Abstract

Well-developed professional development opportunities are a crucial component in ensuring that faculty engaging in assessment are equipped to do this work well. Creating these opportunities requires clear expectations of the knowledge, skills, and attitudes necessary to conduct assessment work. Additionally, the knowledge and skill requirements of faculty conducting assessment are often different from those of professionally trained assessment practitioners. Although higher education student affairs organizations have developed frameworks for assessment skills, no formal framework of knowledge, skills, and attitudes exists to drive professional development in assessment within academic affairs. This article provides a framework of assessment-related knowledge, skills, and attitudes that are important to the professional development of faculty assessment practitioners, targeting three levels of complexity. This framework can be used to evaluate current professional development offerings and plan new, intentionally designed programs in accordance with backward-design principles.

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The Assessment Skills Framework: A Taxonomy of Assessment Knowledge, Skills and Attitudes

*C*onducting quality student learning outcomes assessment requires diverse knowledge, skills, and abilities. Given that people engaging in assessment work often lack formal assessment training (Hutchings, 2010; Nicholas & Slotnick, 2018), professional development (PD) opportunities are needed in areas as disparate as student learning outcomes development, curriculum mapping, data management, and reporting results. Simultaneously, the lines between campus assessment offices and faculty development offices are blurring, as employees of both focus on student learning (Kinzie, Landy, Sorcinelli, & Hutchings, 2019). To our knowledge, no formal framework of the necessary knowledge, skills, and attitudes for conducting this work has been assembled. This article aims to provide such a framework in order to develop a common language for communicating about student learning outcomes assessment and fostering high-quality work in our field.

Articulation of learning outcomes provides a natural starting point when planning educational opportunities. Professionals in both assessment (e.g., Suskie, 2018) and faculty development (e.g., McTighe & Wiggins, 2004) typically endorse a backwards design approach to the planning of learning opportunities, which begins by identifying the end goal of what the learner should know, think, or do as a result of the learning opportunity. All subsequent activities and assessments should then align with the desired student learning articulated in the student learning outcomes (McTighe & Wiggins, 2004). We argue that an identical approach—beginning with the articulation of learning outcomes and then engaging in backward design—provides a necessary foundation for building effective assessment PD for faculty members.

We expect that this process will be aided by the development of a set of learning outcomes for the field of assessment. The literature contains limited examples of the use of backward design in assessment PD offerings. For example, Burrack and Urban (2014)

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broadly stated the following learning outcomes for assessment-related PD offerings at Kansas State University:

> Participants will possess a student-centered philosophy and knowledge of techniques to improve assessment processes. Participants will demonstrate skills in specific topics of need, such as learning to write SLOs, developing and using rubrics, and assessment planning and mapping. Participants will engage in collaborations with both internal and external partners to implement ideas beyond one department or institution. (p. 6)

The lack of a common framework likely contributes to unnecessary work as campus assessment offices work to develop intentionally designed PD offerings

We assume that many PD opportunities begin with a similar process; however, the field has not agreed upon a common set of outcomes. The lack of a common framework likely contributes to unnecessary work as campus assessment offices work to develop intentionally designed PD offerings. Each office must locally develop their own outcomes before beginning to plan their PD interventions. An exception may reside in the field of student affairs. There are, for example, several sets of standards for student affairs professionals that outline the knowledge, skills, and attitudes required to conduct high-quality assessment. The *Assessment Skills and Knowledge* (ASK) *Standards* (ACPA, 2006) includes skill descriptions that begin with the phrase "ability to" followed by a specific assessment-related skill. For example, *ASK Standards* (ACPA, 2006) Content Standard 2 ("Articulating Learning and Development Outcomes") is, "Ability to articulate intentional student learning and development goals and their related outcomes" (ACPA, 2006, p. 5). This could be easily adapted into a learning outcome for a PD activity.

In addition to the *ASK Standards* (ACPA, 2006), student affairs professionals are also held to the *Professional Competency Areas for Student Affairs Educators* (referred to as "*Professional Competencies*"; ACPA & NASPA, 2015; 2016), which include two competency areas related to outcomes assessment: the *Assessment, Evaluation, and Research* skill area and the *Student Learning and Development* skill area. The *Professional Competencies* (ACPA & NASPA, 2015; 2016) provide a bank of competencies for student affairs professionals in order to do effective assessment at foundational, intermediate, and advanced levels. Although not written specifically as outcomes, the *ASK* Standards (ACPA, 2006) and Professional Competencies (ACPA & NASPA, 2015; 2016) provide well-thought-out listings of skills necessary for conducting high-quality assessment. Moreover, although developed specifically for and by student affairs professionals, both sets of standards (ACPA, 2006; ACPA & NASPA, 2015) easily transfer to the academic "side of the house" (Finney & Horst, 2019, p. 311).

Both assessment and faculty developers would benefit from a general framework for assessment-related PD learning outcomes. Therefore, the purpose of the current manuscript is to provide a structured framework of assessment learning outcomes, the *Assessment Skills Framework (ASF)*, that includes faculty learning outcomes at novice, intermediate, and advanced levels.

