

Learning Theories and Effective Teaching

Jody Cormack PT DPT MEd NCS
California State University, Long Beach

Outline

- What is adult learning
 - Critical thinking and problem solving
 - Theories
- Applying teaching and learning principles
 - With students in a clinical setting
- Determining learning difficulty
 - Situational leadership
 - Affective problems
 - Cognitive problems

The Learner

Characteristics of the adult learner
Learning Progression
Learning Theory

Adult Learners Houle 1984 in Baker 1990 pg 8

- Goal-oriented
 - Use learning to achieve specific objectives
 - Select the institution or method that will best help them to achieve their purpose
- Activity-oriented
 - Participate in learning primarily for the sake of the activity itself
- Learning-oriented
 - Pursue learning for it's own sake
 - Possess a fundamental desire to know and grow through the learning process

Adult learning

Adults are motivated by learning that:

- Is perceived as relevant
- Is based on, and builds on, their previous experiences
- Is participatory and actively involves them
- Is focused on problem solving

Adult learning

Adults are motivated by learning that:

- Is designed so that they can take responsibility for their own learning
- Can be immediately applied in practice
- Involves cycles of action and reflection
- Is based on mutual trust and respect

Progression of Expertise and Critical Thinking Skills (Dreyfus, 1985)

- Novice
 - Inductive reasoning
- Advanced Beginner
- Competent
 - Backward reasoning
 - Hypothetico-deductive approach
- Proficient
 - Forward reasoning
- Expert

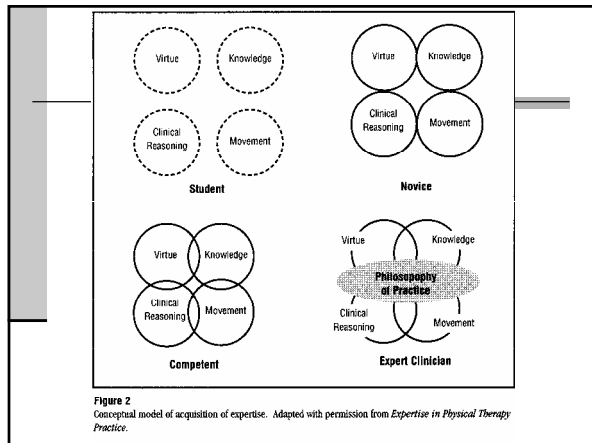
From... Novice

- Abstract principles
- General understanding
- Observational detachment
- Not self-directed
- Rule-based thinking
- Memorizer
- Organizes by lists
- Wants to be told what to learn

To... Expert

- Concrete experience
- Contextual response
- Engaged participation
- Knows learning needs
- Intuition
- Conceptualizer
- Creates own algorithms
- Practices reflection

■ (Benner, Boughton)



Learning Theories Shepard pg 45

Gestalt/Problem-solving experience

Behaviorism

Piaget/Cognitive structure

Learning Theories: Behaviorism

- Thorndike and Skinner, early 1900's
- Positively reinforced behaviors will re-occur
 - Process of learning involved rewarding correct behavior until the behavioral change is consistently demonstrated
 - Praise, encouragement in all areas
 - Class room – high grades reinforce studying
 - Internship – patient improvement reinforces studying
 - Clinic – completing transfer reinforces practice

Learning Theories: Gestalt/Problem Solving experiences

- Early to mid-1900's
- Gestalt = organization
- People experience and organize the world in meaningful patterns or contexts
 - Information must make sense within some context, or the learner will not be able to learn
 - Class room – Present a patient "framework" vs. memorizing separate facts and figures
 - Internship – Learn from patients vs. books
 - Clinic – task specific practice vs. breaking task into isolated parts

Learning Theories: Gestalt/Problem Solving experiences

- Problem solving – Dewey
 - Students should be actively involved in an experience from which they can learn
 - Problems generate critical thinking and learning
 - Classroom – cases and problem based learning
 - Internship – working with patients
 - Clinic – letting the patient solve a problem

Learning Theories: Piaget/Cognitive structure

- Piaget – psychologist in early/mid 1900's
- Learning in terms of development of mental or cognitive abilities that make learning possible
- Constructivist theory (Piaget, Bruner, Vygotsky)
 - Human beings are constantly constructing our own version of reality based on prior experience and assumptions
 - Knowledge is developmentally, socially, and culturally mediated

