Active Lecturing for Optimal Learning

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Ground Rules

- Active lectures call for active participants
- Ask lots of questions and offer your ideas
- Take risks

Session Objectives

By the end of this session you should be able to …

- restate learning theory as applied to lecture processes
- Construct appropriate objectives for a lecture or presentation;
- Develop learner activities for each of the three phases of a lecture;
- describe the impact of lecture density on learning
- Critique the style and make suggestions regarding lecture examples provided on video;
- apply the concept of an active lecture to your lecture planning
- Create an effective active lecture of your own.

Session Plan

- Introduction
- Learning theories applied to lecturing
- Constructing Objectives
- What makes a good lecturer?
- Three phases of lectures
- Activities for lectures
- Summary

Critical Incident

- Think of a lecture you ***really enjoyed*** and from which ***you learned a lot***.
- What made that lecture so enjoyable and a good learning experience?

Whom do we teach?

Adapting to different audiences

- Students
- Residents
- Patients
- Community groups
- Conference attendees

Why Lecture?

What are the Advantages to Lecturing?

- Efficient
- Controlled content
- Access unpublished material
- Explain difficult content
- Flexibility
- Personalized
- Motivating & inspiring

What are the Disadvantages to Lecturing?

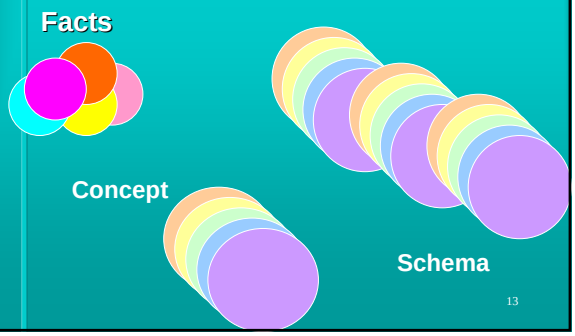
- Missed content
- Off-topic (irrelevant) instructors
- Passive students
- Poor note-taking skills
- Inability to transfer from hearing to writing, speaking, or doing

Some Research Findings

- Audience members who are both frequent and relevant responders learn more than passive observers
- Despite desiring full notes provided to them, students have done better when provided with partial notes
- Students taking accurate notes, studying them later consistently receive higher test scores than students who only listen to the lecture and read the text.

How does learning occur?

Focus on Concepts: *not on facts*



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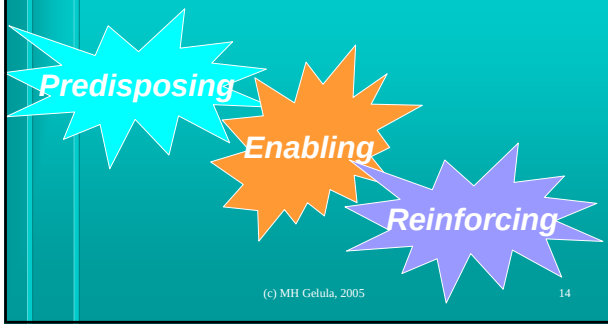
A Sequence of Teaching for Optimal Learning



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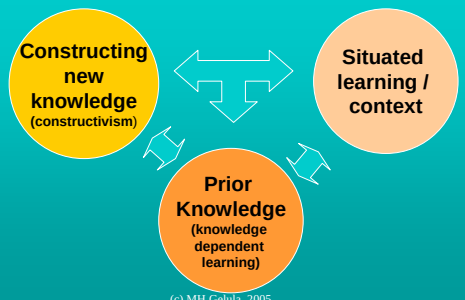
Cognitive Learning Research



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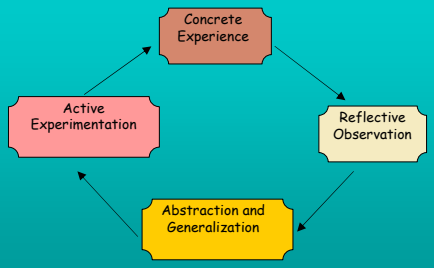
Kolb's Experiential Learning Model



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Questions and Questioning

- Questions engage students actively
- Questions enable student reflection
- Questions foster higher order learning
- Questions facilitate deep learning through
  - Recall
  - Engagement
  - Reflection
  - Practice

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Goals and Objectives: Purpose, Process and Outcome

What do you want learners to be able to do when they're done?

