

# Classifying Learning Skills for Educational Enrichment

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## Abstract

*The 2019 revision of the Classification of Learning Skills (CLS) incorporates and describes substantially more life-long learning skills for personal and professional growth than previous versions. An original classification in 1997 was updated in the 2007 Faculty Guidebook in which the skills were apportioned into Cognitive, Social, and Affective domains. During 2018 and early 2019, a cross-disciplinary team of 13 Process Educators revisited the CLS with the goal of identifying all essential skills required to support the core processes of Process Education (PE), such as learning, problem solving, communication, and self-growth. Instead of integrating the skills of measuring, improving, and judging the quality of performance within the Cognitive, Social, and Affective Domains, as was done in 2007, the 2019 version features these skills in their own domain, Assessment and Evaluation of Quality. This is likely the most distinctive addition to the 2019 CLS. The team expanded the size of the classification from 256 developmental learning skills (in 2007) to 509 by identifying new processes and clusters, subdividing skills previously defined too broadly, adding the skills aligned with these new processes and clusters, and identifying missing skills. The team also refined skill labels and definitions throughout the domains to help users better understand how to identify and work with these skills in the real world. By further clarifying skills needed for growth, the 2019 revision of the CLS provides a foundation for researching the PE theory of performance, measuring performance, and aligning curriculum to development of collegiate learners across disciplines.*

## Introduction

*“The principal goal of education is to create individuals who are capable of doing new things, not simply of repeating what other generations have done.”*

~Jean Piaget (Educational psychologist, 1896-1981)

The Classification of Learning Skills (CLS) for Education Enrichment and Assessment was initially created in 1997 for the purpose of drawing attention to life-long skills for learning that can be improved (a core tenet of Process Education) (Burke, Lawrence, El-Sayed, & Apple, 2009). This list was expanded in 2007 as part of the *Faculty Guidebook* that placed learning skills into Cognitive, Social, and Affective Domains (Apple, Beyerlein, Leise, & Baehr, 2007). This framework highlighted processes like information processing, critical thinking, problem solving, communication, teamwork, management, leadership, emotional self-management, and personal development. In 2018 and early 2019, a cross-disciplinary team of 13 Process Educators and Process Education scholars revisited the CLS in order to improve its accessibility by more precisely aligning skills with key processes and clusters, providing better definitions, identifying missing learning skills, and

providing examples of learning skill applications. This paper outlines the methodology and scholarship used by the team, along with the final work products.

## Role of Learning Skills in Process Education

As can be seen in the formal definition of Process Education that appeared in the inaugural issue of the *International Journal of Process Education* learning skills are a central element in learner performance and growth (Burke et al., 2009). These skills have been integral to the history of the evolution of Process Education over more than 25 years. Burke et al. (2009) underscores the importance of understanding the role of performance and self-growth in education.

*Process Education is a performance-based philosophy of education which integrates many different educational theories, processes, and tools in emphasizing the continuous development of learning skills through the use of assessment principles in order to produce learner self-development (p. 38).*

Process Educators facilitate growth of learning skills and active construction of knowledge by learners rather than relying on direct instruction. Facilitation is accomplished

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by assessing learners' performance in order to determine how best to help them develop the capacity to perform better while reinforcing what is already working well (Apple, Duncan, & Ellis, 2016). Assessment as a method of performance analysis is chief among the tools of a process educator.

## New Features

Several novel elements are infused in the 2019 revision. These revisions are explained by examining each of the domains.

### Cognitive Domain

Within the Cognitive Domain Process 2 is redefined as **CRITICAL THINKING**. Process 3 is refocused from Applying Knowledge to **GENERALIZING**, a more expansive construct. Process 5, **DISCOVERING, CREATING AND INNOVATING** is more inclusive than Research, the previous label for the most complex cognitive learning skills. Additionally, the Cognitive Domain now incorporates new clusters such as **Transforming Data** in Level 1 to support the contemporary importance of "big data." **Decision Making** in Process 2 impacts every discipline, **Self-Regulation of Thinking** in Process 2 is an executive function, **Systems Thinking** in Process 3 is important for generalization of knowledge, and **Designing** in Process 5 is critical in creative enterprises. **Advancing Research** is the final cluster within Process 5 and is clearly supported by skills in the new clusters **Identifying Direction** and **Grounded Exploring**. These additions and redefinitions allow creative innovation, design, and research to logically fit within the highest level of the Cognitive Domain (see Figure 3).

### Affective Domain

The reformulation of the Affective domain is now grounded on contemporary emotion theory and research. Core affect theory (Barrett, 2005, 2017) makes the hierarchy of process levels consistent with Process Education assumptions about learning, development, motivation, and growth. This caused an almost complete redesign of the Affective Domain because every level was redefined, many new clusters were identified, and the number of learning skills was more than doubled, from 86 to 180.

### Social Domain

The Social Domain is built on the 2007 model but with more clearly defined clusters and skills. The Social Domain learning skills are applicable to both "horizontal" networks such as teams or academic departments and to

hierarchies such as vertical power relationships in management and leadership of organizations (Ferguson, 2017). Apple, Duncan, & Ellis, (2016) have identified a set of critical learner characteristics, many of which have been addressed in the Social Domain. **COMMUNICATION** (Process 1) was expanded to include more skills related to important learning processes such as gathering information and preparing for oral delivery to enhance capability in learning to learn and self-growth.

### Assessment and Evaluation of Quality Domain

Perhaps the most significant change is the addition of a separate Assessment and Evaluation of Quality Domain that emphasizes the central importance of producing quality. Creation of this new domain allowed the team to collect and organize learning skills focused on the processes of **DEFINING, MEASURING, ASSESSING, and EVALUATING QUALITY**. The additional processes, **PROVIDING FEEDBACK, SELF-ASSESSMENT, and REFLECTION** complete this new domain. The skills in these areas underpin learner self-development (self-growth), the overarching goal of Process Education.

These new features, together with an enlarged inventory of skills can help practitioners better utilize the CLS to grow personal and professional life-long learning skills in their students, colleagues, and themselves. These features also allow Process Educators to better design, implement, and support the systematic use of assessment, because learning skills, when clearly defined, can be measured and improved.

### History of the Classification of Learning Skills

*Learning skills* was a major topic in Process Education as early as 1991. Inspired by the Secretary's Commission on Achieving Necessary Skills (SCANS) report (1991), 26 learning skills were included in the first Teaching Institute (Apple, 1991). Over the course of the next 25 years, dozens of researchers and practitioners worked to develop and refine the concept of *transferrable learning skills*. In 1997, Pacific Crest published *The Classification of Learning Skills for Educational Enrichment and Assessment*, a significant revision that partitioned 286 learning skills into 50 cluster areas, 13 process areas, and 4 domains (Cognitive, Social, Affective, and Psychomotor).

In 2007, the CLS was extensively updated in the fourth edition of the *Faculty Guidebook* (Beyerlein, Holmes, & Apple, 2007). Authors of *Faculty Guidebook* modules concerned with the Classification of Learning Skills adopted the five-level hierarchy suggested by Bloom and Krathwohl (2001) for their work in the Cognitive and Affective Domains. While neither the Bloom and Krathwohl nor Anderson

and Krathwohl (2001) models include a social domain, the 2007 authors created a five-level structure for the Social Domain that complemented their work in the cognitive and affective domains. It was felt that insufficient expertise was available to populate and further expand the psychomotor domain.

While the available models for the Affective Domain (Krathwohl & Bloom 2001, Bloom 2001, Anderson & Krathwohl 2000, and Anderson et al., 2000) provided logical and practicable starting points for establishing the Process Education CLS, their conceptualization of curriculum objectives, even with a student-focused emphasis, were limited with respect to the importance of quality and growth in Process Education. In the Bloom model, the emphasis is on action verbs that define outcomes directly and dynamically, something that was useful for the CLS work. The Anderson and Krathwohl (2001) revision of Bloom's original work defines procedures and principles that add complexity and realism to outcomes. In PE, this model has been further defined as methodologies that have been validated in practice for detailed steps within each major process such as reading, communicating, generalizing, designing, and problem solving. It is these methodologies that allow Process Education to move beyond previous models to define and allocate skills to additional domains.

For the 2007 CLS, each learning skill was carefully considered to ensure that it was distinctively and uniquely positioned within the domain/process area where it was most likely to first appear. This resulted in a CLS consisting of 256 learning skills grouped in 55 cluster areas and 15 process areas within 3 domains (Cognitive, Social, and Affective). Process areas were envisioned as a pyramid structure, building on a general foundation of language development, with lower level processes at the bottom and more intricate processes at the top. Assessment was a central axis that interfaced with all the processes. Assessment-oriented learning skills were parsed out to different domains and process areas to contextualize their use as depicted in Figure 1.

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### Impetus for the Upgraded 2018 CLS

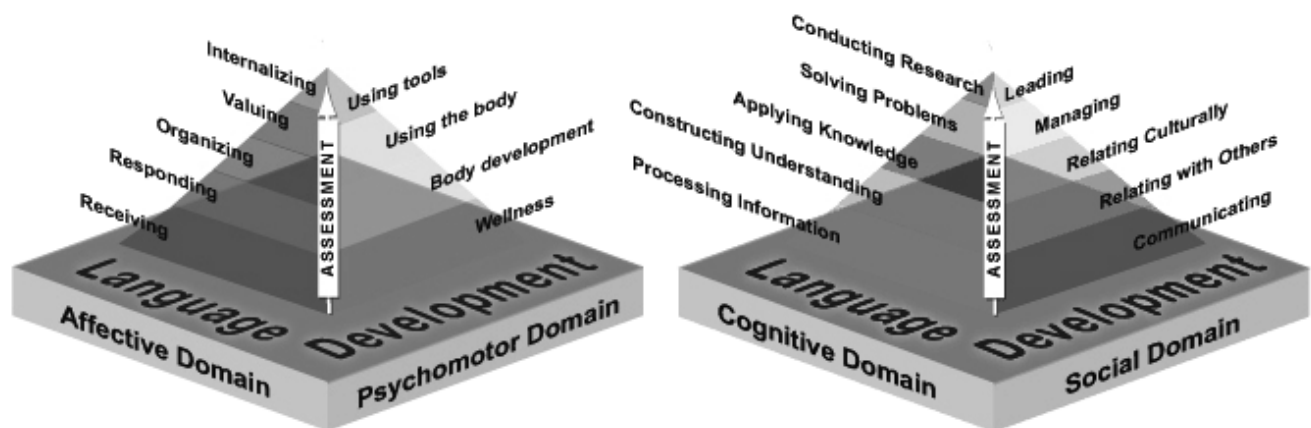
In 2017, three of the authors of this paper, Apple, Leasure, and Ellis, began a review of learning, knowledge, learning skills, growth, and performance, vis a vis Process Education. Their work led to the creation of the concept of *Universal Performance Potential* which describes the essential requirements, specifications, and properties required of the Classification of Learning Skills (Leasure, 2018). As such, it helped to identify gaps in the 2007 listing of learning skills

As a result, in 2019, **performance** is the emphasis in all domains. Previous work on the Cognitive Domain (in 2007) highlighted processes for constructing knowledge rather than for understanding the activity of thinking as a performance-based skill. With this changed point of view in 2019, many new cognitive processes became apparent. This same performance perspective was similarly applied to the revision of the Social, Affective, and Assessment and Evaluation of Quality Domains.

### Workforce Competencies

A wide search of frameworks and systems of thinking contributed to an increase in information about skills in all the domains. There has been substantial work to specify competencies assumed important to prepare individuals to become high performing members of the workforce. The importance of skill/competency frameworks for job/career analysis and workforce development is exemplified in *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21<sup>st</sup> Century* (Committee on Defining Deeper Learning and 21<sup>st</sup> Century Skills, 2012). This report

**Figure 1** The Classification of Learning Skills (domains and processes), 2007



presents a well-researched set of universal competencies and growth areas in the Cognitive Domain and presents findings supporting the desirability of learning universal skills. Other influential reports include those of the *National Leadership Council for Liberal Education & America's Promise* (2008), and *A Foundation for Success in the Workplace* by the Business Roundtable (2014).

Survey evidence was used to validate the significance of learning skills in the National Research Council's report, *Education for Life and Work* (2012). Data indicated that cognitive competencies show "consistent, positive correlations (of modest size) with desirable educational, career, and health outcomes" (2012, p. 65). The report also identifies cognitive skills as important to improved educational attainment, which strongly predicts adult earnings, health and civic engagement, as well as faster learning of skills on the job (2012, p. 66).

Another significant resource is the *Occupational Outlook Handbook* (United States Department of Labor, Bureau of Labor Statistics, 2018) which identifies universal skills important in each of the major work settings in the U. S. The set of skills used in the *Occupational Outlook Handbook* is also included in the building blocks model sponsored by the Education and Training Administration of the U.S. Department of Labor (Competency Model Clearinghouse, 2018). This model (see Figure 2) includes five levels starting with Tier 1: Personal Effectiveness Competencies, which range from interpersonal skills to integrity and life-long learning. Tier 2: Academic Competencies, which include reading, writing, communication, basic computer skills and other foundation skills likely to be attained in school. Tier 3: Workplace Competencies,

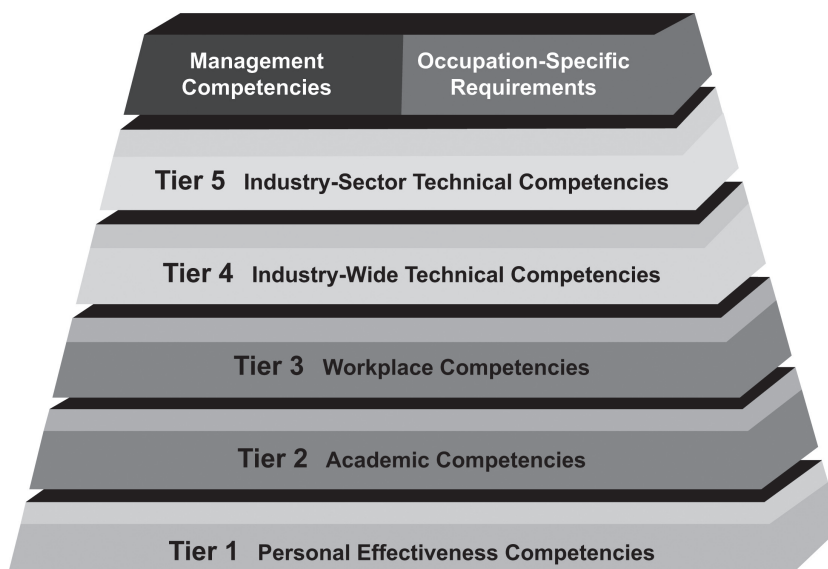
which includes teamwork, creative thinking, problem solving and decision making as well as customer focus and health and safety. Tier 4 is reserved to be defined by industry representatives as industry-wide technical competencies, and Tier 5 is reserved for more specific Industry-sector technical competencies. Above Tier 5 are management competencies which include staffing, clarifying roles and objectives, and developing an organizational vision. The 2019 CLS domains include most of the workplace competencies in the building blocks model but organize them in a clearer hierarchy of processes and with skills articulated in terms of unlimited performance growth rather than as competencies for a given level of work.

### Universality of Skills

Each skill in the CLS is universal because it applies across all contexts of performance. It also increases performance potential because it makes performance possible, speeds up a performance, or improves the quality of a performance. A skill does this by supporting one or more of the following example areas:

- Helping to process the context of the performance
- Clarifying the desired final situation
- Specifying quality expectations of the performance
- Learning new required things
- Bringing existing knowledge to bear
- Regulating self
- Interacting with others
- Pursuing a productive course of thought and action

**Figure 2** Building Blocks for Competency Models – Foundational Competencies



- Assessing current performance to improve future performance potential

## Dynamic Assumptions about Reality

The CLS is based on the implicit assumption that reality is dynamic and that the performance of learning is not the simple action of detecting an objective reality ever more definitively, but rather the work of constructing realities, both internal and external, and managing their interactions. Philosopher of science Karl Popper usefully differentiated three “worlds”—all real—that everyone must learn about and deal with—the physical world, the personal world, and the constructed world (Popper & Eccles, 1977). The world of physical objects (World I) is experienced as an empirical constant. Learners routinely bump up against World I—it has an undeniable persistence and reality. Examples include gravity, the weather, and anything that can be sensed. The personal (“internal”) thoughts and feelings of individuals constitute World II. Learners come to a classroom or learning activity as social beings whose social dynamics influence their learning about World II—they are emotional beings who react emotionally, even as they learn. Learning is always affected by social dynamics and emotional reactions. World III consists of the social representations and intellectual creations by which we continually construct the world (and any objective understanding we may have of it). World III is what is being learned—the constructs that we create and use to represent reality. It is the learning outcomes or goals for every class and learning activity. World III is literally constructed by learning, with learning skills being the bricks of that construction. Fittingly, this theory of knowledge and learning is known as *constructivism*.

This appreciation of reality is dynamic in that reality is not limited to physics or the information gathered by the senses but is constantly created by learners as they interact with and move between these three worlds. The CLS gives voice and legitimacy to the persistence of World II for learners, even as it enables increased facility and sophistication (unlimited potential) in World III while taking into account the constraints presented by World I—physical reality.

## Constructivism and Performance

As previously stated, according to constructivism, learners construct personal knowledge through the process called *learning*. A developmental learning capability is present at birth, compliments of our genetic heritage, and only as we develop do we become aware of the process and learn how to deliberately enhance it. Individual learners can improve their ability to learn by developing *learning skills* through

personal experimentation and intentional practice. *Growth* is the increase in the quality of one’s learning process and learning skills.

Growth of one’s learning process strongly impacts one’s performance potential because learning skills allow one to make sense of and adapt to new situations and challenges. Elger (2007) presented a Theory of Performance model with six components: identity, knowledge, learning skills, context, personal factors, and fixed factors. The quality of any observed performance varies according to the strength or influence of these six components. The motivation for its development is explained by Apple, Ellis, and Hintze (2016):

As Process Education was increasingly clarified as a performance-based philosophy, it became more critical to determine what we mean by performance: to define a performance, determine how to analyze a performance, formulate criteria for a performance, and consider how a performance can and should be measured (p. 29).

