Moving Beyond Lectures:

Integrating Active Learning Strategies

Alice Fornari, EdD, RD
Director of Faculty Development, NS-LIJ Health System
Assistant Dean, Medical Education, Hofstra NS-LIJ SOM
afornari@nshs.edu

North Shore LIJ

HOFSTRA NORTH SHORE-LIJ
SCHOOL of MEDICINE
AT HOFSTRA UNIVERSITY

Abraham Flexner (1910)

"On the pedagogic side, modern medicine, like all scientific teaching, is characterized by activity. The 'student' no longer merely watches, listens, memorizes: he does. His own activities in the laboratory and in the clinic are the main factors in his instruction and discipline. Since education nowadays involves both learning and learning how; the 'student' cannot effectively know, unless he knows how."

David Irby, Educating Physicians (2010)

- “The fundamental pedagogy of medical education aims to have learners develop motivation and skill required to teach themselves, stimulated by clinical experiences…

- “Throughout their medical education, students and residents require strong, engaged relationships with faculty members that provide challenge, support and strong role modeling, as well as an opportunity for individual guidance.”

Icebreaker Activity

- What type of environment and activities do you find are most effective for you as a learner?
  - Pair up with person at your table
  - Exchange thoughts for 3-4 minutes

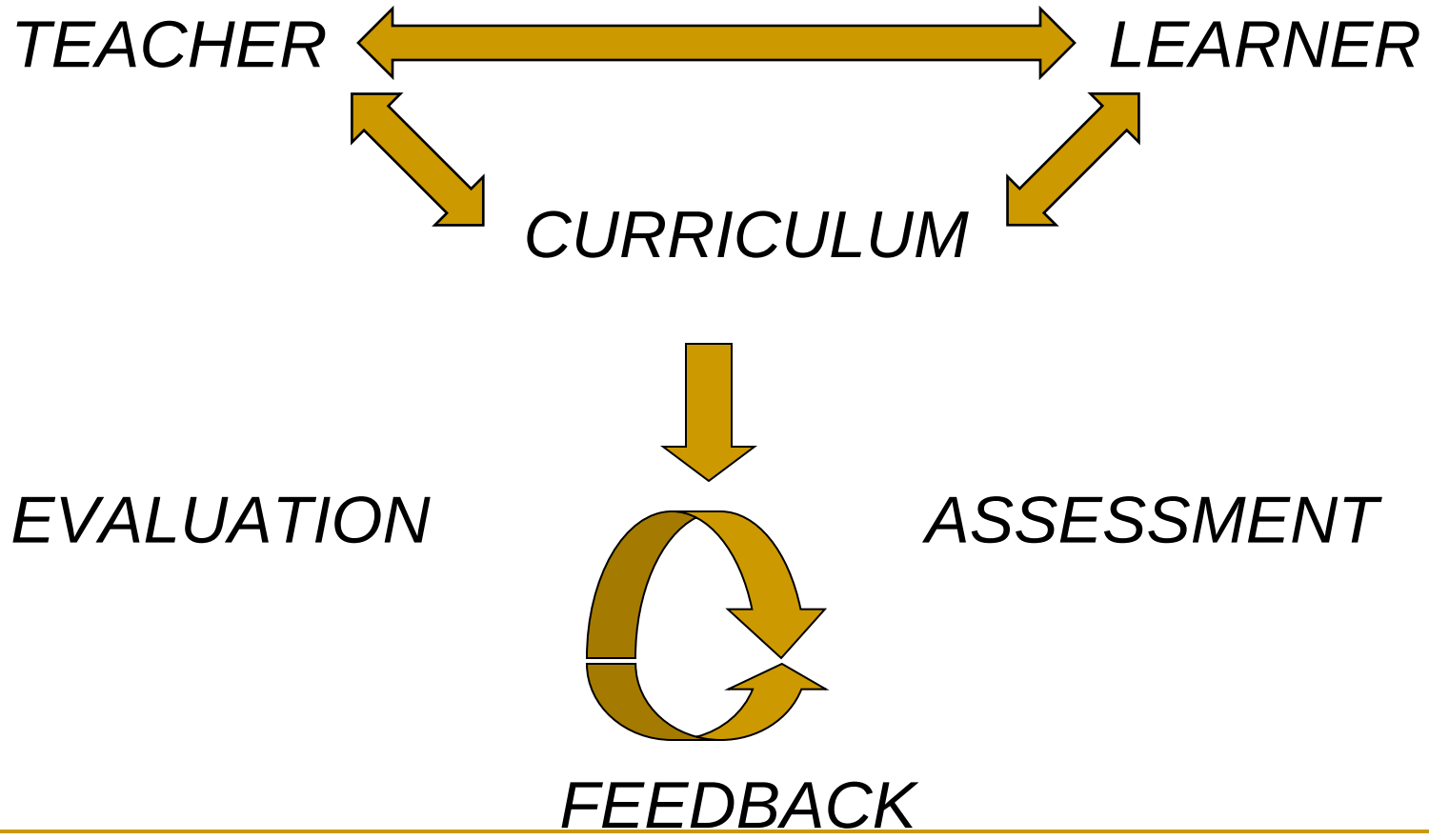
Objectives

- review why active learning is a “good” educational strategy
- identify different teaching strategies and their distinguishing characteristics
- explain why active learning strategies must have active learning assessments