- State the lecture purpose
- Provide only essential facts
- Frame facts within concepts
- Explain concepts using different context examples
- Create opportunities to practice and reinforce concepts with questions, cases, problems and other simple activities

What Do We Teach in a Lecture?

- K = Knowledge/Cognitive
- A = Attitude/Affective
- S = Skill/Psychomotor

Is this any different from what we teach in a discussion at the bedside or in the ambulatory clinic?

What is a Goal?

- A goal states the purpose of instruction.
- A goal states the students what to expect from the lecture.
- A goal reminds the teacher of the lecture focus.
- A goal is a "road map" directing us where we are "going".

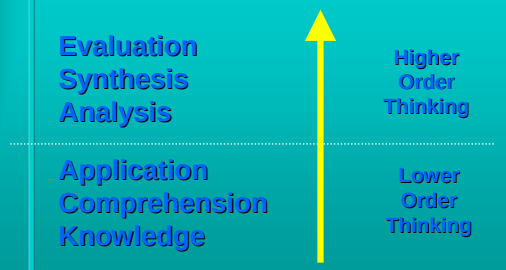
What Are Your Lecture Goals?

Speaker's Goal	Desired Participant Response
To Inform	Understanding (K)
To Convince	Belief / Acceptance (A)
To Actuate	Establish, Modify, or Stop the Behavior (S)

What is an Objective?

- An objective is a description of what is to be learned.
- A behavioral objective states what the learner is expected to be able to do after instruction.
- Behavioral objectives direct us "how to get where we are going".

Bloom's Taxonomy



Example

- Goal: the purpose of this lecture is to introduce the concept of 'active lecturing'.
- Objective:
  - By the conclusion of this lecture each participant should be able to
    - Create an active lecture on a topic of interest to them
    - Critique lectures presented by their colleagues.

Objective Writing Activity

Four Phases of a Presentation or Lecture

I. Planning
II. Introduction
III. Body
IV. Conclusion

Planning Essentials

- Know your audience
  - Experience Level
  - Specialty
  - Special Issues
- Limit your focus to a single goal
- Limit your time
- Know your goal
  - Relate your goal to your audience's needs
- Develop the Body Section First

The Lecture: Introduction

Introduction

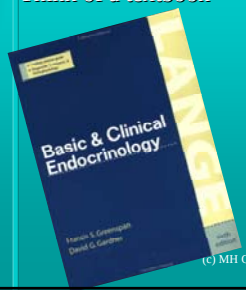
- **Style**
  - How you begin means everything. This is style and structure
- **Introduction Activities**
  - Purpose: state purpose –
    - State what the lecture is about. This statement tells the students what to expect from you
  - Objectives:
    - Explains for students what you expect **them** to achieve by the end of the lecture

Two Models for Lecture Clarity and Organization

- The Book
- The Outline

Textbook analogy: Lecture Clarity and Organization

- Think of a textbook



The Outline Method for Lecture Clarity and Organization

- Introduction phase:
  - Objectives
  - Lecture outline
  - Transition statements
  - Segment summaries
- Body phase:
  - Segment summaries
  - Transitions

I.
A.
B.
C.
II.
A
1.
2.
B.

What Makes a Good Lecture?

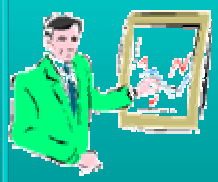
Watch This Lecture Episode

Compare that Lecturer With This One

Lecture Episode 2

The Dr. Fox Studies

- The effects of educational seduction



Keep the audience engaged

- Requires effective speaker who can vary
  - Tone
  - Pitch
  - Pace

Three Approaches to Style

- **Reading Style**
  - Speaker reads from notes, or speaks as if reading from notes. *Narrow tonal range.*
- **Conversational Style**
  - Speaker is informal, and may or may not use notes. *Conversant tonal range.*
- **Rhetorical Style**
  - Speaker as a performer. *Wide tonal range.*

Style Problems

- Eye contact
- Voice level
- Inflection
- Recitation from notes
- Disorganization
- Irrelevance
- Filler words
- Uncoordinated AV or Uncomfortable using AV

Style Suggestions

- Speak clearly
- Vary your pace
- Pause often
  - Both you and the audience need pauses
    - You to catch your breath and to scan the audience
    - They to reflect on what you've said
- Try to limit "umms" and "ahhs"
- Vary your inflection
- Un-Root Yourself → Move around
- Use lots of eye contact

The Lecture: Body

Robert Gagne's Conditions of Learning

1. Gain attention
2. Inform learners of objectives
3. Stimulate recall of prior learning
4. Present the content
5. Provide "learning guidance"
6. Elicit performance (practice)
7. Provide feedback
8. Assess performance
9. Enhance retention and transfer

Challenges in the Body Phase?