To facilitate improvement in performance, faculty and learners must non-judgmentally assess a performance by measuring the quality of the performance against criteria, identifying strengths of the performance for replication in new contexts and for opportunities to improve the performance. The opportunities to improve are chosen and presented by the assessor to most appropriately benefit the assessee. Providing the most influential opportunities to improve well-selected universal learning skills will most improve future performance of the assessee.

## Contemporary Constructs in Educational Psychology

Skill taxonomies are not new and variously describe skills, traits, mindsets, and attitudes. Robert Gagné’s Taxonomy consists of intellectual skills including problem solving skills, cognitive strategies, verbal information, motor skills, and attitudes (1971). According to Jonassen, Peck, and Wilson (1997) Gagné’s Taxonomy has had wide impact on instructional designers who use it for task analysis.

The increased appreciation of cognition as a process is based on classroom and online education dynamics that make clear that social and affective influences are part of learning even in the cognitive domain. Or, put differently, that World II has real influences on Worlds I and III. An example is the difficulty many people have in understanding and accepting scientific findings. According to Sinatra, Kienhues, and Hofer (2014), three interrelated processes have become prominent in contemporary educational theory to explain attitudes toward scientific knowledge: epistemic cognition, motivated

reasoning, and conceptual change. *Epistemic cognition* refers to the challenges of understanding what scientific knowledge is and how it is validated. *Motivated reasoning* refers to unconscious biases in information processing about science. Preexisting beliefs and even moral convictions can change how a person assesses scientific evidence. Conceptual change research explores the cognitive, affective, and motivational factors involved in knowledge restructuring. It is important to prepare individuals to change how they think and to have an open attitude when information seems contrary to their own interests or beliefs. Learning and growth issues related to all three of these central constructs are included in the 2019 CLS.

Greene and Azevedo (2007) evaluated a model of self-regulated learning developed by Winne and Hadwin (1998) to identify what factors make a difference in learning processes and outcomes. These factors were determined to be task definition, goal setting and planning, studying tactics, and adaptations to metacognition. One of the problems learners have is setting and using standards of judgment with respect to how well they are doing with each of these processes. Earlier research (by Sinkavich in 1995, for example) found that stronger learners set clearer self-standards and use them more but even these learners predict future success at a learning task with only 60% certainty and with much variation in the outcome. The elements, phases, and factors in educational models such as Winne and Hadwin's suggest areas of exploration and application of the 2019 CLS (and for Process Education research).

### Methodology Used for CLS Revision

In 2017, authors Apple and Beyerlein initiated a project to review, revise, and improve the CLS largely because a multitude of additional learning skills had been identified but not classified. They prepared for the revision by inventorying and identifying all the learning skills used in the learning processes and methodologies used in Process Education, investigating profiles of collegiate learners as well as professionals within different disciplines, and assembling a list of skills to be compared with the 2007 CLS. They formed a team of experienced Process Educators and Process Education scholars from multiple disciplines which met in Atlanta, GA in January, 2018. While there, the team met as a whole and then in focus groups to analyze and brainstorm about specific domains. In a three day period, they identified affinities and affiliated skills, examined cluster relations, refined definitions, and aligned descriptions.

The team split into several groups, each of which worked in-depth on specific domains over the next three months. These groups conducted detailed examinations of the

learning skills in each domain, process, and cluster. They also reviewed the relationships among learning skills and collaborated with the other groups to establish the correct location of each skill in the CLS. The principles that guided skill selection, the mapping into clusters, and articulation of definitions were established in the initial meeting in January and applied by the different groups.

### Criteria for Selection and Placement of Learning Skills

To be considered for inclusion in the classification, each learning skill was tested against the following criteria:

1. Improvement in this skill leads to enhancement of learning performance
2. The skill is accessible and usable at all times
3. Performance in this learning skill is unbounded (i.e., can be improved to progressively higher performance levels)
4. The skill is transferable across disciplines and contexts
5. The skill applies to multiple forms of knowledge
6. The skill is a holistic element which cannot be subdivided (i.e., it cannot be broken down into other skills)
7. The skill is not a process consisting of multiple steps

Once a skill met each of these criteria, it was associated with a dominant domain and linked with an appropriate skill cluster. The skill cluster was then examined to ensure that it formed a compact, complete, and non-overlapping set, in other words, nothing essential was left out or shared with another cluster. In this process, each of the following conditions had to be met:

1. Each of the skills is distinct and provides unique added value to the set
2. The skills and definitions are worded concisely, congruently, and completely
3. The skills are not critical to learning performance at the next lower process level

As candidate skills were considered for each of the domains, definitions were refined so that they represented something unique (non-overlapping) and essential (significant added-value). The following guidelines were applied:

1. Each learning skill was clearly justified as different from more generalized versions of the skill. For example, *Editing in writing* seems to be a new skill, except that the skills under the cluster **Validating**

**Results** make it clear that these are the skills that are really at work in editing.

2. In determining if two skills can be mapped into a single skill when they seem to be close in nature, effort was made to find cases where one skill can be very strong while the other is weak and vice versa. If a compelling example could not be found, the two skills are the same and should be collapsed into a single skill.
3. Every growth area identified as “universal” should be present in the CLS. For example, the 50 key learning characteristics in *The Profile of a Quality Collegiate Learner* (Apple et al., 2016) are also present in the CLS.
4. Learning skills should be labeled generically (independent of context) to preserve the universality of the skills. For example, *Diagramming* is the generic label of the learning skill that includes the contextually dependent action of flow charting.
5. Redundancy of skill listing across domains was avoided by determining where the skill was most dominant. For example, the skill *Being decisive* has both affective and social aspects, but the skill is most often found in affective contexts, leading to its final location being the Affective Domain.
6. It was decided that skill definitions should be positive so that an improvement in the skill leads to an improvement in learning performance. *Being skeptical* is the positive aspect of the negative “being cynical.” Improving one’s ability to be skeptical is a positive thing. There is no way to improve being cynical; were it the learning skill, one would need to vitiate the skill itself in order to improve.
7. The descriptions of clusters and processes should organize the set of learning skills they contain in a meaningful way.
8. Circular definitions should be avoided in processes, clusters, and individual skills.
9. While examples of skill application are not included in the listing of skills within this paper, the team decided to identify at least two examples of each skill in a real-world context as part of its work. This identification was done not only to help the authors think as clearly as possible about each skill, but also in anticipation of an online listing of the 2019 CLS, where examples would be available.

## Cognitive Domain Theory and Lessons Learned

This section provides background on the theory used to create a clear structure for the revised Cognitive Domain

and includes lessons learned from the identification and analysis of the learning skills in the completed domain. The definition of the *Cognitive Domain* as the set of skills supporting thinking processes has been retained from the 2007 *Faculty Guidebook* module (Davis, Beyerlein, Leise, & Apple, 2007). The process levels of the 2019 revision of the Cognitive Domain are **INFORMATION PROCESSING, CRITICAL THINKING, GENERALIZING, PROBLEM SOLVING, and DISCOVERING, CREATING, AND INNOVATING.**

## Background History of Cognition

There is a deep history to the cognitive domain of learning skills. The ancient Greek philosophers were intensely interested in reasoning abstractly (Pythagoras), using logic and analyzing causality (Aristotle), and thinking critically (Plato). During the medieval centuries, scholars such as Thomas Aquinas explored the limits of human reasoning that could be distinguished from required theological beliefs.

In the seventeenth century, the philosopher and mathematician Descartes argued for a dualism of mind versus matter—and most people still consider personal consciousness (World II) to be separate from “external reality” (Popper’s World 1). Galileo’s description of a heliocentric cosmos, published in 1632 (1953), and Newton’s mathematical physics, published in 1687 (1962), dramatically changed perceptions of reality. Later, David Hume (1777) argued that cognition serves natural instincts because the latter define what is most important to an individual and, therefore, motivate reasoning. Darwin published his theory of evolution in 1859, which set the stage for our understanding that cognition and affect have adaptive functions.

After WWII, the rapid progress in technology, especially computers, stimulated psychological decision and problem solving models based on an assumption that executive functions and memory may operate analogously to computing (e.g., Newell & Simon, 1972). Twenty-first century artificial intelligence and neuroscience research has moved beyond the untenable computer analog assumption of earlier cognitive research to address ill-defined problems such as how to design viable robots, other systems, and state-of-the-art products. The rise of the Internet and personal and mobile computing and communications has reshaped further still our understanding of cognition as executive function.

## Skill Taxonomies in Education

Bloom’s 1956 taxonomy included a hierarchy of six levels of cognitive skills: Knowledge, Comprehension,

Application, Analysis, Synthesis, and Evaluation. The update by Anderson et al. (2000) listed the levels as Remember, Understand, Apply, Analyze, Evaluate, and Create—which moved Evaluation lower in the hierarchy. Bobrowski's *Expanded Taxonomy* (2007), which aligns well with the 2007 version of the CLS, is similarly intended to support the improved design of courses, assessment practices, and development of learners. Bobrowski (2007) defines *conceptual understanding* as a process that uses critical thinking to discover how existing knowledge relates to new forms of knowledge, similar to Nygren (2007b). Application of knowledge is understood to require a generalized understanding so that it can be contextualized to a new situation, similar to Nygren (2007a). Bobrowski's *working expertise* is the use of problem solving across dissimilar contexts; the Research level in the *Expanded Taxonomy* combines synthesis and evaluation.

The 2019 CLS revision of the Cognitive Domain is organized similarly but with some key differences. **CRITICAL THINKING** is the Level 2 process that includes analysis and synthesis—as did the 2007 CLS—but focuses not on the result, but on the critical thinking skills used to construct understanding. Applying Knowledge, Level 3 of the 2007 CLS, is strongly associated with Level 3 of the 2019 CLS—and with Level 3 of Bobrowski's model. The 2019 CLS expands the previous level 5, Research, as **DISCOVERING, CREATING, AND INNOVATING**.

Jonassen, Tessmer, and Hannum (1998), and others (e.g., Beaudoin, 2014), have updated Bloom's work with skills based on findings of cognitive science since 1956—with special attention to ill-structured problems and executive processes. For example, self-regulated learning (e.g., Winne & Hadwin, 1998) requires affective and social as well as cognitive learning skills because of the need to meta-cognitively monitor learning progress while also minimizing unconscious biases and unmanaged interferences during learning. Jonassen, Tessmer, and Hannum (1998) concluded that the purpose of the Bloom taxonomy and its revisions was to classify levels of learning outcomes and to communicate and support assessment of learning expectations. By closely examining the concepts and processes that have been validated by scientific research, the 2019 CLS teams have added several new clusters (each with multiple new learning skills), incorporated additional new skills within existing clusters, and clarified other clusters. The resulting updated Cognitive Domain addresses all of the identified concerns of the 2007 Cognitive Domain and issues derived from alternative models, while also supporting the Universal Performance Potential model (Leasure, 2018).

## Revising the Cognitive Domain

The 2019 revision of the Cognitive Domain emphasizes thinking as performance at all five process levels and contains 136 discrete learning skills. Changes in contemporary society were taken into account so that the domain addresses the increased importance of digital literacy in contemporary work and life.

In Process 1, **PROCESSING INFORMATION**, the revision includes greater emphasis on using search tools (Cluster 2: **Locating/Searching**) and making sure data are accurate and complete (Cluster 4: **Cleaning Data**). Cluster 5 (**Transforming Data**) accentuates the critical importance of skills for changing representations of data in order to bring out alternative perspectives or interpretations.

Process 2, **CRITICAL THINKING**, takes a purposeful approach to thinking by identifying all the learning skills associated with constructing understanding—which contrasts with the 2007 focus on constructing knowledge; the focus now is on the means rather than the results. Four clusters (**Analysis, Reasoning, Synthesis, and Validating Meaning**) were present in the 2007 Process 2 of the Cognitive Domain, but two new clusters have been added in 2019. Cluster 4, **Decision Making**, involves use of performance learning skills such as *Analyzing risks* and *Identifying consequences* which are essential for making choices that have a high probability of being beneficial. Critical Thinking becomes more efficient and effective if executive control skills in Cluster 5, **Self-Regulation of Thinking**, are strong enough to enable the thinker to identify the most critical issues that must be addressed in order to accomplish understanding. For example, *Accepting assumptions* is the skill that allows one to competently make use of methodologies created by others. If methodologies and other tools accurately align with initial assumptions, they will direct attention to whether knowledge construction is progressing as expected. The Cluster 5 skill of *Thinking skeptically* is important for recognition of misperceptions or missing elements in the initial assumptions. False knowledge needs to be detected if assumptions were inaccurate. Cluster 6 (**Validating Meaning**) includes four skills involved in authenticating that meaning is properly represented: *Recognizing contradictions*, *Verifying scope*, *Validating completeness*, and *Recognizing limits*.

Critical thinking has been studied and applied in many settings, but progress has been uneven despite the investment of effort to increase its use. For example, a



study by Sonoma State University's Center for Critical Thinking and Moral Critique, found that even faculty who strongly espoused critical thinking as central to teaching (89%) could not fully explain what it was and apparently used it only about 9% of the time in typical class sessions (Paul, Elder, & Bartell, 1997). The Center defines critical thinking as thinking that is characterized by "...well-founded judgment..." and utilization of "...appropriate evaluative standards...to determine the true worth, merit, or value of something" (Paul, et al., 1997). The clusters and skills in the **CRITICAL THINKING** process identify the essential performance skills that will lead to the desired results stated by the Center at Sonoma State University. The Cognitive Domain includes **INFORMATION PROCESSING** (Process 1) as a foundation to Process 2, **CRITICAL THINKING**, which avoids confusion about when and how one is performing as a critical thinker rather than using skills from other process levels.

Process 3, **GENERALIZING**, includes the new clusters, **Contextualizing**, **Modeling**, and **Systems Thinking**—and retains a fourth, **Validating Results**, from 2007. In order to generalize, it is necessary first to use knowledge in specific situations that allow one to identify important characteristics that could be meaningful in other contexts. **Modeling** is effective if the factors and data can be abstractly formulated for testing in new situations. **Systems Thinking** is defined as, "recognizing patterns of relationship within a context." Because systems are so pervasive in daily life, failure to think appropriately about systems often results in being overwhelmed by those systems. Cluster 4, **Validating Results**, supports the other clusters in Process 3 by ensuring that all the thinking results in outcomes that are effective, efficient, and meet expectations.

Process 4, **PROBLEM SOLVING**, had the fewest changes and additions because this process has been deeply investigated and practiced by Process Educators for decades. The Problem Solving Methodology (Myrvaagnes, Brooks, Carroll, Smith, & Wolf, 1999) incorporates many of the learning skills in Process 4. Clarifications of the skills enhance the effectiveness of the methodology as well as other problem-solving tools and strategies.

Because Research (*Process 5* in 2007) is not the only creative process, Process 5 in the 2019 revision was expanded to **DISCOVERING, CREATING, AND INNOVATING**. As with the other four process levels, this change represents deeper understanding of knowledge and thinking processes and a move from an emphasis

on knowledge construction to a performance focus on thinking processes as dynamic learning skills. This focus was especially significant in the expansion of Process 5, Cluster 1, **Identifying Direction**, which focuses attention on analysis of whether hypotheses and proposals are aligned with reality and with expected outcomes. Cluster 2, **Grounded Exploring**, continues this line of thought with a focus on methods such as **Reviewing literature**, as a way to validate that a valuable path has been identified. Cluster 3, **Creative Thinking**, involves ways to transform present ideas through strategies such as **Using divergent thinking** and **Using lateral thinking** to explore *what-if* assumptions. Cluster 4, **Innovating**, and Cluster 5, **Designing**, include learning skills related to generating valuable new ideas, prototypes, and products. The role of research was emphasized in the 2007 version by making it the label for Process 5. The expansion of Process 5 in the 2019 version adds emphasis on creativity and innovation but research remains an overarching process. Cluster 6, **Advancing Research**, captures the importance of processes for producing evidence that is not only valid, but also supports hypotheses, designs, models, theories, and practices of all kinds.

### Positioning of Processes and Clusters

The detailed descriptions of the five process levels in the 2019 revision of the Cognitive Domain provide a basis for understanding the logic of the hierarchy of processes and clusters as delineated in Figure 3. The first process, **INFORMATION PROCESSING**, provides the learning skills for finding not only relevant data but accurate information and ways to transform representations of data. Process 2, **CRITICAL THINKING**, is essential for any higher-level endeavor. Being able to make valid arguments based on reasoning and data is an entry capability for generalizing strategies, building theories, solving problems, and innovating. Knowledge is much more valuable if it can be decontextualized for new applications.

Process 3, **GENERALIZING**, includes the learning skills to reach further with one's knowledge, including Process 4, **PROBLEM SOLVING**. Experts are individuals who have developed critical thinking skills, know how to generalize their knowledge because it is so deeply understood, can diagnose sources of problems, and can teach others even if unexpected learning issues arise. All of the skills in the first four processes are essential ingredients for Process 5, **DISCOVERING, CREATING, AND INNOVATING**.

