C- BEN ASSESSMENT COLLABORATORY LEADERSHIP TEAM AND KEY CONTRIBUTORS:

Tiffany Freeze
Chief Assessment Officer, The QuILTSS Institute
Senior Consultant, C-BEN

Yedid Minjares-Montoya
Programs Administrator, C-BEN

C- BEN ASSESSMENT COLLABORATORY CO- AUTHORS AND SPECIAL CONTRIBUTORS:

Josh Beutler
Vice President, Business Development
GoReact

Naomi Boyer
President; Director, Credentialing Products
NOME, LLC; Education Design Lab

Suresh Chalasani
Professor, Business Department
University of Wisconsin-Parkside

Martha Cheney
Program Director, College of Education and Leadership
Walden University

Erin Crisp
Vice President, Academic Affairs and Innovation
CampusEdu

Adam Samuelson
Faculty Innovation Manager
Rasmussen University

Elicia Flom
Course Designer
Columbus State Community College, Workforce Innovation, Non-Credit

Sean Gyll
Senior Lead Psychometrician
Western Governors University

Marie Horne
Assistant Director, Course and Program Development
Salt Lake Community College

Kim Kostka
Academic Director, UW Flexible Option; Professor, Chemistry
UW Extended Campus

Rachel Kroeplien
Senior Flexible Instructional Design Coordinator
Lakeshore Technical College

Karl McGhee
Assistant Professor of Christian Education; Associate Director of Institutional Effectiveness; General Education Assessment Coordinator
New Orleans Baptist Theological Seminary

Ruth McGillivray
Interim President & Chief Operating Officer
Northwest Seminary

Mike Moore
Manager, Product Management
D2L, Ltd.

Mary Neff
Curriculum & Assessment Coordinator
Bates Technical College

Eric Regnell
Director, Learning Experience Engineering
Southern New Hampshire University

Angela Ripley
Competency-Based Education and Assessment Consultant
Bow Valley College

Craig Schieber
Educational Consultant
Integrated Education

Steve Wallace
Assessment Architect & Accreditation Liaison Officer
Nicolet College
The C-BEN Hallmark Practices for Credential-Level CBE Assessment was developed as an extension of Element 4 of C-BEN’s Quality Framework: Credential-Level Assessment Strategy With Robust Implementation.

This resource was produced through the work of C-BEN’s Assessment Collaboratory, representing over 20 member institutions and organizations. The Assessment Collaboratory worked throughout 2021 to research, target, and define the hallmark practices of competency-based education (CBE) assessment strategies indicative of quality assessment practices currently being implemented in CBE credential-level assessment strategies. The hallmark practices with corresponding examples, information, and resources can be viewed through the lenses of those exploring, implementing, or scaling CBE credentials.

The aim of this work is to provide practical features and considerations for implementing quality CBE assessment strategies in practice. The 10 identified hallmark practices accompanied by relative features and questions serve as checkpoints for planning, implementing, or scaling CBE credential-level assessment strategies. As further evidence emerges regarding CBE assessment practices, it is recommended these initial hallmark practices of CBE assessment be revisited and refined. Several of the hallmark practices mirror best practices in educational assessment; however, they are identified as hallmark practices of CBE assessment as they are considered essential to quality assessment practices of a CBE credential-level strategy.

Those referencing this tool for purposes of exploration, implementation, or scaling may use it as a guide for future planning of a credential-level assessment strategy, a reference for checking current practices of a credential-level assessment strategy, or a set of recommendations for quality practices before scaling.

QUALITY FRAMEWORK

The Quality Framework for Competency-Based Education Programs was released in September 2017. The creation of this framework was led by the C-BEN Quality Standards Task Force to provide guidance to the field by describing elements, principles, and standards that inform quality design of a CBE credential. The Quality Framework describes eight elements of quality intrinsic to successful competency-based education (see next page).
The Quality Framework

Eight Elements of Quality

1. Demonstrated Institutional Commitment to and Capacity for CBE Innovation

2. Clear, Measurable, Meaningful and Integrated Competencies

3. Coherent Program and Curriculum Design

4. Credential-level Assessment Strategy with Robust Implementation

5. Intentionally Designed and Engaged Learner Experience

6. Collaborative Engagement with External Partners

7. Transparency of Student Learning

8. Evidence-driven Continuous Improvement

Download a digital copy of the Quality Frameworks for Competency-Based Education Programs at cbenetwork.org
The C-BEN Hallmark Practices for Credential-Level CBE Assessment was developed as a distinguishing feature of competency-based education is the intentional and transparent nature of the credential’s design. Backward Design is a powerful framework used to plan and guide the student learning process with the “end in mind.” In other words, it focuses on purposeful teaching and learning activities to guide the learner to a desired result. Such a design process aligns with the definition of competency-based education as used by the Competency-Based Education Network:

*Competency-based education combines an intentional and transparent approach to curricular design with an academic model in which the time it takes to demonstrate competencies varies and the expectations about learning are held constant. Students acquire and demonstrate their knowledge and skills by engaging in learning exercises, activities and experiences that align with clearly defined programmatic outcomes. Students receive proactive guidance and support from faculty and staff. Learners earn credentials by demonstrating mastery through multiple forms of assessment, often at a personalized pace.*

The Backward Design Process supports competency-based education, in that, it provides a framework for program design that is intentional and transparent. Competencies are targeted and defined through workforce validation. In other words, program graduates will leave with knowledge, skills, abilities, and intellectual behaviors that are meaningful and that the workforce and potential employers value. Thus, it is essential that the targeted competencies are observable and measurable, in turn ensuring the student’s level of competency mastery is validated by defensible assessment measures. The entire student experience is intentionally and directly aligned, including identifying desired results, determining acceptable evidence, and planning learning experiences and instruction.

