

Domains of Learning

Michael Everett, EMT-P, I/C

"I'm not smart. I try to observe. Millions saw the apple fall but Newton was the one who asked why."

- Bernard Mannes Baruch

If I have the belief that I can do it, I shall surely acquire the capacity to do it even if I may not have it at the beginning.”

~ Mahatma Gandhi

Self-Efficacy Defined

“The belief in one’s capability to organize and execute the courses of action required to manage prospective situations.”

“Self reflection is the most uniquely human characteristic.”

- Albert Bandura

High Self-Efficacious Individuals

Are more effective at:

- Regulating their motivation
- Not creating catastrophic cognitions (Chicken Little Syndrome)
- Modulating affective arousal (Not emotionally reactive)
- Remaining task oriented in the face of threats
- Maintaining a strong commitment to goals
- Making an effort toward mastery in the face of challenges
- Being resilient in the face of failure
- Crediting their achievements to their own capabilities rather than to external factors

Self-Efficacy in Academics

- Many, if not most, academic crises are crises of confidence
- Self-perceptions of capability help determine what individuals do with the knowledge and skills they have. More importantly, self-efficacy beliefs are critical determinants of how well knowledge and skill are acquired in the first place.
- So, academic performance is largely a result of what students actually come to believe that they have accomplished, are accomplishing, and can accomplish in the future.

Self-Efficacy in Academics

- Self-efficacy beliefs influence choice of majors and career decisions of college students
- Regardless of ability level, students with high self-efficacy
 - completed more math problems correctly and re-worked more of the ones they missed
 - Used more meta-cognitive strategies
 - Showed more self-regulation
- Self-efficacy accounts for about 14% of variance in academic performance (Multon et al, 1991 – meta analysis of 36 studies)

Teacher Self-Efficacy

- Affects teaching style
 - Low teacher self-efficacy leads to: custodial approach, pessimistic attitude, rigid control of classroom, extrinsic inducements, and negative sanctions to motivate students
 - High teacher self-efficacy leads to: create mastery experiences for students, emphasize positives, empower students towards internal locus of control
- Correlates with student achievement
 - This applies across a wide range of areas and levels

For a detailed review of the literature and other information on self-efficacy, go to Dr. Albert Bandura's website, www.des.emory.edu/mfp/efftalk.html

Developing Self-Efficacy

- **Mastery experiences**
 - Succeeding in realistic goals/tasks
- **Vicarious experiences (modeling)**
 - Mentoring, role-models, supervision
- **Verbal persuasion**
 - Support, affirmation, positive peer pressure
- **Re-evaluating physiological states**
 - Mind-body health, relaxation, cognitive-behavioral interventions

Competency Processes

- ***Cognitive Processes:*** Competency beliefs shape the types of anticipatory scenarios people construct and rehearse.
- ***Motivational Processes:*** Competency beliefs determine the goals people set, how much effort they expend, how long they persevere in the face of difficulties, and resilience in the face of failure.
- ***Affective Processes:*** Competency beliefs determine how much stress people experience and their ability to control anxiety and disturbing thoughts.

How we Learn

Humans are lifelong learners. From birth onward we learn and assimilate what we have just learned into what we already know. Learning can be categorized into the domains of concept knowledge, how we view ourselves as learners, and the skills we need to engage in learning.

Pedagogy

- The art and science of teaching

Domains of Learning

- Utilized as a tool to understand how people think, feel, and act
- Through understanding of domains greater congruence of educational goals
- Developed by Benjamin Bloom in 1956
 - Bloom's Taxonomy

Domains of Learning

- Cognitive (thinking)
- Affective (feeling)
- Psychomotor (doing)

Utilizing the Domains

- Develop instructional designs
- Develop test questions and/or scenario testing
- Evaluate effectiveness of lesson plan and/or teaching
- Evaluate progress of individual(s)

Cognitive Domain

- Content knowledge
- Recall or recognition of specific facts
- Consists of six (6) levels (categories)
- Range from lowest to highest
- Must master lower level to move to next

MJE

<Domains of Learning>

Knowledge

- Defined as: remembering (recalling) of appropriate, previously learned information
- Descriptors include:
 - Defines, describes, identifies, labels, lists, matches, names, read, records, reproduces, recognizes, selects, states

Comprehension

- Defined as: Understanding the meaning of informational material
- Descriptors include:
 - Classifies, cites, converts, describes, discusses, estimates, explains, gives examples, paraphrases, restates, summarizes, traces, understands

Application

- Defined as: The breaking down of previously learned information in a new and concrete situations to solve problems with two or more answers
- Descriptors include:
 - Acts, administrators, assesses, collects, charts, computes, determines, develops, implements, includes, informs, instructs, participates, predicts, prepares, provides, shows, solves, teaches, uses, utilizes

Analysis

- Defined as: The breaking down of informational materials into their component parts, examining (and trying to understand the structure of) the information to make inferences, identify causes, find evidence
- Descriptors include:
 - Breaks down, correlates, diagrams, differentiates, discriminates, distinguishes, focuses, illustrates, infers, limits, outlines, prioritizes, separates, subdivides

Synthesis

- Defined as: Creatively or divergently applying prior knowledge and skills to produce a new or original whole
- Descriptors include:
 - Adapts, anticipates, collaborates, combines, compares, composes, contrasts, creates, designs, devises, expresses, facilitates, formulates, incorporates, initiates, integrates, intervenes, models, modifies, plans, rearranges, reconstructs, reinforces, revises, structures, substitutes, validates