Assessment Skills Framework (ASF)

In order to organize effective PD opportunities, it is key to identify and articulate the knowledge, skills, and attitudes that are important to effective assessment work for faculty members across campus. To this end, we created the *ASF*, which outlines 33 knowledge, skill, and attitude domains foundational to quality assessment practice. We characterized each domain with specific student learning outcomes. Appendix A contains a copy of the *ASF*. The knowledge, skills, and attitudes contained in the framework are necessary for professionals or practitioners conducting assessment work within their departments, offices, or divisions; however, they are not necessarily sufficient. Requirements will vary widely across institutions, positions, and portfolios of responsibility. Similarly, the level at which each of the elements in the framework should be developed will vary depending on the needs of their context.

The *ASF* was developed over the course of two years by a team of assessment professionals (faculty and graduate students) at our institution, James Madison University. During its development, the document was reviewed and revised by over a dozen assessment

and measurement professionals and graduate students within our institution's assessment office and the university assessment advisory council. The initial development of the *ASF* involved review of learning outcomes for existing PD opportunities at our institution (e.g., Waterbury, Holzman, Perkins, & Ames, 2017), assessment (e.g., Suskie, 2018), change agent (e.g., Ottaway, 1983), and cultural responsiveness (e.g., Montenegro & Jankowski, 2017) literature, and existing student affairs standards (ACPA, 2006; ACPA & NASPA, 2015; 2016). Although certain specialized assessment-related skills are absent (e.g., technical statistical skills), the *ASF* is quite comprehensive. Therefore, a single faculty member would not be expected to possess all skills. Similarly, no given PD offering can be expected to cover all skills. The information in the *ASF* can serve as a starting-point for the backwards design process when planning assessment-related PD opportunities. The *ASF* is intended as a bank from which assessment professionals can choose and adapt when planning PD opportunities.

Because people enter assessment practice at different levels of preparation, PD opportunities may be aligned to different skill levels. Therefore, the framework includes three levels of outcomes: novice, intermediate, and advanced. The *ASF* begins with a description of the knowledge, skills, and attitudes attributed to each level. Specifically, someone at the novice level is able to provide basic explanations of assessment concepts and apply that knowledge to hypothetical examples devoid of context and real-world complexity. However, the novice may express some anxiety about applying knowledge to practice. People at the intermediate level are able to provide a more thorough explanation of assessment concepts than someone at the novice level. At the intermediate level, people begin to think flexibly about assessment practice, and are able to evaluate context and determine appropriate use of their knowledge when making assessment-related decisions. Faculty at the intermediate level successfully apply their knowledge to real-life assessment projects. Relative to those at the novice level, faculty at the intermediate level express greater confidence in contributing to assessment projects but may express anxiety at the thought of taking full responsibility for parts of the assessment process. People at the advanced level are described as being able to provide nuanced explanations of assessment concepts. These individuals use reflective thinking about their assessment practice, resulting in the generation of new knowledge or useful alternative conceptions about assessment processes. These people can help, lead, encourage, or act as change agents to effectively integrate assessment into the institutional culture.

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The *ASF* is organized into ten categories of domains. For most categories, the document provides knowledge/skills/abilities at the three skill levels (i.e., novice, intermediate, and advanced). The ten categories of domains include:

- Prerequisite Knowledge
- Foundational Assessment Knowledge and Skills
- Skill Area 1: Specify Student Learning Outcomes
- Skill Area 2: Create and Map Programming to Outcomes
- Skill Area 3: Select and Design Instruments
- Skill Area 4: Examine Implementation Fidelity
- Skill Area 5: Collect Outcomes Information
- Skill Area 6: Analyze Data, Interpret and Report Results, & Maintain Information
- Skill Area 7: Use Results to Improve Student Learning
- Skill Area 8: Assessment in Practice–Additional Skills for Assessment

Note that Skill Areas 1 through 7 align with the assessment cycle followed by most assessment offices, in some form or another (e.g., Suskie, 2018). Each Skill Area contains domains. For example, Skill Area 3, Select and Design Instruments, includes the domains of 1) evaluating instruments–alignment; 2) evaluating instruments–context and resource considerations; 3) evaluating instruments–reliability and validity; 4) designing selected response measures; 5) designing non-cognitive/attitudinal measures; and 6) designing performance assessment measures.

Skill Area 8, Assessment in Practice–Additional Skills for Assessment, includes several domains that contribute to the building of the institutional milieu. Specifically, Skill Area 8 includes domains on evaluating the quality of an assessment plan, promoting value for assessment, and promoting ethics, diversity, and inclusion. Although these topics are not explicitly part of commonly used assessment cycles, we recognize these areas as important for quality student-learning-focused assessment. Another important element of the *ASF* that reaches past the standard assessment cycle is the concept of the change agent. This person is a "visionary/believer" (Jankowski & Slotnick, 2015, p. 93) who can influence others' value for assessment. This role is critical to developing and sustaining assessment practices across an institution (Ariovich, Bral, Gregg, Gulliford, & Morrow, 2018). Not all professional development opportunities need to emphasize the creation of change agents, but their cultivation is a critical step in moving from an institution that conducts assessment to an institution that values assessment and uses results to improve student learning. Therefore, PD offerings must be equipped to create new change agents and support those who already exist across a campus.

