The doctoral learning process is life changing. It begins with the decision to seek the doctorate and becomes tangible and real with enrollment. As academic coursework and the colloquia requirements are met, the transformation from practitioner scholar to scholar practitioner unfolds. Having a deep understanding about this experience, across the span of time during which you will be engaged in achieving the doctorate, will add meaning and value to your doctoral transformation.

At Capella, our doctoral transformation model can be partially explained through application of Bloom’s Taxonomy of Educational Objectives (1956) and several subsequent variations and updates (Fink, 2003; Dettmer, 2006). In using this model and its variants, we recognize the value and benefit of a continuing debate about learning models within the higher education community, especially as this discussion is directed to adult learning. For the purposes of this presentation, therefore, contemporary interpretations and extensions of Bloom’s Taxonomy will be used to frame this discussion.

Background: Overview of Bloom’s Taxonomy

In 1956, Benjamin Bloom led a group of educational psychologists to develop a classification of levels of learning that became a taxonomy including three overlapping domains: The cognitive, affective, and psychomotor. As learning progresses through a program of graduate study, learners have ongoing opportunities to develop competence in each of these domains, with an emphasis in doctoral education on the higher order cognitive competencies of critical thinking, analysis/evaluation, and synthesis competencies that are associated with successful doctoral degree completion. This
taxonomy, as well as variations that have been introduced since Bloom’s original work was published, describes learning objectives that can lead to methods to determine if objectives have been met; i.e., assessment of learning.

If one views the learning progression along a developmental timeline, learners are seen entering a doctoral program with some of the competencies present along each domain, most often in varying degrees of intensity, while other aspects of each domain are not as evident or perhaps would be at earlier stages of development. As coursework is completed, learners are expected to steadily acquire the competencies associated with each domain that are aligned with the doctoral degree. Upon completion of the academic coursework and colloquia portions of the degree program, the learner should have demonstrated necessary competencies as preparation to begin the next stage of the degree completion: The comprehensive examination.

Let’s review the three domains that Bloom’s working group developed. We’ll start with the cognitive domain since that is a central focus of academic coursework, colloquia, and the capstone activities consisting of the comprehensive examination and the dissertation.

**Cognitive Domain**

Acquisition of the intellectual behaviors linked to successful completion of coursework sets the stage to demonstrate the application of these competencies in the capstone activities. It must be emphasized, however, that the capstone activities in a doctoral program are qualitatively and substantially different than academic coursework. A single course or a sequence of courses are stand alone entities designed to provide the content specific information associated with a field of practice and to provide opportunities for learners to acquire higher order intellectual behaviors. Further, coursework is designed to provide opportunity to demonstrate the first three intellectual behaviors described below (i.e., knowledge, comprehension, application), with emphasis on the latter three intellectual behaviors becoming more prominent in the advanced specialization and research courses (i.e., analysis, synthesis, evaluation).

As depicted in this illustration, cognitive development builds as you complete coursework and refine intellectual competencies and behaviors.
Depth and breadth of intellectual competence is acquired as you progress through your doctoral coursework and complete the colloquia requirement. As coursework is completed, the advanced cognitive competencies are then demonstrated through completion of the comprehensive examination: i.e., an advanced capacity to synthesize, critique, and analyze/evaluate a topic, issue, or body of literature or research. Summarizing or describing the topic does not reflect this level of intellectual competence. Thus, the comprehensive examination represents a distinctly different and intellectually challenging task that is not comparable to a course paper.

Cognitive learning is demonstrated by knowledge recall and the intellectual skills of comprehending information, organizing ideas, analyzing and synthesizing data, applying knowledge, choosing among alternatives in problem-solving, and evaluating ideas or actions. To assist you in identifying progress in developing and applying cognitive competencies, review Bloom’s six levels within this domain, from the simple recall or recognition of facts, as the entry level, through increasingly more complex and abstract intellectual skills, to the highest order that is classified as evaluation and creation of knowledge.

Mastery of each level becomes the support for each next level’s development. While we use this model to describe a complex process of intellectual development, we realize that each person engages in this process of intellectual growth in a unique way, including (a) overlap of competency development, (b) inherent strengths in some competencies and needs to substantially develop others, and (c) interaction of cognitive growth with the affective and psychomotor domains.

The taxonomy is used to frame learning objectives for the colloquia curriculum by using verbs in the wording of objectives and outcomes identified for academic activities; e.g., academic sessions for Track 1, Track 2 and Track 3 learners; for brown bag sessions; and for learner support sessions offered by the Doctoral Advisors, Career Center, Library and Writing Program. You’ll also see these words used in your online courses.

These objectives represent the outcomes for learning experiences that faculty want you to achieve. As you understand how the taxonomy is used, you can engage in self-assessment regarding how you have met learning objectives. Particularly at colloquia, self-assessment of learning is a significant learner activity that is facilitated by faculty and learner support experts’ feedback, peer discussions, and your review of learning goal achievement.

