A performance measure is a rubric, either holistic or analytic, that is designed to measure the level of performance in a well-defined performance area by identifying and integrating the factors that contribute most significantly to the performance.

Measuring performance doesn't improve performance; measurement is a neutral activity. But if we are to improve performance through assessment, being able to measure current performance is critical so that we know what aspects of the performance are already strong and in what ways the performance can be improved. Put very simply, performance criteria describe the performance target and performance measures give a reading of current performance level.

The *Knowledge Table for Process Education* (Schlesinger & Apple, 2007) identifies performance measures such as rubrics among the tools that Process Educators use to produce quality in learning, growth, programs, and institutions. While the traditional approach in education has been to develop content competency and regard that as the chief indicator of educational success, the goal in Process Education is to measure and assess real-time performances. This helps both learners and educators to record, appreciate, and potentially reproduce aspects of performance that lead to growth in capacity and improvement in specific performance areas.

An early example of a performance measure was the construction of a rubric for the cognitive skill of listening at a 1997 teaching institute that was formally published the following year in the *Teaching Institute Handbook* (Kirkwood, 1997; Apple & Krumsieg, 1998). Shortly after the 1997 teaching institute, a generic measure for the levels of learner performance was published in *Classification of Learning Skills for Educational Enrichment and Assessment* (Apple, 1997).

While it is certainly possible to create and use performance measures for highly complex performances such as designing (Cordon, Beyerlein, & Davis, 2007), one of the goals of Process Education is to improve the performance of **learning** which means that we are primarily focused on defining and measuring aspects of learning (Apple & Ellis, 2015). Fortuitously, learning skills — individual skills that, when improved, lead to improved learning — provide the perfect focus for such definition and performance measurement. Each learning skill can be developed from a low level to the level that individuals or teams exhibit when they excel. For example, the learning skill *attending*, defined in the *Classification of Learning Skills* as mindful focusing by a listener (Leise, Beyerlein, & Apple, 2007), is essential in any classroom but needs to be more advanced in a graduate seminar setting. In such a situation, additional skills such as filtering information, summarizing, making inferences, formulating questions, and analyzing research are all likely to be integrated with and mutually dependent on the skill of attending in order for a learner to maintain his or her connection with the discourse and content. The need to differentiate levels of performance in learning skills led to a five-level holistic rubric for defining levels of learner development in any learning skill (Figure 1). This rubric was added to each of the cognitive, social, and affective domains of learning skills as they are presented in the *Faculty Guidebook* (Beyerlein, Holmes & Apple, 2007).

Over the years, numerous groups of faculty have collaborated with Pacific Crest to create more than 60 performance measures. The majority are **holistic rubrics** (performance characteristics that are integrated into a

Figure 1 Levels of Learner Development in Any Learning Skill

Level 5 Transformative Use	The skill is expanded and integrated with other skills so that it can be applied in new contexts that inspire the emulation of others.
Level 4 Self-Reflective Use	The skill can be self-improved and adapted to unfamiliar contexts with occasional advice from a mentor.
Level 3 Consistent Performance	The skill is routinely called upon and effectively applied in multiple contexts by the user, who consciously directs the effort.
Level 2 Conscious Use	The skill can be used proactively by a learner, but its use needs to be constantly encouraged and supported by a mentor.
Level 1 Non-Conscious Use	The skill appears on a reactive basis in response to an immediate need, but without awareness of self or others.

description), though some are **_analytical_** (performance characteristics that are presented individually more specific/fine measurement). Eight of the most useful and polished performance measures are published in holistic form in the *Book of Measures* (Pacific Crest, 2013): professionalism, self-assessing, learning, problem solving, critical thinking, teaming, quantitative reasoning, and risk-taking. Pacific Crest shared a methodology for creating performance measures in the *Handbook for Designing and Implementing Performance Measures* (Apple & Krumsieg, 2002; see Figure 2).

