

# The Pedagogy of Medical Education

## Instructional Design Principles

The best instruction is that which is:

- **Effective** - facilitates learners' acquisition of the prescribed knowledge, skills and attitudes
- **Efficient** – requires the least possible amount of time necessary for learners to achieve the objective
- **Appealing** – motivates and interests learners, encourages them to persevere in the learning task
- **Enduring** – encoded in long-term memory, accessible and applicable in the future

## Instructional Design Principles

- There should be congruence among objectives, learning activities, and assessment.
- The objectives should be the driving force behind decisions about activities and assessment.
- Students must participate actively, interacting mentally as well as physically with material to be learned.
- Learners should be evaluated in terms of how nearly they achieve the instructional objectives rather than how they “stack up” against their fellow students.

## Adult Learning Principles

- Capitalize on the experience of participants.
- Adapt to the aging limitations of the participants.
- Adults should be challenged to move to increasingly advanced stages of personal development.
- Adults should have as much choice as possible in the availability and organization of learning programs.

## Application of Adult Learning Theory

- Explain why specific things are being taught
- Instruction should be task-oriented instead of memorization -- learning activities in context of common tasks to be performed.
- Instruction should take into account the wide range of different backgrounds of learners; learning materials and activities should allow for different levels/types of previous experience
- Since adults are self-directed, instruction should allow learners to discover things for themselves, providing guidance and help when mistakes are made.

## Principles of Andragogy

- Adults need to be involved in the planning and evaluation of their instruction.
- Experience (including mistakes) provides the basis for learning activities.
- Adults are most interested in learning subjects that have immediate relevance to their job or personal life.
- Adult learning is **problem-centered** rather than content-oriented.

## Experiential Learning Principles

- Significant learning takes place when the subject matter is relevant to the personal interests of the student
- Learning which is threatening to the self (e.g., new attitudes or perspectives) are more easily assimilated when external threats are at a minimum
- Learning proceeds faster when the threat to the self is low
- **Self-initiated learning is the most lasting and pervasive.**

## Cognitive Learning Principles

- Learning activities must provide multiple representations of content
- Instructional materials should avoid oversimplifying the content domain and support **context-dependent** knowledge
- Instruction should be **case-based** and emphasize **knowledge construction**, not transmission of information
- Knowledge sources should be highly **interconnected** rather than compartmentalized.

## Constructivist Principles

- Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness).
- Instruction must be structured so that it can be easily grasped by the student (spiral organization).
- Instruction should be designed to facilitate extrapolation and or fill in the gaps (going beyond the information given).

## Cognitive Dissonance Principles

- Dissonance theory applies to all situations involving attitude formation and change. It is especially relevant to decision-making and problem-solving.
- Dissonance results when an individual must choose between attitudes and behaviors that are contradictory.
- Dissonance can be eliminated by reducing the importance of the conflicting beliefs, acquiring new beliefs that change the balance, or removing the conflicting attitude or behavior.

## 9 Events of Instruction

- Gaining attention (reception)
- Informing learners of the objective (expectancy)
- Stimulating recall of prior learning (retrieval)
- Presenting the stimulus (selective perception)
- Providing learning guidance (semantic encoding)
- Eliciting performance (responding)
- Providing feedback (reinforcement)
- Assessing performance (retrieval)
- Enhancing retention and transfer (generalization)

## Conditions of Learning

- Different instruction is required for different learning outcomes.
- Events of learning operate on the learner in ways that constitute the conditions of learning.
- The specific operations that constitute instructional events are different for each different type of learning outcome.
- Learning hierarchies define what intellectual skills are to be learned and a sequence of instruction.

## Learning Objectives

- Fundamental Rule of Thumb
- **Must be measurable and observable**
- Articulate goal of the training/teaching
- Communicate intent to learner
- Provides means for evaluation
- Assists in selection of materials

## Essential Characteristics of Learning Objectives

- Description of **performance** task and results – evidence of achievement: verb and product
- **Conditions** under which performance will take place
- Criterion, **Standards** – minimum acceptable level

## Rules of Good Visual Aides

- Easy to read in all circumstances
  - Contrast
  - Font size
- Less is more
  - Rule of 6 (pick a number)
  - Simplicity of graphs and charts
- Illustrate concepts and main points

## Development of Instructional Materials for Posting Online

- Small enough to be easily downloaded over modem connection
- Specify software and version in which materials were created

## Analysis of Learning Environment

- What are characteristics of the teachers/trainers who will be using these materials?
- Are there existing curricula into which this piece of instruction must fit? If so, what is the philosophy, strategy or theory used in these materials?
- What hardware is commonly available in the potential learning environments?

## Analysis of the Learner

- Who is your target audience?
- Cognitive characteristics
  - Specific content knowledge
  - Prior experiences
- Physiological characteristics
  - Age
  - Sensory perception
  - General health
- Psychosocial characteristics
  - Interests
  - Motivations
  - Attitude toward learning
  - Moral development
  - Job position and rank
  - Role Models

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