- Challenges from 2 perspectives:
  - Challenges for students
  - Challenges for you as lecturer
    - What is the goal or purpose?
    - What do you want to accomplish during this period of time?
    - What might be difficult for learners to understand?

What's in a body?

- Depends on your objectives –
  - What's the purpose of this lecture?
    - To Inform
    - To Convince
    - To Actuate

Effective Lectures

Content Process

Russell: information density

Content:

Cut it in half!

Russell, I.J. et. al. (1984) Effects off Lecture Information Density on Medical Student Achievement. *Journal of Med. Ed.* 59:881-889.

Effective Lectures

Content Process

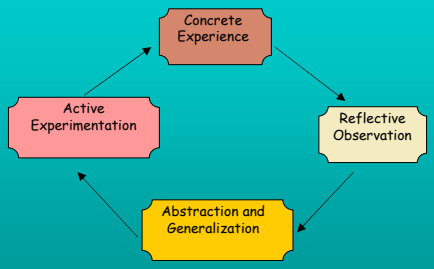
Copeland et al: Attributes of the effective medical lecture

- Engaging the audience
- Lecture clarity
- Active Learning

Engaging the audience

- Attention
- Arousal-interest
- Motivation
- Active learning
- Guided note handout

Let's Revisit Kolb's Experiential Learning Model



Now It's Your Turn

- Join with a person sitting close to you:
- List at least three activities which can be used to actively engage students during the introductory phase of a lecture
- I will ask for some responses

Involving Your Audience

- Questions
  - Structuring
  - Soliciting
  - Responding
  - Reacting
- Cases
  - Content in a specific context
  - Different contexts to emphasize similar content
- Examples
  - How you do something
  - How others do same thing
  - How else it could be done
  - Concrete vs abstract
- Clarifications
  - Responding to questions
  - Responding to student ideas

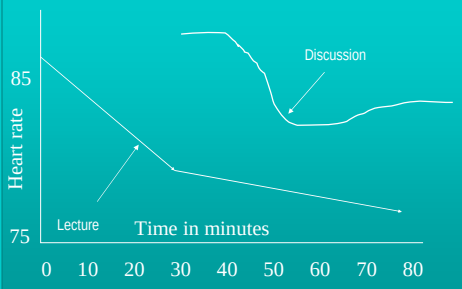
Handouts and Guided Notes

- Guided Notes
  - Instructor-prepared handouts
    - Background information
    - Standard cues with specific spaces where learners write
      - Key facts
      - Concepts
      - Concept and fact relationships

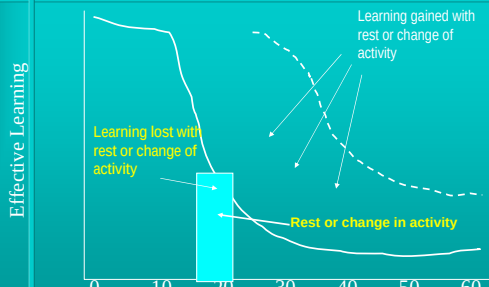
Handouts and Guided Notes

- **Benefits of Guided Notes**
  - Instructor preparation – no more winging it
  - Prioritized, focused lecture content
    - Less is more -- what is most important for learners?
  - Increased learner engagement with content
  - Focused questions & comments
  - Complete accurate lecture notes
  - Higher exam scores

Keeping Learners Engaged



Effect of rest or change of activity on learning



Therefore…use alternative strategies and involve learners every 15 - 20 minutes!