Evaluation

- Defined as: Judging the value of material on personal values/opions, resulting in an end-product, with a given purpose, without real right or wrong answers
- Descriptors include:
 - Appraises, compares & contrasts, concludes, criticizes, critiques, decides, defends, interprets, judges, justifies, reframes, supports

Exam Question Content

- **Knowledge**
 - “Who, what, where, how?”
 - Describe
- **Comprehension**
 - “Describe in your own words . . .”
 - Match facts and ideas (matching)
- **Application**
 - How *is* ___ an example of ___?
 - Why *is* ___ significant?
- **Analysis**
 - How *does* . . .?
 - Why *does* . . .?
- **Synthesis**
 - What *would* you predict based on?
 - What *would* you do for . . .?
- **Evaluation**
 - What criteria would you use to *evaluate*?
 - What do you *think* about?

Affective Domain

- Includes values, feelings, appreciation, enthusiasm, motivations and attitudes.
- The most difficult domain to evaluate
- Consists of five (5) levels

Affective Domain

- Receiving
- Responding
- Valuing
- Organization
- Characterization

Receiving

- Defined as: Willingness to receive or to learn
- Divided into three categories:
 - Awareness
 - Willingness to receive
 - Controlled attention
- Descriptors include:
 - Asks, chooses, describes, follows, located, selects, replies, uses

Responding

- Defined as: Active participation of the student. Indicates the desire to become committed to subject, task, activity, etc
- Descriptors include:
 - Answers, assists, conforms, greets, discusses, helps, performs, presents, reads, recites, tells, writes

Valuing

- Defined as: The worth or value a student attaches to a particular object or behavior
- Descriptors include:
 - Completes, describes, follows, forms, initiates, invites, joins, justifies, proposes, reads, reports, shares, studies, works

Organization

- Defined as: Bringing together different values, resolving conflict, and building a consistent value system
- Descriptors include:
 - Adheres, alter, arranges, combines, compares, defines, explains, modifies, orders, relates

Characterization

- Defined as: A value system that has controlled his/her behavior to have developed a 'life style'
- Descriptors include:
 - Acts, discriminates, displays, influences, listens, modifies, performs, practices, qualifies, questions, solves, uses, verifies

Psychomotor Domain

- Includes physical movement, coordination, and use of the motor-skill areas
- Development requires practice
- Measured in terms of:
 - Speed
 - Precision
 - Techniques
 - Procedures
- Five (5) levels

Psychomotor Domain

- Imitation
- Manipulation
- Precision
- Articulation
- Naturalization

Imitation

- Defined as: early stage in learning a complex skill. Includes repeating an act that has been demonstrated or explained
- Descriptors include:
 - Begin, assemble, attempt, carryout, copy, construct, duplicate, follow, mimic, repeat, reproduce

Manipulation

- Defined as: Practicing until habitual and can be repeated with *some* confidence and proficiency
- Descriptors include:
 - Acquire, assemble, complete, conduct, do, execute, improve, maintain, make, manipulate, operate, pace, perform, produce, progress, use

Precision

- Defined as: The skill has been attained. Proficiency is indicated by a quick, smooth, accurate performance.
- Descriptors include:
 - Accomplish, automatic, advanced, exceed, excel, master, reach, refine, succeed, surpass, transcend

Articulation

- Defined as: The ability to modify skills to meet special requirements and/or situations (“improvise, adapt, and overcome”)
- Descriptors include:
 - Adapt, alter, change, excel, rearrange, reorganize, revise, transcend

Naturalization

- Defined as: Response is automatic. Begin to experiment with new ways to accomplish task. Acting without thinking
- Descriptors include:
 - Arrange, combine, compose, construct, create, design, refine, originate, transcend

Teaching to the Domains

- **Cognitive**
 - Lecture
 - Discussion
 - Reading
 - Case studies drills
- **Affective**
 - Modeling
 - Role playing
 - Scenario based
 - Awareness
- **Psychomotor**
 - Skills practice
 - Scenarios
 - Simulations
 - Role playing

Assessment of Domains

- Domains are interrelated
 - e.g. psychomotor reinforces cognitive
- Cognitive and Psychomotor easiest
- Cognitive knowledge is not an indicator of competency of psychomotor ability
- Affective is difficult to evaluate
 - www.dot/nhtsa/hrsa_emtp.gov
 - Appendix of IC Curriculum

Assessment of Domains

- **Cognitive**
 - Written and oral examinations
 - Static presentations
- **Psychomotor**
 - Skill competency testing
 - Scenario-based evaluations
 - Clinical and field evaluations
 - OJT performance
- **Affective**
 - Class participation
 - Leadership
 - Peer supervision
 - Role modeling
 - Adherence to policies & procedures

Additional Assessment Techniques

- Scoring rubrics
- Concept maps
- Concept testing
- Oral presentations
- Written reports
- Peer review
- Peer assessment
- Individual review
- Individual assessment

EMS Education Models

- Three (3) level system
- Groups the levels of each domain into:
 - Knowledge
 - Application
 - Problem-solving
- 80% to 90% of questions asked are in the 'knowledge' category
- Most instructors never go past the application stage when teaching and evaluating students

Remember

- Quality education begins with you
 - What level of cogitation are you at?
 - What level of psychomotor are you at?
 - What is your affective state?
- Not all students are the same
- Teach to higher level than required
- EMS professionals require all three domains to function (the higher the better)