledge

## New Terms

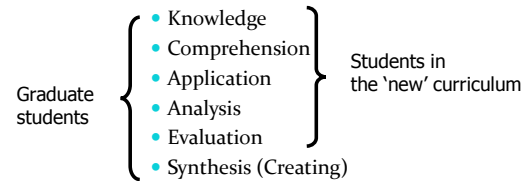
- Creating
- Evaluating
- Analysing
- Applying
- Understanding
- Remembering

(Based on Pohl, 2000, *Learning to Think, Thinking to Learn*, p. 8)

## Bloom's Taxonomy for Pre-clinical Educators



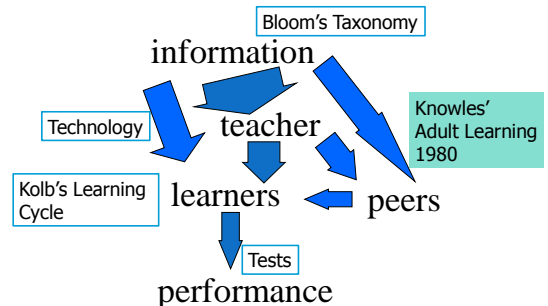
## Incorporate Analysis and Evaluation



## Educational Change 1: Incorporate Analysis and Evaluation Activities

- Classroom objectives must match program objectives
- Adjust your teaching activities to the needs of your learners

## Impact of Educational Research



## Classroom task

- Learn Turkish
  - Time constraint - 3 months
  - Purpose - Travel to scientific congress
- Think (1 minute by yourself)
- Pair (talk to your 'neighbors')
- Share (whole class discussion)

## Pedagogical approach

- High School German
  - Drill vocabulary
  - Exam motivated
  - Grammar
  - Stimulus-response

Pedagogy	vs.	Adult Learners
External	<b>Motivation</b>	Internal
Authority	<b>Environment</b>	Peers
Novice	<b>Perspective</b>	Experienced
Passive	<b>Execution</b>	Active
External Exams	<b>Evaluation</b>	Internal

## Unresolved issues

- Content vs. Depth
- Learning vs. Retention



If the goal of teaching is learning...



Note: There is NO research to support this theory

## Active learning approaches

- Advantages
  - Promotes higher cognitive skills
  - Develop analytical skills
- Disadvantages
  - Depth, but not breadth, of material
  - Large time demands on faculty and students

## Lecture

- Advantages
  - Emphasize important points
  - Introduce terms and concepts
  - Workload independent of class size
- Disadvantages
  - Student attention span < 50 minutes
  - Stenography, not thinking, in class
  - Little higher level processing

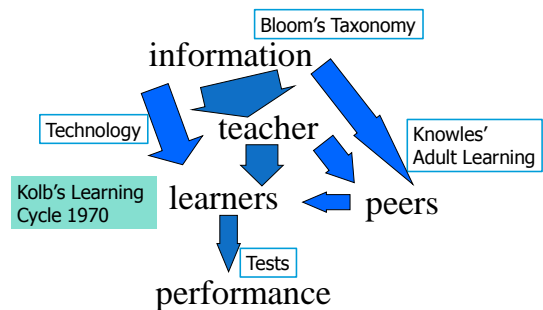
## Small group approaches

- Advantages
  - Peer interactions
  - Depth of learning
  - Self-directed
- Disadvantages
  - Content can vary
  - Limited breadth of information
  - Little control of depth

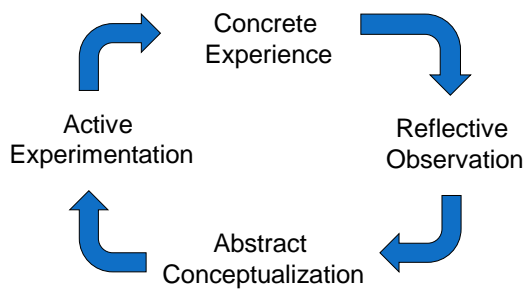
## Educational Change 2: Diversify Your Teaching Skills