**Figure 3** Cognitive Processes and Clusters

<b>Process 1 – Information Processing (managing data and information for efficient use)</b>
<p>Cluster 1: Generating Data (producing valuable information)</p> <p>Cluster 2: Locating/Searching (obtaining needed information)</p> <p>Cluster 3: Organizing Data (providing structure to one’s own information)</p> <p>Cluster 4: Cleaning Data (ensuring accurate, complete, and high-quality data)</p> <p>Cluster 5: Transforming Data (restructuring data/information to gain new meaning)</p>
<b>Process 2 – Critical Thinking (increasing meaning, comprehension, and understanding)</b>
<p>Cluster 1: Analyzing (characterizing individual parts)</p> <p>Cluster 2: Reasoning (revealing meaning by thinking about implications of knowledge)</p> <p>Cluster 3: Synthesizing (creating new configurations from elements)</p> <p>Cluster 4: Decision Making (making the best choice for a situation)</p> <p>Cluster 5: Self-Regulation of Thinking (linking awareness, analysis, and control of thinking)</p> <p>Cluster 6: Validating Meaning (ensuring results are applicable and accurate)</p>
<b>Process 3 – Generalizing (elevating knowledge so it applies in multiple contexts)</b>
<p>Cluster 1: Contextualizing (applying knowledge to a specific situation)</p> <p>Cluster 2: Modeling (building an abstraction of reality or a representation of an abstraction)</p> <p>Cluster 3: Systems Thinking (recognizing patterns of relationship within a context)</p> <p>Cluster 4: Validating Results (ensuring outcomes are effective, efficient, and meet expectations)</p>
<b>Process 4 – Problem Solving (resolving a situation that has unmet expectations)</b>
<p>Cluster 1: Clarifying the Problem (defining a situation and future desired state)</p> <p>Cluster 2: Structuring a Problem (strategizing directive action of the process)</p> <p>Cluster 3: Creating Solutions (building and implementing a resolution)</p> <p>Cluster 4: Improving Solutions (resolving issues and gaps in current and future resolutions)</p>
<b>Process 5 – Discovering, Creating, and Innovating (making new, unique things)</b>
<p>Cluster 1: Identifying Direction (establishing a path to an outcome)</p> <p>Cluster 2: Grounded Exploring (trying paths to determine viability)</p> <p>Cluster 3: Creative Thinking (generating novel ideas)</p> <p>Cluster 4: Innovating (building new upon old or creating where none exists)</p> <p>Cluster 5: Designing (creating processes, systems or products with pre-determined needs)</p> <p>Cluster 6: Researching (process of creating new knowledge that adds to the body of knowledge)</p>

**How the Cognitive Interacts with Other Domains**

There has been a tendency for educators to assume that cognitive skills and objectives are primary among the learning skills (as an example, consider the influence of Bloom, 1956). This assumption underestimates the many ways social and affective learning skills interact with cognition. If social and affective skills are insufficiently developed, there are deleterious effects on quality of thinking and problem solving.

Revisiting Popper’s three world metaphor, until and unless a learner can mediate and regulate their affective and social responses (World II), the useful products of World III, such as theories, unbiased thinking, plans, and learning goals remain unattainable. It is World III that holds the greatest potential for adding value and meaning to life.

## Ten Lessons Learned from the Cognitive Domain Revision

1. *Growing importance of the Internet and Big Data:* The ubiquity of the internet and computing power has meant that these skills have moved from specialized function to universal skills for those working with knowledge, including data cleaning, data transformation, and other forms of data literacy. In addition, the rise of Internet systems requires efficiency, generalization, and problem solving with information selectively processed just-in-time.
2. *Generalizing conceptual patterns:* Many knowledge workers must move models and other cognitive tools from immediate situations to far contexts while maintaining the quality of their performances.
3. *Expansion of the need for critical thinkers:* Even though we are in an era of readily available information, this information is too often used in uncritical ways—and expectations that value can be created without essential learning skills is a cultural concern.
4. *Expansion of problem-solving opportunities:* Today societies around the globe must deal with many of the same challenges such as flooding and droughts from climate change, inadequate food production, safety trade-offs in air and water pollution, and increasing health and nutrition problems despite economic expansion.
5. *Most important problems are ill-structured:* Discovery, whether through intuitive creative thought or by means of processes like research and design, has become much more important as organizations and nations compete and rely on innovation for solving larger problems.
6. *Decision makers deal with increasingly complex systems:* Seeing new patterns and connections in large systems requires the ability to analyze systems. Hypothesizing and then testing causal networks through systems thinking allows for the construction and refinement of better predictive and decision-making models.
7. *Growth in cognitive skills is socially and affectively influenced:* Even though cognitive processes are separately identifiable and assessable, they are intertwined with processes from the Affective, Social, and Assessment and Evaluation of Quality Domains. Cognitive competence is strongly interdependent with self-confidence and efficacy, for example. Handling disappointment and failure requires growth of resilience as well as willingness to cooperate and ask for help so that problem solving can proceed, assessment is effective, and performance continues to show quality.
8. *Learning skills must often be connected across domains:* Skills from different processes may be linked in performance clusters based on the functions needed to perform particular kinds of work, making those relationships important for supporting assessment and evaluation of performances. For example, critical thinking about boundary conditions within systems thinking means that assessment must tease out skills responsible for observed performances.
9. *Personal constructs must be validated:* Cognitive knowledge has traditionally been assumed to be based on an epistemology of true facts which justify true beliefs. Given the ever-changing social world, e.g., the rapid increase in social media use, it is also increasing clear that individuals must care for the reliability and validity of their own ideas and feelings. Popper's World II knowledge may appear to be "internal" to one's personal consciousness, but erroneous assumptions easily propagate without individual responsibility. The incremental nature of knowledge construction can be disrupted if one doesn't examine the validity and quality of one's attitudes, ideas, values, and beliefs. Justified, consistent beliefs must be thoughtfully assessed and improved using sound reasoning patterns and skills.
10. *Knowledge builders must apply their values and beliefs:* The quality of research, design, and innovation depend on integration of values and principles with decisions about what is important and with performance that matches the best in each field. High-level reasoning skills must proactively avoid bias, follow tested patterns to achieve reliable and valid results, and continually incorporate assessment to achieve higher quality knowledge construction.

## Social Domain Theory and Lessons Learned

The Social Domain includes a hierarchy of learning skills concerned with communicating, relating with others, living in society, managing, and leading. The nexus of this domain is that specific skills involve interpersonal performance in multiple social contexts where interaction and learning occur. The Social Domain is distinct from the Cognitive, Af-

fective, and Assessment and Evaluation of Quality Domains but leveraging this domain in concert with the other domains can increase learning and growth, as learning is a social process that supports societal and cultural development (Vygotsky, 1934; Vygotsky, 1962).

Bloom's interest in learning and in improving the effectiveness of instruction spurred his pioneering work to provide educators with a set of building blocks for learning objectives within the affective, cognitive, and psychomotor domains (Bobrowski, 2007). It is significant that Bloom did not create a social domain model despite its obvious prominence in educational and other settings.

### **Social Domain Theory**

Process Educators consistently focus on facilitating learner social development as a path for elevating learning skills. Sociocultural theory supported creation of the conceptual structure for the revised Social Domain. The Social Domain skills also are connected to constructivist theorists, such as Piaget (1970), who focused on brain development, stimulation of cognition, and construction of knowledge in contexts that included social comparisons of performance. The identification and analysis of the 140 developmental learning skills which make up the completed domain resulted in lessons learned that are included at the end of this section.

Social learning theories help with understanding how people learn from each other in social contexts and provide insights that teachers can use to construct active learning experiences within team learning and learning communities. Lev Vygotsky (1962), a Russian teacher and psychologist, emphasized that we learn through our interactions and communications with others. In examining how our social environments influence the learning process, Vygotsky (1962) discovered that learning takes place through the interactions students have with their peers, teachers, and other experts. Other theorists, Galperin for example, have refined Vygotski's sociocultural theory of education and learning (Arievitch and Haenen, 2005). Teachers can create learning environments that incorporate discussion, collaboration, and feedback, thereby maximizing the learner's ability to learn from interacting with other learners.

### **Social Network Theory**

As a prelude to a detailed review of the five processes of the updated version of the social domain, it is important to appreciate how social network theory relates to the social domain. Network theory (Saltiel, 2006; Kadushin,

2004) provides a framework for understanding both individual and organizational interactions between persons, objects and/or events. In education (Daly, 2010), networks are labeled as groups (systems of interconnected people) and organizations (e.g., schools) whose aims and purposes include the improvement of learning and learner attributes (characteristics) that affect learning (Hadfield, Jopling, Noden, O'Leary, & Stott, 2006).

Networking is then a process by which individuals and/or organizations connect with one another to achieve specific goals through the acquisition of resources and ideas. Networking most commonly begins when a person with a need reaches out to someone else who can help with that need. Social Network Theory, an extension of general network theory, analyzes the interactions between individuals, groups and organizations. According to Liu, Sidhu, Beacom, and Valente (2017), Social Network Theory focuses on the role of relationships in conveying information, managing personal or media influence, and facilitating attitudinal or behavioral change.

Networks can be horizontal or vertical (Ferguson, 2017). Family networks are both horizontal and vertical based on levels of authority and levels of interaction. The use of teams and egalitarian management methods are naturally horizontal and are intended to support processes and solve problems that routinely occur, regardless of the leadership style of the top executive leaders.

Communication often makes the difference between an effective network and one that absorbs time and effort without meaningful outcomes. Social groups and organizations that survive and thrive consistently embrace change to transform practices and outcomes. Especially in horizontal networks undergoing significant change, communication is essential for thriving during a period of change. Organizations with teams, managers, and leaders in effective collaboration can facilitate more strategic change than those that allow a silo (highly vertical) culture. Further, ongoing causes of dissension that are not resolved by leaders with clear visions and goals lead to release of energy in nonproductive ways rather than in creative directions (Harms & Leise, 2011). Some skills, such as project management, help by establishing priorities and methods for doing new things that will energize the organization through its teams and managers. This prioritization can give leaders a focus for clear messages about why a new direction is both exciting and essential.

**Figure 4** Social Processes and Clusters

<p><b>Process 1 – Communicating (producing and receiving messages)</b></p> <p>Cluster 1: Receiving a Message (using techniques to process a transmission of information)</p> <p>Cluster 2: Preparing a Message (structuring the information for a given audience)</p> <p>Cluster 3: Delivering the Message (maximizing the value of the communication)</p> <p>Cluster 4: Writing a Message (using techniques to enhance textual communication)</p> <p>Cluster 5: Orating (applying verbal skills in delivering a formal speech)</p> <p>Cluster 6: Communicating Informally, Orally (applying communication skills to engage with others)</p>
<p><b>Process 2 – Relating with Others (engaging effectively with people)</b></p> <p>Cluster 1: Relating Informally (connecting with others in a casual manner)</p> <p>Cluster 2: Relating Formally (connecting with others in an official context)</p> <p>Cluster 3: Relating Meaningfully (deepening relationships with others)</p> <p>Cluster 4: Performing in a Team (working together to achieve common goals)</p>
<p><b>Process 3 – Living in Society (dealing with all dimensions of social systems)</b></p> <p>Cluster 1: Being a Citizen (participating in civic processes)</p> <p>Cluster 2: Living in a Community (being a member of a group by adhering to common expectations)</p> <p>Cluster 3: Performing in an Institution (thinking and comporting oneself within an organization)</p> <p>Cluster 4: Being a Family Member (managing day-to-day interactions with immediate relatives)</p> <p>Cluster 5: Performing in a Culture (demonstrating competence in diverse societies, ethnic groups, and communities)</p> <p>Cluster 6: Mentoring (Facilitating the growth of others through a formal relationship)</p> <p>Cluster 7: Living in the World (existing in a global society)</p>
<p><b>Process 4 – Managing (leveraging people, resources, and time to accomplish specific outcomes)</b></p> <p>Cluster 1: Managing Individuals (setting people up for successful performance)</p> <p>Cluster 2: Managing Teams (setting groups up for successful performance)</p> <p>Cluster 3: Managing Human Systems (ensuring effective organization performance)</p> <p>Cluster 4: Managing Resources (planning, providing, and monitoring assets and capital)</p> <p>Cluster 5: Managing Communications (overseeing internal and external information flow)</p> <p>Cluster 6: Managing Projects (overseeing the development of end results or products)</p> <p>Cluster 7: Facilitating group process (helping others achieve a set of outcomes)</p>
<p><b>Process 5 – Leadership (accomplishing a mission by guiding others)</b></p> <p>Cluster 1: Envisioning (projecting a path to an end state)</p> <p>Cluster 2: Building a Following (establishing a group who will bring a vision to fruition)</p> <p>Cluster 3: Establishing Culture (creating an environment that supports a vision)</p> <p>Cluster 4: Maintaining a Commitment (helping the continuance of group dedication in order to achieve the vision)</p> <p>Cluster 5: Facilitating Change Process (Leading a community/institution in a new growth area)</p> <p>Cluster 6: Empowering (inspiring and allowing others to carry out the vision)</p>

## How Social Learning Skills Fit Social Network Theory

The Social Domain details the various ways in which skills are used and/or developed as an individual, as part of a group, and as a member of society. Vygotsky (1978) believed that learning has its basis in interacting with other people; therefore, information learned through interactions is transformed into integrated knowledge of an individual.

### Individuals

Process 1, **COMMUNICATING**, includes 35 skills significant for individual development in the production and receipt of messages. For example, Cluster 1, **Receiving a Message**, calls for individual learners to listen actively to understand the interaction and what is being said. In addition, an individual validates what was heard by using the skills of *Rephrasing* and *Reading body language*. The remaining five clusters in the **COMMUNICATING** process are also anchored in individual learning. They include **Preparing a Message**, **Delivering a Message**, **Writing a Message**, **Orating**, and **Communicating Informally, Orally**.

### Groups

Process 2, **RELATING WITH OTHERS**, and Process 3, **LIVING IN SOCIETY**, include the many learning skills required in the process of dealing with all dimensions of social systems. The majority of these social skills are related to interactions within groups.

### Organizations

Process 4, **MANAGING** and Process 5, **LEADERSHIP**, focus specifically on social interactions within organizations. Process 4 addresses leveraging people, resources, and time to accomplish specific outcomes. Process 5 is focused on learning skills related to the art and science of accomplishing a mission through others.

## Revising the Social Domain

As noted previously, workforce competencies played a key role in revision of the CLS as a whole; especially so with respect to the Social Domain. *What Work Requires of Schools: A SCANS Report for America 2000* (1991) and *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21<sup>st</sup> Century* (2012) were helpful in the identification of potential skills to include in the Social Domain. Some examples are social perceptiveness, coordination, persuasion, negotiation, instruction, and service orientation—all of which have close analogues in the skills definitions

in the updated Social Domain. For example, Process 1, **COMMUNICATING**, includes clusters such as **Receiving a Message** and **Preparing a Message**. In Process 3, clusters include **Living in Society**, **Performing in a Culture**, and **Performing in an Institution**. In Process 5, **LEADERSHIP**, clusters include **Facilitating Change Process** and **Empowering**.

## Positioning of Processes and Clusters

The five levels were constructed to form a hierarchy of skills that support social interaction in a variety of ways including individual, group, and societal perspectives. Some of the skills were expanded to recognize how one operates with different networks and in various contexts. Explicitness of each of the learning skills adds to and supports Process Education philosophy and methodologies. The Social Domain processes and clusters are delineated in Figure 4.

Process 1, **COMMUNICATING**, includes 35 skills for producing and receiving messages. The process was expanded from three to six clusters; the clusters added were **Writing a Message**, **Orating**, and **Communicating Informally, Orally**—for a total of 19 new skills.

Process 2, **RELATING WITH OTHERS**, was changed from Relating Culturally in 2007 to provide greater clarity. This process was expanded to 23 skills with new cluster titles to reflect the nature of relating to others informally, formally, and meaningfully, including with individuals as team members.

Process 3, **LIVING IN SOCIETY**, was changed from Relating with Others in 2007 to more accurately address the different roles and dimensions within a social system. Skills clusters reflect engagement in various contexts in the broader society. The number of clusters was increased from four to six, including **Being a Citizen**, **Living in a Community**, **Performing in an Institution**, **Being a Family Member**, **Performing in a Culture**, **Mentoring**, and **Living in the World**. The majority of the clusters and skills in this process are new or have been revised to provide greater clarity for learning in societal contexts.

Process 4, **MANAGING**, was revised to incorporate three additional clusters, **Managing Human Systems**, **Project Management**, and **Facilitating Group Process**—for a total of seven clusters. The four that were continued from their 2007 version were the clusters **Managing Individuals**, **Managing Teams**, **Managing Resources**, and **Managing Communication**. All of these changes and additions support better understanding of the skills and the clearer cluster titles expedite navigation to skills needed based on a context or purpose.

Process 5, **LEADERSHIP**, now includes 23 skills in six clusters, as opposed to the 2007 version which had 16 skills in four clusters. **Establishing Culture** was added as a cluster in recognition of the skills essential to a leader's need to foster an environment that supports and sustains change over time. Cluster 2, **Building a Following**, is clearer about the discrete skills that leaders must develop, such as *Involving stakeholders* and *Demonstrating integrity*. Further, there is a more logical progression of the clusters from **Envisioning** to **Empowering** (allowing others to carry out the vision).

### Ten Lessons Learned from Revising the Social Domain

1. *The 2019 Social Domain maps a pathway to social developmental growth:* The developmentally logical construction of the process levels of the Social Domain directs attention to processes, clusters, and skills with the most potential to strengthen communication interpersonally and in communities.
2. *Revisions to the Social Domain will make curriculum alignment easier:* Changes, especially in the first three process levels, now make it clearer how to direct attention: Process 1 has a focus on message communication; Process 2 has a focus on interpersonal communication; Process 3 has a focus on social systems.
3. *The social aspects of quality learning environments are a key to empowerment:* Facilitation of Social Domain learning skills appropriate to a task or a context is a critical strategy for increasing learners' social engagement, shared self-efficacy expectancies, and sense of empowerment for future learning and performance.
4. *Communities influence learning quality:* Social processes in learning communities transmit "memes" (social patterns), norms, and assumptions that affect the depth and growth of learning.
5. *Changing a social system can change members' level of knowledge:* Organizational cultures tend to stabilize around socially shared benchmarks of performance; applying the skills in Process 3 (**LIVING IN SOCIETY**) increases the potential for a more productive culture in which knowledge is constructed in creative and innovative ways, thus connecting these skills to those in Process 5 (**DISCOVERING, CREATING, AND INNOVATING**) from the Cognitive Domain.
6. *Social domain skills are integral to robust skill sets:* Real-world problems are complex, ill-structured, and often occur in social contexts. Experts with strong

Social Domain skills can mentor the growth of those learning skill sets, from all domains, which are integral to solving a problem or completing a project.

7. *Cooperation on knowledge-construction tasks causes relationship growth:* Individuals scoring higher on the Self-Growth Rubric (Apple, Morgan, & Hintze, 2013) consciously integrate skills from all domains. The strongest performers build interpersonal and organizational networks that are effective and efficient in support of knowledge creation.
8. *Strong social learning skills enable a performer to work with diverse individuals:* In-group identity can override learning and performance goals if it reduces motivation to pursue goals beyond present group interests. Skills from Process 2 (**RELATING WITH OTHERS**) such as those in the clusters **Relating Meaningfully** and **Performing in a Team** increase ability to perform in any goal-oriented social situation without being biased or conflicted by the presence of others with widely varied opinions and perspectives.
9. *Management strength is demonstrated by growth in team members:* Effective application of Process 4 (**MANAGING**) clusters and skills increase buy-in for a mission and tap into the talents and aspirations of team members (or employees) as a resource in support of success.
10. *Effective leaders construct social change:* Successful leaders discern how the change required to realize a progressive vision can be accomplished within the culture of their organization.