An Example of Applying the ASF

The *ASF* can provide learning outcomes for PD opportunities, contribute to position descriptions, frame conference offerings, and offer a tool for personal self-reflection.

We have applied the *ASF* for numerous purposes, including self-reflection and discussion with graduate students who study assessment. However, we would like to focus on the example of a specific PD offering at James Madison University that illustrates the benefit of applying the *ASF* in assessment work. Each year, we offer several week-long hands-on Assessment 101 workshops for faculty and staff who wish to (or are assigned to) engage in assessment. In our yearly workshop planning, we engage in an ongoing backwards-design process (McTighe & Wiggins, 2004). Because the workshop was created prior to the development of the *ASF*, it was originally mapped to a set of outcomes specifically written for the workshop. However, since the development of the *ASF*, all activities and assessment items included in the workshop have been backwards-mapped to the *ASF*. The learning outcomes, then, guide the entire curriculum and the assessment of participant learning. We then use assessment data to determine which outcomes are or are not met by the participants. Because all activities and assessments are tightly aligned to the *ASF* learning outcomes, we can use the assessment results to improve future offerings of the workshop. By focusing the PD opportunity on the outcomes specified in the *ASF*, we are able to engage in an ongoing cycle of assessment and use of results for our PD offerings.

Another use of the *ASF* at JMU is what we loosely refer to as a "fit-gap" analysis. Our institution's assessment office facilitates a wide array of professional development activities. However, we had little coordination between the PD offerings. We were unsure which skills and attitudes were fostered by our PD opportunities, and it was unclear whether we were providing opportunities that best targeted the skills we thought were most important for faculty to develop. Therefore, following the development of the *ASF*, we asked 10 assessment graduate program faculty experts to rate their perceived importance of each of the *ASF* skills for faculty who are learning to do quality assessment. In another activity, we asked assessment professionals to indicate what PD activities they offer, to what audience (i.e., academic affairs or student affairs), and indicate the skill level(s) at which they are offered. By combining faculty perceptions of each skill's importance with information about current PD activities, we were able to identify gaps that needed to be filled in our existing PD offerings. The process enabled us to plan the next level of PD offerings at the intermediate to advanced level and provided the learning outcomes from which to begin the process.

Conclusion

As we work to professionalize assessment and assessment-related PD opportunities, a carefully articulated set of skills provides competencies for faculty entry into assessment. Similar to ways in which the student affairs standards are employed, the *ASF* can provide learning outcomes for PD opportunities, contribute to position descriptions, frame conference offerings, and offer a tool for personal self-reflection (Arminio, 2009; Arminio & Gochenauer, 2004; Finney & Horst, 2019).

High-quality professional development for faculty and staff is key to developing assessment capacity in higher education (Jankowski, Timmer, Kinzie, & Kuh, 2018). The *ASF* has provided us with a vision of a campus engaged with the assessment process. In order for faculty to adopt high-quality assessment practices, they need access to high-quality assessment PD. In order to create PD offerings that both fit the needs of assessment practitioners and meet the standards of assessment professionals, we must have a common framework of assessment knowledge, skills, and attitudes. Working from a common framework allows us to clearly scaffold PD experiences, ensuring that PD offerings meet the range of faculty.

Increasing the quality of assessment practice in higher education requires formalization of skillsets. In order to ensure that faculty conducting assessment work have the tools they need to do their work well, we need to agree upon a set of knowledge, skills, and attitudes essential to that work. In other words, we need to clearly define *what* these individuals need to know, think, and do in order to conduct their work. However, outlining a framework is only the first step in building assessment skills across university campuses. PD offerings that provide faculty with opportunities to master the knowledge, skills, and attitudes outlined in the framework must be made available. We must also provide answers to the question: *How* can faculty gain the tools necessary for conducting quality assessment work? The current manuscript described the "what" in offering a framework of learning outcomes for assessment-related professional development opportunities. An upcoming *Research and Practice in Assessment* manuscript offers suggestions for "how" the field may consider professionalizing learning opportunities.

In order to ensure that faculty conducting assessment work have the tools they need to do their work well, we need to agree upon a set of knowledge, skills, and attitudes essential to that work.

