

Module 1 Objectives:

- Readers will understand the purpose of basic objectives.
- Readers will understand the structure of basic objectives.
- Readers will understand two domains of basic objectives.
- Readers will apply limitations of short term memory to objectives.
- Readers will construct basic cognitive and psychomotor objectives.

Module 1: Purpose and structure of objectives**A. Who:**

Objectives are created for students by instructors.

B. What:

Objectives are the purpose of any instruction. In the end, objectives define *what you want students to achieve*.

C. When:

Objectives should be created before the instructional materials are produced and revised as needed.

D. Where:

Objectives should precede and follow instructional materials as an outline and review, as well as be included within the curriculum.

E. Why:

Objectives guide the production of instructional material and allow the 'meat and potatoes' to be focused upon. The human mind has a relatively limited (7 +/- 2) short term capacity without using techniques such as chunking. Accordingly, each instructional section (typically referred to as a *module*) should be limited to 7 +/- 2 objectives. Extraneous, distracting material should be removed and placed into a separate module if deemed necessary. Sometimes, during design and development of learning objects, new important topics are recognized. These should be added as additional objectives in the appropriate module. Objectives within a scaffolded curriculum also allow educators to evaluate the progress of the student to determine if they are ready for advancement or need remediation.

F. How:

At the most basic level, objectives are divided into cognitive and psychomotor domains with standard formatting. Objectives of the cognitive domain (knowledge) have traditionally started with, "Students will understand...". Objectives of the psychomotor domain (procedures) have traditionally started with, "Students will be able to..."

Module 1 Review:

1. What do objectives define?
2. What is the main reason for objectives?
3. What is the maximum number of objectives for any module?
4. How should basic cognitive objectives be formatted?
5. How should basic psychomotor objectives be formatted?

Module 1 Activity:

Create basic cognitive and psychomotor objectives for an EMS provider using a BVM device on an apneic patient.

Note: This process should reveal the supplies, equipment, and activities necessary for instruction, which will be noted later on the curriculum.

Review of Module 1 Objectives:

- You should understand the purpose of basic objectives.
- You should understand the structure of basic objectives.
- You should understand two domains of basic objectives.
- You should have applied limitations of short term memory to objectives.
- You should have constructed basic cognitive and psychomotor objectives.

When you're finished, move on to module 2.

Module 2 Objectives:

- Readers will understand Bloom's Taxonomy for the cognitive domain.
- Readers will understand Dave's Taxonomy for the psychomotor domain.
- Readers will understand KBM's Taxonomy for the affective domain.
- Readers will evaluate objectives to determine the quality, domain, and order.
- Readers will construct HOT objectives using appropriate Taxonomies.

Module 2: Taxonomies**A. Bloom's cognitive taxonomy**

We have already discussed the importance of defining what a student should be able to *understand* and *do* at the completion of instruction. However, if we look at Bloom's Revised Taxonomy for cognition (below), understanding is low level thinking. These may be appropriate as an introductory objective, but the educator should purposefully create curriculum for instruction that includes higher order thinking (HOT) objectives. This produces a professional with improved retention. Higher order thinking in the cognitive domain includes activities that make the students analyze, evaluate, and create material. This can be accomplished in many ways.



Graphic retrieved from <http://saraeffron.wordpress.com/tag/blooms-revised-taxonomy/> on January 4, 2014.

Module 2A Review:

Based on the following objective:

“Learners will compare the efficacy of sympathomimetic medications within their scope of practice.”

1. Is this a quality objective with respect to its structure?
2. What domain does this objective target?
3. What order within the domain does this objective target?