To achieve the framework outlined above in a competency-based education program, Backward Design includes three primary steps.

**Using the Backward Design planning process, a CBE credential is uniquely supported for student success. It is recommended that the Backward Design process guides the planning, creation, and implementation of every CBE credential.***
Each step of the Backward Design process will be illustrated below through an example from Bow Valley College. It is important to note that this is one example, an institution delivering a CBE credential in Canada, and approaches to CBE design and delivery may vary.

At Bow Valley College, we are utilizing CBE as a model to drive our new development of post-diploma programs and micro-credentials. Although traditional programming still exists within the institution, CBE is a model for progressive learning and development. CBE centers on authentic learning and authentic assessment (authentic meaning that it reflects what is required from the graduate in life and on the job).

CBE is different from traditional education, because it focuses on the learner being at the center. In this way, it’s based on the idea that student achievement should reflect a demonstration of relevant competencies. It’s also based on prior knowledge, learning, and skills, which means a learner can expedite their time spent in their programming by showcasing their competencies through performance demonstrations. CBE meets the learner where they are, providing personalized learning plans, and learners only progress once they can demonstrate the desired level of proficiency. That eliminates learners moving forward with learning gaps.
STEP 01. IDENTIFY DESIRED RESULTS

The first step in the design process includes identifying competencies that answer the guiding question, “What does it look like in practice?” That allows for the creation of behavioral descriptors by articulating the knowledge, skills, abilities, and intellectual behaviors for each respective competency at varying levels of mastery. Behavioral descriptors allow for objective measurement by operationally defining the competency, which makes it both observable and measurable. This is a significant step in identifying and designing a sound assessment strategy and learning journey.
To bridge the talent gap, we develop all CBE programs with learners in mind so that our graduates will be able to meet the gap that exists within industry (which has been identified by our key external partnerships within industry). This enables the many successful, skilled workers who are looking for ways to adapt to the new economic landscape through targeted and efficient reskilling and upskilling opportunities that fit in with their other commitments and obligations.

Once we have an understanding of the identified need, we then work with our external partners to develop the competencies required on the job.

We have defined a competency as the observable technical tasks (“what you do”) and transversal skills (“how you need to do those tasks”) associated with a specific job or life function. Depending on the context, a competency may represent: a major duty or responsibility of a given occupation, role, or position or a major responsibility of independent living. Transversal skills are the behaviors, dispositions, and attitudes that are transferable between context and application. Competencies described in this way are functional because they prepare graduates to function in the workplace effectively.

To develop competencies, a job task analysis is either completed in consultation with external partnerships or compiled from industry data and then validated with expert practitioners. This validation is critical because we want to ensure that the job tasks and transversal skills are current, relevant, and what is needed in the role.

This is documented in what we call a competency profile, which provides the blueprint to build training programs that will prepare our learners to function in the workplace. As you can see in this example of our Cloud Computing Post Diploma Program, on the left you’ll notice the competency, and then they are broken into a series of job tasks. Those tasks are then broken down into their steps and performance expectations. As you can see, the job-task analysis then identifies the competencies or learning outcomes, the learning objectives, and the performance criteria, which are then used to create the assessments and learning pathways.
STEP 02. DETERMINE ACCEPTABLE EVIDENCE

In a thriving CBE program, an assessment strategy and its suite of assessments are designed to make learning transparent to faculty, staff, and students. Because CBE is anchored by the belief that progress toward a credential should be determined by what learners know and are able to do, effective and robust assessments are the engine of the program.

Assessments measure learning and application of learning into multiple and novel contexts. Competency-based education programs assess learners on what they know and can do during the program and in life after graduation. Competency-based education assessments use a variety of approaches such as objective, project-based, presentations, simulations, etc. These assessments are designed to reveal how the learner will do in applying acquired knowledge, theories, skills, behaviors, and intellectual behaviors in new settings. A significant amount of time needs to be spent on creating this suite of tools. In the end, all assessment tools should map to the credential-level competencies, external standards, and expectations of performance, accreditor requirements, and so forth.
Assessment First refers to how learners progress through a course or program. The competency assessment is provided upfront. If a learner can demonstrate competency, they will receive credit for completion. If they do not demonstrate competency, they will be provided actionable feedback and a personalized learning plan to address gaps and help build their skills.

Learners have multiple attempts to undertake the competency assessment – a performance-based assessment that accurately measures student performance with respect to the stated competencies – and after each assessment attempt, learners receive detailed feedback on their performance.