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Appendix A: Assessment Skills Framework

Competency Level Overview

Competency Levels	General Characterization of Knowledge, Attitudes, and Skills	Cognitive Level (Bloom's Taxonomy)
Novice	**Knowledge**: • Able to provide basic explanations of assessment concepts. • Characterized by more rigid or "black and white" thinking related to assessment practice. **Attitudes**: • May have anxiety about applying knowledge to practice. **Skills**: • Can apply assessment knowledge to simplified/hypothetical examples devoid of context and "messiness".	Low-level Bloom's Taxonomy: **Describe**, Identify, Define, Distinguish, Recognize
Intermediate	**Knowledge**: • Able to provide thorough explanations of assessment concepts. • Characterized by more flexible thinking related to assessment practice. • Can evaluate context and determine the appropriate use of knowledge/skills when making assessment-related decisions. **Attitudes**: • Confidence in ability to participate in an active project with some leadership or guidance. • May have anxiety about leading or taking full responsibility for parts of the assessment process. **Skills**: • Can apply assessment knowledge to the planning and implementation of real-life assessment projects.	Mid-level Bloom's Taxonomy: **Apply**, Conduct, Demonstrate, Analyze, Compare/Contrast, Evaluate, Examine, Integrate
Advanced	**Knowledge**: • Able to provide nuanced explanations of assessment concepts. • Characterized by reflective, insightful thinking related to assessment practice. • Generates new knowledge and useful alternative conceptions of assessment processes (e.g., may no longer view the assessment process as "linear"). **Attitudes**: • Confidence in ability to lead various parts of the assessment process. • Embodies the spirit of assessment & promotes the value of assessment. **Skills**: • Can help or lead others in completing assessment tasks. • Can serve as a change agent or leader in assessment to effectively integrate assessment into the culture of a program or institution.	High-level Bloom's Taxonomy: **Design**, Develop, Propose, Plan, Synthesize, Review, Anticipate, Solve, Reflect

Prerequisite Knowledge

Trait/Domain	Knowledge, Attitudes, Skills
Knowledge of program/understanding of context	When applicable: • Articulates the mission and vision of the program. • Articulates the mission and vision of the institution/department/office within which the program is situated. • Describes the history of the program (e.g., impetus for program, changes to programming/curriculum, previous assessment results). • Describes student population served by program; aware of the needs of these students. • Describes departmental resources (e.g., staffing, time, money, knowledge and skills of colleagues, buy-in of colleagues) that may impact assessment practice. • Describes sociopolitical factors (e.g., departmental and institutional hierarchy, accreditation/accountability requirements) that may impact assessment practice.

Foundational Assessment Knowledge and Skills

Trait/Domain	Novice	Intermediate	Advanced
Distinguishing student learning outcomes assessment from other assessment and evaluation processes	• Differentiates between student learning outcomes assessment and other types of assessment (e.g., needs assessment, use assessment, satisfaction assessment). • Differentiates between student learning outcomes assessment and other aspects of program evaluation and/or program review. • Describes how student learning outcomes assessment is situated within program evaluation.	• Considers the ways in which student learning outcomes assessment is situated within their own program's program evaluation/review process.	• Creates a program evaluation/review process that integrates student learning outcomes assessment.
Describing the assessment cycle	• Provides basic descriptions of each step of the assessment cycle (e.g., can define implementation fidelity and describe the purpose of collecting implementation fidelity data).	• Provides detailed descriptions of each step of the assessment cycle (e.g., can describe how to collect implementation fidelity data).	• Provides nuanced descriptions of the steps of the assessment cycle, including the ways in which various parts of the assessment cycle interact with one another (e.g., can describe how articulating program theory in Step 2 informs the development of an implementation fidelity checklist, and how implementation fidelity data informs how assessment results are interpreted in Step 5). • Explains the steps of the assessment cycle to others.
Identifying the purposes of assessment	• Can describe the differences between assessment for accountability and assessment for improvement.	• Can identify factors within their own program that may indicate the primary driver for assessment is accountability rather than improvement or vice versa.	• Promotes assessment for improvement vs. assessment for accountability within their own program and/or across the institution.

Foundational Assessment Knowledge and Skills, Cont.

Trait/Domain	Novice	Intermediate	Advanced

Distinguishing between various levels of assessment	• Can identify the various levels of assessment (e.g., section, course, program, department, division, institution) and describe how they are situated within one another.	• Identifies relevant assessment considerations given the level at which assessment is conducted (e.g., curricular alignment, implementation fidelity, reporting).	• Facilitates multi-level communication and engagement to promote alignment of assessment activities across levels, including within the following domains:
			  • Developing SLOs
			  • Collecting data
			  • Reporting results
			  • Using results
			• Navigates the socio-political structure of their own program/institution to promote multi-level assessment that provides fruitful information at each level.

Skill Area 1: Specify Student Learning Outcomes

Trait/Domain	Novice	Intermediate	Advanced
Developing student learning outcomes	• Recognizes the need for clear student learning objectives. • Describes various taxonomies used to classify student learning objectives (e.g., Blooms, Finks, SOLO). • Writes a student learning objective and identifies a measurable verb at an appropriate level of Bloom's or another taxonomy.	• Writes SLOs including appropriate level of Bloom's or another taxonomy for their own program with some guidance. • Independently identifies common issues with SLOs (e.g., double-barreled SLOs, vague language, unmeasurable verbs, or inappropriate level of verb usage). • With guidance, considers and incorporates relevant theories in the development of SLOs.	• Independently develops SLOs for their own program according to best practice and relevant theories. • Captures the spirit of the program in the SLOs. SLOs are aligned with the mission and vision of the program.