- Allows you to incorporate multiple approaches to teaching
  - Determine teaching goal
  - Select the correct tool for the job

## Impact of Educational Research



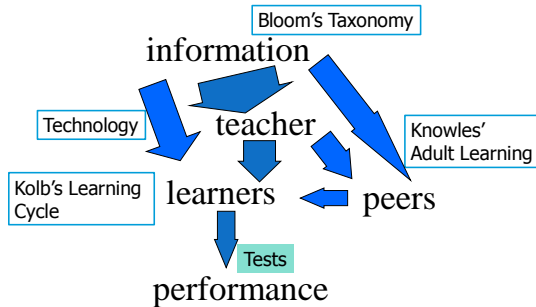
## Kolb's 4-Stage Learning Cycle



## Educational Change 3: Become a 'Reflective' Practitioner

- The "Experience" only begins the process
- Education should offer opportunities to
  - Reflect on the experience
  - Consolidate and incorporate into existing knowledge
  - Apply new knowledge
- Model this behavior for your students

## Impact of Educational Research



## What they don't tell you

- Evaluation determines student behavior
- Whoever evaluates learning, controls learning

## Begin with the end in mind - both yours and others

- Minimal content expectations (OT)
- Intermediate content expectations (PA)
- Significant content expectations (MD)
  - Medical Physiology Learning Objectives
- Significant skills expectations (PhD)
  - List of Professional Skills for Physiologists and Trainees

## Physiology for Medical Students

- Establish expectations
  - Europe FEPS End-Terms Medical Physiology
  - Canada CanMEDS
  - USA APS Medical Physiology Learning Objectives
- Match testing to these expectations
- Shift from "learning objectives" to "competencies"
  - Group from IAMSE is exploring this

## Controlling the curriculum

- Licensing Examinations
- Defining Medical Physiology
  - Aging
  - Health promotion
  - Wellness
  - Gender Differences

## APS/ACDP List of Professional Skills for Physiology Trainees

Graduate education is a continuum

Skills rather than content

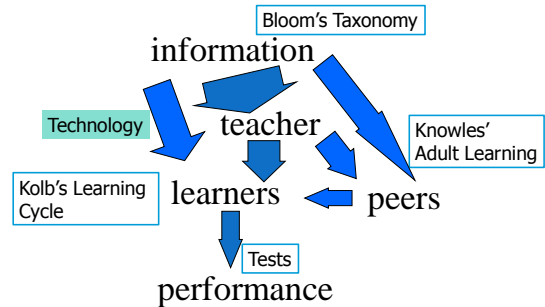
Available on APS web site

Developing web links for each skill

## Educational Change 4: Align Goals, Competencies and Objectives

- Determine the educational objectives before making instructional decisions
- Activities and Evaluation also must match the goals, competencies and objectives

## Impact of Educational Research



## The APS Archive of Teaching Resources



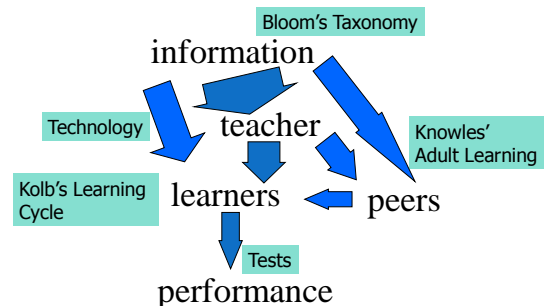
## Millennial Learners

- As a group, create their own information
- Unlimited access to information
- "How to find information" is as important as the information
- Strong preference for dynamic, interactive media

## Educational Change 5: Embrace Novel Technology

- Incorporate media
- Review for accuracy

## Impact of Educational Research



## Summary: Understand and Embrace Impending Changes

- Incorporate analysis and evaluation activities
- Diversify your teaching skills
- Become a 'Reflective Practitioner'
- Align goals, competencies and objectives
- Embrace technology

## What has not changed: The role of the teacher in education

- Create an environment
- Provide direction
- Model behavior