The *Faculty Guidebook* (2007) includes modules that share increasing expertise on performance measures:

- *Fundamentals of Rubrics* (Bargainnier, 2007)
- *Performance Levels for Learners and Self-Growers* (Myrvaagnes, 2007)

- *Identifying Performance Measures for a Program* (Parmley & Apple, 2007)
- *Performance Levels for Assessors* (Jensen, 2007)
- *Overview of Measurement* (Burke & Bargainnier, 2007)
- *Constructing a Table of Measures* (Racine, 2007)
- *Measuring Quality in Design* (Cordon, Beyerlein, & Davis, 2007)

In addition to modules explicitly focused on measuring performance, other aspects of the scholarship in the *Faculty Guidebook* support the creation and application of performance measures. The module, *Theory of Performance* (Elger, 2007) offers a comprehensive model of performance, making it possible to analyze and appreciate that the measured level of performance is the result of the interaction of the components of that performance. The

Figure 2 Methodology for Creating Performance Measures

Step	Description
1. **Build a team.**	Include at least ten individuals from a minimum of seven disciplines including the sciences, applied sciences, social sciences, humanities, professional schools, and performing arts.
2. **Identify a facilitator.**	The facilitator who facilitates the process must be neutral to any discipline-specific bias.
3. **Divide into work teams.**	Each team should include three or four persons from varying disciplines.
4. **Write a descriptive definition of the skill.**	Each team writes a two- or three-sentence description of the specific skill for which the measure is being developed.
5. **Synthesize into a descriptive paragraph.**	The facilitator leads a session using the sentences from the previous step to create a paragraph that accurately and completely describes the learning skill being measured.
6. **Identify a skill expert.**	Identify a person who possesses an "expert" level of proficiency with the specific skill. Let the behaviors of this expert serve as a model.
7. **Brainstorm factors.**	Brainstorm factors which account for variability in the performance with respect to the specific learning skill.
8. **Produce a top 10 list.**	Reduce the list of brainstormed factors (from the previous step). Produce a new list which contains the top ten factors in rank order of importance. Match or pair up the top 10 items.
9. **Identify five qualitative labels.**	The labels you choose should correspond to performance levels ranging from "novice" to "expert."
10. **Develop five statements that clarify behaviors.**	These statements identify behaviors associated with the different performance levels. Use the criteria and factors identified for Level 5 (expert) first, followed by Level 1 (novice), then Level 3, Level 2, and lastly Level 4.
11. **Write parallel statements.**	Write parallel statements for each of the five levels of performance. Modify statements according to the appropriateness of behavior for that level.
12. **Test the classification levels.**	Test by assessing the performance of people at each level in different contexts. Use several assessors to improve quality and help determine which behaviors can be defined in a better way.

import of this theory is that it gives performers a way to break down their performances and improve the individual components. More generally, numerous modules in the *Faculty Guidebook* model the analysis of performance that must occur before performance is measured in order to be assessed or evaluated. The *Faculty Guidebook* also offers multiple rubrics created for and by Process Educators.

One of the core values of the Academy of Process Educators is in the area of performance, using "research-based practices supported by clear criteria and measurable outcomes" (Academy of Process Educators, 2008). An example of research exemplifying this value is found in the article, Measuring Writing as a Representation of Disciplinary Knowledge (Burke, Ouellette, Milner, Leise, and Utschig, *International Journal of Process Education*, 2012). The research team collaborated to design and carry out an empirical study of the reliability and validity of a revised version of the Academy of Process Educators writing rubric, which was published earlier in the *Faculty Guidebook* as the Analytic Rubric for Writing Quality (Burke & Nancarrow, 2007). The reliability and validity of the rubric were tested using samples of three different types of writing which were rated by four different readers. The results showed some differences in average ratings across raters but showed consistency by each rater, which indicated that the rubric could be used reliably in specific contexts. This seminal performance measurement research provides a model that can be adapted for study of the reliability and validity of other performance measures.

Process Education leads to improved performance on the part of learners and growth in their capacity to perform. As such, the acceptance and recognition of Process Education depends largely on the availability of high-quality performance measures used in a culture that does not balk at measuring performance, but embraces it as a critical part of improving performance. Only then will the magnitude of positive change and growth in learners that Process Education offers be made explicit.

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