### Affective Domain Theory and Lessons Learned

This section provides background on the theory used to create a clear structure for the revised Affective Domain and includes lessons learned from the identification and analysis of the 180 developmental learning skills in the completed domain.

#### Core Affect Theory

An understanding of Barrett's (2005, 2017) "core affect" theory is fundamental to appreciating the five process levels of the new version of the Affective Domain. This theory of emotion provided an orienting foundation for defining the kinds of developmental learning opportunities (learning skills) that fit within this domain. For a general explanation of the Affective Domain, it is important to recognize that the emotion system evolved to include some hard-wired reactions such as fear, which triggers "fight or flight" behavior (e.g., James, 1890;

Cannon, 1927) and some relatively universal facial expressions of emotion (Ekman, 1984)—later modified (Ekman, 1993). *Core affect* refers to immediate, holistic, and continually changing feelings about situations and people—essentially a signal system used in scanning for what an individual should pay attention to. These initial feelings then trigger positive or negative judgments which lead to responses and behaviors.

The CLS Affective Domain includes developmental learning skills that pertain to each of the three emotion phases or aspects of the core affect model: 1) feeling (holistic core affect), 2) evaluative judgment, and, 3) action constructed from an appraisal of significance of the feeling and the judgment for the present set of conditions.

### How Affective Learning Skills Fit Core Affect Theory

The core affect model supports a wide range of useful insights related to increasing self-awareness, changing attitudes, expanding motivation, clarifying values, becoming more self-determined, and seeking meaning. Core affect theory is based on evidence that emotions are “constructed” from interactions with people and situations (Barrett, 2017) rather than being universal, innately determined reactions. The Affective Domain in the 2019 CLS includes skills related to each of the three aspects of the theory, however, many of the skills involve combinations that are best described by contextual examples.

### Feelings

Some affective learning skills at the first and most basic level in the domain (Process 1—**ENGAGING EMOTIONALLY**), involve directly processing a feeling or opening up a feeling in real time. For example, to be *Loving* it is essential to stay in that feeling, at least for a time—even though it is also true that each person’s experiences of loving will vary. Similarly, *Accepting love* or *Feeling secure* are actual feelings rather than just conscious judgments that one is loved or that conditions are right to feel secure. The Process 1 Cluster labeled **Freeing Emotions** exemplifies the importance of developing a capacity to stay with and expand positive feelings to overcome personal histories that may include avoiding or repressing feelings. Throughout the levels of the domain it remains important to experience basic feelings (“core affect”) in ways that align with the increasingly complex types of skills identified. Claiming to value someone’s friendship but not feeling *Loving* or other learning skills (from Process 1) for that person would invalidate what may appear to be a Process 3 (**CLARIFYING, BUILDING, AND REFINING VALUES**) developmental capacity.

### Judgment

A relatively small number of skills are centered on the judgment aspect of core affect theory. *Valuing the emotion* (from Process 1) emphasizes the immediate evaluation of a feeling and directs attention to simply accepting both the feeling and the initial judgment as information to process by applying additional skills. *Valuing the emotion* (Process 1) requires that one accept both one’s own judgments as well as the judgments of others in the immediate situation without taking defensive actions. *Noticing Outlier Reactions* and *Recognizing Triggers* (both Process 1) require accepting one’s judgment that a reaction is different or personally significant. *Being decisive*, *Satisficing*, *Suspending closure* (all from Process 2), and *Sensing wrongness* (Process 3) are examples of recognition that an evaluative judgment is appropriate for a situation. *Feeling empowered* (Process Five) is a complex skill but is essentially about recognizing a judgment about readiness to take charge of something.

Some skills include information generated from judgment but are more focused on actions. While many of these skills have a focus on judgment, they are typically dominated by at least one action tendency. *Recognizing unmet need* (Process 2) involves a feeling followed by a negative evaluation that leads to an observation about what is missing. An example is an emptiness caused by not doing something that is important for one’s life, such as *Traveling* to experience a different culture—which is a skill in Process 3 that would require new growth. *Identifying stressors* (Process 2) may start with a feeling and a judgment about the impact of a stressor but then may require additional skills to identify which factors in specific situations cause stress.

### Action

*Managing anxiety*, *Handling distress*, and *Managing frustration* (Process 2—**EXPANDING SELF-EFFICACY**) involve learning to stay in control (an action) even when one’s feelings and judgment spotlight negative possibilities such as a poor performance or an emotionally painful incident. Anxiety, distress, and frustration are negatively evaluated feelings; resolution requires setting aside the initial negative judgments about what is being felt to open a path of action that may improve the situation, including minimizing the negative judgment in order to allow performance growth. *Managing Dissonance* (Process 2) is a related skill in which a cognitive conflict must be reduced by moving to a perspective that takes account of inconsistencies but moves toward more consistent integration.



**Figure 5** Affective Processes and Clusters

<p><b>Process 1 – Engaging Emotionally (increasing affective capacities)</b></p> <p>Cluster 1: Observing Self (attending to present emotions)</p> <p>Cluster 2: Checking Emotions (changing your reactions to emotions)</p> <p>Cluster 3: Expanding Emotions (establishing affective connections to life)</p> <p>Cluster 4: Engaging Situationally (being ready to experience what contexts have to offer)</p> <p>Cluster 5: Freeing Emotions (opening yourself up to fully feel emotions)</p> <p>Cluster 6: Being Resilient (dealing with life’s unpleasant outcomes; showing grit)</p> <p>Cluster 7: Creating an Emotional Pathway (collecting memorable situational examples)</p>
<p><b>Process 2 – Expanding Self-Efficacy (having belief in one’s own potential)</b></p> <p>Cluster 1: Preparing for a Performance (readying yourself before a display of skill)</p> <p>Cluster 2: Performing in Real-Time (taking charge of performance)</p> <p>Cluster 3: Managing One’s Emotions (being skilled in self-care and uses of feelings)</p> <p>Cluster 4: Managing Performance Emotions (taking charge of achievement-related issues)</p> <p>Cluster 5: Practicing Social Management with Others (personally engaging with individuals)</p> <p>Cluster 6: Practicing Social Management (relating emotionally within collective systems)</p> <p>Cluster 7: Practicing Intellectual Management (taking initiative to seek truth without bias)</p> <p>Cluster 8: Discerning Reality (separating valid judgment from emotional reaction)</p> <p>Cluster 9: Strengthening Self-Efficacy (increasing expectations of one’s own competence)</p>
<p><b>Process 3 – Clarifying, Building, and Refining Values (strengthening core personal beliefs)</b></p> <p>Cluster 1: Discerning Values (recognizing habits, desires, and principled beliefs)</p> <p>Cluster 2: Valuing Independent Self (focusing on what you want to become)</p> <p>Cluster 3: Valuing Self in Relation to Others (relating your standards to external influences)</p> <p>Cluster 4: Valuing Others (expressing social values)</p> <p>Cluster 5: Valuing Intellect (appreciating the unlimited capacity and spirit of humans)</p> <p>Cluster 6: Integrating Cultural Values (enhancing your life by infusing human creativity)</p> <p>Cluster 7: Valuing Life Opportunities (expanding by exploring new dimensions)</p> <p>Cluster 8: Valuing Daily Life (making positive changes in your habits and attitudes)</p> <p>Cluster 9: Expanding and Validating Your Value System (living the life you want)</p>
<p><b>Process 4 – Personal Growth (maturing into the person you value through self-determination)</b></p> <p>Cluster 1: Clarifying Your Personal Identity (growing individuality from the roles you play)</p> <p>Cluster 2: Visioning Future Self (identifying the person you value and want to become)</p> <p>Cluster 3: Facilitating Self-Growth (gaining the skills to pursue personal development)</p> <p>Cluster 4: Self-Regulation (maintaining energy to keep running the marathon of life)</p>
<p><b>Process 5 – Facilitating Growth Beyond Oneself (expanding meaning in life for humankind)</b></p> <p>Cluster 1: Moving Out in Front (making more of a difference)</p> <p>Cluster 2: Moving Beyond Yourself Emotionally (creating meaning and value for others)</p> <p>Cluster 3: Moving Beyond Yourself Socially (facilitating growth outside of yourself)</p> <p>Cluster 4: Moving Outside of Yourself (creating meaning and value beyond your life)</p>

*Changing behaviors* and *Being independent* (both Process 4) are complex growth challenges that require self-management of motivation (e.g., choosing conditions in which personal change and independence are possible because of ability to use strengths from many lower-level skills). Skills such as *Using one's social power* (Process 5) are action-oriented and require that one has already mastered many learning skills from the Cognitive and Social as well as the Affective Domain. The placement of these examples in the Affective Domain has to do with motive—both are about having a centered identity and the conscious knowledge and skills to exert influence or to pursue achievements and establish a legacy.

### Revising the Affective Domain

The revision of the Affective Domain began with a substantial modification of the five process levels to convey more clearly how the affective hierarchy logically and realistically builds from lower to higher levels (see Figure 5). A learning skill found within a lower process does not mean it is “easier” to develop but rather that a person will be better prepared to move to a higher level by first developing skills lower in the hierarchy of levels. The set of five new or redefined processes proved to be a clear set of organizing constructs within which clusters and learning skills could be identified, defined, and illustrated through examples—a new element that helped to further validate the focal intent of each skill.

Analysis of many of the skills was challenging because the research and theory related to affect, which is mostly psychological, deals in concepts rather than skills. For example, sources of bias have been heavily researched but less so the skills involved in preventing or overcoming biases. The affective skills in the CLS were labeled and defined after a detailed examination that resulted in 180 malleable learning skills that can be applied singly or in combinations depending on personal differences relevant to situations and purposes. The sets of skills within the process levels of the domain are aligned with other frameworks such as traits of quality collegiate learners (Apple et al., 2016) and perspectives such as emotional intelligence (Goleman, 1995) and constructive living (Reynolds, 1984). The goal was to differentially describe distinctive and constructive ways to take effective action across the range of possible types of emotions in order to advance one's emotional development and maturity.

Development of affective skills produces enhanced emotional intelligence (Goleman, 1995) that includes conscious management of internal reactions to feelings.

For example, if a person feels that a situation or person is so challenging that responding usefully is outside of their control, it is possible to suspend judgment, that is to say to oneself, “I need time to gain perspective,” before trying a response that seems reasonable or seeking outside help. The CLS provides a wide range of constructive skills that allow a person to manage more and increasing life challenges. Continual assessment is a key to gaining more control, as opportunities arise, to reinterpret initial feelings and to suspend or alter initial evaluative judgments, and to decide on constructive actions that may lead to awareness of how feelings and judgments influence behavior.

Social influences based on Goleman's (1995) emotional intelligence construct play a role in supporting or hindering performance as a result of each person's lifetime of social learning. When there was doubt about the relative importance of social versus affective emphasis in a specific skill, it was consciously resolved by assessing which type of skill—social or affective—is usually more prominent in real-world contexts.

### Positioning of Processes & Clusters

The five process levels were designed to build logically upon one another in support of the integration of additional skills in identity formation and values development, self-growth development, and advanced skills for facilitating the growth of others. There are also many new clusters within levels that are sub-processes (e.g., self-regulating) and these helped the authors to identify, classify and reorganize related skills. Process 1 (**ENGAGING EMOTIONALLY**) includes clusters such as **Expanding Emotions** and **Freeing Emotions** that emphasize the developmental importance of becoming open to feelings and to learning to be emotionally expressive and balanced. **Engaging Situationally** and **Being Resilient** are clusters in Process 1 that focus on how increased performance with basic emotional self-management has long-range implications for life adjustment and success.

Process 2 (**EXPANDING SELF-EFFICACY**) is closely related to the performance quality emphasis of Process Education. Expectations about performance aspects of the diverse roles of life build one's self-worth (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003) and range of capability (Fredrickson, 2009; Seligman, 2011). The practice of mindfulness meditation is an interesting example which has been experimentally demonstrated to lead primarily to self-enhancement and only secondarily to the traditionally assumed outcome of “quieting the ego” (Gebauer, et al. 2018). Other clusters in Process

2 show how affect plays a large role not only in **Managing One's Emotions** but in **Preparing for a Performance, Practicing Social Management, and Practicing Intellectual Management**. Learning to remain committed with engaging problems and being humble are important attitudes found here. Many life enhancing endeavors have a performance aspect that serves to enhance self-worth while creating insights and meaning.

Process 3 (**CLARIFYING, BUILDING, AND REFINING VALUES**) addresses a large set of valuing skills that include the natural prominence of self, family, and others in one's life. But valuing also extends to being open to varied and creative intellectual and cultural experiences, having principled beliefs about moral decisions (Haidt, 2012), and adhering to sources of meaning in life such as growth goals and interest in improving the world (Goleman, 2015). The cluster, **Valuing Intellect** focuses on attitudes about knowledge, perspectives, and evidence. The skills in Process 4 (**PERSONAL GROWTH**) are focused on consciously tying expectancies (self-efficacy skills from Process 2) and values (Process 3) to a path of growth that will enhance integration of identity over time (Ryan & Deci, 2017). Process Education principles and key practices are very dependent upon Level 4 (**PERSONAL GROWTH**) affective skills and are critical to the practice and modeling of self-growth. Process 5 (**FACILITATING GROWTH EXTERNALLY**) emphasizes skills that move one beyond personal growth to the creation of meaning for others and the world through service, courageous action, and compassion (Armstrong, 2010; Nhat Hanh, 2014).

### Ten Lessons Learned from the Affective Domain Revision

Work on the revision of the Affective Domain led to substantive new insights about the power of the this domain. Ten lessons learned summarizes top insights from working to identify and define the final set of 180 affective learning skills within the 5 processes and 33 clusters of the revised domain.

1. *Unlimited growth is possible in all affective learning skills:* The established criteria for inclusion and exclusion of elements for skills in all domains strengthened the Affective Domain as it required that learning skills be decontextualized and re-conceived as functioning in any learning performance where there is universal potential for growth.
2. *Core affect theory as a foundation:* The "core affect" model clarified the experiential phases of emotions which helped with maintaining a clear frame of reference about whether a skill required expansion of an immediate emotional experience or formation of an attitude, a value, or an action.
3. *The essential role of self-efficacy:* Growth in quality of performance requires increasingly higher and more accurate self-efficacy expectations and supporting affective skills such as *learning to enjoy productive struggle*.
4. *Each role adds to identity:* Identity is formed from self-efficacy expectancies for performances that are part of many roles such as being a student, a parent, an educator, or a team member (Chandra & Leong, 2016).
5. *Positive affect is critical to growth:* A learning skills approach requires identification of the positive skills that will support desired ends such as balanced mental health and a sense of hope (Seligman, 2018).
6. *Assessment is essential to being internally consistent:* Competition between values is common, which means that learning skills related to values increase attention to self-assessing and reflecting on the consistency of one's decisions and behavioral choices.
7. *Affective skills are essential to every collaboration of educators and learners:* When quality learning environments and constructive interventions are conscious goals (Apple & Smith, 2007), it is essential to identify the feelings and judgments that have strong influences on relating with teams and classrooms.
8. *Learning growth requires awareness of affect:* Metacognition requires "markers" like effective emotional judgments, positive self-efficacy expectancies, clear values, and strong role identities (Seligman, 2011). Sources of cognitive bias and dissonance that interfere with metacognition require not just rational understanding but specific affective learning skills to modify these often unconscious tendencies (Kahneman, 2011).
9. *Generations vary in patterns of affect because of social changes:* The Affective Domain can serve as an analysis tool for understanding how habits, attitudes, values, and self-determination vary across generations (e.g., Twenge, 2017) or between groups of people (e.g., Brooks, 2015).
10. *Affect does not abrogate decision-making:* Although strongly negative feelings can feel over-whelming, constructive action is still possible (Reynolds, 1984). When strong feelings are ascendant, but a person maintains emotional control it is more likely that growth in affective learning skills will expand the capabilities of that individual (Goleman, 2015).

## Description of the Assessment and Evaluation of Quality Domain

The 2019 CLS includes an entirely new and separate domain for the assessment and evaluation of quality. In past versions, assessment was considered a generic, unifying feature that integrated all domains, processes, clusters, and learning skills (Apple et al., 2007). However, continuing experience and reflection led to the decision that *quality* is not only an idea relevant to any learning skill but a definable domain with processes, clusters, and specific learning skills.

The hierarchy within this new domain is structured to support the development of quality and is organized in a sequence of processes which helps users focus on the practices that produce improved quality in performances or products. The order of these processes is: **DEFINING QUALITY, MEASURING QUALITY, ASSESSING QUALITY, EVALUATING QUALITY, PROVIDING FEEDBACK ON QUALITY, ENHANCING QUALITY, SELF-ASSESSING, and REFLECTING**. See Figure 6 for a table of process and clusters in this domain.

In any assessment or evaluation process, the first challenge is to define quality from a user or client perspective—a “receiver” with needs and expectations. Process 1, **DEFINING QUALITY**, includes four clusters that comprise

the learning skills needed to describe and characterize a working basis for establishing criteria for a performance or product that is expected to match the desires of receiver(s). This is accomplished with Cluster 1 skills for analysis of their need and desired quality, Cluster 2 skills which relate to setting criteria of products or outcomes, Cluster 3 skills which are required for setting criteria of performances, and Cluster 4 skills which are needed to determine how closely these criteria align with what the receiver wants.

Assessment and evaluation cannot fulfill their purposes unless there are reliable and valid measures for the level of quality desired for a performance, outcome, or product. There are a set of learning skills to help identify appropriate existing measures as well as creating new measures. These are found in Process 2, **MEASURING QUALITY**, and include skills for ensuring that measures also have the range of measurement (a high enough “ceiling”) needed to fully capture variability, and that the set of measures as a whole are well aligned with each other for the intended purpose.