Learning Theories: Piaget/Cognitive structure

- Gagne proposed a similar hierarchy for adult learning
 - Facts
 - Concepts
 - Principles
 - Problem solving
 - For any setting, present background information before complex associations

Learning Theories

- Behaviorism is the learning theory that has predominated elementary and secondary education.
 - It is also prevalent in undergraduate higher education
 - Memorization for tests versus application to problems
 - Need to teach students how to problem solve

Learning Theories

- Present information in context when the student is ready, reinforce learning positively
 - Consider how to promote problem solving
 - Consider learner maturity, or readiness
 - Consider how you will provide feedback
- *Active learning*

Active Learning

- Provides opportunities for students to:
 - Talk
 - Listen
 - Read
 - Write
 - Reflect
 - Problem solve
- Provides opportunities for students to:
 - Be Adult Learners

Group activity

Best Learning Experiences

The Teacher - Clinical

Teaching progression for the clinic
Choosing teaching techniques to meet learner readiness

Clinical Education

Normative Model, V2004

- That portion of a physical therapy program that is conducted in the health care environment rather than in the academic environment

Clinical Education Experiences

Normative Model, V2004

- That aspect of the curriculum in which students' learning occurs directly as a function of being immersed within PT practice.

Clinical Education Experiences

Normative Model, V2004

- These experiences comprise all of the formal and practical "real-life" learning experiences provided for students to apply the following in a clinical environment:
 - Classroom knowledge
 - Cognitive
 - Skills
 - Psychomotor
 - Professional behaviors
 - Affective

Promoting Clinical Learning and Critical Thinking Skills

- The novice PT must apply knowledge, reflect upon the experience, and then form a concept from which behavior can be modified to aid new experiences (Stockhausen, 1994).

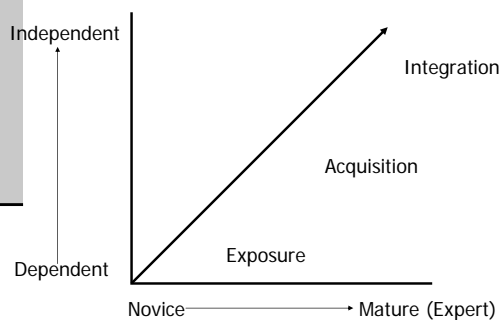
Promoting Clinical Learning and Critical Thinking Skills

- Practical knowledge for problem solving is developed via reflection
 - Reflection is the link between theory (or book learning) and practice. Schon (1987)
 - Reflection is useful only after a clinical application and use of repeated opportunities to make clinical decisions (Perry, 1999; Irby, 1986).
- The student develops self-directed learning from the decision making experience, and the process of evaluating the results of the experience. (Crandall, 1993)

Promoting Clinical Learning and Critical Thinking Skills

- Strategies to improve critical thinking
 - initially focused at constructing general backward reasoning problem solving strategies
 - progression towards individualized use of practical knowledge for problem solving (Jensen, 1999).

The Learning Vector Model for Professional Development Beck, Stritter



Clinical Education

- Progression for clinical instruction (Ladyszewski, 1998 Irby, 1986).
 - Direct reinforcement
 - CI is teacher
 - Vicarious reinforcement
 - CI is a clinical supervisor
 - Self-administered reinforcement
 - CI is a facilitator

Direct Reinforcement Stage

(Ladyszewski, 1998 Irby, 1986).

- Weeks 1-2
- Activity
 1. The CI directs each student to perform part of the intervention, allowing the CI to assess the baseline of the student's skill and knowledge base.
 2. The CI is a teacher and a role-model
 3. Role modeling of skill, behavior, and attitude is a useful method for instructing the novice clinician (Ettinger, 1991; Ross et al., 1985).

Vicarious Reinforcement Stage (Ladyszewski, 1998; Irby, 1986).

- Weeks 3-6
- Activity
 1. The CI starts to transition from a teacher to a facilitator, becoming a clinical supervisor
 2. As a facilitator, the CI must give feedback that will help the student discover how to self-assess.
 3. The CI must not just give the answer to a problem, but facilitate the students clinical thinking to discover the answer independently

Self-administered Reinforcement Stage (Ladyszewski; Irby).

