

Climbing to Higher Understanding **Jon Tierney, IFMGA Licensed Mountain Guide** **Educational Director, Professional Climbing Instructors Association**

Climbing instructors are educators! A question facing all educators is “what level of understanding do I want my students to attain?” This question takes on even greater importance when designing training and certification programs that validate an individual’s ability to provide instruction in a high risk activity such as rock climbing.

Further, if educators share their intended learning outcomes with their students then the learner will also have a clearer sense what is expected of them during evaluation. The intended learning outcomes of PCIA courses are aligned with current industry standards. Industry standards are dynamic. As a result of monitoring ever growing information exchange, taking input from respected individuals representing a variety of disciplines and surveying the needs of the outdoor leadership community, the PCIA developed an educational model to meet professional needs and industry guidelines. This resulted in a tiered education and certification program, each with it’s own set of learning outcomes, that currently includes the following levels for climbing instructors:

- Climbing Site Belayer
- Climbing Wall Instructor
- Lead Climbing Wall Instructor
- Sport Climbing Instructor
- Top Rope Climbing Instructor
- Top Managed Top Rope Climbing Endorsement
- Single Pitch Climbing Instructor Endorsement
- Lead Climbing Instructor Endorsement

So back to developing learning outcomes and evaluating a learner’s depth of understanding.

Over six decades ago Benjamin Bloom developed a model for assessing knowledge. The model has stood the test of time and has proven to be a useful tool for measuring thinking. Referred to as Bloom’s taxonomy, it has become a corner post of education.

Bloom’s original model proposed three primary domains of learning: the cognitive (thinking), the affective (feeling) and the psychomotor (doing). Within each of these domains are progressive steps a learner moves through in developing understanding.

The cognitive model was updated in 2001 by a group comprised of curriculum theorists and researchers, cognitive psychologists, and assessment specialists who were led by a former student of Bloom’s. The revised Bloom’s Taxonomy provides a useful mechanism for determining learning outcomes within PCIA programs. It suggests that we must climb through the lower levels before reaching the upper levels. Let’s look at how we might apply Bloom’s cognitive model to the subject of belaying.

- **Remembering:** information expressed through memorization and recall of facts, definitions, lists, etc.
A new belayer manages the rope by remembering acronyms such as PBUS (Pull, Brake Under, Slide) and recalls the importance of FRAP (Friction, Anchor, and Position). They rely on using the same tool they learned with.
- **Understanding:** information has some significance and concepts can be explained, illustrated and summarized.
The learner is able to explain belaying to peers.

- **Applying:** uses knowledge to implement procedure and execute actions such as in simulations and presentations. Is able to distinguish important information from trivial. *The learner is able to demonstrate an effective belay.*
- **Analyzing:** organizes and differentiates subject matter into component parts. *The learner is able to break belaying into components such as anchor, position and friction and begins to understand the relationship of the parts.*
- **Evaluating:** makes critical judgments based on criteria and standards and critiques material. Is able to process different perspectives and weave them together to form conclusions and decide whether they are appropriate or not. *The learner realizes the similarities and differences of different belays such as Munter Hitch, Hip Belay and use of an aperture device and can choose an appropriate use of each. The learner is able to teach the belaying using a well organized outline.*
- **Creating:** Puts information together in new patterns or structure to generate or produce new ideas and ways of thinking. *The learner assimilates all the belay information and is able to create new ways to belay. Is able to orchestrate a lesson beginning with any component and may no longer need an outline.*

Thus we might expect a recreational climber to become consciously competent at applying belay skills while a professional climbing instructor is expected to become unconsciously competent at evaluating situations and choosing the most appropriate belay. At yet a higher level is the professional who is involved in training instructors and who creates and proposes new ideas around belaying.