Process 3, **ASSESSING QUALITY**, addresses the need for consideration of how quality can be enhanced over time. After a receiver’s need has been well documented and appropriate measures have been selected or created, there will be opportunities for implementation or product improvement through thoughtful analysis of the set of

**Figure 6** Assessment and Evaluation of Quality Processes and Clusters

<b>Process 1 – Defining Quality (identifying what impacts the consumer’s affective satisfaction)</b>
Cluster 1: Defining receiver needs (identifying quality from a user or client perspective)
Cluster 2: Defining quality of results (identifying desired characteristics in a product or experience)
Cluster 3: Defining quality in performance (identifying key characteristics of processes/actions)
Cluster 4: Determining the quality of match (alignment of desired quality to actual quality)
<b>Process 2 – Measuring Quality (selecting and using scales for determining excellence)</b>
<b>Process 3 – Assessing Quality (producing meaningful feedback to make future improvements)</b>
Cluster 1: Preparing for Improvement (setting the foundation for effective implementation)
Cluster 2: Implementing assessment (producing meaningful improvement feedback)
<b>Process 4 – Evaluating Quality (judging the level of quality using a standard)</b>
<b>Process 5 – Providing Feedback on Quality (positively influencing a performer’s future quality)</b>
<b>Process 6 – Enhancing Quality (determining what produces greater value to specific audiences)</b>
<b>Process 7 – Self-Assessing (measuring and analyzing one’s own performance for improvement)</b>
<b>Process 8 – Reflecting (having mindfulness of your learning skills and states of being)</b>

measurements. For example, the design and delivery of a new product, experience or performance must satisfy expectations of many stakeholders about the quality of the means and results. The quality can be improved in both means and results through these assessment skills. For example, in teaching and learning, we can assess learning performance as well as their knowledge produced in order to give the learner the opportunity to improve their learning. Cluster 1 skills involve designing the assessment process and Cluster 2 skills help in the implementation of the assessment. Together these skills address what quality has been produced and why. They also address issues of quality by putting the focus on action plans that can produce meaningful feedback for present and future improvement of quality and on sharing insights about quality in relation to that performance, outcome or product. An assessment mindset (Jensen, 2007) requires that an assessor suspend judgment and the next process, 4, is focused solely on judgment. This is why assessment is found in Process 3 and evaluation of quality in Process 4.

Process 4, **EVALUATING QUALITY**, involves a different perspective of attending to the desired characteristics of quality. The judgment made with respect to quality has many implications that require that Process 1 (**DEFINING QUALITY**) and Process 2 (**MEASURING QUALITY**) are first implemented. Evaluating quality requires that one analyze evidence in a fair, impartial, and consistent manner. Evaluation requires care in maintaining focus on the same characteristics, criteria, and standards across contexts and over time.

Process 5, **PROVIDING FEEDBACK ON QUALITY**, emphasizes the need to make feedback factual, non-emotional, constructive and focused on promotion of growth opportunities. The idea of providing feedback is a process that is situated in communication and requires all the social skills to make communication effective, but has additional skills of maintaining objectivity, being non-judgmental, providing growth feedback and/or providing consulting, even when one needs to highlight sub-standard performance.

Process 6, **ENHANCING QUALITY**, emphasizes opportunities for making decisions that will better match desired future quality. This means that new dimensions of quality can be created, but then they also need to be promoted and positioned, while at the same time refining existing qualities to better match needs. Process 6 also formalizes Process Education's appreciation of quality so that it can be understood in terms of the wider literature on quality and continuous improvement.

Process 7, **SELF-ASSESSING**, involves a set of learning skills defined through experience and expertise, that individuals can use to produce self-growth. These skills include a *Self-Improvement Mindset*, *Desire to seek feedback*, *Be-*

*ing receptive to feedback* (even when discoveries are uncomfortable), and probably most importantly, *Being self-honest*. Self-assessment (and the use of related skills) is based upon the ability to monitor one's own performance so that self-assessment can be integrated into the resulting skill of self-mentoring future performances.

Process 8, **REFLECTING**, is the final process of the domain, placed here because the practice of mindfulness is relatively difficult. As experience with self-assessment evolves, an individual becomes first aware and then, with practice, consistently mindful of an array of influences on an individual's learning and growth. These influences include, but are not limited to, culture (personal and institutional), fixed performance factors (age, height, genetic predispositions) and personal factors (such as self-esteem, self-efficacy, and values). How an individual finds or creates meaning in life depends on the integration of all the elements of quality to support extending beyond oneself in ways made possible through self-growth. Reflection is the process that can produce these valued outcomes.

The sequencing of the eight processes, with their clusters and learning skills, approximates how quality is produced over time. Given a performance, quality is defined and measured. Next, through assessment and evaluation, the level of quality is determined and reported, along with evidence and ideas for improvement and enhancement. Based on the experience of achieving a level of quality, an individual can use self-assessment as a way to not only improve a similar performance in the future, but to consistently monitor performance and self-assess any performance, thus improving any performance. Reflection, as a capstone process, is the thorough and consistent introspection that moves beyond self-improvement (or improvement of one's own performances) and to self-growth and its attendant potential of improved quality of life.

### Using the Classification of Learning Skills

Ingrid Ulbrich, author and Process Educator, describes her experience in using the revised CLS to identify learning skills as part of designing facilitation plans for her Introduction to Chemistry course. Each person will approach this new resource differently of course, but Ingrid's personal narrative gives a sense of how to formulate hypotheses (possibilities) and then test them by scanning the CLS skills sets to discover what actually fits closely and essentially to the course or unit of learning at hand. She started by first using another tool, The Profile of a Quality Collegiate Learner (PQCL) (Apple, Duncan, & Ellis, 2016) to identify characteristics she wants her students to match as an outcome of learning from this course. As she explains,

characteristics are not learning skills but they can be useful as fundamental descriptors that can be expanded with more detail in terms of learning skills.

### Ingrid's Narrative

As I think about preparing for a new semester, I'm digging into the PQCL to see how I can help my students in my Introductory Chemistry class. I want them to have the skills they need to succeed in the next chemistry course, and to take chemistry basics with them to other related courses like Biology. In my process-oriented classrooms, students work in teams to solve presented problems and to validate their learning from the pre-class readings.

I've decided to choose a few characteristics from the PQCL for each class session that will be the focus of constructive interventions with student teams. As I look through the list, it feels like each characteristic is a big area with many related skills. So to drill down and make it easier to target interventions, I use the Classification of Learning Skills to select learning skills that support each PQCL characteristic.

A class session early in the semester focuses on unit analysis (e.g., changing units between inches and centimeters). This calculation is a fundamental skill for general chemistry that quickly becomes a tool for solving more complex problems. If students don't get it now, they will struggle in this and subsequent courses. I want to help students strengthen the relevant learning skills to develop this knowledge and be able to transfer it to future contexts.

The charac characteristics are not actually skills so I proceed with the goal of finding the most important CLS skills related to each of the PQCL characteristics.

#### Skills for Uses Resources

Keeping the overall atmosphere friendly and positive will make it more likely for students to be engaged. For my Chemistry course it is likely that skills from Cluster 5, **Practicing Social Management with Others** (Process 2, Affective Domain), will prove useful to keep in mind if teams have any difficulties. For example, *Supporting* and *Responding to Requests* are important when another team member needs help, such as with *Using Resources Effectively*.

For the team-based structure for the class, there are valuable skills in the Social Domain (Process 2: **RELATING WITH OTHERS**) in Cluster 4, **Performing in a Team**. The ability of a team to become efficient as intended by the **uses resources** characteristic will improve if members use the skill *Articulating an Idea* from Process 1 (**COMMUNICATING**) in Cluster 2, *Preparing a*

*Message*. This PQCL characteristic has two foci in an activity designed with all the needed instructions and information for the example of unit analysis mentioned previously: (a) independently finding and using the information necessary to solve each problem, and (b) providing help and support to team members who may have forgotten their textbook or can't find what is needed. From the Social Domain, Process 2, **RELATING WITH OTHERS**, Cluster 4, **Performing in a Team**, and the learning skills *Cooperating* and *Supporting the Team* will help with both points of focus.

In the Cognitive domain, I find additional skills for **uses resources** in Process 1 (**INFORMATION PROCESSING**), Cluster 2, **Locating/Searching**, such as *Identifying Need*, *Filtering*, *Searching*, and *Scanning*. From past observations, I realize that the skill for which most students need the most growth is *Identifying Need*—recognizing that information is missing and that they need to go find it. So that will be a key learning skill focus for Introduction to Chemistry. Tying in the affective learning skills of *Supporting* and of *Responding to Requests* will strengthen the ability of teams to efficiently work together to more quickly resolve such issues—with less frustration.

#### Skills for Validates

For the **validates** characteristic, the Social Domain skill (from Process 2: **RELATING WITH OTHERS**) of *Achieving Consensus* from Cluster 4, **Performing in a Team**, will enable a team to work together to achieve valid results. From Cluster 6, **Communicating Informally, Orally**, the skill *Speaking to Think* fits how I would like them to work with each other to orally present information until consensus is achieved. Perusing the Cognitive Domain, I quickly identify skills in Process 2, **CRITICAL THINKING**, that are essential for the PQCL characteristic **validates**. Cluster 7, **Validating Meaning** has two valuable skills: *Recognizing Contradictions* and *Validating Completeness* that students can recognize when their answers make numeric sense and have all the right parts.

#### Skills for Problem Solver

For the characteristic **problem solver**, the Social Domain Process 4 (**MANAGING**) skill of *Motivating* from Cluster 1 (**Managing Individuals**), should help teams stick together to achieve the goal by encouraging each other when difficulties arise. I note all of these skills in my facilitation plan to remind myself to check on them as I observe team processes and to make constructive interventions when any of these skills need strengthening. Starting with a brief "ice-breaker" often encourages skills such as *Being Courteous* and *Taking Interest in*

*Others* from Cluster 1 (**Relating Informally**) of Process 2 of the Social Domain.

There is an entire process for problem solving (Process 4 in the Cognitive Domain), so addressing **problem solving** seems easy—except that there are too many skills to focus on. My introductory course sets up each problem for the learners, so Process 4 skills may not be as relevant as I first thought. To examine this insight, I pick the most likely skill from each of the clusters under Process 4: *Identifying the Problem*, *Subdividing*, *Reusing Solutions*, and *Generalizing a Solution*. Only the last seems relevant.

Thinking about it, I realize that *Generalizing a Solution* is one that I value very strongly, but rarely spend time on in class. It is unlikely to happen in introductory courses, or will be slow if it happens at all, because it requires reflection and meta-analysis of the work being done—then I realize I'm thinking about the Assessment and Evaluation of Quality Domain. Refocusing, I review Process 3 (*Generalizing*) of the Cognitive Domain, and decide that it includes the generalization skills I am interested in for much later in this Introduction to Chemistry course.

### Incorporating Affective Domain Skills

I'm initially skeptical about finding relevant skills in the Affective Domain that connect to characteristics like **validates** and **uses resources**. But reflecting on observations and office hour discussions, I discover that students have needs and challenges from Affective Domain Process 1, Cluster 3 (**Expanding Emotions**), such as a need to strengthen skills such as *Toughening self-esteem* (Cluster 6: **Resilience**). As I look through the list of skills, I am able to pull a long list of skills that I want my students to grow. And then it hits me: these are the skills that students lack that cause faculty to complain about them the most. This is why we say they're not ready for college. This is why they struggle. So it's as critical that I help those students grow their affective skills as much as their cognitive learning skills if they are to succeed in their new role as college-level learners. The important skill that points this out is the Process 4 (Personal Growth) skill of *Prioritizing role identities* from Cluster 1, **Clarifying Your Personal Identity**.

For **uses resources**, I find another skill in Process 2 (**EXPANDING SELF-EFFICACY**) of the Affective Domain from Cluster 6 (**Practicing Social Management**), *Using Resources Effectively*. In this context, that means making sure that everyone can access materials, even if someone forgot their book. One affective skill that I could even work on for myself that also fits with

**problem solver** is *Being non-defensive* from Cluster 5 (**Practicing Social Management with Others**). As team members make suggestions to improve the solution during the problem-solving process, some ideas are likely to be criticized and rejected—but members must not do this in a way that leads to defensiveness or possibly shut-down of others.

I am surprised at how many affective skills I find that relate to teaching chemistry! I had supposed that the Affective Domain would focus on needs that staff at the Counseling Center can better help with. But the revised Affective Domain makes it easy to think ahead about the affective skill issues that might routinely arise in a disciplinary course. I see that I will be better prepared to address them in a quality way because the CLS provides clear labels and descriptions.

In each set of students, a few have more basic emotional problems that get in the way of their performance quality. I will invite these students to visit with me during office hours and be prepared to mentor them on other skills from Affective Domain, Process 2, Cluster 1 (**Preparing for a Performance**), such as *Being organized*, *Preparing*, *Sensing emotional confusion*, and *Identifying stressors* (from Cluster 3, **Managing One's Emotions**).

### Incorporating Skills from Assessment and Evaluation of Quality Skills

Finally, I come to the Evaluation/Assessment Domain. Certainly, evaluation is important for deciding whether solutions meet the criteria for the **validates** characteristic and to determine the strength of solutions (for the **problem solver** characteristic). But I want students to grow an assessment mindset, represented by *Valuing performance* (in Process 1, Cluster 3, **Defining Quality in Performance**), and to provide feedback to themselves and their team members while *Being non-judgmental* from Process 5, **PROVIDING FEEDBACK ON QUALITY**.

### Final Reflections

As I reflect on the set of skills that I've chosen for facilitating one activity in my Introduction to Chemistry course, I'm amazed to discover that the disciplinary context, unit analysis, wasn't as crucial as I would have expected. It was useful for choosing target characteristics from the PQCL, but the skills that supported those characteristics, especially in the Affective, Social, and Assessment and Evaluation of Quality domains, are broadly applicable to growing learner performance.

## Conclusions

The impetus for the 2019 revision of the Classification of Learning Skills (CLS) was to expand and improve the Cognitive, Social, and Affective Domains published in 2007. Among the insights gleaned from application and assessment of the previous CLS was the recognition that cognitive learning skills have the purpose of growth in learning and performance—not just strengthening knowledge production, as was assumed in 2007. Each skill from every domain is universal because it applies across all contexts and disciplines and has no limit on the extent and quality of growth possible.

For the 2019 CLS revision, teams used background scholarship and theory to create a stronger foundation and rationale for each domain. For the Cognitive Domain, there

have been extensive advances over the past 10 years in learning and cognitive sciences as well as advancements in educational applications and movements. Educational psychology scholarship on models of learning added depth to the set of skills. For the Social Domain, network theory was a useful resource. The scholarship by sociologists supports the alignment of skills to social contexts and to social institutions like families, organizations, and institutions, for which new realms of universal skills can be applied to life situations. The Affective Domain was changed more than the others and was substantially expanded and deepened by applying the theory of “core affect”. The expansion of these learning skills is all about taking the appropriate action through effective judgment of feelings that leads to more effective behavior made possible by these more effective judgments about feelings. Finally, a new domain



**Figure 3** Interactive Classification of Learning Skills (main interface)

### Welcome to the Classification of Learning Skills

**Learning skills are at the heart of Process Education:**

**Process Education** (def.) a performance-based philosophy of education which integrates many different educational theories, processes, and tools in emphasizing the continuous development of **learning skills** through the use of assessment principles in order to produce learner self-development.

**Learning skills** are aptitudes, abilities, and behaviors related to increasing quality of learning performance. Learning skills are distinct from disciplinary content and each skill in this Classification is universal because it applies across all contexts of performance. As performance quality increases it enhances self-efficacy, the positive expectation that one can add new performance skills, can speed up performances, and can use insights from assessment to raise the quality of performances in ways consistent with one’s goals. Self-growth is the increase in the quality of one’s learning process in all aspects of life: there is no limit on the extent and quality of development possible. Individual learners can improve their ability to learn by developing learning skills through personal experimentation and intentional practice but also are encouraged to develop mentoring and peer support strategies to increase performance quality.

The learning skills are divided into four different domains: Cognitive, Social, Affective, and Assessment & Evaluation of Quality. Use the navigation wheel at left to explore the CLS.



Cognitive Domain



Social

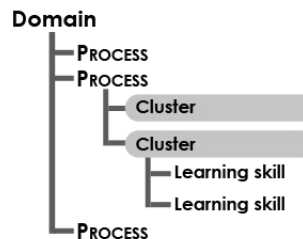


Affective



Evaluation and Assessment of Quality

Each **DOMAIN** is divided into **PROCESSES**. Each process is divided into **CLUSTERS**. Each cluster contains multiple **LEARNING SKILLS**. All processes and clusters are clickable.





was created, Assessment and Evaluation of Quality. This new domain will make it more feasible for educators to embrace assessment, as it specifies how to construct a full range of quality criteria, measurement tools, assessment, evaluation, and feedback for any purpose.

Using the CLS will be easier, despite the substantial increase in skills within each domain, because many sub-processes are in fact clusters and these have improved labeling. There also is stronger learning skill alignment in all domains, processes, and clusters. For a specific context of use, the effective hierarchy of the CLS makes searching for a specific skill much more efficient. It is easy to envision a

host of future articles on how to apply the CLS for growth and development of individuals, including the measurement and assessment of their learning skills. Learners will find skills related to growth in roles that will help them integrate their personal life vision and identity. Educators will find new ways to self-determine their professional and personal growth plans.

A web support system is currently under development that will also provide examples of learning skills in context. This system is located at <http://www.processeducation.org/cls/web/> (see Figures 3 and 4).



**Figure 4** Interactive Classification of Learning Skills (Cognitive Domain exploded view for Process 1)

### Cognitive Domain

These are the skills that support thinking processes. Each **PROCESS** consists of multiple **CLUSTERS**. Simply click any process to open its clusters. Each **CLUSTER** consists of multiple **SKILLS**. Simply click any cluster to view its skills.