Just like climbing a mountain, some learners are at the bottom of the mountain looking up and acquiring knowledge, while yet others are halfway up the mountain and working on practice simulations (think of a nurse in a lab environment), while others are on the top of the mountain perhaps working in the workplace doing what is expected of them on the job.
STEP 03. PLANNING LEARNING EXPERIENCES AND INSTRUCTION

Within CBE program design, active learning as well as early and often assessment, which includes learning activities for the purposes of formative feedback, ensure the learning journey extends from knowledge acquisition to performance demonstration. Throughout the process of supporting the learner in this journey, learning is never left to chance. The learning journey is explicit, transparent, and intentional in design to deliver the learner to successful demonstration of competencies in the workplace and life.

Competency-based education programs design their curriculum like a road map. A CBE curriculum maps various routes that learners can take to work through experiences and content to develop and demonstrate all program competencies. Many CBE programs use their curriculum as a transparent and predictable guide to direct the CBE faculty, staff, and learners. CBE credential programs identify learner outcomes that are ambitious and achievable. Outcomes consider different competency components and their interrelatedness. Learning outcomes can serve as mile markers on the curriculum road map, indicating how close a learner is to graduation.
The learning pathway allows for personalization and opportunities for deeper learning and includes all relevant learning materials required to develop competence. Learners will work with other learners, mentors, instructors, subject matter experts, and peers to expedite their development toward both articulating and demonstrating competence.

### The Learning Pathway

**Competency:** Perform Occupational Therapy Interventions

**Learning Outcome:** Handle and modify equipment for Activities of Daily Living (ADL)

**Performance Objective:** Demonstrate the correct handling and modification of equipment for Activities of Daily Living (ADL) in a clinical setting.

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Knowledge Required</th>
<th>Practice Activities</th>
<th>Workplace skills/Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust wheelchair/ seating:</td>
<td>Enabling learning Objectives:</td>
<td>g. Select the appropriate wheelchair adjustment for a given set of situations in clinical settings.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Anatomy and Physiology Objective 1</td>
<td>h. Demonstrate the ability to adjust a wheelchair to prescribed settings in a clinical setting.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Anatomy and Physiology Objective 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Pathophysiology objective 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Rehabilitation Theory Objective 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. Describe the adjustable and non-adjustable features of a wheelchair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. Describe the process for making wheelchair adjustments.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transversal learning objectives:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Demonstrate your ability to introduce yourself to a new client.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content and activities:</td>
<td>Read chapter 3.1 of online textbook</td>
<td>Lab activity: wheelchair adjustments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Watch video</td>
<td>Lab activity: wheelchair adjustments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Take online quiz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Illustration: **Bow Valley College**
The Quality Framework: Element 4

Each element of the Quality Framework contains standards that provide benchmarks and aspirational goals for administrators of CBE programs. For the purposes of this resource, the focus will be on Quality Framework Element 4: Credential-level Assessment Strategy with Robust Implementation.
Hallmark Practices in CBE Assessment

Credential-Level Assessment Strategy with Robust Implementation

**PRINCIPLE**

Authentic assessments and their corresponding rubrics are key components of CBE, which is anchored by the belief that progress toward a credential should be determined by what learners know and are able to do. The overarching assessment strategy is comprised of assessments designed both to inform the learning journey (often referred to as “assessment for learning” or formative assessment) and to validate mastery (often referred to as “assessment of learning” or summative assessment). In CBE models, assessments are intentionally aligned to competencies and cognitive levels, and use a range of assessment types and modalities to measure the transfer of learning and mastery into varied contexts. Authentic assessment design and use follow best practices for assessment professionals.

**STANDARDS**

1. Authentic assessments are built within and aligned to an overarching assessment strategy for the competency being measured and the credential being earned.

2. The assessment strategy clearly articulates how the set of assessments supports the learning journey for learners, matches the cognitive level of the competencies being demonstrated and determines mastery at the appropriate academic level.

3. The set of authentic assessments is designed to provide learners with multiple opportunities and ways to demonstrate competency, including measures for both learning and the ability to apply (or transfer) that learning in novel settings and situations.

4. The assessment strategy and each of the assessments and their corresponding rubrics equitably measure learning outcomes across diverse learner groups, while guarding against bias in the formative and summative assessments.

5. Faculty understand their role in the overarching assessment strategy for the credential and are trained in and can articulate the critical function played by each assessment in validating mastery of a competency.

6. Each authentic assessment is transparently aligned to program competencies and their corresponding rubrics. Each authentic assessment is rigorous, has clear and valid measures and is approved by faculty and assessment professionals.

7. Formative assessments serve as a tool for learning and provide feedback for reflection and refinement while also offering a feedback loop that is timely and appropriate to the competency and intent of the assessment.

8. Summative assessments’ ability to measure application (the “can do” aspect of a competency) is validated by a subject matter expert (SME), ideally one external to the program design team.

9. The assessment design accommodates personalization for learners by offering flexibility around when assessments will be administered. This ability is often supported by technology.

10. The timeliness of feedback from assessments enables learners to proceed with an absolute minimum of delay. Technology is used wherever possible to facilitate and expedite the timeliness of feedback.