Seven Principles of Good Practice in Education

- Learner-faculty contact
- Cooperation among learners
- Active learning (techniques)
- Time on task (pre/during/post work)
- Prompt feedback
- High benchmarks
- Respects diversity of learners

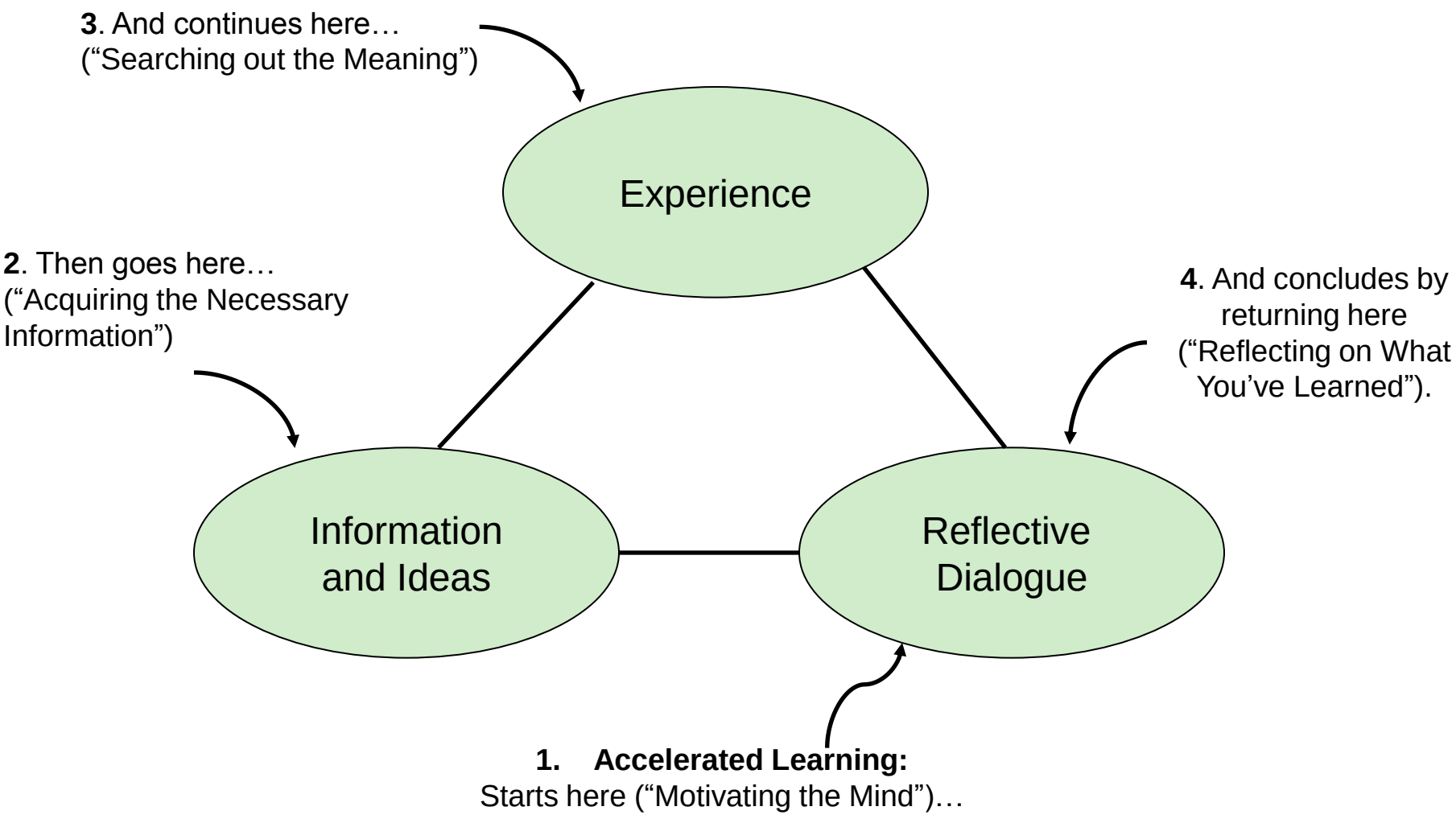
LEARNING CLIMATE



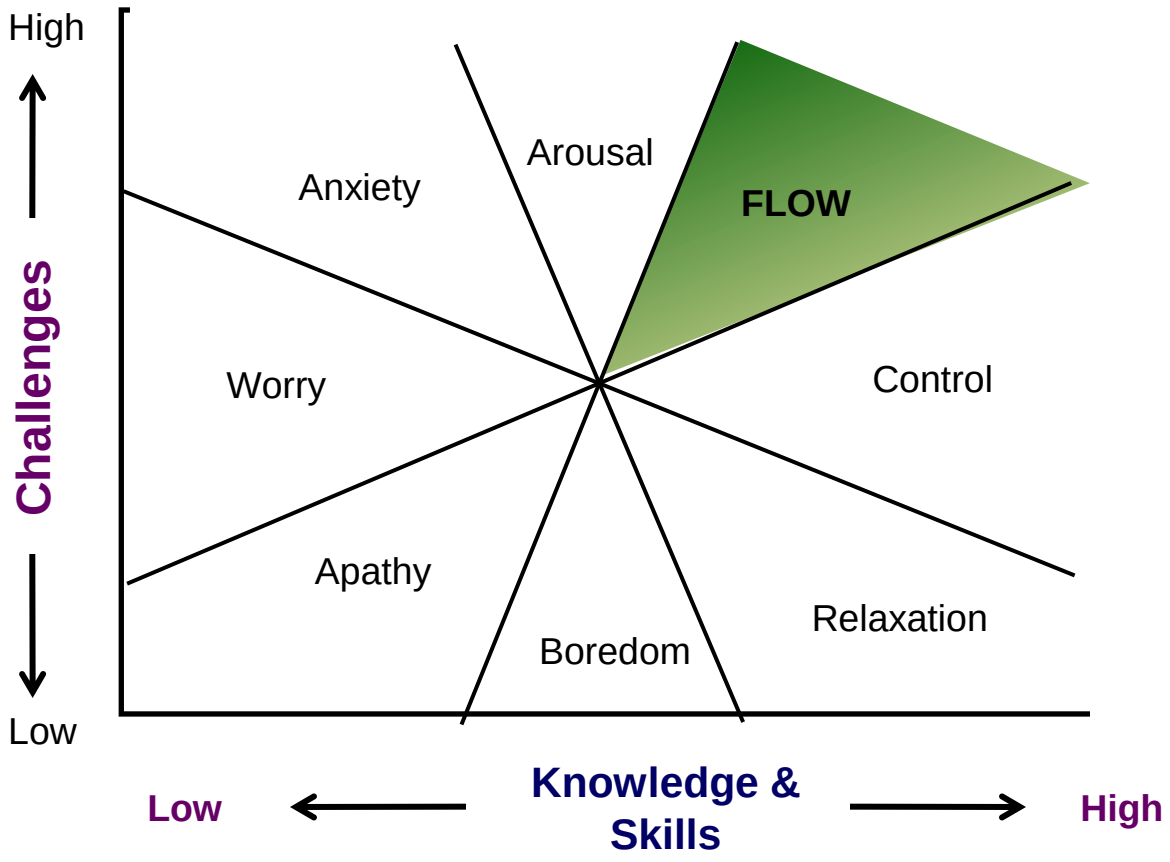
Adult Learning Theory

- Learning is relevant
- Addresses previous experiences
- Participatory
- Goal/Problem-oriented
- Learner is accountable
- Applicable to practice
- Moderates action with reflection
- Learning is supported by trust and respect

Sequence of Events in Accelerated Learning



"FLOW" EXPERIENCES IN RELATION TO CHALLENGES AND SKILLS



Brainstorming

a thread of active learning strategies…

- Facilitator selects a concept and controls process
- Draws on group's knowledge and experience