Skill Area 2: Create and Map Programming to Outcomes

Trait/Domain	Novice	Intermediate	Advanced
Developing theory-based programs	• Describes the concept of program theory. • Recognizes the importance of theory-based programming. • Identifies components of a logic model for program development (e.g., inputs, activities, outputs, short-term outcomes, intermediate outcomes, long-term outcomes).	• Clearly articulates program theory underlying a given program or intervention. • With assistance, develops a logic model to aid in articulating program theory for a given program or intervention. • Identifies various bodies of literature to assist with program development, such as academic motivation, learning theories, or cognitive theories.	• Integrates clearly articulated theory when developing programs. Independently develops clear logic models underlying theory-based programs. • Thoroughly explains why programming should produce the intended outcome(s) based on clearly articulated program theory. • Directs others to appropriate bodies of literature to aid in building programs, such as academic motivation, learning theories, or cognitive theories. • Synthesizes multiple sources of information when developing programming (e.g., construct theories, motivation, learning theories, cognitive theories).
Mapping of SLOs with curriculum	• Recognizes the importance of mapping curriculum to SLOs. • Given a clearly articulated set of SLOs and curriculum, maps curriculum to SLOs.	• Clearly articulates their own SLOs and program curriculum. • With assistance, maps their own program curriculum to SLOs.	• Independently and effectively maps their own program curriculum to SLOs. • Uses curriculum map to note gaps in programming or redundant programming. Collaborates with others to generate plans to close identified gaps or reduce redundancies.

Skill Area 3: Select and Design Instruments

Trait/Domain	Novice	Intermediate	Advanced
Evaluating instruments – alignment	• Describes basic types of instruments and their intended uses (e.g., indirect/direct, selected response/constructed response, cognitive/non-cognitive). • Matches appropriate instrument to SLO on a superficial level.	• Describes different item types that can be used within each type of instrument (e.g., multiple choice, true/false, and matching items as types of selected response items). • Effectively matches appropriate instruments to SLOs. • Chooses an instrument appropriate for the cognitive process indicated in a given SLO.	• Critically considers options to select appropriate measures for their own assessment plan and provides a well-developed rationale. • Considers alignment of cognitive processes and breadth and depth of content coverage when evaluating instruments for a specific SLO.
Evaluating instruments – context & resource considerations	• Describes the pros and cons of selecting an existing instrument versus developing a new instrument. • Describes the advantages and disadvantages of using each type of instrument (e.g., indirect/direct, selected response/constructed response, cognitive/non-cognitive). • Describes the pros and cons of using commercial versus non-commercial instruments.	• Weighs pros and cons of selecting vs. designing instruments, using commercial vs. non-commercial instruments, and using each type of instrument into evaluating an instrument for their own assessment plan. • Identifies the various resource and contextual considerations necessary to evaluate an instrument within their own assessment plan (e.g., time, population served, data access, scoring).	• Effectively evaluates instruments for their own assessment plan based on knowledge of context and resource considerations within their own program.
Evaluating instruments – reliability & validity considerations	• Acknowledges the importance of considering reliability and validity when selecting a measure. • Describes commonly used types of reliability and validity evidence.	• Identifies specific reliability and validity evidence appropriate for different types of instruments (e.g., rater agreement for performance assessments). • Explains the importance of rater training and reliability issues related to rater agreement.	• Evaluates appropriate reliability and validity evidence when selecting a measure. Seeks help in conducting reliability analyses for their own data, if necessary. • Conducts literature search for validity evidence when appropriate.

Skill Area 3: Select and Design Instruments, Cont.

Trait/Domain	Novice	Intermediate	Advanced
Designing selected response measures	• Identifies components of a basic multiple-choice item (i.e., stem, alternatives, correct answer, distractors). • Identifies best practices for constructing selected response measures, including: • Developing clear, measureable objectives • Using a test blueprint • Writing items • Piloting items with students and revising	• Writes items according to best practices for a selected response measure that is appropriately mapped to a set of their own SLOs. • Applies best practices for constructing selected response measures to own program.	• Regularly writes or revises items that are appropriately mapped to their program SLOs and program curriculum. • Leads others in applying best practices for constructing selected response measures.
Designing non-cognitive/attitudinal measures	• Identifies characteristics of non-cognitive/attitudinal instruments (e.g., inclusion of negatively worded items, variety of response options, response option labels). • Identifies best practices for constructing non-cognitive/attitudinal measures (e.g., avoiding loaded items, avoiding double-barreled items)	• Follows best practices for constructing non-cognitive/attitudinal measures within their own program.	• Leads others in applying best practices for constructing selected response measures. • Incorporates concerns about student motivation into non-cognitive assessment design.

Skill Area 3: Select and Design Instruments, Cont.