While the audience for the quality framework is likely an institutional CBE expert, steering committee, or administrator, the audience for the assessment hallmark practices is likely people who are more directly involved with students and curriculum design. In other words, if the quality framework outlines the macro level for successful CBE, the assessment hallmark practices describe the mezzo level of work to be done for CBE that serves learners well.
Hallmark Practices of CBE Credential-Level Assessment Strategies

A CBE assessment strategy must be considered and evaluated at the credential level, rather than a course as the unit of focus. The following are proposed as the hallmark practices currently followed by institutions implementing CBE programs and are considered indicative of quality assessment practices in those respective credential-level strategies.
The Hallmark Practices of CBE assessment were developed as a guide for those exploring, implementing, and scaling competency-based credential strategies. Throughout these assessment hallmark practices, the C-BEN Quality Framework Elements are addressed in a variety of ways. As program leaders working at the mezzo level of an organization use the assessment hallmark practices, reading the corresponding standards from the quality framework provides context for macro level strategy and planning. The quality framework elements provide the “why” behind the implementation of assessment hallmark practices. Each hallmark practice presented across the following pages offers a hallmark label, description, key features, and questions for quality practice.

**For clarity’s sake, the terms used in this document are defined below:**

**Hallmark Practice**: Term and description to indicate topic area of each hallmark practice of CBE assessment with a description of what is meant by it

**Key Features**: Factors that CBE institutions and stakeholders consider and include in the implementation of the respective hallmark practice of CBE assessment

**Questions for Quality Practice**: Considerations for successful practice of the respective hallmark practice of CBE assessment
Clear Assessments have clearly defined observable and measurable levels of competence, performance expectations, and scoring criteria that are understandable and transparent to all stakeholders. Faculty and learners know the meaning and purpose of assessments and have clear expectations for their design, implementation, standards, and feedback. *NOTE: For the purposes of this work, faculty is defined as anyone who facilitates learning, including instructors, reviewers, adjuncts, assessors, content and curriculum designers, etc.*

**Key Features:**

- CBE assessments are transparently aligned to course/program competencies.
- CBE assessments are created through a collaborative design and development process.
- CBE assessments, from design to implementation, involve a variety of faculty roles.
- CBE assessments include clear performance expectations and scoring criteria.
- CBE assessments include student-friendly scoring criteria (e.g., rubrics).

**Questions for Quality Practice:**

- Are competencies provided to students and faculty?
- Is there a connection between an assessment and a competency?
- Is there alignment between course/program outcomes and competencies?
- Do all stakeholders and industry partners have a voice? (e.g., advisory committee, department staff, students)
- Does each faculty member know their role in the student learning process?
- Do faculty make clear the student’s role and responsibility for their own learning?
- Are assessments worded in a way that can be easily interpreted as intended?
- Are competencies worded in a way that can be easily interpreted as intended across stakeholders?
- Are the scoring criteria easily interpreted as intended by learners and faculty?
- Can the student use the rubric to score their own work?
- Can the student look at the rubric to understand the expectations of the assessment?
- Can the student easily understand where they need to grow or where they have achieved competency once their assessment was scored?
**Integrated**

Integration between outcomes, competencies, performance expectations, curriculum content, assessments, and external criteria such as accreditors and employers are aligned and transparent. Assessments are part of the learning process that include assessments *for* learning (formative assessment) and assessments *of* learning (summative assessment).

**Key Features:**

- CBE assessments include formative activities to provide a feedback loop between the learner and instructor. Data from formative activities provide an opportunity to provide meaningful feedback to learners on their performance, benchmark learner progress, and show continuous improvement areas at the course or credential level.

- CBE assessments include a summative evaluation that provides point-in-time judgment and evidence of demonstrated mastery with feedback. That may be composed of internal assessments and/or external certifications.

**Questions for Quality Practice:**

- Is the assessment used as a vehicle for discussion and development of learning?
- Are course and program competencies clearly aligned to assessments so that students can see where they are successful or need to grow?
- Is the linkage between learning activities, performance indicators, and assessments obvious to learners and instructors alike?
- Do formative assessments build the learner to successful performance of the competencies?
- Do summative assessments connect to competency expectations?
- Do summative assessments connect to course and program outcomes?
- Do summative assessments connect to industry certifications?
- Do summative assessments connect to accreditation expectations?
- Do summative assessments evaluate mastery of the stated competencies, at the targeted level of proficiency?
- Do summative assessments connect to competency/credentials (e.g., certificates, degrees, badges)?
Scaffolded

CBE assessments are sequenced and scaffolded to measure student progress toward competency and transfer of learning to real-world contexts. Student learning and demonstrations move through the levels of learning from identify and recognize to demonstrate and perform.

Key Features:

• CBE assessments provide identified benchmarks to track learner progress toward mastery of competence.

• CBE assessment provides opportunities to build a learner to performance through graduated levels of mastery, through cognitive and performance levels of learning.

• CBE assessments provide the opportunity to evaluate pre- and post-development performance.

• CBE assessments drive performance-based outcomes.

• CBE assessment provides multiple opportunities and ways to demonstrate competence.

Questions for Quality Practice:

• What benchmarks are important to determine learner progress?

• Are there industry-specific benchmarks to consider?