- Weeks 7-?
- Activity
 1. Students treat independently, and the CI is a facilitator and an instructional leader
 2. At this stage, instruction often occurs outside of the context of direct clinical teaching.
 - Rounds
 - Chart Reviews
 - Case presentations

Clinical Education Using the Learning Vector Model

Stage	Activity	Example
Exposure/ Direct Reinforcement	Goal setting	Assess background, list objectives
	Task	Demonstrate, query student
	Evaluation	CI Feedback on accuracy of answer
Acquisition/ Vicarious Reinforcement	Goal setting	Develop objectives with student
	Task	Supervise and guide student with patient
	Evaluation	CI feedback and Student self-assess
Integration/ Self- administered Reinforcement	Goal setting	Student list learning plan/objectives
	Task	Student independent, CI consults
	Evaluation	Self-assess, CI and others give feedback

(Beck et al., 1988. J Allied Health 17:331-341)

Clinical Education tasks

- Relate to where the student is in the learning vector model
- Include characteristics of the adult learner
- Are derived from mutually set learning objectives
- Are within the resources of the facility

Clinical Education tasks

- Provide multiple opportunities for practice
- Meet more than one objective
- Integrate a variety of learning experiences
- Minimize negative learning
- Consider a variety of teaching/learning methods

What are the tasks of clinical education?

- Observe CI (Role Model)
- Examine/treat patients
- Billing/scheduling
- Documentation
- Meeting with CI
- Technique review
- Attend/provide inservices
- Complete assignments

What are the tasks of clinical education?

- Observe CI (Role model)
- Examine/treat patients
- Billing/scheduling
- Documentation
- Meeting with CI
- Technique review
- Attend/provide inservices
- Complete assignments
- Observe/provide feedback to another student
- Evidence-based searching
- Self assess clinical performance from video
- Role play activities
- Attend/participate in MD rounds
- Attend/participate in PT rounds
- Complete projects

Clinical Learning Assessment

- Formative and Summative
- Were mutually set goals and objectives met?
- Clinical Performance Instrument (APTA)
 - Quality of Care
 - Supervision/guidance required
 - Consistency of performance
 - Complexity of tasks/environment
 - Efficiency of performance

Diagnosing Potential Learning Problems

Situational Leadership
Affective problems
Knowledge problems

Leadership in the Clinical Setting

- Teachers and Clinical Instructors with students
- Therapists with patients

- Can be considered *leaders with followers*

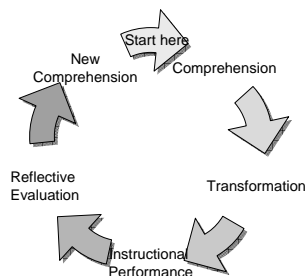
Teaching

- Teach applies to any manner of imparting information or skill so that others may learn
- Instruct suggests methodical or formal teaching
- Educate implies development of the mind
 - Webster's 10th edition

- Traditional definitions of teaching ignore the role of the learner

Model for teaching

Shepard pg 75



Unsuccessful teaching

- Think of a student that just wasn't "getting it"

- How did you decide what should be done?
- How did you present the request/information?
- What do you think went wrong?

Leadership

- “The ability to influence, motivate, guide and enable others to join in a shared vision to achieve a goal.”
 - Latorre
- “The skill of influencing people to work enthusiastically toward goals identified as being for the common good.”
 - Hunter

Leadership

- **Authority** = the *skill* of getting people to willfully do your will because of your personal influence.
- This is different from **power**, which is the *ability* to force or coerce someone to do your will because of your position.
- We must remember that our students and patients are *volunteers* Hunter

3 Domains of Leadership

- Diagnosing
 - Understanding the situation you are trying to influence
- Adapting
 - Altering your behavior and other resources
- Communicating
 - Interacting with others