Trait/Domain	Novice	Intermediate	Advanced

Designing performance assessment measures	• Identifies basic rubric components (e.g., elements, rating scale, scoring criteria).
	• Distinguishes between holistic and analytic rubrics and identifies the advantages and disadvantages for each.
		• Develops an appropriate prompt or task that will be rated by a rubric for their own program.
		• Designs a rubric mapped to their own program's student learning outcome(s) that appropriately implements the following skills:
		  • Selects the appropriate rubric type
		  • Effectively describes elements/traits
		  • Determines rating scale and score levels
		  • Develops scoring criteria
		• Assists in conducting a rater training.
			• Independently designs and implements a rubric within their own assessment plan.
			• Leads others in designing a prompt or task and rubric mapped to student learning outcome(s).
			• Consults with experts to design and conduct a rater training.

Skill Area 4: Examine Implementation Fidelity

Trait/Domain	Novice	Intermediate	Advanced
Designing implementation fidelity studies	• Defines implementation fidelity and explains the rationale behind implementation fidelity research. • Explains the five components of implementation fidelity (i.e., program differentiation, adherence, quality, exposure, responsiveness).	• With assistance, creates an implementation fidelity plan for their own program (e.g., creates materials for recording data on each of the five components, determines method of collection).	• Develops, conducts, and/or leads an implementation fidelity study for their own program. • Articulates the importance of implementation fidelity to others who express resistance (change agent).
Collecting implementation fidelity data	• Explains the pros and cons of collecting implementation fidelity data via self-report versus observation.	• Collects or aids in collection of implementation fidelity data for their own program.	• Develops a sustainable plan for ongoing collection of implementation fidelity data for their own program and/or leads others in the development of a sustainable data collection plan.
Interpreting implementation fidelity results	• Recognizes the importance of evaluating data for each of the five components of implementation fidelity. • Explains how implementation fidelity data are interpreted in conjunction with student learning outcomes assessment findings (e.g., how low implementation fidelity affects interpretation of poor assessment results).	• With assistance, explains findings from each of the five components for their own program. • Interprets student learning outcomes assessment data for their own program in light of implementation fidelity results.	• Makes recommendations for program improvement, based on integration of student learning outcomes assessment and implementation fidelity results.

Skill Area 5: Collect Outcomes Information

Trait/Domain	Novice	Intermediate	Advanced
Planning a data collection design	• Recognizes the types of questions that can be asked when developing a research design (e.g., differences, relationships, change, competency). • Defines validity threats in the context of research design (e.g., internal validity, external validity, statistical conclusion validity).	• Selects an appropriate research design for their own program, based upon the types of research questions asked (e.g., differences, relationships, change, competency) and desired inferences. • Evaluates the threats to validity associated with the research design chosen for their own program. • Compares and contrasts the appropriate inferences that can be drawn from a chosen research design. Acknowledges the limitations of reasonable assessment designs in which random assignment is not feasible.	• Anticipates the appropriate inferences that may be drawn from a research design and uses that information to propose a strong and clearly articulated rationale for their own (or others') research design. • Encourages others to reflect upon the appropriate inferences and threats to validity associated with various research designs. • When appropriate, challenges others' rigid views of causality. Clearly articulates the need for tentative conclusions when others make causal claims.

Skill Area 5: Collect Outcomes Information, Cont.

Trait/Domain	Novice	Intermediate	Advanced
Selecting a data collection method	• Recognizes the importance of collecting meaningful and credible data. • Recognizes the importance of factors such as data collection mode, frequency, and sample size in choosing a data collection method. • Identifies the importance of specifying who, how, what, where, and when related to data collection. • Recognizes factors related to student motivation and how they apply to data collection methods. • Identifies factors to consider when designing a survey (e.g., question format, timing, layout), including both electronic and paper/pencil formats.	• Develops a data collection plan for their own program, considering costs and benefits of data collection mode, frequency, and sample size • When appropriate, evaluates sampling methods (e.g., stratified sampling) in order to address the representativeness of the sample. • Evaluates factors that may contribute to students' motivation to complete measures. • Creates surveys in a variety of formats (e.g., constructed response, Likert-type, technology-enhanced). • Considers usability of the survey.	• Maintains a sustainable and efficient data collection plan for their own program assessment (or leads others in doing so). • Integrates knowledge of sampling methods into data collection plan (e.g., stratified sampling, multistage sampling) when appropriate. • Reflects upon the representativeness of the sample. • Makes theory-based recommendations for increasing students' motivation and encourages others to consider student motivation when designing a data collection plan. • When appropriate, takes advantage of electronic survey capabilities (e.g., skip logic, technology-enhanced items).