- Sparks thinking
- Needs to be done with time limits
- All ideas need to be recognized and recorded

Brainstorming Activity

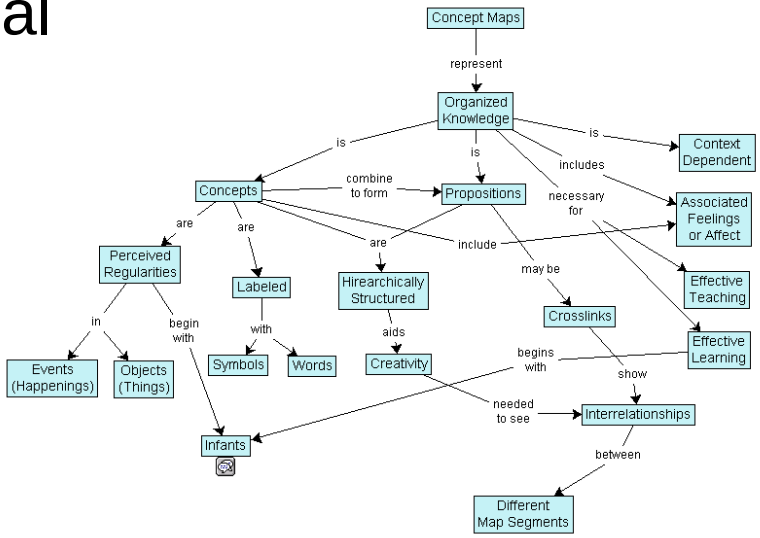
- How do you know that active learning is happening?
  - Designate a recorder in your small group
  - 5 minutes to discuss in small group
  - Prepare to bring ideas to the larger group

Structuring Your Brainstorming Session

- **Charrette Process- Small groups → large group**
  - Works in large groups, encourages participation, primary vetting
- **Roundrobin (spoken)/Roundtable (written)**
  - Good in smaller groups; one individual at a time
- **Reverse Brainstorming**
  - Useful for identification of difficult solutions; reverse the question
  - Ex., “How do we improve patient satisfaction?” →
    “How do we make patients more dissatisfied?”