Management vs. Leadership

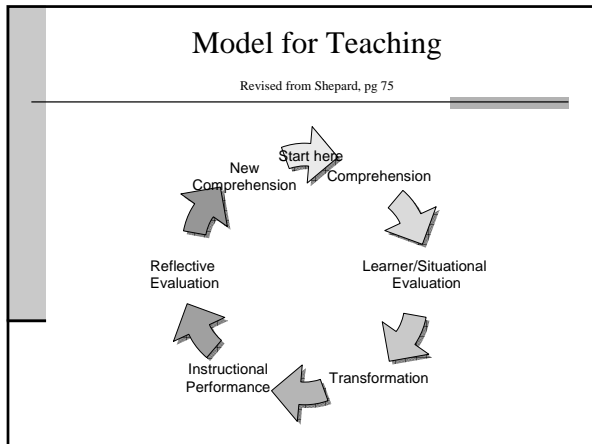
Managers	Leaders
Deal with speed/efficiency	Deal with direction (Covey)
Focus on organizational nuts and bolts	Keep the mission in sight (Covey)
Process oriented	Outcome oriented (Covey)
Focus on bottom line	Focus on top line (Covey)
“Left brain”	“Right brain” (Covey)
Transactional forms of motivation	Transformation and empowerment
Manage things	Lead people (Hunter)
Muscle, maneuver, monitor	Mentor, mosey, muse (Hagberg)
Doing the things right	Doing the right thing (Bennis)

Teaching and Leading

- “Teaching and learning are dependent on the sets of interactions that occur between the teacher and the student, who are involved in a reciprocal, interdependent relationship”
 - Expert teachers use influence (authority)
 - Expert teachers are motivating
 - Baker et al

Teaching and Leading

- “*My role is one of motivator. The role is enhanced by my knowledge of subject matter and love for what I do.*”
 - Community college instructor: Baker et al



- ### Leading followers
- Teacher effectiveness is moderated by follower maturity
 - The ability and willingness to take responsibility for directing their own behavior...considered only in relation to the task that is to be performed

- ### 3 Domains of Learning Shea et al
- Blooms taxonomy
 - Affective
 - Behavior
 - Cognitive
 - Knowledge
 - Critical thinking/Problem solving
 - Psychomotor
 - Skills

- ### Leading followers
- Hersey/Blanchard Situational Leadership
 - Assesses follower readiness in terms of:
 - Ability
 - Psychomotor
 - Cognitive
 - Willingness
 - Affective
 - Confidence
 - Affective

- ### Leading followers
- Follower Readiness
 - R1 Unable and Unwilling or Insecure
 - R2 Unable but Willing or Confident
 - R3 Able but Unwilling or Insecure
 - R4 Able and Willing or Confident

Leading Followers

Continuum of Follower Readiness

High	Moderate		Low
← R4	R3	R2	R1 →
Able and Willing or Confident	Able but Unwilling or Insecure	Unable but Willing or Confident	Unable and Unwilling or Insecure

Source: Adapted from Paul Hersey, *Situational Selling* (Escondido, CA: Center for Leadership Studies, 1985), p. 27. Reprinted with permission.

Leading Followers

- Hersey/Blanchard Situational Leadership
 - Assesses leading style in terms of:
 - Task Behavior
 - Relationship Behavior

Leadership styles

- Task behavior
 - The extent to which leaders are likely to organize and define the roles of the members of their followers and to explain what activities each is to do and when, where, and how tasks are to be accomplished
 - Characterized by endeavoring to establish well-defined patterns of organization, channels of communication, and ways of getting jobs accomplished

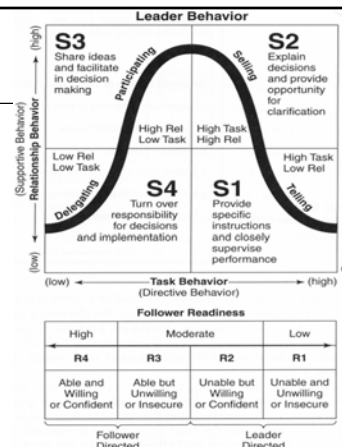
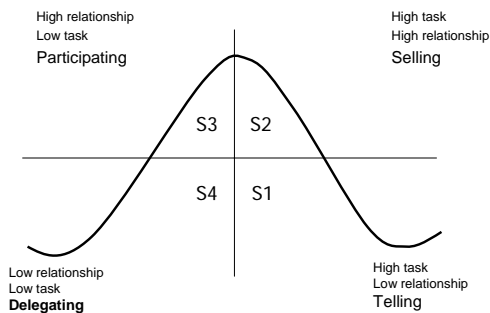
Leadership styles