• Are scaffolded levels of performance articulated for each competency?

• Is there a diagnostic assessment to evaluate the present level of performance across areas of competency and determine needed growth?

• Is the assessment authentic and allow students to show what they know and can do?

• Are there industry-specific tasks that could serve as an assessment tool?

• Is the assessment strategy meeting a variety of learning styles?

• Does the learner have a choice in the type of performance demonstration?

• Will the student receive growth feedback to meet expectations?

• Is there an opportunity for the learning to exceed expectations?
Valid

CBE assessment measures what it claims or intends to measure. Knowledge, skills, and behaviors being measured clearly align with competencies to authentically evaluate required learning. Assessment content and method is appropriate for real-to-life expectations for targeted competency.

Key Features:

- CBE assessment ensures content validity through evaluating knowledge, skills, and/or intellectual behavior proportionally to the course or program content. An assessment blueprint or Table of Specifications (TOS) is used to ensure proportionate weighting.
- CBE assessment ensures criterion validity through tracking how success on assessment(s) predict likelihood of successful demonstration of the targeted competency and/or in the workplace role. Assessment content and method correlate to predetermined performance expectations.
- CBE assessment ensures construct validity through confirming that an assessment measures what is intended to measure. For example, if the construct being measured is public speaking, there is clear evidence that the assessment measures skill in public speaking vs. knowledge or presentation design.
- CBE assessment maps content, criterion, and content validity through an assessment blueprint or TOS. Assessment(s) is validated by industry subject matter experts and aligned to external requirements for practice in the field and accrediting body expectations.

Questions for Quality Practice:

- Does the assessment align with the content?
- Does the content align with the assessment blueprint or TOS?
- Does mastery of course or program content sufficiently prepare the learner for success on the assessment?
- Does success on the assessment predict success in the role for which the learner is being prepared?
- Do criteria exist to compare observable behavior against?
- How are the target standards or performance expectations discerned? Are there existing industry standards? Have assessments been reviewed by industry advisors?
- Does the credential prepare a learner for success on an external credentialing/licensing assessment?
- Does the assessment measure what it claims to measure?
- Does successful performance rely on skills or knowledge the learner should be prepared to reasonably demonstrate at this stage of development?
- Does the assessment evaluate the targeted level of learning?
- Do you have an assessment blueprint or TOS?
- Does the assessment content align proportionally with the course or program being assessed?
- Do the constructs being measured align to the targeted taxonomy levels?
- Has your assessment blueprint been reviewed by an industry or subject matter expert?
Comprehensive

CBE assessments cover the entire scope of competencies in each course or outcome. Assessments also demonstrate achievement of program outcomes or objectives at the credential level, not just individual courses or outcomes.

Key Features:

• CBE assessment measures the full scope of competencies. An assessment blueprint, or similar tool, clearly links all competency statements to assessments that measure their mastery.

• CBE assessment relies on a credential-level assessment blueprint or similar tool. The assessment blueprint includes credential-level assessments that aggregate competencies developed through courses into demonstrated achievement of program-level outcomes and objectives.

Questions for Quality Practice:

• Does the assessment blueprint show how every competency in the course or program is measured?

• Is achievement of credential-level outcomes or objectives assumed or explicit?

• Does the assessment blueprint include ways for learners to demonstrate formative and summative achievement of the program outcomes and objectives, as well as course-level competencies?
Reliable

CBE assessment uses methods and/or instruments that consistently measure the performance of learners, producing comparable outcomes, given consistent standards and circumstances, over time and between different learners and examiners. Evidence is collected or tracked to prove reliability claims.

Key Features:

- CBE assessments rely on the measurement of observable behavior based on predetermined criteria across objective benchmarks. Performance indicators are defined and criteria are provided to assessors to minimize subjectivity or bias in assessments. Cross-cutting competencies are operationally defined into observable behaviors.

- CBE assessments produce consistent results across assessors. Multiple assessors will score assessments similarly within an acceptable window of measurement. Assessor subjectivity and bias are minimized through practices such as objective criteria.

- CBE assessments are equitable through assurance that consistent results are produced across students with similar knowledge or skills, despite diverse backgrounds.

- CBE assessments are designed according to the characteristics associated with best practices of that respective type (e.g., multiple choice questions, performance-based assessments, etc.). Best practices for each assessment type are followed to ensure fair, high-quality assessment experiences for learners.

A variety of assessment types exist, such as the following:

- Case studies
- Direct observation
- Examinations
- Multiple choice tests
- Collaborative/group projects
- Essays
- Examinations
- Oral questioning after observation
- Performance projects
- Problem sheets
- Self-assessment
- Simulations
- Portfolios
- Projects
- Short-answer questions
- Oral examinations
- Tastings
Questions for Quality Practice:

• Are assessments of mastery based on articulated scoring criteria?

• Are soft competencies translated into observable indicators or markers that assessors can look for and point to as evidence of competence?

• Do you know that evaluations of competency are consistent across assessors?

• Are performance expectations written in observable and measurable terms that are clear and concise?

• Do assessments rely on background knowledge or understanding that you can reasonably expect all learners to have?