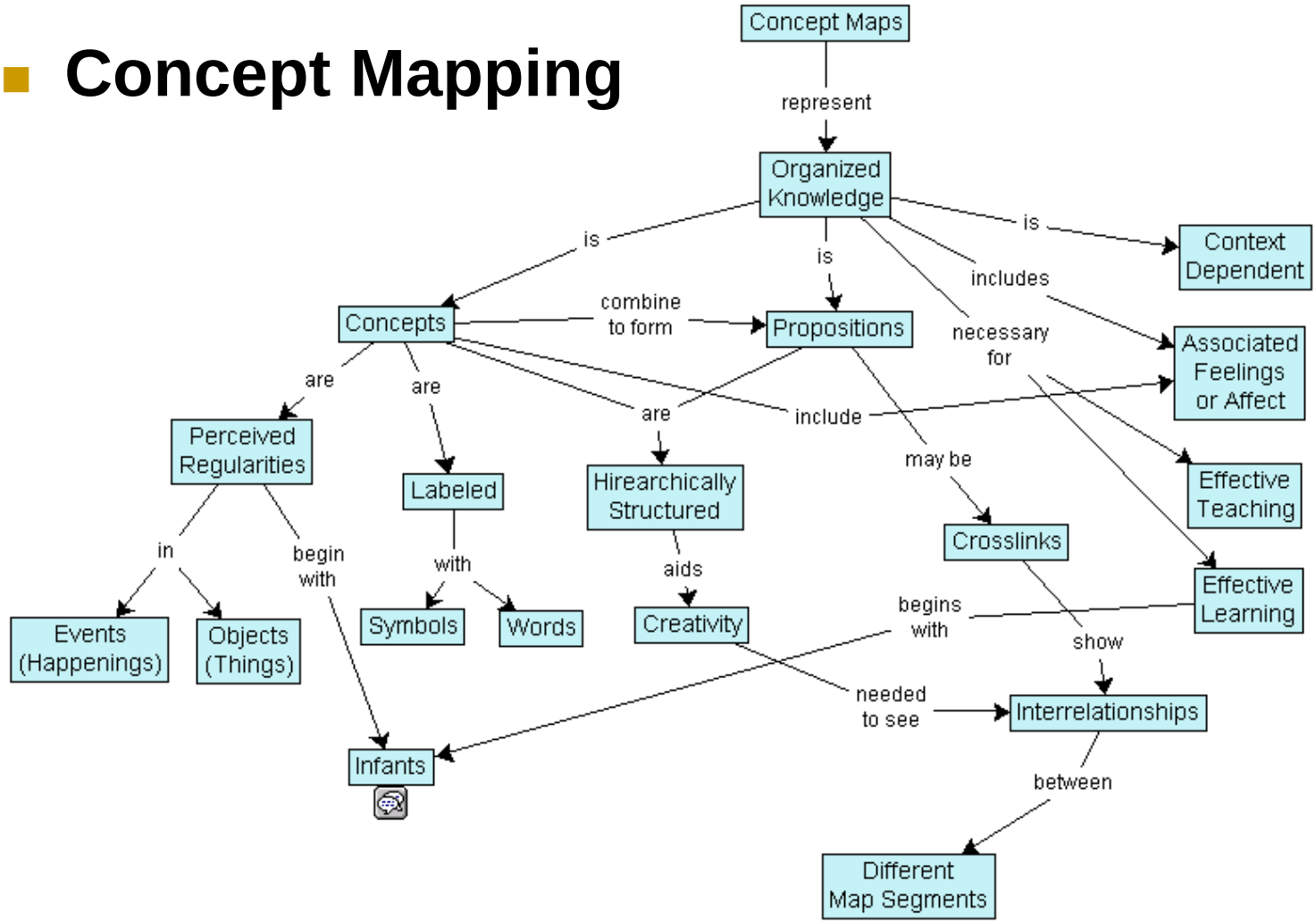
Organizing Your Brainstorming Content

- **Categorization**
- **Outlining/ Hierarchical Structuring**
- **Concept Mapping-** A visual representation of knowledge structure, links create relationships



Organizing Your Brainstorming Content

- **Concept Mapping**



Active Learning and Active Learner

- Interactive

Initiative

The type of instruction that involves learners during the learning process, i.e. "learning by doing and thinking about what you are doing". ***Bonwell and Eison, 1991***

Goals

Self Directed

Core Principles of Active Learning

- Learner-centered
- Emphasizes on learner
- Facilitates learning
- Fosters deeper learning

Two Principles of Active Learning

(Dee Fink, 1999)

#1 Doing vs. observing

Observing

- **This occurs whenever a learner watches or listens to someone else "Doing" , something that is related to what they are learning about.**
- **A direct observation means the learner is observing the real action**
- **A vicarious observation is observing a simulation of the real action.**

Doing

- **This refers to any learning activity where the learner actually does something.**
- **Case studies, role-playing and simulation activities offer ways of vicariously engaging students in the "Doing" process.**

Two Principles of Active Learning

(Dee Fink, 1999)

#2 Dialoguing with self or others

Dialogue with Self

- **This is what happens when a learner thinks reflectively about a topic, i.e., they ask themselves what they think or should think, what they feel about the topic.**

Dialogue with Others

- **A much more dynamic and active form of dialogue occurs when a teacher creates an intense small group discussion on a topic or you are required to teach your peers.**