1. Knowledge of terminology; specific facts; ways and means of dealing with specifics (conventions, trends and sequences, classifications and categories, criteria, methodology); universals and abstractions in a field (principles and generalizations, theories and structures). In this context, knowledge is defined as the remembering (recalling) of appropriate, previously learned information.

Summary of construct:

- observation and recall of information
- knowledge of dates, events, places
- knowledge of major ideas
- mastery of subject matter
2. **Comprehension**: Grasping (understanding) the meaning of informational materials.

*Summary of construct:*

- understanding information
- grasp meaning
- translate knowledge into new context
- interpret facts, compare, contrast
- order, group, infer causes
- predict consequences

3. **Application**: The use of previously learned information in new and concrete situations to solve problems that have single or best answers.

*Summary of construct:*

- use information
- use methods, concepts, theories in new situations
- solve problems using required skills or knowledge

4. **Analysis**: The breaking down of informational materials into their component parts, examining (and trying to understand the organizational structure of) such information to develop divergent conclusions by identifying motives or causes, making inferences, and/or finding evidence to support generalizations.

*Summary of construct:*

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• seeing patterns
• organization of parts
• recognition of hidden meanings
• identification of components

Course, course unit objectives and colloquia objectives begin with:

• Analyzes; explains; classifies; arranges; divides; compares; selects; breaks down; correlates; diagrams; differentiates; discriminates; distinguishes; focuses; illustrates; infers; limits; outlines; points out; prioritizes; recognizes; separates; subdivides.

5. **Synthesis**: Creatively or divergently applying prior knowledge and skills to produce a new or original whole.

*Summary of construct:*

• use old ideas to create new ones
• generalize from given facts
• relate knowledge from several areas
• predict, draw conclusions

Course, course unit objectives and colloquia objectives begin with:

• adapts; anticipates; categorizes; collaborates; combines; communicates; compares; compiles; composes; contrasts; creates; designs; devises; expresses; facilitates; formulates; generates; generalizes; incorporates; individualizes; initiates; integrates; intervenes; invents; models; modifies; negotiates; plans; prepares; progresses; rearranges; reconstructs; reinforces; reorganizes; revises; structures; substitutes; validates.

6. **Evaluation**: Judging the value of material based on personal values/opinions, resulting in an end product, with a given purpose, without real right or wrong answers.

*Summary of construct:*

• compare and discriminate between ideas
• assess value of theories, presentations
• make choices based on reasoned argument
• verify value of evidence
• recognize subjectivity

Course, course unit objectives and colloquia objectives begin with:

• assesses, appraises; compares; contrasts; concludes; critiques; decides; defends; interprets; judges; justifies; measures; reframes; recommends; selects; explains; discriminates; supports; concludes; summarizes.
Affective Domain
Aligned with the development of cognitive competencies is ongoing development of the affective domain. Consistent with the scholar practitioner model of doctoral education at Capella University, the affective domain addresses the feelings, attitudes, emotions, and behaviors that reflect both the values inherent in the learning experience itself and the context created for learning (Bloom, Masia, and Krathwohl, 1964).

As learners progress through the doctoral program, these affective competencies and qualities develop in concert with the cognitive and intellectual skills that often are a central focus for online coursework and colloquia academic experiences. The affective domain components, similar to those associated with the cognitive domain, are identified separately here (extrapolated from Clark, 2007), yet in reality, each learner develops, fine tunes, and incorporates these affective elements in individual ways, over time, and often in an overlapping manner. For example, affect (or feelings and emotions) are not easily separated when experienced. Therefore, as each of these elements is described separately, it is understood that each learner’s expression of affective development in the doctoral program may not be so distinctly articulated.

1. **Receiving**: Refers to the experience of listening; willingness to hear and be aware. It is expressed through listening and attending to others with a respectful attitude and demeanor.
   - *Course, course unit objectives and colloquia objectives begin with*: Asks, chooses, describes, identifies, selects, replies, uses.

2. **Responding**: Refers to the experience of being actively involved in learning activities; engaged with content, peers, faculty in learning processes; includes attending to and reacting to interactions associated with learning; reflected in completing requirements in learning venues, willingness to respond in real time or asynchronously and in motivation to achieve a satisfying learning experience.
• *Course, course unit objectives and colloquia objectives begin with:* Questions, discusses, performs, practices, presents, reads, reports, writes, participates.

3. **Valuing:** Refers to the value or worth the learner attaches to a phenomenon or behavior including complex levels of commitment to apply these value propositions. It is reflected in an internalizes set of values that are demonstrated through beliefs and sensitivity to individual and cultural/diversity differences. Uses values to establish commitment to follow through with social change.