#### Process 1 **INFORMATION PROCESSING** (managing data and information for efficient use)

Generating Data (producing valuable information) *(toggle to view skills)*

Locating/Searching (obtaining needed information)

Organizing Data (providing structure to one's own information)

1. **Categorizing**: classifying or grouping data
2. **Systematizing**: organizing information resources for use
3. **Tagging**: labeling an informational object with key words
4. **Archiving**: selecting and preserving aged data for potential future use

Cleaning Data (ensuring accurate, complete, and high-quality data)

Transforming Data (restructuring data/information to gain new meaning)

#### Process 2 **CRITICAL THINKING** (increasing meaning, comprehension, and understanding)

#### Process 3 **GENERALIZING** (elevating knowledge so it applies in multiple contexts)

#### Process 4 **PROBLEM SOLVING** (resolving a situation that has unmet expectations)

#### Process 5 **DISCOVERING, CREATING, AND INNOVATING** (making new, unique things)

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## COGNITIVE DOMAIN

### PROCESS 1 INFORMATION PROCESSING (managing data and information for efficient use)

<b>Cluster 1</b>	<b>Generating Data</b> (producing valuable information)
→	<p><b>Observing</b> — using the senses to pick up on details of an object, dynamic, or relationship</p> <p><b>Memorizing</b> — intentionally committing information to memory</p> <p><b>Recording</b> — capturing information and representing it in some medium</p> <p><b>Measuring</b> — producing accurate and precise readings from an instrument</p>
<b>Cluster 2</b>	<b>Locating/Searching</b> (obtaining needed information)
→	<p><b>Identifying need</b> — defining the specific characteristics of the information required</p> <p><b>Recalling</b> — retrieving from memory</p> <p><b>Filtering</b> — eliminating irrelevant information or focusing on specific information</p> <p><b>Searching</b> — seeking specific information</p> <p><b>Scanning</b> — quickly searching a resource or situation to identify critical words or prompts</p>
<b>Cluster 3</b>	<b>Organizing Data</b> (providing structure to one's own information)
→	<p><b>Categorizing</b> — classifying or grouping data</p> <p><b>Systematizing</b> — organizing information resources for use</p> <p><b>Tagging</b> — labeling an informational object with key words</p> <p><b>Archiving</b> — selecting and preserving aged data for potential future use</p>
<b>Cluster 4</b>	<b>Cleaning Data</b> (ensuring accurate, complete, and high-quality data)
→	<p><b>Finding errors in data</b> — determining which values must be corrected/addressed</p> <p><b>Validating sources</b> — rating obtained resources based on quality and credibility</p> <p><b>Identifying irregularity</b> — seeing outliers, anomalies and violations of rules</p> <p><b>Ensuring sufficiency</b> — making certain that a data set meets requirements</p> <p><b>Inventorying</b> — checking that a data set is complete</p>
<b>Cluster 5</b>	<b>Transforming Data</b> (restructuring data/information to gain new meaning)
→	<p><b>Translating</b> — changing the frame of reference</p> <p><b>Converting</b> — changing to one-to-one mapping based upon a rule</p> <p><b>Changing representation</b> — presenting the same object in a new form</p> <p><b>Combining</b> — creating new data from existing data by following functions or rules</p> <p><b>Reducing</b> — collapsing a data set according to rules</p> <p><b>Sorting</b> — reordering data according to rules</p>

**PROCESS 2 CRITICAL THINKING (increasing meaning, comprehension, and understanding)**

<b>Cluster 1</b>	<b>Analyzing</b> (characterizing individual parts)
→	<p><i><b>Deconstructing</b> — breaking into parts</i></p> <p><i><b>Identifying similarities</b> — recognizing shared attributes of items</i></p> <p><i><b>Identifying differences</b> — recognizing distinctive attributes of items</i></p> <p><i><b>Inquiring</b> — asking key questions</i></p> <p><i><b>Identifying schemas</b> — finding existing models to characterize a phenomenon</i></p>
<b>Cluster 2</b>	<b>Reasoning</b> (revealing meaning by thinking about implications of knowledge)
→	<p><i><b>Interpreting</b> — adding meaning for better understanding</i></p> <p><i><b>Deducing</b> — deriving specific conclusions from general principles</i></p> <p><i><b>Inducing</b> — arriving at a general principle by observing specific instances</i></p> <p><i><b>Inferring</b> — drawing conclusions from evidence and logic</i></p> <p><i><b>Being logical</b> — applying a rational pattern of thinking</i></p>
<b>Cluster 3</b>	<b>Synthesizing</b> (creating new configurations from elements)
→	<p><i><b>Bounding</b> — determining the limits and constraints of the validity of a theory or model</i></p> <p><i><b>Recognizing patterns</b> — recognizing and describing the structure of repeating elements</i></p> <p><i><b>Making connections</b> — reorganizing elements to reveal insights that are of greater value</i></p> <p><i><b>Summarizing</b> — representing the whole in a condensed statement</i></p>
<b>Cluster 4</b>	<b>Decision Making</b> (making the best choice for a situation)
→	<p><i><b>Predicting</b> — forecasting from experience and current knowledge</i></p> <p><i><b>Estimating</b> — approximating from mathematical models</i></p> <p><i><b>Identifying consequences</b> — seeing effects that flow from a possible decision</i></p> <p><i><b>Analyzing risks</b> — identifying external sources/impacts of error</i></p> <p><i><b>Deciding</b> — making a determination based on available information</i></p>
<b>Cluster 5</b>	<b>Self-Regulation of Thinking</b> (linking awareness, analysis, and control of thinking)
→	<p><i><b>Thinking agilely</b> — choosing the appropriate cognitive skills for the context</i></p> <p><i><b>Thinking tangentially</b> — exploring related ideas sparked from current thought</i></p> <p><i><b>Redirecting focus</b> — moving back and forth among different processes and contexts</i></p> <p><i><b>Thinking skeptically</b> — testing against fundamental principles/schemas</i></p> <p><i><b>Accepting assumptions</b> — explicitly recognizing reasonable logical premises</i></p> <p><i><b>Incubating</b> — letting ideas percolate in your subconscious</i></p>
<b>Cluster 6</b>	<b>Validating Meaning</b> (ensuring results are applicable and accurate)
→	<p><i><b>Recognizing contradictions</b> — identifying when results violate fundamental principles/schemas</i></p> <p><i><b>Verifying scope</b> — testing that understanding is equivalent to what can be inferred from data</i></p> <p><i><b>Validating completeness</b> — testing that data address the boundary conditions</i></p> <p><i><b>Recognizing limits</b> — acknowledging what you currently don't know and can't resolve</i></p>

### PROCESS 3 GENERALIZING (elevating knowledge so it applies in multiple contexts)

<b>Cluster 1</b>	<b>Contextualizing</b> (applying knowledge to a specific situation)
→	<p><b>Clarifying Conditions</b> — sizing up a situation</p> <p><b>Clarifying expectations</b> — defining a desired standard of quality or outcome</p> <p><b>Examining existing knowledge</b> — surveying relevant data/information</p> <p><b>Strategizing</b> — mapping out a way to use knowledge</p> <p><b>Transferring</b> — using ideas, analogies, or patterns in a new context</p> <p><b>Identifying contextual prompts</b> — identifying the most relevant cues for action in a situation</p>
<b>Cluster 2</b>	<b>Modeling</b> (building an abstraction of reality or a representation of an abstraction)
→	<p><b>Identifying factors</b> — recognizing the important contributions to a situation</p> <p><b>Identifying relationships</b> — defining how categories or variables are connected</p> <p><b>Analogizing</b> — representing similar elements in a dissimilar context</p> <p><b>Simplifying</b> — reducing to a minimal set of primary components and variables</p> <p><b>Abstracting</b> — capturing the essence from concrete examples or instances</p> <p><b>Quantifying</b> — representing with numbers or equations</p> <p><b>Diagramming</b> — clarifying relationships through visual representations</p>
<b>Cluster 3</b>	<b>Engaging in Systems Thinking</b> (recognizing patterns of relationship within a context)
→	<p><b>Defining function</b> — clarifying purpose with objectives</p> <p><b>Exemplifying</b> — showing with a concrete example</p> <p><b>Visualizing</b> — creating a mental image of how parts make a whole</p> <p><b>Designing systems</b> — representing components and relationships within certain constraints</p> <p><b>Using schemas/frames</b> — locating the appropriate structure to provide effective orientation</p> <p><b>Appreciating randomness</b> — detecting unsystematic (stochastic) variables</p> <p><b>Being process-oriented</b> — creating and using methodologies</p>
<b>Cluster 5</b>	<b>Validating Results</b> (ensuring outcomes are effective, efficient, and meet expectations)
→	<p><b>Following principles</b> — ensuring the compatibility of knowledge with context</p> <p><b>Testing</b> — analyzing/enhancing results to satisfy quality expectations</p> <p><b>Capturing evidence</b> — constructing compelling and documented value sets</p> <p><b>Capturing value</b> — seeking broader impact from results</p> <p><b>Ensuring fitness</b> — checking that results match parameters of a situation</p>



## PROCESS 4 PROBLEM SOLVING (resolving a situation that has unmet expectations)

### Cluster 1 Clarifying the Problem (defining a situation and future desired state)

- *Identifying the problem* — seeing and describing the gap between expectations and perceptions
- Defining the problem* — specifying the targeted end state of resolution
- Identifying issues* — pointing out things that must be addressed to get to end state for all stakeholders
- Identifying assumptions* — discovering the implicit presumptions or beliefs that may be operative in a given context
- Identifying constraints* — determining the restrictions required for a solution to be acceptable

### Cluster 2 Structuring a Problem (strategizing directive action of the process)

- *Subdividing* — separating the problem into manageable sub-problems
- Selecting tools* — integrating resources that increase effectiveness
- Defining a solution's specifications* — clarifying the form of resolution that satisfies all stakeholders

### Cluster 3 Creating Solutions (building and implementing a resolution)

- *Reusing solutions* — adapting prior approaches to the current situation
- Determining viability of sub-solutions* — establishing that each partial resolution will work
- Harmonizing solutions* — integrating sub-resolutions with clean interface into a whole
- Implementing* — applying an accepted solution

### Cluster 4 Improving Solutions (resolving issues and gaps in current and future resolutions)

- *Troubleshooting* — identifying and fixing specific issues
- Testing robustness* — validating under varying conditions to determine solution strength
- Optimizing a solution* — making changes that further close any gap
- Generalizing a solution* — modifying a resolution for broader future use

## PROCESS 5 DISCOVERING, CREATING, AND INNOVATING (making new, unique things)

### Cluster 1 Identifying Direction (establishing a path to an outcome)

- *Defining the current state* — identifying relevant characteristics from the present condition
- Visualizing the future state* — imagining desirable characteristics of a future condition
- Justifying need* — establishing the merit of filling gaps between current and future states
- Identifying research questions* — proposing lines of inquiry
- Clarifying impact* — predicting implications of the change in state

### Cluster 2 Grounded Exploring (trying paths to determine viability)

- *Reviewing literature* — researching the current state of knowledge
- Surveying* — systematically sampling what exists or is perceived
- Challenging assumptions* — identifying and questioning current theory or conventional wisdom
- Investigating* — testing different trials or approaches for viability
- Ruling out alternatives* — determining that an explanation is stronger than others proposed

<b>Cluster 2</b>	<b>Grounded Exploring</b> (trying paths to determine viability) <span style="float: right;"><b>continued</b></span>
→	<p><b>Forming hypotheses</b> — proposing possible explanations for observations</p> <p><b>Probing frameworks</b> — selecting direction using theory, schemas or collective experiences</p> <p><b>Proposing</b> — laying out a path for moving forward to realize merit and impact</p>
<b>Cluster 3</b>	<b>Creative Thinking</b> (generating novel ideas)
→	<p><b>Expanding creative mindset</b> — imagining and playing with the seemingly impossible</p> <p><b>Being open minded</b> — welcoming a wide range of ideas</p> <p><b>Brainstorming</b> — using a diverse group to do open-end idea generation</p> <p><b>Using divergent thinking</b> — taking a variety of viewpoints to stimulate ideas</p> <p><b>Using lateral thinking</b> — generating new ideas from associations</p> <p><b>Transforming representation</b> — manipulating objects or models to gain new insight</p> <p><b>Making novel assumptions</b> — trying out new premises to stimulate the investigative process</p>
<b>Cluster 4</b>	<b>Innovating</b> (building new upon old or creating where none exists)
→	<p><b>Evolving innovative mindset</b> — embracing new ways and strategies to overcome constraints</p> <p><b>Envisioning</b> — sharing key details of impact to help visualize the future existence</p> <p><b>Creating schemas</b> — developing novel conceptual models</p> <p><b>Using appreciative inquiry</b> — pursuing transformational change though focus on building on and broadening what is already working</p> <p><b>Using tools inventively</b> — working with an existing object or resource in a novel way</p> <p><b>Developing new language</b> — creating terms, signs, symbols, gestures, and rules</p> <p><b>Being entrepreneurial</b> — using vision and persistence to bring a viable product to market</p>
<b>Cluster 5</b>	<b>Designing</b> (creating processes, systems or products with pre-determined needs)
→	<p><b>Evolving design mindset</b> — wanting to meet stakeholder needs efficiently and effectively</p> <p><b>Using creative application</b> — artfully integrating all skills to produce a concrete design</p> <p><b>Writing specifications</b> — translating stakeholder needs into requirements that guide the design process</p> <p><b>Creating tools</b> — fashioning instruments to investigate new areas</p> <p><b>Prototyping</b> — physically representing the proposed product</p> <p><b>Field testing</b> — measuring performance of the finished product to determine if it meets specifications</p>
<b>Cluster 6</b>	<b>Researching</b> (process of creating new knowledge that adds to the body of knowledge)
→	<p><b>Advancing research mindset</b> — seeing opportunities and methods to produce evidence supporting new knowledge</p> <p><b>Selecting methods</b> — choosing appropriate, acceptable procedures aligned with research community</p> <p><b>Experimenting</b> — producing a design process for extracting reproducible evidence</p> <p><b>Testing hypotheses</b> — validating that the evidence supports conclusions</p> <p><b>Constructing theory</b> — proposing explanations with broad implications</p> <p><b>Validating discoveries</b> — checking if the discoveries connect in your community before making them official</p> <p><b>Being parsimonious</b> — reducing to the simplest explanation consistent with empirical observations</p> <p><b>Defending scholarship</b> — positioning research results effectively to propagate research agenda</p> <p><b>Peer reviewing</b> — providing justification for acceptance or rejection based on quality and standards</p>

# SOCIAL DOMAIN

## PROCESS 1 COMMUNICATING (producing and receiving messages)

<b>Cluster 1</b>	<b>Receiving a Message</b> (using techniques to process a transmission of information)
↳	<p><b>Active listening</b> — maintaining attention on what is being said with interaction</p> <p><b>Rephrasing</b> — restating—illustrating what was heard by honoring and then enhancing the message</p> <p><b>Reading body language</b> — gathering information from non-verbal signs</p> <p><b>Gaining perspective</b> — adopting new points of view based on the message</p> <p><b>Being perceptive</b> — being attuned to what is happening during communication</p> <p><b>Identifying key ideas</b> — determining the important components of the message</p>
<b>Cluster 2</b>	<b>Preparing a Message</b> (structuring the information for a given audience)
↳	<p><b>Defining thesis</b> — specifying central theme for a message</p> <p><b>Knowing the audience</b> — understanding the background and interests of receivers</p> <p><b>Articulating an idea</b> — distilling the essence of the message</p> <p><b>Building credibility</b> — generating trust that the message is true</p> <p><b>Structuring a message</b> — sequencing elements for the desired impact</p> <p><b>Phrasing</b> — using words and expressions suitable for the audience or context</p> <p><b>Choosing medium</b> — selecting the means or channel of communication</p>
<b>Cluster 3</b>	<b>Delivering a Message</b> (maximizing the value of the communication)
↳	<p><b>Timing delivery</b> — picking the right time and place to present a message</p> <p><b>Explaining</b> — clarifying the message with specifics to increase understanding</p> <p><b>Illustrating</b> — enhancing a message with images, props, drawings or body language</p> <p><b>Storytelling</b> — affirming or informing with an anecdote</p> <p><b>Exposing vulnerability</b> — being willing to speak publicly</p>
<b>Cluster 4</b>	<b>Writing a Message</b> (using techniques to enhance textual communication)
↳	<p><b>Documenting</b> — capturing the details of something (a solution, a discussion, an incident, etc.)</p> <p><b>Writing to think</b> — exploring meaning through expressing what comes to mind</p> <p><b>Using correct grammar</b> — forming sentence structure using established syntax</p> <p><b>Writing critically</b> — considering evidence from diverse sources to make reasoned conclusions</p> <p><b>Writing technically</b> — using applied or professional language to communicate specialized knowledge</p> <p><b>Writing formally</b> — following specific conventions and formatting standards</p>
<b>Cluster 5</b>	<b>Orating</b> (applying verbal skills in delivering a formal speech)
↳	<p><b>Generating presence</b> — delivering a message in a way that impresses or entertains an audience</p> <p><b>Being dynamic</b> — using rhetorical devices or vocal strategies</p> <p><b>Using dialectic skills</b> — arguing to arrive at truth rather than convincing or winning</p> <p><b>Responding to an audience</b> — dynamically changing communication tactics based on how others are reacting</p> <p><b>Appealing to emotions</b> — persuading an audience by intentionally triggering feelings</p>

**Cluster 6** **Communicating Informally, Orally** (applying communication skills to engage with others)

*Checking perception* — testing to see if what you think is happening is happening  
*Speaking to think* — exploring meaning by talking about what comes to mind  
*Opining* — speaking from one's perspective, value or beliefs  
*Conversing* — engaging others while exchanging information  
*Influencing* — intentionally affecting an audience's belief or frame of reference  
*Discussing* — arguing for a specific point of view through the exchange of information

**PROCESS 2** **RELATING WITH OTHERS (engaging effectively with people)****Cluster 1** **Relating Informally** (connecting with others in a casual manner)

*Greeting others* — initiating welcoming interactions with people  
*Being personable* — having a congenial manner with diverse people  
*Being courteous* — following conventions of politeness  
*Using body language* — projecting messages with the gestures, stance, and expressions  
*Taking interest in others* — initiating inquiry about another to show they are important

**Cluster 2** **Relating Formally** (connecting with others in an official context)

*Hosting* — staging an event that welcomes, includes, and produces enjoyment  
*Being respectful* — showing regard and consideration  
*Accommodating* — being flexible to best meet others' needs  
*Seeking mentoring* — asking for guidance/support from an expert to grow performance