Instructional Activities that Engage

- ***Conventional Activities …***
  - promote passivity in students
  - fail to clarify relation of activities to objectives
  - fail to define benefits, outcomes of activities
  - omit essential directions, resources, students need

Instructional Activities that Engage

- ***Learning-Centered Activities***
  - Engage students with material
  - Explain instructional rationale (relate activity to goals/objectives) -
  - Provide clear guidelines or models
  - Assess progress toward objectives (Formatively or Summatively)

Copeland et al: Attributes of the effective medical lecture

- Engaging the audience
- Lecture clarity
- Active Learning

Segment Summaries & Transition Statements

- **Content**: "To review, the three parts of a lecture are the intro, body and conclusion"

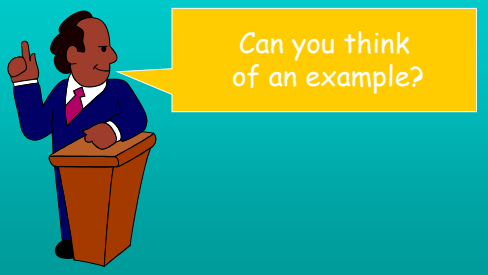
Segment Summary

- **Structure**: "We've gone over the three parts of a lecture; now we're going to talk about the three dimensions of a lecture."

Transition Statement

Instantiation I

Instantiation II



Summarize, Reinforce, Clarify Key Concepts

- Summarize your main points
- Reinforce
- using cases,
- Use problem solving,
- Ask questions
- Provide concrete examples
  - instantiation

Copeland et al: Attributes of the effective medical lecture

- Engaging the audience
- Lecture clarity
- Active Learning

What do you want learners to be able to do when they're done?

Give learners opportunities to practice using:

- Cases
- Problems
- "Tests"
- Handouts

Active Learning: Case based format

- Relevance
  - *Example:* Students analyze Patient cases
- Students apply new information that you just taught
  - *Your example*
- Students use relevant statistics
  - *Your example*
- Students use comparison and contrasts
  - *Your example*

These are Active Learning Methods

- Active Learning Supports:
  - Transfer
    - Application to clinical medicine
    - Application to practice
    - Application to other contexts
  - Generalization to real life

Strategies

- Take an EBM approach --use statistics about the case
  - Clarify an idea with questions
  - Put it in a population perspective
  - Focus on clinically related statistics if possible
- Use rhetorical questions
  - Focus on thinking rather than memorizing
- Ask open ended questions
- Follow up with "Why" questions
- Follow up with another slightly different case

Activities that Engage Students and Promote Deep Learning

- Involve students in more than information gathering.
- Ask students to classify, compare/contrast, explain, etc.
- Involve students in discerning, reporting, recording contextual differences
- Involve students in describing steps in an operation/procedure *then* ask them to practice it, report results

Activities that Engage Students and Promote Deep Learning

- Ask students questions that will help them to accurately integrate new learning with old (have them identify similarities and differences to avoid oversimplification and misconceptions about new learning)
- Involve students in applying decision making rules and being able to support their decisions
- ask students to organize new material (conceptual mapping, outlining, graphics, summaries, etc.)

Activities that Engage Students and Promote Deep Learning

Ask students to

- Apply new learning to a problem
- Develop questions or tasks to assess new learning
- Assess the work of their peers
- Think of ways new knowledge affects those outside of the field

Copeland et al: Attributes of the effective medical lecture

- Engaging the audience
- Lecture clarity
- Active Learning

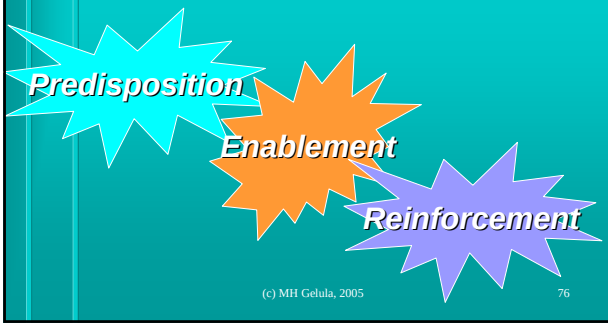
The Lecture: Conclusion

The Challenge in the Conclusion

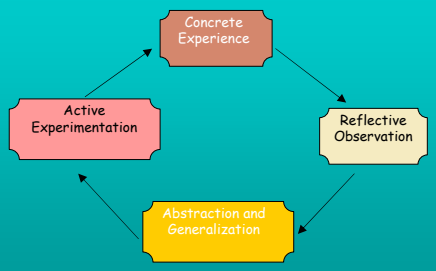
We must help students as they consolidate their learning.