Learning Cell

- Pairs of students learning cooperatively
- Learners read material or listen
- Questions prepared either by faculty and/or learners
- Ask and answer questions with peers
- Think-Pair-Share
  - Discuss an interview, issue, clarify/summarize a lecture
- Optional: report out to larger group from their pair's perspectives (not theirs)

Think-Pair-Share Activity

- #1-Think individually, when did you as a teacher completely engage your learners in a topic i.e. used a strategy that worked?
  - Dialoguing with self
- #2-Share with a partner the outcome of #1
  - Dialoguing with others
- #3-Share with the larger group
  - Dialoguing with others

Note: Challenge increased but support increased as well and the learner is active

Small Group Discussion

General Principles

All learners joining in free discussion of a topic; develops critical thinking and retention; can use an ice breaker to start and it is important to have group ground rules/assigned roles

- **Beginning:** Introduction, set expectations/rules, create a safe but challenging environment
- **Middle:** think about types of questions, ask questions effectively; maximize group participation of ALL learners (use brainstorming technique)
- **Closing:** summarize what happened and identify remaining questions of the learners and next steps

Case Studies

- Careful selection or writing of cases
- Teach students to select important factors from a tangle of less important ones, which will inform a context to consider.
- Case progresses to solve more difficult problems
- Transfer learning back to objectives i.e. general principles

Case Studies

- Use an authentic case example that is clearly defined
  - Present in writing, video clip or role play
- Prepare questions:
  - # and depth varies with learners and goals
  - What, why, how, what if?
- Can modify to meet setting, culture
- Supports explorations of solutions
  - Consider role of evidence in decision making
- Focused on problem-solving, individually or in teams
- Teams report out after discussing case
- Facilitator: listens, questions, clarifies, challenges, fosters analysis, tests generalizations
- Consider bringing in an expert to debrief case

Case Scenario: Discuss as a large group

- It is 7pm and you are home on the couch and you get a page from the PACU. You call back and the head nurse says "we're having a problem with Dr. _____. He is giving us a lot of attitude and not writing the post-op orders." You know this resident well, he is a 3rd year resident, a good friend of yours, and you know that he is busy running between two rooms in the OR late in the day as well as on call so he is probably pretty rushed and stressed. However, How do you respond to the nurse? How do you approach Dr. ____ about it?

Followup Case Scenario: Discuss in small groups

- This is also not the first time you have had to address Dr. ___'s attitude with the staff and you actually did an intervention in the spring of his PGY2 year, your 4th year.
- Does this change your next steps with the resident?
- Do you need to “bump it up” to the program director? What is your responsibility on reporting up?

Audience Response System (a.k.a. "clickers")

- Hand-held remote controls that allow audience interactivity
- Instant feedback and display of polling results
- Can poll anonymously or track individual students
- Increase attentiveness and knowledge retention

- **Important to think about your questions!**

- Disadvantages:
  - Cost
  - Technical problems

I would consider myself to be primarily a:

1. Clinician
2. Researcher
3. Educator
4. Other
5. More than one of the above

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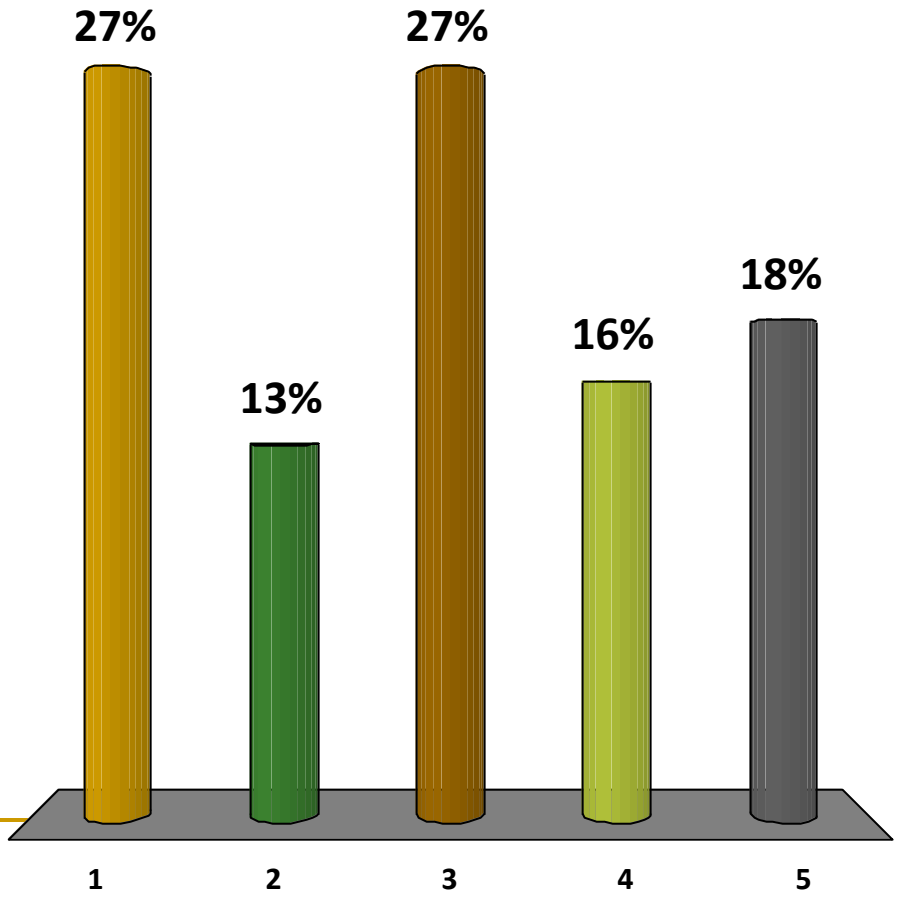