• *Course, course unit objectives and colloquia objectives begin with:* Completes, explains, differentiates, demonstrates, initiates, proposes, forms, follows, shares, works, selects.

4. **Organizing and conceptualizing values:** Refers to the capacity to conceptualize the refinement or development of values as part of the professional identify as a scholar practitioner. Organizes values as priorities through contrasting values and resolving values conflicts. Leads to a continuing process of considering values, applying values, synthesizing values, and incorporating values into the professional identity.

• *Course, course unit objectives and colloquia objectives begin with:* Compares, contrasts, alters, arranges, explains, generalizes, integrates, defends, modifies, organizes, synthesizes.

5. **Internalizing values:** Refers to development of an internal-guidance system of values that is consistent, pervasive, predictable, and characteristic of the learner. This system of values incorporates the development across the doctoral program and serves as the platform upon which continued development and refinement can be positioned throughout the professional’s career as a scholar practitioner.

• *Course, course unit objectives and colloquia objectives begin with:* Displays, influences, listens, practices, discriminates, proposes, leads, revises, verifies, solves.

**Affective domain acquisition and application.** The affective domain is often highlighted within the curriculum through an emphasis on the acquisition and application of *self-assessment and self-reflection activities* that are directly and indirectly part of becoming doctoral. For example, during the three residential colloquia, faculty and learning support experts often encourage, structure, and follow-up with queries about self-assessment regarding:

• Acquisition of doctoral competence in critical thinking, research knowledge and skills, or professional communication skill sets.
• Progress in the doctoral program: Coursework achievements, plans for each quarter, goal setting for each colloquium.
• Use of self-assessment resources at colloquia; e.g., doctoral advising, writing program; scales to measure knowledge and learning within sessions, in the Planner, or in the colloquia/residencies Web Center.
• Depth of personal understanding about the inner journey of transformation that takes place as the scholar practitioner role is acquired.

In addition, affective domain development is tightly linked with the cognitive domain since logically, we cannot separate ourselves into distinct cognitive, affective or behavioral dimensions. Thus, as you engage in self-assessment activities, you are also encouraged to notice that process; i.e., acquire metacognitive knowledge about yourself (Krathwohl, 2002).

This noticing of the internal shifts and growth that is taking place during a doctoral program is an aspect of self-awareness. Self-awareness aligns with the scholar practitioner model of doctoral education and the competencies that are associated with those who earn the PhD. The interrelatedness of each element of the taxonomy, therefore, is expressed in a holistic yet individualized manner. To further explore the affective domain, consider theory and research surrounding emotional intelligence as well as Fink’s taxonomy (2003).

Psychomotor Domain
In Bloom’s original taxonomy, the psychomotor domain was not addressed in depth. Subsequent efforts to develop, extend and expand understanding of each domain, as well as apply the taxonomy to adult education, resulted in refinements that have been incorporated into the cognitive and affective domain information presented in this presentation. This continuing work additionally resulted in definition and refinement of the psychomotor domain by educators who proposed models to describe how this domain develops and relates to the cognitive and affective domains.

The development of the psychomotor domain includes engagement of the senses with motor capacities and is linked with the other domains in a fluid, interactive manner. It is the application of higher levels of sensorimotor sensitivities, within a global framework of multiculturalism and diversity that constitutes the environment of the scholar practitioner, that distinguishes doctoral education from previous levels of education. Social intelligence as an aligned area of competence (Kelly & Moon, 1998) is also reflected in each of the Bloom domains of learning and is more in evidence as we focus on the psychomotor form of learning during the doctoral transformation experience.

The psychomotor domain is developmental in nature; i.e., the early level or stage of development serves as the foundation for the next level or stage. As with the cognitive and affective domains described by Bloom, the psychomotor domain is developed in a dynamic manner, reflects the individuality of the learner, and occurs in concert with ongoing development of cognitive and affective competencies that support the doctoral transformation as a scholar practitioner. As with each domain of learning described here, the social context or environment in which learning takes place and is applied forms the backdrop to this transformational process.

Adult graduate students continue to develop psychomotor competencies during the doctoral education process, albeit in a manner that is sophisticated and complex when compared to how this form of learning develops at earlier stages in the life span. For the life long learner, psychomotor competencies incorporate the senses, movement, perception, and acquisition of a host of capabilities that support and enable doctoral development across the academic program. The psychomotor domain has been the
subject of refinement by several experts in higher education and assessment. One in particular will be used here.

**Simpson’s interpretation (1972):** Simpson’s interpretation of the psychomotor domain incorporates constructs that describe this form of learning through use of terms that are analogous to terms used by other educators. For example, the term “mechanism” is analogous to “precision” described in Dave’s (1970) model, and “adaptation” (Simpson) is analogous to Dave’s “naturalization”. Since perception (Simpson) includes use of the senses to discern and define incoming information to the brain, Dettmer’s (2006) sensorimotor element in the learning process can also be accommodated in Simpson’s model as extrapolated for the purposes of this discussion.