Without consolidation learning cannot be *retrieved* and *applied*.

For effective behavior change, three procedures needed:



Kolb's Experiential Learning Model

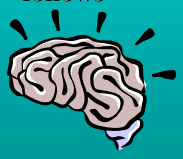


Consolidation into Long-Term Memory

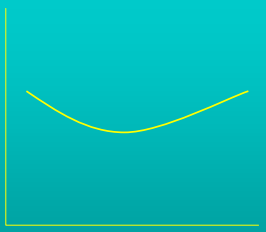
- Consolidation takes about 3 hours
- Without consolidation:
  - Surface learning: memorization of facts
- Consolidation fosters deep learning:
  - make connections and links;
  - establish relationships between facts, concepts, pre-existing information

Interference with memory

- **Proactive** interference: from what came before
- **Retroactive** interference: from what follows



Facts and concepts learned at the beginning and end of the lecture are remembered best

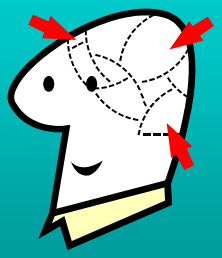


Consolidation through: Reinforcement, Review & Practice

- **Reinforcement**
- **Review**
- **Practice**
  - Within 30 minutes
  - Encourages connections between concepts

Strategies for the conclusion phase

- Challenge: help students consolidate their learning so it can be *retrieved* and *applied*.



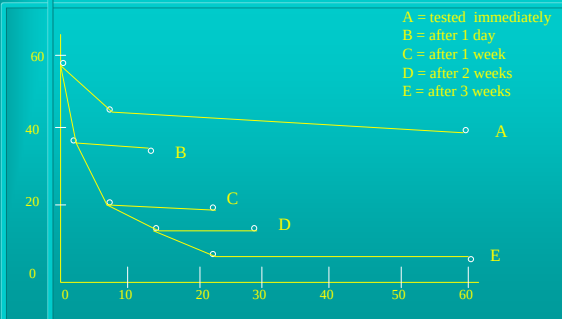
Long term memory

- Takes about 30 min to consolidate
- Surface learning: memorization of facts
- Deep learning:
  - make connections and links;
  - establish relationships between facts, concepts, pre-existing information

Rehearsal helps consolidation

- **Rehearsal within 30 minutes facilitates consolidation**
- **Encourages connections between concepts**

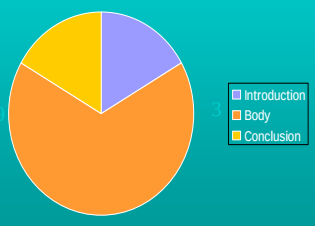
Reinforcement through Testing



Identify Strategies to Foster Consolidation

- ***Review* important points & key concepts**
- ***Highlight* structure of lecture and important links**
- **Have *students summarize* important points**
- **Have *students generate questions* at start of lecture, answer them at end**
- ***Give tasks that enable students to practice what they've learned.***

Implication: The conclusion phase takes time!



Consolidating Activity

- Specify the objectives…
- Design two activities for one of the lecture phases
  - For the intro: to *engage prior knowledge*
  - For the body: to *maintain attention* and *interact* with material
  - For the conclusion: to *practice* using the material per the objectives

Analyze this session!

- **Introductory activity (primer)**
- **Body activity (interact with material)**
- **Conclusion activity (integrate and practice)**

- **Whom do we teach?**
- **Why lecture?**
- **What Makes a good Lecturer?**
- **Construct objectives**
- **Design activities**
- **Analyze workshop**

Session Objectives: Did you have a chance to practice?

- By the end of this session you will be able to:

1. **Construct appropriate objectives for a lecture or presentation**
2. **Design learner activities for each of the three phases of a lecture**

The successful teacher …

is no longer on a height, pumping knowledge at high pressure into passive receptacles … he is a senior student anxious to help his juniors.

-- William Osler

Session Summary

Tell me either:

- One concept or new idea that you learned today

or

- One process that you will do differently