Evolution of Audience Response Systems

- Use of SMS (text messaging)
  - Cost drastically decreased
  - Text feedback can also be sent
- Free apps, paid services, Twitter…

Let'sGoVOTE®
sms-based surveys, polls & learning

Poll Everywhere

twitter

SMSPOLL

mClk

Reflection Exercise

- What active learning strategy do you anticipate being able to incorporate into your teaching?
- Reflect on an attitudinal change you will have to personally make to incorporate this specific active learning strategy into your “toolbox” of teaching strategies.

Reflection as a Pedagogy

- Narrative about an experience; intended to increase learner's self-awareness of knowledge, skills, or attitudes
- Can take multiple forms
  - Written, verbal, drawn, acted …
- Experience being reflected on can be either focused or general
- Conducted either pre- post- or mid-activity
- Reflection prompt is critical

Appendix

Debriefing an Educational Strategy

Required for higher level learning ⟶ application

- What was going on?
- What did you observe?
- What is the problem/dilemma/issue?
- What is influencing the problem/dilemma/issue?
- Assumptions?
- Evidence-i.e. direct observation, literature, guidelines
- Conclusions? Were learning objectives met?
- Recommendations? Next steps?

Next Steps: Assessment and Feedback

Drivers of Learning

- How will you know if the strategy chosen to facilitate learning a topic is successful i.e. learning objectives/outcomes were achieved?
- What will you observe or measure to answer this question?

Assessment → Feedback

A process in which rich usable feedback, is reflected on by the learners and then acted upon by the teachers.

- **The goal is to get smarter and better at what we do.**
- **It is driven by reflection, judgment and improvement.**

MILLER'S PYRAMID

Figure 1: Miller's Framework for clinical assessment.
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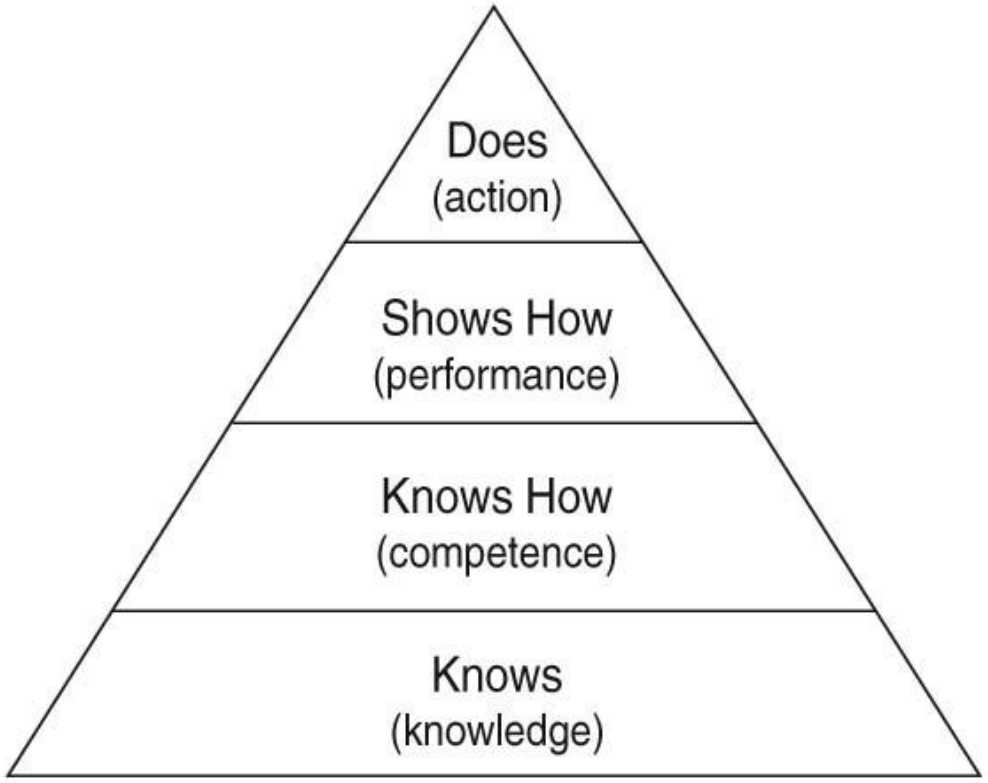


Debate/Decision-Making

- A dialogue about a controversial idea that can be supported by arguments
- Excellent for ethical issues
- Pose a *controversial* topic/issue
- Assign learners to defend viewpoints on the issue
- Identify rules of the debate
  - Time, use of resources to inform debate content
- Allow time for audience to ask questions of each team
- Bring closure with resolution to the controversial issue, if possible
- Debrief debate process and content