**Cluster 3** **Relating Meaningfully** (deepening relationships with others)

*Befriending* — initiating a supportive relationship  
*Trusting* — having faith or belief in another  
*Committing to others* — assuring that one will provide aid and support as promised  
*Esteeming individuals* — interacting for shared meaning in achieving a result  
*Collaborating* — working together for mutual benefit  
*Compromising* — negotiating to achieve common ground  
*Comforting* — attending to uplift others' physical or mental state  
*Showing gratitude* — letting others know how much you value them

**Cluster 4** **Performing in a Team** (working together to achieve common goals)

*Performing in a role* — fulfilling requirements of a particular position  
*Cooperating* — acting jointly to achieve goals  
*Supporting the team* — upholding collective performance  
*Achieving consensus* — agreeing on decisions based on shared input  
*Challenging groupthink* — stopping team when self-reinforcing shuts out alternative ideas  
*Resolving conflicts* — finding common ground to move past disagreements

## PROCESS 3 LIVING IN SOCIETY (dealing with all dimensions of social systems)

<b>Cluster 1</b>	<b>Being a Citizen</b> (participating in civic processes)
→	<p><b>Accepting civic responsibility</b> — performing roles supporting governance</p> <p><b>Obedying laws</b> — complying with legal requirements</p> <p><b>Politicking</b> — actively influencing decision-makers and stakeholders</p> <p><b>Supporting institutions</b> — contributing respectfully to communities and organizations</p>
<b>Cluster 2</b>	<b>Living in a Community</b> (being a member of a group by adhering to common expectations)
→	<p><b>Recognizing conventions</b> — behaving within the unwritten rules/social norms</p> <p><b>Gaining acceptance</b> — interacting to discover like-minded people and groups</p> <p><b>Networking</b> — interacting/forming strategic relationships</p> <p><b>Giving back</b> — finding meaningful ways of bettering the status quo</p> <p><b>Volunteering</b> — giving altruistically for the greater good</p>
<b>Cluster 3</b>	<b>Performing in an Institution</b> (thinking and comporting oneself within an organization)
→	<p><b>Being professional</b> — meeting expectations within one's organization</p> <p><b>Being assertive</b> — projecting self-assurance and self-confidence</p> <p><b>Negotiating</b> — pursuing advantageous agreements</p> <p><b>Using resources</b> — sizing up and using available tools, information, people and system</p> <p><b>Being principled</b> — applying or standing by your values, convictions, and beliefs in the face of adversity</p>
<b>Cluster 4</b>	<b>Being a Family Member</b> (managing day-to-day interactions with immediate relatives)
→	<p><b>Respecting parents</b> — valuing your parents for their role in your life</p> <p><b>Nurturing</b> — warmly and respectfully guiding the development of family (and community) members</p> <p><b>Putting family first</b> — giving priority to the needs of relatives (parents, siblings, children, etc.)</p>
<b>Cluster 5</b>	<b>Performing in a Culture</b> (demonstrating competence in diverse societies, ethnic groups & communities)
→	<p><b>Analyzing a culture</b> — determining the key societal differences</p> <p><b>Honoring traditions</b> — observing/revering societal customs</p> <p><b>Being socially adept</b> — reacting skillfully to changing cultural norms</p> <p><b>Appreciating myths</b> — understanding/welcoming folklores</p>
<b>Cluster 6</b>	<b>Mentoring</b> (facilitating the growth of others through a formal relationship)
→	<p><b>Believing in someone</b> — transparently providing substance so they believe in what they can become</p> <p><b>Advising</b> — helping a person discover their best possibilities for improvement and success</p> <p><b>Challenging</b> — raising expectations of others to increase their quality of life</p> <p><b>Advocating</b> — proactively providing support for someone with hardship or opportunity</p>
<b>Cluster 7</b>	<b>Living in the World</b> (existing in a global society)
→	<p><b>Integrating history</b> — assimilating/incorporating past events into current situations</p> <p><b>Seeking social justice</b> — working towards a fair distribution of wealth, opportunities, and privileges</p> <p><b>Supporting sustainability</b> — safeguarding future viability through present actions</p> <p><b>Acting globally</b> — being guided locally by awareness of interdependency with the world community</p>

## PROCESS 4 MANAGING (leveraging people, resources, and time to accomplish specific outcomes)

<b>Cluster 1</b>	<b>Managing Individuals</b> (setting people up for successful performance)
↳	<p><b>Acquiring personnel</b> — selecting qualified personnel for specific functions</p> <p><b>Motivating</b> — stimulating someone's interest or enthusiasm to do something</p> <p><b>Assigning tasks</b> — matching duties to performer skills and time</p> <p><b>Supporting needs</b> — identifying and effectively responding to observed lack of resources</p>
<b>Cluster 2</b>	<b>Managing Teams</b> (setting groups up for successful performance)
↳	<p><b>Building teams</b> — forming groups by identifying the characteristics, functionality, and resources for success</p> <p><b>Assigning roles</b> — aligning/matching positions or duties to member skills</p> <p><b>Sharing authority</b> — agreeing on how to manage selected tasks</p> <p><b>Mediating</b> — engaging with disputants to facilitate resolution of conflicts</p>
<b>Cluster 3</b>	<b>Managing Human Systems</b> (ensuring effective organization performance)
↳	<p><b>Designing an evaluation system</b> — creating performance standards and measures</p> <p><b>Recognizing strong performance</b> — publicly distinguishing excellence</p> <p><b>Increasing productivity</b> — increasing quality and quantity while also decreasing costs</p> <p><b>Providing professional development</b> — identifying growth needs and sources for supporting it</p>
<b>Cluster 4</b>	<b>Managing Resources</b> (planning, providing, and monitoring assets and capital)
↳	<p><b>Identifying essential resources</b> — recognizing appropriate funding, scheduling and staffing</p> <p><b>Being financially astute</b> — understanding key fiscal parameters</p> <p><b>Budgeting</b> — planning for and managing resources</p> <p><b>Using information technology</b> — taking advantage of data management tools</p>
<b>Cluster 5</b>	<b>Managing Communications</b> (overseeing internal and external information flow)
↳	<p><b>Staying informed</b> — intentionally acquiring information for decision making</p> <p><b>Marketing</b> — initiating messages to persuade clients of the value of something</p> <p><b>Informing stakeholders</b> — communicating with key individuals at appropriate times</p> <p><b>Being diplomatic</b> — responding to divergent stakeholders' needs without damaging relationships</p> <p><b>Systematizing communications</b> — building and utilizing social networks for sharing information</p>
<b>Cluster 6</b>	<b>Managing Projects</b> (overseeing the development of end results or products)
↳	<p><b>Chartering</b> — proposing and gaining support prior to project design</p> <p><b>Initiating</b> — ensuring start of a project</p> <p><b>Monitoring</b> — periodically reviewing established milestones</p> <p><b>Generating results</b> — producing useful or successful outcomes</p> <p><b>Meeting deadlines</b> — making sure that critical milestones are met in timely manner</p>

<b>Cluster 7</b>	<b>Facilitating group process</b> (helping others achieve a set of outcomes)
→	<p><i>Developing connectedness</i> — developing the shared experiences as agency</p> <p><i>Building cohesiveness</i> — evolving solidarity in your community</p> <p><i>Creating a growth culture</i> — building an environment for increasing individuals' capabilities</p> <p><i>Running a meeting</i> — making sure that collective interests are efficiently served</p>

## **PROCESS 5 LEADERSHIP (accomplishing a mission by guiding others)**

<b>Cluster 1</b>	<b>Envisioning</b> (projecting a path to an end state)
→	<p><i>Forecasting</i> — visualizing future status based on trends and logic</p> <p><i>Perceiving implications</i> — describing the operational social impacts of future trends</p> <p><i>Balancing perspectives</i> — avoiding tunnel vision by considering different points of view</p>

<b>Cluster 2</b>	<b>Building a Following</b> (establishing a group who will bring a vision to fruition)
→	<p><i>Sharing a vision</i> — using empathy and imagery to help others see a future state</p> <p><i>Involving stakeholders</i> — inviting key individuals to share perspectives and participate in significant activities</p> <p><i>Inspiring</i> — motivating and encouraging others</p> <p><i>Demonstrating integrity</i> — responding to issues with clear and consistent principles</p>

<b>Cluster 3</b>	<b>Establishing Culture</b> (creating an environment that supports a vision)
→	<p><i>Forming shared values</i> — developing consensus on important principles</p> <p><i>Obtaining commitment</i> — securing willingness to tackle challenges required for a vision</p> <p><i>Maintaining transparency</i> — ensuring open access to information, data, and strategies</p>

<b>Cluster 4</b>	<b>Maintaining a Commitment</b> (helping the continuance of group dedication in order to achieve the vision)
→	<p><i>Taking meaningful stands</i> — publicly embracing positions based on principles</p> <p><i>Being charismatic</i> — displaying a confident flair and presence that motivates others</p> <p><i>Being accessible</i> — being readily available to others</p> <p><i>Garnering resources</i> — obtaining resources needed for implementing the vision</p>

<b>Cluster 5</b>	<b>Facilitating Change Process</b> (Leading a community/institution in a new growth area)
→	<p><i>Thinking opportunistically</i> — using positive strategies to optimize advantage</p> <p><i>Responding to change</i> — being flexible in strategic thinking</p> <p><i>Preparing for change</i> — facilitating training needed for readiness</p> <p><i>Leading change process</i> — effectively modeling, advocating, supporting and transforming a culture</p> <p><i>Sustaining change</i> — taking actions that ensure the ongoing engagement of stakeholders</p>

<b>Cluster 6</b>	<b>Empowering</b> (inspiring and allowing others to carry out the vision)
→	<p><i>Grooming future leaders</i> — mentoring and promoting a diverse and talented team</p> <p><i>Encouraging ownership</i> — engaging others to accept a stake in the vision</p> <p><i>Practicing servant leadership</i> — using the power of ones influence to enhance the well-being of others</p> <p><i>Preparing succession</i> — ensuring that future leaders have a viable path forward</p>

# AFFECTIVE DOMAIN

## PROCESS 1 ENGAGING EMOTIONALLY (increasing affective capacities)







<b>Cluster 1</b>	<b>Observing Self</b> (attending to present emotions)
↳	<p><i>Listening to self</i> — tracking the focus of your inner voice</p> <p><i>Perceiving emotions</i> — recognizing and identifying your own affective responses</p> <p><i>Discovering motives</i> — finding situations that lead you to act</p> <p><i>Valuing the emotion</i> — understanding the power of an affective response</p>
<b>Cluster 2</b>	<b>Checking Emotions</b> (changing your reactions to emotions)
↳	<p><i>Noticing outlier reactions</i> — discerning when your emotions are extreme for the context</p> <p><i>Controlling judgmental self-talk</i> — confronting and changing negative inner messages</p> <p><i>Calming</i> — soothing yourself</p> <p><i>Energizing</i> — invigorating or rousing yourself, especially from boredom or lethargy</p> <p><i>Inhibiting impulses</i> — consciously restraining sudden urges</p>
<b>Cluster 3</b>	<b>Expanding Emotions</b> (establishing affective connections to life)
↳	<p><i>Finding humor</i> — being amused by new sources of delight</p> <p><i>Trusting</i> — expanding the ability to recognize authentic expressions of support</p> <p><i>Being loyal</i> — showing allegiance to those you trust</p> <p><i>Responding to loss</i> — adjusting to ongoing feelings related to disappointments and grief</p> <p><i>Risking disapproval</i> — willingness to put yourself in contexts where others may judge you</p>
<b>Cluster 4</b>	<b>Engaging Situationally</b> (being ready to experience what contexts have to offer)
↳	<p><i>Being open</i> — seeking and seeing novelty in situations</p> <p><i>Being curious</i> — scanning for novelty or being motivated to explore</p> <p><i>Being focused</i> — being attentive to what is happening</p> <p><i>Being careful</i> — reducing the likelihood of bad outcomes</p> <p><i>Being active</i> — energizing yourself into the situation</p> <p><i>Being positive</i> — initiating activities or changing situations to maintain confident emotional energy</p> <p><i>Seeking new experiences</i> — actively searching for enjoyable and rewarding adventures</p> <p><i>Living vibrantly</i> — being mindful in every moment and appreciating what it offers</p> <p><i>Caring</i> — valuing another because they are important to you</p>
<b>Cluster 5</b>	<b>Freeing Emotions</b> (opening yourself up to fully feel emotions)
↳	<p><i>Laughing</i> — freely reacting to humorous fun</p> <p><i>Loving</i> — unconditionally caring about someone</p> <p><i>Accepting love</i> — taking in and appreciating the unconditional caring of others</p> <p><i>Feeling secure</i> — having an inner sense of belonging</p> <p><i>Feeling joyful</i> — appreciating what life is offering</p> <p><i>Crying</i> — allowing yourself to feel emotions, both positive and negative, that trigger tears</p> <p><i>Playing</i> — enjoying an activity</p> <p><i>Enjoying pleasure</i> — taking delight from sensually relaxing experiences</p>



<b>Cluster 6</b>	<b>Being Resilient</b> (dealing with life's unpleasant outcomes; showing grit)
→	<p><i><b>Persisting</b> — continuing on a reasonable path despite low mood or mounting difficulties</i></p> <p><i><b>Adapting</b> — changing direction when feedback to do so is reasonable and trusted</i></p> <p><i><b>Seeking help</b> — accepting that you need outside assistance and asking for it</i></p> <p><i><b>Grieving</b> — processing a major loss</i></p> <p><i><b>Addressing adversity</b> — standing up to the complexity of life's difficulties</i></p> <p><i><b>Using failures</b> — looking for a "lesson" from each setback</i></p> <p><i><b>Coping</b> — dealing effectively with a situation or issue that is difficult</i></p> <p><i><b>Toughening self-esteem</b> — strengthening self-worth by overcoming difficulties and struggles</i></p>
<b>Cluster 7</b>	<b>Creating an Emotional Pathway</b> (collecting memorable situational examples)
→	<p><i><b>Identifying unfamiliar feelings</b> — discerning an emotion and what it is informing you</i></p> <p><i><b>Being stoic</b> — accepting that life situations often create discomfort for a time</i></p> <p><i><b>Recognizing triggers</b> — connecting upsetting experiences to negative conditioning</i></p> <p><i><b>Writing to reflect</b> — journaling life experiences to explore emotions</i></p> <p><i><b>Experiencing role identities</b> — integrating new daily understandings from each life role's activities</i></p> <p><i><b>Creating memories</b> — intentionally storing positive instances or occasions</i></p>

## **PROCESS 2** EXPANDING SELF-EFFICACY (having belief in one's own potential)

<b>Cluster 1</b>	<b>Preparing for a Performance</b> (readying yourself before a display of skill)
→	<p><i><b>Recognizing unmet need</b> — finding what is "empty" (missing) in the current situation</i></p> <p><i><b>Setting goals</b> — identifying the purpose and the associated outcomes</i></p> <p><i><b>Planning</b> — generating structured tasks that promote a successful performance</i></p> <p><i><b>Managing time</b> — effectively and efficiently deciding how to allocate daily efforts</i></p> <p><i><b>Being organized</b> — knowing what is needed and where to obtain it</i></p> <p><i><b>Being prepared</b> — going over highlights and reminders about an upcoming performance</i></p>
<b>Cluster 2</b>	<b>Performing in Real-time</b> (taking charge of performance)
→	<p><i><b>Being disciplined</b> — setting and following priorities and schedules</i></p> <p><i><b>Being decisive</b> — choosing the time to move forward</i></p> <p><i><b>Practicing deliberately</b> — refining a performance to improve probability of success</i></p> <p><i><b>Working hard</b> — maintaining intensity of work over time</i></p> <p><i><b>Being fully engaged</b> — being completely immersed in an experience</i></p> <p><i><b>Owning performance</b> — wanting to excel by doing it your own way to produce quality</i></p> <p><i><b>Satisficing</b> — knowing the minimum requirements necessary to achieve a goal</i></p> <p><i><b>Bringing closure</b> — wrapping up a current effort and moving on</i></p>
<b>Cluster 3</b>	<b>Managing One's Emotions</b> (being skilled in self-care and uses of feelings)
→	<p><i><b>Sensing emotional confusion</b> — realizing that unclear feelings must be dealt with</i></p> <p><i><b>Supplying a missing emotion</b> — using a different or changed affective response required for success</i></p> <p><i><b>Identifying stressors</b> — having a clear sense of work, home, and life pressures</i></p> <p><i><b>Managing daily stressors</b> — dealing effectively with work, home, and life pressures and conflicts</i></p> <p><i><b>Renewing</b> — recharging yourself for future performance</i></p> <p><i><b>Disengaging emotionally</b> — taking a time out when feelings dominate rational thought</i></p>