Skill Area 6: Analyze Data, Interpret and Report Results, & Maintain Information

Trait/Domain	Novice	Intermediate	Advanced

Item analysis	• Understands that items vary in quality.
	• Identifies general, non-technical characteristics of high- and low-quality items.
		• Investigates the quality of individual items using basic item analyses, including:
		  • Item difficulty
		  • Item discrimination
			• Investigates the quality of items within the context of a scale or measure, including:
			  • Inter-item correlations
			  • Internal consistency reliability (coefficient alpha)
			  • Alpha if item is deleted

Reliability of score inferences	• Recognizes reliability as the "relative consistency of responses" and provides basic definitions of different types of reliability estimates (e.g., internal, test-retest, inter-rater, alternate forms).	• Explains the concept of reliability and applies it to their own program assessment.
		• Describes the following forms of reliability estimates, when each would be appropriate, and basic interpretation of a given numeric estimate:
		  • Internal consistency (coefficient alpha, split-half reliability)
		  • Inter-rater reliability
		  • Test-retest reliability
		  • Alternate forms reliability
			• Evaluates reliability evidence associated with their own assessment data and assists others in evaluating results from their programs.
			• Given a journal article or output that includes reliability estimates, interprets the estimate.
			• Given a measurement context, recommends appropriate means for investigating reliability.

Skill Area 6: Analyze Data, Interpret and Report Results, & Maintain Information, Cont.

Trait/Domain	Novice	Intermediate	Advanced

Validity of score inferences	• Defines validity as the extent to which evidence supports the interpretations made from the data.
	• Conceptualizes validity as a continuum, rather than an absolute property (i.e., all-or-none).
	• Identifies the importance of ongoing validity research.
	• Defines validity within the context of score inferences, rather than the context of the measure itself.
		• Accurately explains the concept of validity and applies it to their own program assessment.
		• Describes the sources of validity evidence outlined in the Standards for Educational and Psychological Testing:
		  • Evidence based on test content
		  • Evidence based on response processes
		  • Evidence based on internal structure
		  • Evidence based on relations to other variables
		  • Evidence for validity and consequences of testing
		• Identifies and debunks basic validity myths and misconceptions.
			• Evaluates validity evidence associated with their own assessment data.
			• Given an assessment scenario, recommends appropriate methods of investigating validity.
			• Identifies research articles or assessment plans in which strong validity evidence is presented, and/or which explicate a strong rationale for collecting specific validity evidence.

Analyzing data – quantitative	• Understands and provides basic interpretations of common descriptive statistics, including measures of central tendency, variability, and association. • Identifies research questions that can be best investigated using quantitative research methods.	• Selects appropriate descriptive statistics for a given research question. • Generates effective quantitative research questions. • Conducts (basic) descriptive statistical analyses, including measures of central tendency, variability, and association. • Defines and interprets the results of (basic) inferential statistics, such as t-tests, bivariate linear regression, and ANOVA.	• Selects appropriate (basic) inferential statistics for a given research question. • Conducts (basic) inferential statistical analyses, including t-tests, bivariate linear regression, and ANOVA. • Identifies the ways in which sample size can influence analytical findings. • Distinguishes between statistical and practical significance when interpreting results.

Skill Area 6: Analyze Data, Interpret and Report Results, & Maintain Information, Cont.

Trait/Domain	Novice	Intermediate	Advanced

Analyzing data – qualitative	• Identifies differences between major approaches to qualitative research:
	  • Narrative research
	  • Phenomenological inquiry
	  • Grounded theory
	  • Ethnography
	  • Case study
	• Identifies research questions that can be best investigated using qualitative research methods.
		• Develops basic coding schemas and applies them to qualitative data.
		• Identifies important considerations in developing an interview protocol.
		• Generates effective qualitative research questions.
		• Selects appropriate qualitative approaches for a given research question or scenario.
			• When applicable, identifies resources for and plans a qualitative study for their own program's assessment process.
			• Creates effective interview protocols for a given purpose and context.
			• Provides appropriate descriptions and interpretations of qualitative data.
			• When applicable, uses software programs for transcription and analysis of qualitative data (e.g., NVivo, HyperResearch).

Analyzing data – mixed methods	• Identifies research questions that can be best investigated using mixed methods. • Identifies various mixed methods research designs (e.g., sequential explanatory, concurrent triangulation).	• Identifies components of a mixed methods study (e.g., Creswell's components) that includes quantitative, qualitative, and mixed research questions. • Identifies the appropriate type of mixed methods design for a particular research study. • Appropriately displays research methods via design diagrams.	• Identifies resources for and plans a mixed methods study for their own program, writing appropriate quantitative, qualitative, and mixed research questions and diagramming the design. • Integrates quantitative and qualitative data using methods such as joint display tables to inform interpretation.
Displaying data	• Appropriately interprets basic data displays (e.g., bar graphs, histograms, line graphs, scatterplots). • Identifies essential components of effective data displays.	• Identifies and explains common errors in displaying data (e.g., inappropriate axes, missing labels). • Determines the appropriate graph or table for a specific data visualization need. • With assistance, creates basic data displays using their own program's assessment data.	• Independently creates data displays that accurately portray their own program's assessment data. • Chooses appropriate data display methods for the type of data collected. • Effectively integrates data displays with text when creating reports.