• What cultural understanding, experience, or interpretation are you assuming that learners have? Are assessments unbiased against those who do not have that experience or understanding? If so, how do you know (e.g., statistical analysis)?

• Who is writing your assessments? Are they trained on the best practices associated with each type?

• Who is validating your assessments? Are they trained on how to apply the best practices for each type?

• Do the metrics of assessments show an equally weighted experience across alternate versions of the same assessment?

• Have cut scores or targeted levels of mastery been determined as a threshold for performance expectations on the assessment that equates to competency in the real-world context?

• Are expectations clearly written in the syllabus and on the assessment exercise?

• Are terms such as proficient, meets expectations, or not yet proficient used to alert the learner where their performance stands?

• Are assessment exercises and performance expectations held constant across a variety of individuals, situations, and environments?
**Varied**

CBE assessment affords learners the opportunity to develop and demonstrate competence through multiple means, appropriately matched with the level of knowledge, skills, or behaviors being assessed.

**Key Features:**

- CBE assessment provides multiple pathways to demonstrate competence.
- CBE assessment aligns the assessment type to the level of learning expected at that point in the learning journey. Assessment types move beyond measurement of cognitive levels of learning to performance levels of learning as appropriate. For example, a multiple-choice test may be appropriate to evaluate at the identify level of learning. A simulation exercise may be appropriate to evaluate at the demonstrate level of learning.
- CBE assessments are offered across multiple learning domains, including both direct and indirect assessment.

**Questions for Quality Practice:**

- Does the course/program include a variety of assessment methods by which students demonstrate competency, not relying on a single method of assessment?
- Is sufficient evidence of competency gathered through several different types of assessment (objective assessment, performance assessment, etc.)?
- Where possible, are students provided with choice in how they demonstrate competence?
- Does the course/program include both direct and indirect assessment to ensure measurement of multiple learning domains including knowledge (cognitive), skills (psychomotor), and attitudes (affective)?
Individualized

CBE assessment feedback is student specific, aligned with competencies, and timely. CBE is differentiated by its ability to move students at their own pace. Feedback should be individualized and meaningful in a way that allows for unimpeded student progress (individualized feedback may require human touchpoints).

Key Features:

• CBE assessment feedback should be individualized by meeting each learner where they are at in their development of a competency.

• CBE assessment feedback should be meaningful by filling in learning gaps and providing a safe opportunity for growth.

• CBE assessment feedback should be provided to the student in a timely manner by being provided as immediately as possible. Just-in-time feedback is significant to the development of performance-based development and demonstration.

• CBE assessment feedback should provide learners with the ability to demonstrate growth through sequenced and scaffolded teaching/learning and evaluative activities.

Questions for Quality Practice:

• Is the feedback specific to the individual learner’s work?

• If feedback templates are used, is additional feedback provided that clarifies how the templatized feedback applies specifically to the individual learner’s work?

• Does the feedback connect the score/grade and/or recommended revisions to the competencies?

• Is the feedback sufficiently clear that students accurately interpret how they met/did not meet the competencies?

• Is the feedback sufficiently specific that students are able to take action on it to improve their performance where applicable?

• Does the assessment strategy include guidelines for ensuring that learners receive feedback as quickly as possible so that student progress is not delayed due to lack of feedback?

• Do formative and summative assessments meet each learner where they are and build them to performance of the competency?
Generalizable

CBE assessments are intentionally designed to produce results that are interoperable and meaningful across contexts to all stakeholders.

Key Features:
• CBE assessments measure a student's ability to demonstrate competencies in a variety of contexts.
• CBE assessments, including at the program/credential level, are scored in a way that is transparent and meaningful to all stakeholders.
• CBE assessments make it possible for students to share achievement of competencies in various contexts.

Questions for Quality Practice:
• Do the assessments allow students to demonstrate mastery of competencies across a variety of situations, settings, and individuals?
• Can students, faculty, evaluators, industry, and transfer institutions easily interpret and extract meaning from the score achieved on assessment?
• Can students choose how and when to share the results of their assessments?
• Can students easily share the results of their assessment with industry or other institutions?
Enhanced

CBE assessments and evaluation strategies undergo continuous improvement through regular review of performance, relevance, and alignment with accreditation.

Key Features:

• CBE assessments are reviewed as part of program evaluation.

• CBE assessments are reviewed for relevance and currency by stakeholders on a regular basis.

• CBE assessments align with policies as appropriate.

• CBE assessments evaluate student performance and are reviewed on a regular basis for reliability and validity.

• CBE assessments evaluate faculty performance, and the data is reviewed on a regular basis for improvement.

Questions for Quality Practice:

• Does your program evaluation plan include an evaluation of assessments?

• Does your assessment strategy include a plan for regular review and evaluation by faculty, external subject matter experts, industry experts, and accrediting bodies to ensure the assessments remain relevant and up to date?

• Does your assessment strategy include a plan for regular review and evaluation by accrediting bodies to ensure the assessments maintain the program’s accreditation?

• Does your assessment strategy include a plan for regularly evaluating student results to ensure reliability and validity?

• Are your assessments designed to be iterative?

• Does your assessment strategy include a plan for regularly reviewing data to improve faculty performance and content?
The following example from Southern New Hampshire University is offered as a comprehensive illustration of programs being implemented through CBE strategy at the micro-credential level.