Cluster 4	<b>Managing Performance Emotions</b> (taking charge of achievement-related issues)
	<p><i>Accepting uncertainty</i> — being ready to deal with unpredictable outcomes</p> <p><i>Dealing with negative outcomes</i> — accepting and learning from poor results</p> <p><i>Managing frustration</i> — controlling negative emotions in the face of challenges</p> <p><i>Managing anxiety</i> — letting go of worry over things beyond your control</p> <p><i>Exhibiting self-confidence</i> — smoothly adjusting performance to meet changing needs or goals</p>
Cluster 5	<b>Practicing Social Management with Others</b> (personally engaging with individuals)
	<p><i>Competing</i> — intentionally performing in a way that could lead to gaining or winning</p> <p><i>Being a good sport</i> — enjoying performing and reacting with equanimity, regardless of who wins</p> <p><i>Responding to requests</i> — respectfully accepting or rejecting appeals to help</p> <p><i>Supporting</i> — affirming and publicly acknowledging the value of others and their contributions</p> <p><i>Being non-defensive</i> — being verbally and nonverbally calm in the face of judgmental challenges</p> <p><i>Acting</i> — presenting a different self-representation for a performance</p>
Cluster 6	<b>Practicing Social Management</b> (relating emotionally within collective systems)
	<p><i>Accepting external expectations</i> — agreeing to quality expectations and time constraints</p> <p><i>Handling distress</i> — effectively dealing with extremely unsettling social or emotional experiences</p> <p><i>Challenging the status quo</i> — publicly questioning the validity of something commonly accepted</p> <p><i>Managing finances</i> — keeping expenses within income sources over time</p> <p><i>Using resources effectively</i> — incorporating materials required for an effective performance</p> <p><i>Being responsible</i> — taking ownership for upholding your commitments</p>
Cluster 7	<b>Practicing Intellectual Management</b> (taking initiative to seek truth without bias)
	<p><i>Reducing self-bias</i> — being conscious of how your values and feelings influence your thinking</p> <p><i>Preventing biases</i> — choosing strategies to avoid known types of misjudgments</p> <p><i>Enjoying productive struggle</i> — finding satisfaction in working on unclearly defined problems</p> <p><i>Managing dissonance</i> — seeking consistency when addressing unresolved intellectual conflicts</p> <p><i>Suspending closure</i> — avoiding premature judgements caused by assumptions or unfamiliarity</p> <p><i>Questioning conventional wisdom</i> — challenging the way things are usually done</p> <p><i>Having intellectual humility</i> — working to not overestimate strengths or underestimate weaknesses</p>
Cluster 8	<b>Discerning Reality</b> (separating valid judgment from emotional reaction)
	<p><i>Managing a judgment</i> — realizing that traits often are unreliable predictors of capabilities</p> <p><i>Controlling overreactions</i> — striving for moderation in responses</p> <p><i>Acknowledging error</i> — using reason to publicly concede invalid emotion-based judgments</p> <p><i>Reprocessing without emotions</i> — setting aside the feeling element in reviewing an experience</p>
Cluster 9	<b>Strengthening Self-Efficacy</b> (increasing expectation of one's own competence)
	<p><i>Believing in your potential</i> — generalizing from achievements to validate a growth trend</p> <p><i>Analyzing performance</i> — objectively assessing current capacity in a performance area</p> <p><i>Self-challenging</i> — getting out of your comfort zone to increase growth opportunities</p>

## PROCESS 3 CLARIFYING, BUILDING, & REFINING VALUES (strengthening core personal beliefs)

Cluster 1	<b>Discerning Values</b> (recognizing habits, desires, and principled beliefs)
→	<p><i><b>Discovering the norm</b> — determining the relationship of your values to other's values</i></p> <p><i><b>Clarifying habits</b> — articulating the “why” in consistent actions to define implicit values</i></p> <p><i><b>Sensing wrongness</b> — noticing reactions inconsistent with what you believe and value</i></p> <p><i><b>Emulating others</b> — mirroring behavior of others that matches what you value</i></p> <p><i><b>Identifying personal values</b> — recognizing what matters most to you as an individual</i></p> <p><i><b>Establishing an ethical code</b> — achieving an orderly system of values for life decisions</i></p>
Cluster 2	<b>Valuing Independent Self</b> (focusing on what you want to become)
→	<p><i><b>Clarifying interests</b> — discovering what is deeply engaging for producing individual value</i></p> <p><i><b>Accepting ownership</b> — being responsible about what you promised to contribute</i></p> <p><i><b>Staying healthy</b> — assuring long-term well-being of mind, body, and spirit</i></p> <p><i><b>Being true to self</b> — Walking the walk of your values; following your inner compass</i></p>
Cluster 3	<b>Valuing Self in Relation to Others</b> (relating your standards to external influences)
→	<p><i><b>Trusting self</b> — knowing that your values and capabilities are the most relevant to your situation</i></p> <p><i><b>Committing to self</b> — believing that the value of your life is as important as anyone else's</i></p> <p><i><b>Associating with high performers</b> — seeking out those with integrated achievements and values</i></p> <p><i><b>Accepting forgiveness</b> — feeling and showing gratitude when others pardon your wrongdoing</i></p>
Cluster 4	<b>Valuing Others</b> (expressing social values)
→	<p><i><b>Empathizing</b> — sharing, emotionally, the pain and joy of others</i></p> <p><i><b>Valuing family</b> — integrating family history and influences as a critical aspect of your life</i></p> <p><i><b>Valuing service</b> — actively advancing or protecting the interests/well-being of others</i></p> <p><i><b>Being tolerant</b> — valuing that others' values are as important to them as yours are to you</i></p> <p><i><b>Valuing sanctity of life</b> — believing that each person has intrinsic worth</i></p> <p><i><b>Being socially active</b> — publicly pursuing equity in relationships, organizations, and communities</i></p>
Cluster 5	<b>Valuing Intellect</b> (appreciating the unlimited capacity and spirit of humans)
→	<p><i><b>Valuing knowledge</b> — learning from any source at any time for any purpose</i></p> <p><i><b>Valuing alternate perspectives</b> — wanting to know others' ways of reasoning and making meaning</i></p> <p><i><b>Valuing thinking</b> — appreciating the power of cognitive processes</i></p> <p><i><b>Being evidence-based</b> — intentionally focusing on facts and data vs. feelings and opinions</i></p> <p><i><b>Valuing best practices</b> — being willing to assimilate and integrate what others' do effectively</i></p> <p><i><b>Enjoying complexity</b> — finding satisfaction in fully engaging with the natural intricacy of life</i></p>
Cluster 6	<b>Integrating Cultural Values</b> (enhancing your life by infusing human creativity)
→	<p><i><b>Integrating music</b> — experiencing music as a sharing of emotional and cultural reactions</i></p> <p><i><b>Assimilating art</b> — enjoying representations that are diverse in style, theme, content, and purpose</i></p> <p><i><b>Appreciating history</b> — using data and narrative to connect with people and events of the past</i></p> <p><i><b>Valuing the written word</b> — entering worlds of meaning created by diverse authors and poets</i></p> <p><i><b>Appreciating culinary experiences</b> — exploring the cultural and creative aspects of food and nutrition</i></p> <p><i><b>Valuing traditions</b> — seeking opportunities to share in rituals and customs different from your own</i></p>

<b>Cluster 7</b>	<b>Valuing Life Opportunities</b> (expanding by exploring new dimensions)
→	<p><i>Traveling</i> — journeying in order to explore new places and experiences</p> <p><i>Seeking diversity</i> — intentionally looking for value in varied and different contexts</p> <p><i>Embracing change</i> — thriving on the inconsistencies of life and the unpredictability of the future</p> <p><i>Valuing creativity</i> — appreciating using imagination and original ideas to create something</p> <p><i>Valuing growth</i> — appreciating opportunities for increasing your capacity</p>
<b>Cluster 8</b>	<b>Valuing Daily Life</b> (making positive changes in your habits and attitudes)
→	<p><i>Valuing sensory wonders</i> — mindfully taking in beauty in your environment</p> <p><i>Valuing aloneness</i> — valuing time away from others for following personal interests and reflecting</p> <p><i>Preventing harm</i> — making choices that reduce negative treatment of people, animals, and nature</p> <p><i>Living sustainably</i> — minimizing your footprint on the environment by conscious daily actions</p>
<b>Cluster 9</b>	<b>Expanding and Validating Your Value System</b> (living the life you want)
→	<p><i>Validating accomplishments</i> — designing your vita/resume to show what you have achieved</p> <p><i>Validating personal impact</i> — recognizing the effect you have</p> <p><i>Validating added value</i> — recognizing the worth you have contributed</p> <p><i>Extending values</i> — challenging your principles in new situations and with diverse people</p> <p><i>Making meaning</i> — valuing experiences or insights that push you beyond your current concerns</p>

#### **PROCESS 4 PERSONAL GROWTH (maturing into the person you value through self-determination)**

<b>Cluster 1</b>	<b>Clarifying Your Personal Identity</b> (growing individuality from the roles you play)
→	<p><i>Prioritizing role identities</i> — focusing on the parts you play that produce the most value for your life</p> <p><i>Strengthening role identities</i> — prioritizing the most important parts you play</p> <p><i>Motivating self</i> — setting up conditions that lead to desired actions</p> <p><i>Interpreting personal responses</i> — capturing instances that clarify your values</p> <p><i>Being passionate</i> — flourishing by doing those things that create the greatest meaning in your life</p> <p><i>Clarifying external identity</i> — discovering how you are regarded across varied social contexts</p>
<b>Cluster 2</b>	<b>Visioning Future Self</b> (identifying the person you value and want to become)
→	<p><i>Updating life vision</i> — mapping new paths to realize your identities in achieving goals and dreams</p> <p><i>Setting growth goals</i> — identifying direction to increase capacity with plans to do so</p> <p><i>Gaining perspective</i> — navigating among multiple vantage points to obtain true understanding</p> <p><i>Being philosophical</i> — gaining deeper understanding of the nature of life and its meaning</p>
<b>Cluster 3</b>	<b>Facilitating Self-Growth</b> (gaining the skills to pursue personal development)
→	<p><i>Accepting consequences</i> — agreeing to bear or own the full outcome of an action or decision</p> <p><i>Changing reactions</i> — purposefully trying out new or alternative reactions to specific feelings</p> <p><i>Changing behaviors</i> — deliberately responding in a new way to old feelings and situations</p> <p><i>Being independent</i> — seeking an appropriate level of autonomy in each role identity</p> <p><i>Committing to success</i> — devoting yourself to accomplishing your goals or triumphing in a challenge</p>

<b>Cluster 4</b>	<b>Self-Regulation</b> (maintaining energy to keep running the marathon of life)
→	<p><i>Maintaining balance</i> — practicing moderation</p> <p><i>Prioritizing</i> — consistently putting the most important things first</p> <p><i>Being patient</i> — waiting with equanimity when timing, conditions, and readiness are not right</p> <p><i>Getting unstuck</i> — recognizing the lack of movement towards life's goals and updates strategies</p>

## **PROCESS 5** FACILITATING GROWTH BEYOND ONESELF (expanding meaning in life for humankind)

<b>Cluster 1</b>	<b>Moving Out in Front</b> (making more of a difference)
→	<p><i>Feeling empowered</i> — having all the factors needed to make a significant endeavor possible</p> <p><i>Being private</i> — keeping your personal affairs out of the public sphere</p> <p><i>Being “thick-skinned”</i> — reacting with patience and non-defensiveness when ideas are attacked</p> <p><i>Championing</i> — working on behalf of those denied equity or who are victimized</p> <p><i>Enduring</i> — abiding, even in the face of adversity or a long-term challenge</p>

<b>Cluster 2</b>	<b>Moving Beyond Yourself Emotionally</b> (creating meaning and value for others)
→	<p><i>Transforming narratives</i> — ending an unproductive impasse by creating a new, positive story</p> <p><i>Being a catalyst</i> — causing or being the impetus for a significant action or outcome to occur</p> <p><i>Providing second chances</i> — helping those who hurt or failed you in the hope that they can do better</p> <p><i>Committing to community</i> — helping a group thrive through your significant involvement</p> <p><i>Behaving honorably</i> — exhibiting the highest standards of virtue and integrity</p>

<b>Cluster 3</b>	<b>Moving Beyond Yourself Socially</b> (facilitating growth outside of yourself)
→	<p><i>Creating traditions</i> — initiating a custom or ritual to make or mark meaning for a group</p> <p><i>Being patriotic</i> — accepting call of duty for your nation</p> <p><i>Backing supporters</i> — providing needed, timely help for those who have taken risks on your behalf</p> <p><i>Using one's social power</i> — exerting influence on others to achieve broad goals</p> <p><i>Setting personal narrative</i> — assertively defining yourself so others can't inaccurately define you</p>

<b>Cluster 4</b>	<b>Moving Outside of Yourself</b> (creating meaning and value beyond your life)
→	<p><i>Self-sacrificing</i> — using your time, effort, and opportunities to help others</p> <p><i>Being courageous</i> — taking action in spite of fear</p> <p><i>Developing spiritually</i> — practicing what reflection tells you about bringing meaning to life</p> <p><i>Being compassionate</i> — being moved by suffering and motivated to show sympathy, kindness, or caring</p>

# ASSESSMENT AND EVALUATION OF QUALITY DOMAIN

## PROCESS 1 DEFINING QUALITY (identifying what impacts the consumer's affective satisfaction)

<b>Cluster 1</b>	<b>Defining receiver needs</b> (identifying quality from a user or client perspective)
→	<p><i>Analyzing needs</i> — finding the qualities a receiver desires</p> <p><i>Defining characteristics</i> — determining the key factors that impact a receiver's affective reaction</p> <p><i>Raising expectations</i> — influencing receiver's mindset towards wants, desires or anticipation</p> <p><i>Forecasting needs</i> — determining the new or adapted future desires</p> <p><i>Writing measurable outcomes</i> — documenting a project or process set of expectations for quality</p>

<b>Cluster 2</b>	<b>Defining quality of results</b> (identifying desired characteristics in a product or experience)
→	<p><i>Defining product characteristics</i> — identifying key features of an entity</p> <p><i>Defining experience characteristics</i> — identifying key features of a happening or an event</p> <p><i>Setting criteria</i> — choosing the important characteristics that represent quality</p>

<b>Cluster 3</b>	<b>Defining quality in performance</b> (identifying key characteristics of processes/actions)
→	<p><i>Describing performance</i> — preparing a picture of expected actions or steps in process(es)</p> <p><i>Defining performance characteristics</i> — recognizing key features of actions/nuances in the process(es)</p> <p><i>Valuing performance</i> — acknowledging excellence in performances</p> <p><i>Writing performance criteria</i> — documenting descriptive expectations of desired quality</p>

<b>Cluster 4</b>	<b>Determining the quality of match</b> (alignment of desired quality to actual quality)
→	<p><i>Determining unmet needs</i> — identifying desired characteristics lacking for receiver</p> <p><i>Realizing the excess quality</i> — identifying actual characteristics not desired by receiver</p> <p><i>Determining future match</i> — identifying actual characteristics that cover future needs</p>

## PROCESS 2 MEASURING QUALITY (selecting and using scales for determining excellence)

<b>Cluster 1</b>	<b>Preparing for Improvement</b> (setting the foundation for effective implementation)
→	<p><i>Selecting measures</i> — establishing a minimal working set of scales for a purpose (what matters)</p> <p><i>Ensuring completeness</i> — validating that measures include key sources of variability in quality</p> <p><i>Ensuring robustness</i> — verifying that measure captures full range of quality variability for the context</p> <p><i>Ensuring reliability</i> — consistency in measuring level of quality by different measurers</p> <p><i>Ensuring validity</i> — verifying that selected measures produce intended results for its purpose</p>

## PROCESS 3 ASSESSING QUALITY (producing meaningful feedback to make future improvements)

<b>Cluster 1</b>	<b>Preparing for Improvement</b> (setting the foundation for effective implementation)
→	<p><i>Having assessment mindset</i> — focusing on improvement without judging quality</p> <p><i>Being proactive</i> — seeing opportunities for initiating improvement</p> <p><i>Pre-assessing</i> — analyzing preparation of a performance to improve readiness</p> <p><i>Designing an assessment</i> — collaborating with assessee to structure the specific process</p>

<b>Cluster 2</b>	<b>Implementing assessment</b> (producing meaningful improvement feedback)
→	<p><b>Applying criteria</b> — aligning observations (evidence), analyses and feedback to focus areas</p> <p><b>Identifying SII opportunities</b> — picking the most valuable areas for analyzing and including in feedback</p> <p><b>Developing action plans</b> — creating short and long-term strategies for improvement</p> <p><b>Using summative assessment</b> — analyzing a process or project quality for future benefit</p>

<b>PROCESS 4</b>	<b>EVALUATING QUALITY (judging the level of quality using a standard)</b>
→	<p><b>Establishing standards</b> — specifying the level of quality for each measurement scale</p> <p><b>Benchmarking</b> — creating standards from existing external comparable entities</p> <p><b>Critiquing</b> — analyzing and determining quality using established standards and conventions</p> <p><b>Being fair</b> — being objective and not letting biases, values and petitions influence judgement</p> <p><b>Maintaining standards</b> — refraining from subjectively changing evaluation criteria/standards after a performance</p>

<b>PROCESS 5</b>	<b>PROVIDING FEEDBACK ON QUALITY (positively influencing a performer’s future quality)</b>
→	<p><b>Maintaining objectivity</b> — focusing on reporting the evaluation, not responding to personal reactions</p> <p><b>Being non-judgmental</b> — withholding or avoiding using one’s personal standards or opinions</p> <p><b>Providing growth feedback</b> — supplying key observations, meaningful analysis, and implications</p> <p><b>Giving consulting feedback</b> — causing action in assessee through timely, valuable, expert analysis</p> <p><b>Highlighting sub-standard performance</b> — providing evidence justifying judgment with consequences</p>

<b>PROCESS 6</b>	<b>ENHANCING QUALITY (determining what produces greater value to specific audiences)</b>
→	<p><b>Interpreting feedback</b> — figuring out why and what the assessor/evaluator is trying to say</p> <p><b>Transforming strategies</b> — developing ownership of action plans for gaining the improved quality</p> <p><b>Fine-tuning characteristics</b> — incorporating receiver feedback to increase satisfaction</p> <p><b>Identifying new qualities</b> — finding new dimensions that enhance value for an audience</p> <p><b>Positioning quality</b> — placing a specific thing with an audience who will value it</p> <p><b>Promoting quality</b> — highlighting how something impacts the needs of an audience</p>

<b>PROCESS 7</b>	<b>SELF-ASSESSING (measuring and analyzing one’s own performance for improvement)</b>
→	<p><b>Focusing on self-improvement</b> — taking on the mindset of continuously improving one’s own performance</p> <p><b>Seeking feedback</b> — asking for assessment/evaluation to adjust and strengthen self-assessment</p> <p><b>Accepting feedback</b> — being receptive to the perspectives and analysis of others on your performance</p> <p><b>Self-monitoring</b> — having a continuous camera on every performance so it can be replayed and assessed</p> <p><b>Being self-honest</b> — recognizing when one’s own filters and assumptions reflect known/new biases</p> <p><b>Self-mentoring</b> — engaging in intentional self-assessment leading to analysis of self for improvement</p>

**PROCESS 8**

**REFLECTING (having mindfulness of your learning skills and states of being)**



**Being self-aware** — *appreciating opportunities for engaging in reflection*

**Self-evaluating** — *being honest about who you are and where you are with respect to your life vision*

**Seeing prompts** — *knowing when reflection is needed and will produce significant value*

**Being metacognitive** — *stepping back to better understand one's thinking, affective, and social learning skills*

**Practicing reflection** — *increasing apprehension of new truths about identities, values, feelings and actions*

**Introspecting** — *using systematic analytical and assessment tools to produce greater meaning about self*