You may have picked out the use of phrases such as “consciously competent” and “unconsciously competent” in the above paragraph. This represent the affective domain and relates to feelings and values. Bloom expressed the affective domain taxonomy as receiving, responding, valuing, organizing and conceptualizing, and characterizing by value. A simpler way of interpreting this is:

- **Unconscious incompetence** – where a learner believes that all belaying must be done with a BUS style method and is unaware of principle principles or other methods where BUS less ineffective such as with a Munter Hitch.
- **Conscious incompetence** - where a student may be frustrated because they understand what is needed but cannot yet do it such as transferring a belay from one person to another.
- **Conscious competence** - where a learner has developed the ability through being shown and practicing to be able to set up an choose appropriate belay tools, establish an effective belay and transfer to another method if they think about.
- **Unconscious competence** – where the learner knows they have mastered the skill and an can resolve problems in a timely and effective manner without having to put much thought into it.

Finally Bloom placed importance on the development of the psycho-motor domain as well. Although Bloom never reached a final conclusion on this domain, the following flow established by Dave in 1975 aligns well with Bloom’s thinking:

Imitation - This student can complete the task if they use similar tools to what they were shown. They can belay with a ATC as they were shown but would be confused by a Munter Hitch.

Manipulation – Where with some time to experiment the learner can set up and use various belay devices that they have been instructed on. They begin to experiment with the device such as reversing its orientation to provide more or less friction.

Precision – Here the learner sees the need for a certain amount of friction and gets an effective belay set up on the first try.

Articulation – Now the learner is able to teach others how to belay. Often this learner is caught up with trying to demonstrate too many variations.

Naturalization – Finally the hands and head just “know” what is needed.

So ultimately the question that any training and certification organization struggles with is “at what level is certification appropriate?” PCIA programs are largely designed for people somewhat new to climbing who desire to teach climbing. What we see here is that the definition of an “experienced” climber is probably better expressed by where they are on a learning scale rather than by “years climbing” or “difficulty of climbs.” A large number of participants in PCIA or AMGA climbing instructor courses are college students and many are used to cramming and jamming for exams. Thus, they would pass exams if they were given one that assessed memorization, imitation and conscious competence. However, based on Bloom’s model this does not translate into a thorough understanding of the subject matter but rather recall of the ingredients that must be learned prior to learning more. So the underlying question then is “what level of understanding does a client expect from their instructor?”

It is widely believed that the first three cognitive levels are appropriate expectations for a technician – what we, in the PCIA, call an assistant instructor. This is someone who can competently (affective) apply skills (cognitive) in a precise (psycho-motor) manner when directed to complete a task (ie set up an instructor belayed rappel).

Moving up the ladder, we view a certified individual as a professional who is able to analyze and evaluate (cognitive) a location and choose an effective instructional strategy that flows naturally from them (psycho-motor) to the learner but requires a fair bit of preparation (conscious competence).

As participants prepare for an exam, we encourage individuals to learn as much as they can about gear, climbing history, technical systems, knots, etc. The more they know, the more connections they will see and come to understand. A exam candidate should expect to be evaluated on the full spectrum of learning. Below are some examples that illustrate how PCIA exams are constructed to assess understanding.

- Identify different belay tools or knots (Remember, Consciously competent)
- Tie common knots in different manners (Analyze, Manipulate, Consciously competent)
- Compare / contrast various anchor systems that could be used for the same purpose. (Analyze / Evaluate, Consciously competent)
- Being asked to do something that is similar to but not exactly like what they were shown such as being asked to set up an effective instructor belayed rappel using a single rope when they were only shown a two rope technique. (Evaluate, Create, Consciously Competent)
- Teach climbing movement and belaying (Analyze, Precision, Articulate, Consciously Competent)
- Arrive at a site and choose a the best options for climbs and rappels given the equipment available and client profiles (Analyze / Evaluate, Precision, Consciously Competent)
- We inject a dose of urgency as a method to assess if the candidate has reached some of the higher levels of learning (unconscious competence, Naturalization, Evaluating)

Raising the Bar

In essence the PCIA standard can be defined as a consciously competent individual who is able to cognitively analyze and evaluate technical and educational options and then demonstrate them in a precise and naturally flowing manner. This is applied to each of the various levels and results in an individual who can be proud to have earned a certification.

References:

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Subject:

Recreationalist (user)

Cognitive

Affective

Psycho-motor

Assistant Instructor

Cognitive

Affective

Psycho-motor

Instructor
Cognitive

Affective

Psycho-motor

Instructor Trainer
Cognitive

Affective

Psycho-motor