Skill Area 6: Analyze Data, Interpret and Report Results, & Maintain Information, Cont.

Trait/Domain	Novice	Intermediate	Advanced
Interpreting results	• Recognizes the types of information needed to make accurate inferences about program effectiveness (e.g., implementation fidelity, research design, quantitative/qualitative/mixed methods results).	• Draws narrow and/or limited conclusions based on isolated sources of assessment data. • Lists common mistakes in interpretation and articulates why they are wrong.	• Integrates multiple sources of information to draw nuanced conclusions about program-level outcomes and tell a cohesive story about program effectiveness. • Demonstrates appropriate caution when interpreting results and does not draw spurious conclusions. • Makes recommendations about additional information that could be collected to strengthen the interpretation of results. • Directs others in interpretation of their own assessment results.
Writing reports	• Identifies key components of effective assessment reports. • Identifies intended audience(s) and their relevant considerations and needs.	• With assistance, constructs a report of their own program's assessment plan and findings. • Tailors content, tone, and style of a report to accurately and effectively convey information to a given audience.	• Inspires action, motivates, and tells compelling stories through report writing. • When appropriate, uses reports to move beyond simple accountability to focus on student learning. • Creates nuanced assessment reports with awareness of political and other contextual factors, such as timing of assessment reporting (adapted from ASK Standard 12).
Maintaining information	• Recognizes the importance of maintaining a database that spans across years. • Recognizes the importance of securing sensitive data.		• Designs data maintenance systems that allow for comparison across years. • Considers data security, applicable laws and policies, consistency of coding, and clarity of documentation when collecting and archiving data (adapted from CAS Standard 10).

Skill Area 7: Use Results to Improve Student Learning

Trait/Domain	Novice	Intermediate	Advanced
Using results to improve student learning	• Articulates the importance of using assessment results to make evidence-based changes to programs. • Identifies learning improvement as one of the primary reasons for conducting assessment. • Describes the steps of the simple model for learning improvement (Fulcher et al., 2014): • Identifies an appropriate SLO • Conducts baseline assessment • Proposes and implements a coordinated intervention • Conducts a post-test assessment • Creates a data collection/intervention implementation timeline • Articulates the importance of each step of the simple model (i.e., the impact of removing a given step). • Differentiates between a change and an improvement in the context of a fictional program assessment process.	• Identifies key indicators of program readiness to embark on a learning improvement project (e.g., administrative support, faculty cohesion, quality assessment practices). • Accurately evaluates their own program's readiness to embark on a learning improvement project. • Feels confident serving as a participant on a learning improvement team.	• Integrates knowledge of one's own program (e.g., program theory, implementation fidelity results, outcomes data) to formulate an evidence-based plan for using results to improve the program. • Serves as the lead on a learning improvement project.

Skill Area 8: Assessment in Practice - Additional Skills for Assessment

Trait/Domain	Novice	Intermediate	Advanced
Evaluating the quality of an assessment plan	• Articulates best practices for assessment at each step of the assessment cycle.	• Identifies the strengths and weaknesses of their own program's assessment process at each step of the assessment cycle (e.g., strong SLOs, poor research design, no implementation fidelity information).	• Develops and implements a plan to improve their own program's assessment process based on knowledge of best practices and identified weaknesses.
Promoting value for assessment	• Recognizes the value of assessment for program improvement and increasing student learning and development. • Recognizes the need for assessment education (generally and personally). • Identifies common barriers (e.g., organizational, attitudinal, political) to conducting high-quality assessment and using results.	• Communicates the value of assessment to others within their own program and/or institution. • Independently seeks additional training related to assessment. • Collaborates with others and shares ideas related to assessment practice. • Identifies the primary barriers to conducting high-quality assessment and using results within their own program and/or institution.	• Creates a positive climate within their own program and/or institution that encourages and supports assessment practice. • Encourages others in their assessment practices and serves as an accessible resource. • Develops strategies to overcome barriers to conducting high-quality assessment and using results within their own program and/or institution.

Skill Area 8: Assessment in Practice - Additional Skills for Assessment, Cont.

Trait/Domain	Novice	Intermediate	Advanced

Promoting ethics, diversity, and inclusion	• Recognizes responsibilities related to ethics, diversity, and inclusion as they relate to instruments, technology, confidentiality, and reporting.
	• Expresses awareness of IRB protocols and human research principles.
		• Applies principles of ethics, diversity, and inclusion as they relate to assessment:
		  • Instruments: Reviews assessment instruments' inclusivity and accessibility. Considers the needs of students with disabilities.
		  • Technology: Considers accessibility of technology when collecting assessment data.
		  • Confidentiality: Protects confidentiality of data, when appropriate.
		  • Reporting: Avoids the misrepresentation of student groups in reporting.
		• Has completed IRB training and is familiar with IRB submission procedures.
			• Serves as a change agent by promoting accessible and ethical use of instruments, considering the needs of all students, maintaining confidential data, and creating accurate and representative reports.