Strategies to Create Active Learning

- **Small group discussion (6-8 students is ideal) with questioning**
- **Cases**
- **Role-playing (pairs or triads)**
- **Video-Movie Clips**
- **Simulation**
- **Games**
- **Concept maps**
- **Team-based learning**
- **Debate/Decision-making**
- **Demonstration-laboratory exercise**

Role Play

- Introduces problem in a dramatic format
- Allows learners to assume roles of others and experience different points of views; can improvise answers based on a narrative script describing role
- Explores solutions
- Allows opportunity for practice
- Must have “appropriate” script for all roles
- Set ground rules for observers- triad and large group

Simulation

- Model a real-life problem
- Identify teaching objectives
- Identify learning outcomes
- Learners play the role of individuals or groups in an interpersonal or skill oriented exercise
- Use of technology i.e. simulators or standardized actors
- Debriefing after simulation exercise is key to learning

Collaborative/Cooperative Learning

"Peer Learning"

- Involves groups/peers working effectively
- This is not always natural and requires preparation
- In class and out of class work needs to be identified
- Establish group expectations/rules, include evaluating group processes and peers

Team Based Learning

- Teams of 5-7 learners
- Faculty select/develop pre-work/reading
- Individually, complete a series of questions on the pre-work
- Faculty prepare a learning assignment/activity for the class with questions related to pre-work
- Answer the assignment questions as a group
- Teams share group answers with larger group
- Debrief why the group selected answers and any individuals who were outliers of group response- defend responses

Concept Diagrams/Maps Construction

1. Make a list; create a simple outline
2. Pull Grouping items from list and connect them together; highest item is broadest concept.
3. Continue to connect subtopics to include details; look for convergence
4. Look for cross-links; powerful for developing integrative thinking.
5. Review maps by verbalizing them; fine tune problem/unclear areas.

Concept Diagrams/Maps

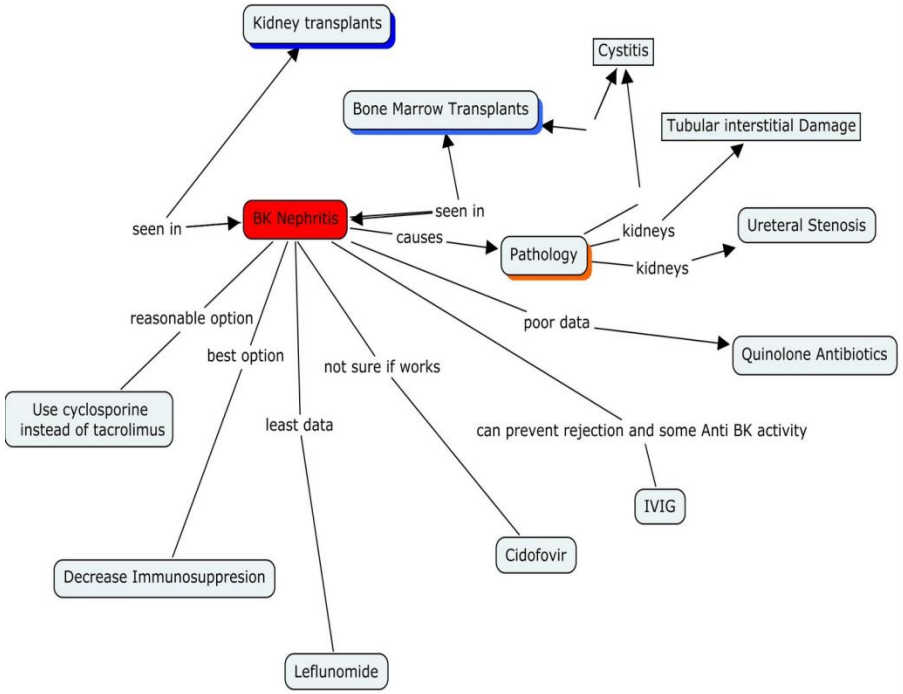
- Hierarchical –

Branch points represent levels in a hierarchy of cognitive learning

- Center-out
- Top-down (preferred by linear learners)