As part of the work for the Digital Credentials Lab (DCL), Southern New Hampshire University (SNHU) piloted two micro-credential learning experiences with partner organizations. The first pilot, *Communicate Effectively With Multilingual Customers*, sought to teach learners how to improve interactions in retail and service environments with customers who may not speak English as a first language. It linked the cognitive science behind how people apprehend language with the ways customers typically communicate with retail and service workers. The second, *Use Data to Solve Problems*, enabled learners in a healthcare setting to understand statistics and visual representations of data. It demonstrated not only how to utilize and interpret data but how to apply those findings in a clinical setting.

**Clear** – Plain language was used throughout the micro-learning passes to make the content accessible, understandable, and personable. That enhanced the clarity for learners and ensured academic jargon did not get in the way of understanding. Rubrics used to measure performance were clearly and obviously placed. The connection between performance on the assessments and demonstrating competency was clearly explained and illustrated. Introductory material in each micro laid out the outcomes to learners and related the knowledge to real world applications.

**Integrated** – Assessments in both micros were designed to be completed multiple times until mastery was achieved. That meant that the assessments could further have a formative component as part of the learning path, reinforcing new concepts and solidifying learning. In *Use Data to Solve Problems*, the final assessment was an immersive simulation, placing learners in the role of a healthcare worker tasked with using a variety of data sources to uncover potential underlying causes of employee turnover and training gaps. The simulation enabled learners to practice using the skills they had acquired in a real-world example. As they progressed, feedback on their choices illustrated how they might improve or different ways to think about the possible conclusions they could draw from the data.
Scaffolded – Lessons built on one another to lead the learner through the experience. In *Communicating Effectively With Multilingual Customers*, learners started by examining the fundamentals of customer interaction. The micro then moved into a deeper exploration of intercultural competence, building empathy and understanding, before moving on into deep practice listening to speakers of English with a variety of accents to train their ear on different speech patterns and phrasing. Finally, it all came together in activities and resources designed around the concept of handling difficult conversations. That process led the learner through steps of understanding the needed skills and abilities, practicing using those skills, and then applying them in authentic scenarios.

Valid – To develop the content, the DCL engaged faculty with a variety of viewpoints. The majority of the scenario-based content was created by an associate dean and faculty lead for undergraduate marketing. That drew on knowledge of best practices in retail environments and customer service. That was then contrasted with input from a different subject matter expert faculty trained in ESOL. This subject matter expert approached the content from a psycholinguistic footing, drawing on theories from TESOL education and a deep experience of interacting with multilingual students and settings. That enabled the DCL to use multiple perspectives to create a holistic approach to the subject.

Comprehensive – During development of the competencies assessed in the pilots, the concepts were broken down in performance indicators centered on discrete aspects and skills. Those performance indicators were explicitly aligned back to competencies within courses in the SNHU catalog. That enabled a simple prior learning assessment process for learners who successfully completed the micro-credential to gain college credit if they enroll in an SNHU program. Within the blueprint of the pilot, each module was explicitly tied to specific performance indicators and focused the learning content and assessment on demonstration of those skills. For the learner, the introductory text in each module explained the goals of that module, as well as the broader context of the overarching competency, engendering metacognitive understanding of the learning pathway.

Reliable – The pilots utilized a variety of subject matter experts and beta testers to norm responses within the multiple choice tests. Questions went through iterations to ensure even results with different populations and overall balance. The simulation in *Use Data to Solve Problems*, while set in healthcare context, was carefully written to assess interpreting data and graphs, not general knowledge of being a nurse manager. Resources to support the learner in the simulation were written to minimize requirements for non-specialists in the field.

Varied – In *Communicate Effectively With Multilingual Customers*, learners interacted with a range of resources over the course of the learning experience. Those included readings, videos, and audio recordings. In the assessments, learners then would respond to those same sorts of resources, engaging their listening skills, watching for visual cues, and answering written questions. That meant that the overall experience drew on a full suite of their understanding of the competencies in intercultural communication and customer service.
**Individualized** – Feedback for each assessment in the pilots was written to guide the learner to the correct answer through resources available in the micro-credential. As the learners progressed through the learning experience, feedback was given during the assessment, and learners could navigate back to previous quiz attempts to review the feedback and then find resources to improve.

**Generalized** – The learning experiences in *Communicate Effectively With Multilingual Customers* and *Use Data to Solve Problems* were contextualized to customer service in a retail environment and nursing, respectively; however, the competencies themselves were built around broadly applicable skills of communication and interpreting data. The skills learned in the experiences transfer easily to other contexts, and the structure of the assessments focused on demonstrating those skills in a clear and concise way. After completion, learners received a digital badge that clearly articulated the skills acquired so that learners could share their achievement freely and employers or institutions could verify the achievement and read about the learning experience and competencies.