- Relationship behavior
 - The extent to which leaders are likely to maintain personal relationships between themselves and their followers by opening up channels of communication, providing socio-emotional support, active listening, and facilitating behaviors

Leading followers

- S1-Telling: High task, low relationship
 - Modeling – tell how, not why
- S2-Selling: High task, high relationship
 - Algorithms – Lead through the process of why
- S3-Participating: High relationship, low task
 - Supportive – Use more self-directed tasks
- S4-Delegating: Low relationship, low task
 - Participate only when asked by learner

Situational Leadership



Leading followers

- Affective deficit = low willingness
 - S2, S3: High relationship leadership
- Psychomotor deficit = low ability
 - S1, S2: High task leadership
- Knowledge deficit = low ability
 - S1, S2: High task leadership

Leading Followers

- Leadership mismatches
 - S1 lead style with R3 follower
 - S4 lead style with R2 follower
 - S2 lead style with R4 follower
 - S3 lead style with R1 follower

Affective vs. Knowledge

- Sometimes it is difficult to discern if the problem is affective or knowledge
 - Assignment not completed
 - Feedback not carried over
 - Can't answer questions – blank look

Affective problems

- Learning style mismatch
- Personality mismatch
- Physiological problems
- Psychological problems
 - Stress

Learning styles

- Witkin's cognitive styles
- Kolb's learning styles
- Myer's Briggs personality styles

Witkin's cognitive styles

- Field Independent
 - Better able to read, memorize, analyze and organize information and experience
 - Does better in traditional learning environment
 - More abstract, impersonal orientation
- Field Dependent
 - High interpersonal and communication skills
 - More socially oriented

Kolb's Experiential Learning Theory

- Concrete experience
 - Relies on feelings/intuition instead of logic/reasoning
- Reflective Observation
 - Learning by observing during a concrete experience
- Abstract conceptualization
 - Involves logic, reasoning, hypothesis formation, and problem solving
- Active experimentation
 - Learning by testing approaches of theories generated

Kolb's Experiential Learning Theory

- Concrete experience
 - "I like to deal with my feelings"
- Reflective Observation
 - "I like to watch and listen"
- Abstract conceptualization
 - "I like to think about ideas"
- Active experimentation
 - "I like to be doing things"

Kolb's Learning Styles

- Diverger
 - Concrete experience and observation
 - Imaginative brainstormers, high interest in people
- Accomodator
 - Concrete experience and active experimentation
 - Flexible problem solvers, risk-takers
- Assimilator
 - Abstract conceptualization and reflective observation
 - Value theory, not practical application
- Converger
 - Abstract conceptualization and active experimentation
 - Exceptional in practical application of ideas

Witkin's Cognitive Styles	Kolb's Learning Styles	Learning Skills to be Strengthened
Field Dependent	Diverger	Spatial perception Reading
Field Dependent	Accomodator	Memorizing Problem-solving
Field Independent	Assimilator	Physical exam Social perception
Field Independent	Converger	Communication History taking

Personality Styles: Myers-Briggs

- Extrovert (E)/Introvert (I)
 - Where you derive your energy from
- Sensate (S)/Intuitive (N)
 - How you prefer to gather information
- Thinking (T)/Feeling (F)
 - How you prefer to make decisions
- Judging (J)/Perceiving (P)
 - How you prefer your outer world to be

Personality Styles: Myers-Briggs

- | | |
|---|--|
| <ul style="list-style-type: none"> ■ Extrovert (E) <ul style="list-style-type: none"> ■ Thinks out loud ■ Draws energy from people ■ Sensate (S) <ul style="list-style-type: none"> ■ Looks for facts ■ Thinking (T) <ul style="list-style-type: none"> ■ Uses objective data ■ Seeks just decisions ■ Judging (J) <ul style="list-style-type: none"> ■ Orders the environment ■ Likes to plan | <ul style="list-style-type: none"> ■ Introvert (I) <ul style="list-style-type: none"> ■ Thinks inside ■ Draws energy from being quiet ■ Intuitive (N) <ul style="list-style-type: none"> ■ Perceives the "big picture" ■ Looks for meaning ■ Feeling (F) <ul style="list-style-type: none"> ■ Uses subjective data ■ Seeks fair decisions ■ Perceiving (P) <ul style="list-style-type: none"> ■ Flexible, spontaneous |
|---|--|