Examples

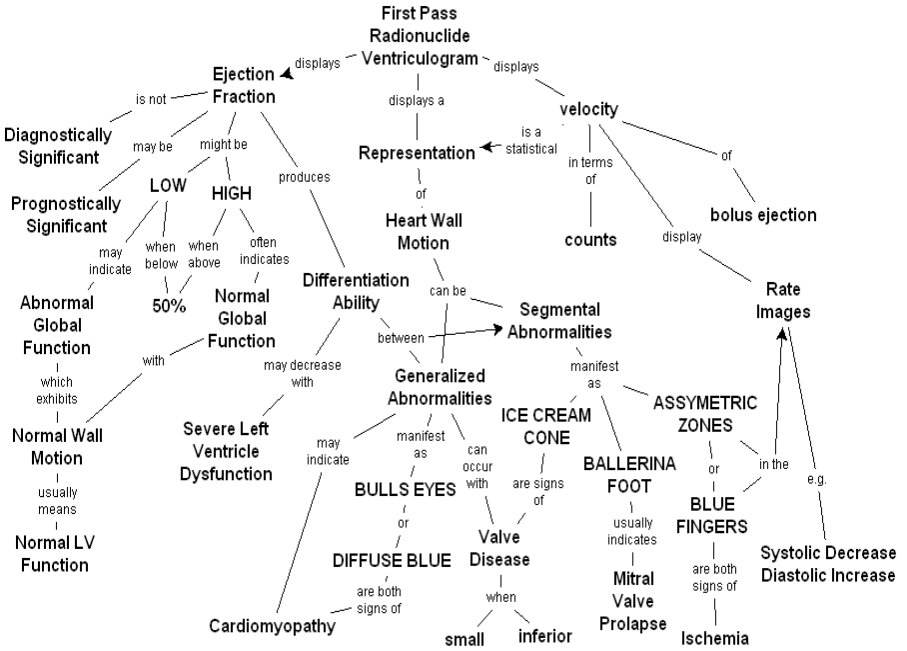
CENTER-OUT



Concept Map of Treatment of BK Nephritis

Kenar Jhaveri
http://onlinetransplantcenter.blogspot.com/2010/10/basic-concepts-in-immunology.html

HIERARCHICAL



Concept Map for Diagnostics in Nuclear Cardiology

Ford et al. 1993. Participatory Explanation. Proceedings of the 6th Florida AI Research Symposium, pp. 111-115.

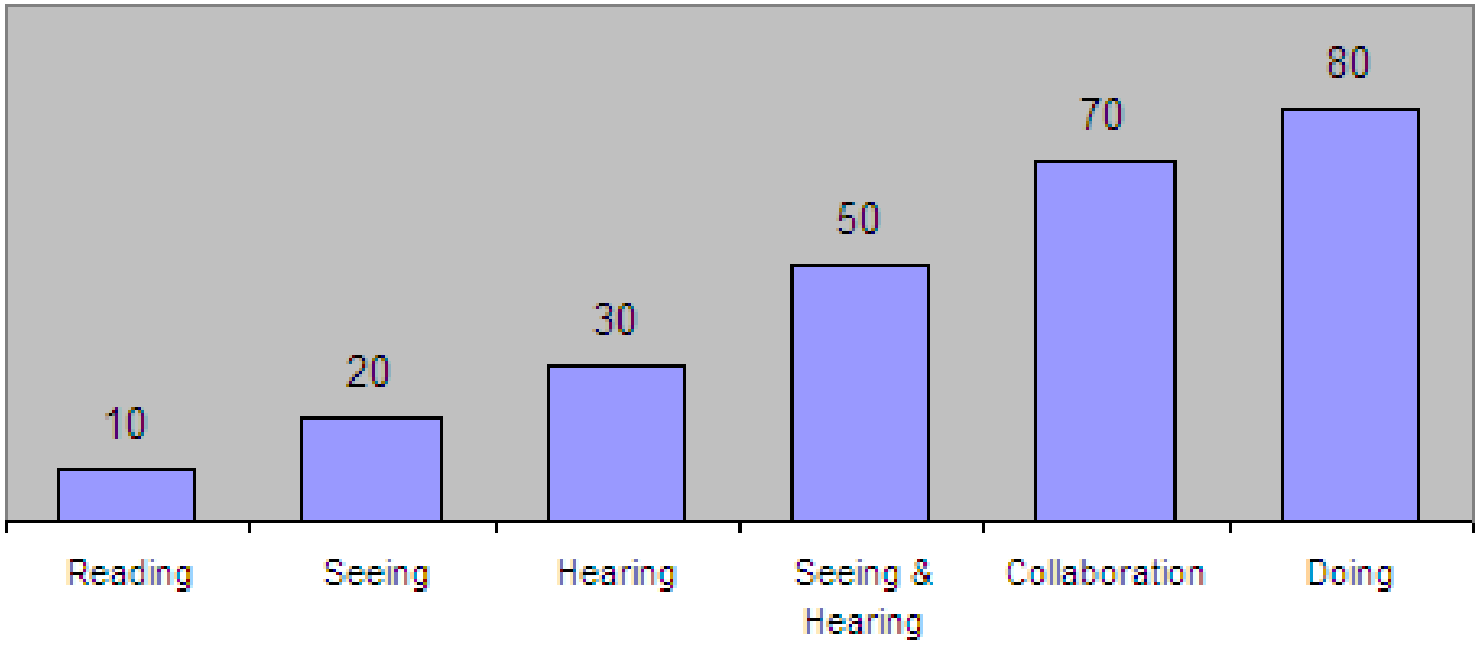
Constructing a Concept Map

- Decisions: High-Tech vs. Low Tech?
  - http://cmap.ihmc.us/
    - The **IHMC CmapTools** program empowers users to construct, navigate, share and criticize knowledge models represented as concept maps.
- Individual or as a group process?
- What is the starting concept?
- Will it be for learning and/or assessment?

Table VI

Dale's Cone of Experience

See Wiman & Mierhenry, Educational Media, Charles Merrill, 1960, for reference to Edgar Dale's Cone of Experience.
*Question marks refer to the unknown.



Chi, M. T. H., Bassok, M., Lewis, M. W., Reimann, P., & Glaser, R. (1989). Self-explanations: How students study and use examples in learning to solve problems. *Cognitive Science, 13*, 145-182.