Simpson’s Psychomotor Model (Extrapolated)

![Psychomotor Model Diagram]

1. **Perception and Set.** Refers to the learner’s ability and capacity to perceive or sense cues that are used to direct and guide physical/motor activity. These abilities reflect aspects of emotional intelligence competencies described by Goleman (2005). With perception, selection and translation of cues from the surrounding or internal environments, the “set” to act is readied. Perceptual set includes mental/psychological, physical, or emotional readiness to respond to varying situations or mindsets (e.g., motivation to learn, to change). For example, newly enrolled learner perceptions of expectations for academic performance, including levels of proficiencies in use of computer technology, are typically different than those described by learners who have completed several quarters of academic work. The perceptual set has shifted with accrual of experience.

   - Course, course unit objectives and colloquia objectives begin with:
     Differentiates, relates, chooses, detects, reacts, moves, explains, begins.

2. **Guided Response & Mechanism.** Refers to the process of acquiring academic skill sets that are applicable to each stage of the doctoral learning process. In early stages of learning complex skills, learners imitate examples provided online and at in-person learning experiences (colloquia) by resource experts, peers, and
faculty. For example, academic writing competencies are developed as coursework assignments are completed, feedback is evaluated, and use of resources is considered in order to strengthen skills. Computer technology competencies are also acquired, fine tuned, or expanded in a similar manner. As academic skill sets become familiar and habitual, comfort levels increase, coursework assignments are more efficiently executed, and competence increases.

- Course, course unit objectives and colloquia objectives begin with: Responds, applies, uses, constructs, organizes, measures, demonstrates.

3. **Complex Overt Response.** Refers to proficiency in the efficient and effective application of academic skills and can include extension of skills to meet more complex skill development needs. Skill application has become automatic, comfortable, and focused. Multitasking capabilities are used to accomplish academic tasks in an organized, accurate manner. Recognition of personal competence and smooth application provides motivation to persist in goal completion as well as satisfaction. For example, mastery of library research skills supports course room learning needs. Advanced library research skills extend these early level competencies to prepare for the independent research phase of the doctoral program. Computer technologies used for course room learning can be built upon by acquiring advanced competence in use of statistical software.

- Course, course unit objectives and colloquia objectives begin with: At a mastery level, learning objectives are intensified, extended, refined, and applied in complex ways: Responds, applies, uses, constructs, organizes, measures, demonstrates.

4. **Adaptation.** Refers to use of academic skills to new situations or requirements. The skills and competencies that have been accrued are integrated into the scholar practitioner identity of the learner and can be used to address unexpected, challenging, or new situations. For example, understanding and mastery in use of specific forms of computer technology in a research course can be transferred to dissertation research data analysis with confidence. Writing course papers with increasing professional communication competency may lead to submission of a revised paper to a peer reviewed journal publication.

- Course, course unit objectives and colloquia objectives begin with: Adapts, revises, applies in new or different ways, innovates, changes organization strategies, uses and pursues constructive feedback.

5. **Origination.** Refers to actions that address specific problems, challenges, or needs. For the doctoral learner as a scholar practitioner who will conduct independent research, origination refers to using creativity to apply knowledge in professional activities. For example, learners with confidence in origination competencies can provide guidance to peers on use of computer technology and technology applications, or create research article filing systems or databases applicable to the comprehensive examination or dissertation capstone activities. Origination also encompasses sensitivity to others while
providing guidance or assistance. At the highest level of development while a
doctoral learner, origination is demonstrated through actions taken to prepare for,
design, implement, and complete of each phase of the dissertation research
process.

Course, course unit objectives and colloquia objectives begin with: Builds, creates,
designs, initiates, composes, originates, constructs, completes, invents, plans, devises,
proposes, finishes, concludes, finalizes.

Summary Comment

This overview provides context for the doctoral learning experience and the colloquia
curriculum. It aligns with the University doctoral competencies and philosophy, and
incorporates sufficient depth to represent a framework within which the doctoral
transformation can be understood. For further study of this aspect of doctoral education,
the references used in this paper will be of assistance.

References

Bloom, B.S. (Ed.) (1956) *Taxonomy of educational objectives: The classification of

Bloom, B.S., Masia, B.B., Krathwohl, D.R. (1964). *Taxonomy of educational objectives:


educational objectives* (pp. 33-34). Tucson, AZ: Educational Innovators Press.

Dettmer, P. (2006). New Bloom’s in established fields: Four domains of learning and
doing. *Roeper Review, 26*, 70-78.


743-746.

Practice, 41*, 212-218.

objectives, the classification of educational goals. Handbook II: Affective
domain*. New York: David McKay Co., Inc.

Simpson, E. J. (1972). The classification of educational objectives in the psychomotor