Myers-Briggs Temperaments; SJ Type (DiMarco, et al, PT Magazine Feb 1997)

- Traditional stabilizer, guardian – 38% (common with students, faculty)
- Learning style
 - Need structure, predictability
 - Prefer 1:1 supervision with a clear chain of authority
 - Need to know the “rules”, expectations
- Clinical sites
 - Uncomfortable with little supervision or guidance
 - Need a formal orientation
 - Want a set schedule each day, likely to study for patients the night before

Myers-Briggs Temperaments; NF Type (DiMarco, et al, PT Magazine Feb 1997)

- Catalyst, romantic – 12%
- Learning style
 - Harmony, teamwork
 - Creative problem solving
 - Can recognize inner turmoil in others
 - Can take criticism personally - defensive
- Clinical sites
 - Disharmony among staff disturbing
 - Develop in-depth relationships with patients/staff
 - Like a personalized approach

Myers-Briggs Temperaments; NT Type (DiMarco, et al, PT Magazine Feb 1997)

- Visionary – 12% (typical with faculty)
- Learning style
 - Insatiable appetite for knowledge
 - Innovative – conceptualize new strategies, systems
 - Enjoy debate
 - Do not appreciate authority, only competence
- Clinical sites
 - Enjoy a confident staff that is willing to share knowledge and answer questions
 - Like teaching patients
 - Prefer lower workload to allow for increased mentoring/inservicing

Myers-Briggs Temperaments; SP Type (DiMarco, et al, PT Magazine Feb 1997)

- Trouble shooter/negotiator – 38% (rare faculty)
- Learning style
 - Prefer autonomy – structure is stifling
 - Like variety, a lot of activity – no schedules
 - Want to solve problems on their own – “doers”
 - Risk takers, respond well to crises
- Clinical sites
 - Variety, flexibility, informality
 - Do not like bureaucracy or routine tasks
 - Like to solve problems rather than follow rules

Learning, Cognitive, Personality Styles

- What particular characteristics do you *prefer* in students?
- What particular characteristics do you *have difficulty* with in students?
- How does **your** learning, cognitive, and personality type affect your teaching?

Physiological/Psychological Affective Problems Quirk

- | | |
|---|--|
| ■ <u>Affective State</u> | ■ <u>Learning Problems</u> |
| ■ Depression | ■ Memory loss, failure to perform |
| ■ Anxiety/Panic | ■ Withdrawal, lack of concentration, memory loss |
| ■ Shame/Guilt | ■ Avoidance, cramming |
| ■ Feeling overwhelmed/
Fear of failure | ■ Passive conformity, lower aspirations |

Physiological/Psychological Affective problems

- Stressors of medical training may affect professional behavior in the clinic
 - Lack of control
 - Sleep deprivation
 - High expectations
 - Financial pressures
 - Lack of personal maturation

Learners with affective problems

- Need counseling and support
- Need S2/S3 High relationship leadership

Knowledge problems

- Too³
 - Too much to learn
 - Too much detail
 - Too little time
- Diane Boughton

Assessing Knowledge Bordage

- Reduced
 - Absent or inaccessible
- Dispersed
 - Encyclopedic, unrelated, out-of-context
- Elaborated
 - In context, abstract associations
- Compiled
 - Concise, experienced, pattern recognition

Knowledge

- | | |
|--------------|---------------------|
| ■ Reduced | ■ Novice |
| ■ Dispersed | ■ Advanced Beginner |
| ■ Elaborated | ■ Competent |
| ■ Compiled | ■ Proficient |
| | ■ Expert |

Learners with reduced/ dispersed knowledge structure

- Model after an expert
- Carry cards to write learning needs
- Stop "yellow-marker" syndrome
- Use algorithms
- Use a 1-10 self assessment scale
- Start with narrow list of patient problems
- Provide time for reflection

- Need S1/S2 – High task leadership

Summary: Situational Leadership

- Effective leadership results from:
 - The amount of task guidance and supervision teachers give to students
 - The amount of socio-emotional support the teacher provides
 - The readiness or maturity level that students exhibit in performance of their tasks

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