Module 2A Activity:

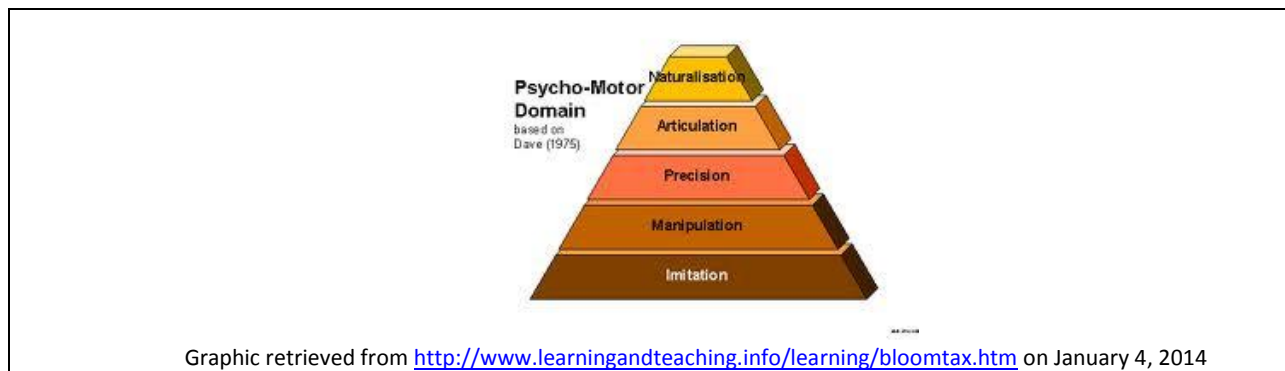
What is a HOT cognitive objective for paramedics learning about a new medication called X4JBA9?

B. Dave's psychomotor taxonomy

While Bloom's focus has been on the cognitive domain, an equivalent limitation in just *doing* becomes obvious when reviewing Dave's Taxonomy. Simply performing a task requires only low level thinking when the activity is directed. Dave's psychomotor taxonomy progresses from observing to imitating to precision - all as low level thinking. Taking it to the next level, Dave includes articulation and naturalization, respectively, as HOT objectives.

You may have heard the "see one, do one, teach one" mantra of medical educators. This is actually based on sound pedagogy with the final component, *teaching one*, being an imperative HOT psychomotor objective: articulation. Articulation involves synthesis of multiple actions. For example, one may be able to perform the static skill of BVM ventilation with precision. This, in itself, does not guarantee the ability to perform the skill within a specific context. Thus, we must hypothesize about what skills need to be integrated. Using assessment as another skill, we may create a HOT psychomotor objective that states, "The student will be able to perform BVM ventilation while assessing the patient's respiratory status." In being able to explain a skill while performing it, we verify that the student is capable of articulation. In demanding simultaneous activities, we lead the student to the highest order thinking of Dave's psychomotor taxonomy: naturalization.

Naturalization occurs when a particular task can be performed without thought. This is especially important in emergency medicine to create professionals who react instinctually to emergent situations. Simulation has been proven invaluable to achieve this. High fidelity simulation can (and should) be used to create realism and demand unguided performance. This encoding specificity results in improved retention and subsequent performance increases.



Module 2B Review:

Based on the following objective:

"Learners will demonstrate appropriate care of a high acuity patient requiring a sympathomimetic medication."

1. Is this a quality objective with respect to its structure?
2. What domain does this objective target?
3. What order within the domain does this objective target?

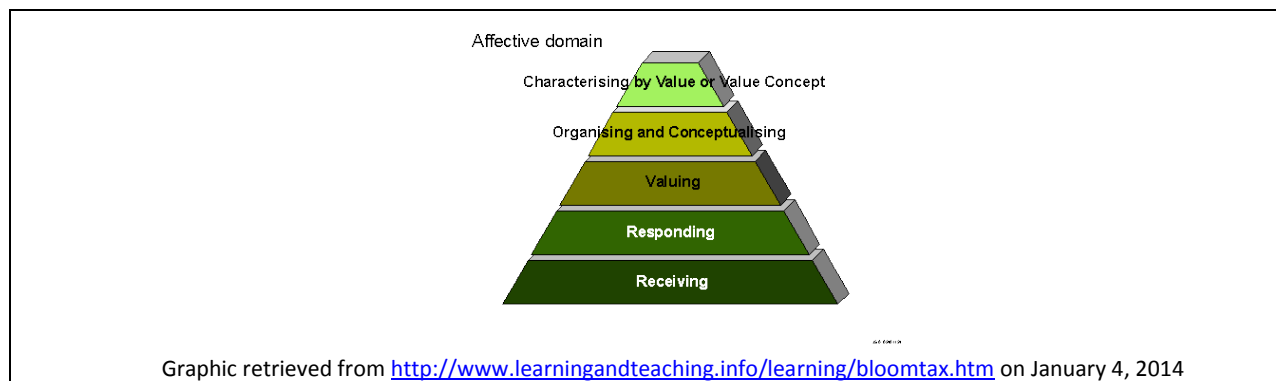
Module 2B Activity:

What is a HOT psychomotor objective for paramedics learning to administer a new medication called X4JBA9?

C. Krathwohl, Bloom, and Masia (KBM) affective taxonomy

Perhaps the least addressed, but arguably the most important, is the affective domain. I continue to pontificate about the importance of recognizing one's values in both recruiting and training. Knowledge and skills can be taught, but values must be embraced. Changing values is often more laborious than tasks involving the previously discussed domains. Hence, these must be salient within objectives targeting new personnel.

Bloom addressed this domain along with Krathwohl and Masia around 1964. The result was a progression from receiving to internalization of values, which is also referred to as characterizing by value.



The first distinction to make is between receiving and responding. Receiving includes asking questions and indicates selective attention. Responding is answering. Many continue to provide instruction through one way delivery of material interpolated by student questions. This structure promotes the lowest order thinking of the affective domain. The information age has produced an instantaneous second orality via technology. One can learn anywhere (and anytime) if they have the infrastructure and knowledge required to obtain credible information. Thus, the prudent educator should stop answering and start asking. Socrates did it and he knew a thing or two.

To reach the medial rung of the taxonomy, one must also learn to value. While valuation is internalized by the learner, this is something that becomes obvious in reviewing one's practices. Again, properly constructed simulation is key for promotion of value. Using both positive and negative feedback during case reviews is also necessary. A positive response to a correct treatment during simulation is likely to produce value in its field use. Conversely, a negative outcome from inappropriate treatments may lead to devaluation. This is, effectively, a technologically advanced version of the reinforcements and consequences associated with behaviorism.

Organization of conceptualization of values is a progression that should occur in time. For example, if medication and cardioversion are two acceptable treatments for SVT, the professional should have positive values associated with both. The decision to use one versus the other is based on which one has the higher positive valuation. Based on education and experience, the valuation of each would be determined based on patient acuity. This can be evaluated with high fidelity simulation, but also should be discussed in debriefing period following such activities. The educator can facilitate conceptualization by asking questions such as, "Would you do anything different if the patient was unstable?" This, too, must be followed up with feedback and reinforcement.

The pinnacle HOT objective within the affective taxonomy is internalization. This is often associated with teamwork and the ability to dynamically adjust to various situations. This can be related to using various 'languages' as necessary. For example, while everyday communication with a patient is often best achieved with common terminology, interaction with a patient who is physician may include medical terminology. Similarly, team communication and dynamics is an imperative component of affective internalization that contributes to a just culture of safety.

It is important to note that instructional objectives are often associated with the learner's general patterns of personal, social, and emotional adjustment.

Module 2C Review:

Based on the following objective:

"Learners will display professional interaction with patient, bystanders, and other medical professionals as the team leader during a high acuity simulation."

1. Is this a quality objective with respect to its structure?
2. What domain does this objective target?
3. What order within the domain does this objective target?

Module 2C Activity:

What is a HOT affective objective for paramedics learning the new medication called X4JBA9?

Review of Module 2 Objectives:

- You should understand Bloom's Taxonomy for the cognitive domain.
- You should understand Dave's Taxonomy for the psychomotor domain.
- You should understand KBM's Taxonomy for the affective domain.
- You should have evaluated objectives to determine the quality, domain, and order.
- You should have constructed HOT objectives using appropriate Taxonomies.