**Enhanced** – Further iterations of the micro-credential used student performance metrics to recommend changes and identify areas of concern for new development. *Communicate Effectively With Multilingual Customers* was recently redeployed as an internal training for SNHU staff to bolster communication skills and intercultural competence. The contextualization was compared against needs of this different audience, and scenarios and assessment questions were rewritten to match a higher education setting. It was also resubmitted to the registrar to confirm continued alignment with SNHU curriculum.
In framing the 10 hallmark practices of CBE credential-level assessment strategies, institutions have leveraged the following pieces of evidence on which these practices are based.

### Clear

**Defining Competencies and Outlining Assessment Strategies for CBE Programs**

**Abstract:** This introductory whitepaper describes how to write, measure, and validate competencies in higher education.

**Stage of CBE Development:** Emerging

**Topics:** Assessment Design, Quality Framework


**An Introduction to Student-Involved Assessment for Learning**

**Abstract:** An introductory text covering a broad range of assessment topics, including why we assess, assessment design, types of assessment, grading, and communicating results.

**Stage of CBE Development:** Developed

**Topics:** Assessment Design, Hallmark Practices

**Cite:** Chappuis, J., & Stiggins, R. (2016). An Introduction to Student-Involved Assessment for Learning (7th ed.). Pearson.

**Quality Framework for Competency-Based Education Programs**

**Abstract:** The Quality Framework outlines eight principles and elements of quality one would look for in a quality CBE program. Standards and performance criteria for each principle and element are presented.

**Stage of CBE Development:** Initial

**Topics:** Assessment Design, Quality Framework


**What’s Wrong – and What’s Right – With Rubrics**

**Abstract:** This resource identifies the concept of evaluative criteria and quality definitions for rubrics. It also investigates how these things can overcome fatal flaws of most poorly designed rubrics.

**Stage of CBE Development:** Developed

**Topics:** Scoring/Feedback, Clearly Defined Rubrics Designed to Measure Content, Character, and Craft


**Link:** https://www.ascd.org/el/articles/whats-wrong-and-whats-right-with-rubrics
Comprehensive

**Classroom Test Construction: The Power of a Table of Specifications**

*Abstract:* Classroom tests provide teachers with essential information used to make decisions about instruction and student grades. A table of specification (TOS) can be used to help teachers frame the decision-making process of test construction and improve the validity of teacher’s evaluations based on tests constructed for classroom use. In this article, we explain the purpose of a TOS and how to use it to help construct classroom tests.

*Stage of CBE Development:* Emerging

*Topics:* Assessment Design, Table of Specifications


*Link:* https://doi.org/10.7275/cztt-7109

**Competency-Based Medical Education: Theory to Practice**

*Abstract:* In this paper, we describe the evolution of CBME from the outcomes movement in the 20th century to a renewed approach that, focused on accountability and curricular outcomes and organized around competencies, promotes greater learner-centeredness and de-emphasizes time-based curricular design. In this paradigm, competence and related terms are redefined to emphasize their multidimensional, dynamic, developmental, and contextual nature. CBME, therefore, has significant implications for the planning of medical curricula and will have an important impact in reshaping the enterprise of medical education.

*Stage of CBE Development:* Developed

*Topics:* Assessment Design, Performance Outcomes


*Link:* https://doi.org/10.3109/0142159x.2010.501190

**The Operational Definition of Competency-Based Education**

*Abstract:* Types of assessment: (1) formative assessment, (2) summative assessment, (3) pre-assessment, and (4) post-assessment

*Stage of CBE Development:* Initial

*Topics:* Assessment Design, Assessment Types


Enhanced

Ensuring Faculty Success in Online Competency-Based Education Programs

**Abstract:** This examines changing faculty roles in CBE and outlines importance of providing faculty with opportunities to develop comfort and confidence with the changes through open collaboration and engagement.

**Stage of CBE Development:** Initial

**Topics:** Faculty/Staff Participation, Faculty Roles, Collaboration


**Link:** https://doi.org/10.1002/cbe2.1052

Evolving Roles of Faculty at an Emerging Hybrid Competency-Based Transdisciplinary Program

**Abstract:** This paper explores faculty perceptions of roles within CBE programs. Distribution of faculty functions differ across CBE approaches but typically share some differentiating characteristics when compared to traditional course-based instruction. Understanding of faculty roles in CBE can support improved faculty satisfaction and student success.

**Stage of CBE Development:** Emerging

**Topics:** Faculty/Staff Participation, Faculty Roles, Bundling

**Cite:** Ashby, I., Caskurlu, S., Exter, M. (2018, March 6). Evolving Roles of Faculty at an Emerging Hybrid Competency-Based Transdisciplinary Program. Competency-based Education, 3(1).

**Link:** https://doi.org/10.1002/cbe2.1059

Faculty Supporting and Developing a CBE Program – Strategies Implemented at the University of Mary Hardin-Baylor

**Abstract:** This article examines how one institution actively engaged traditional faculty in the development and implementation of a competency-based program. Strategies for promoting faculty buy-in and providing intentional opportunities for faculty to take on leadership roles are examined.

**Stage of CBE Development:** Emerging

**Topics:** Faculty/Staff Participation, Vision, Innovation, Leadership

**Cite:** Cooper, T. R. (2016, April 27). Faculty Supporting and Developing a CBE program – Strategies Implemented at the University of Mary Hardin-Baylor. Competency-Based Education, 1(1).

**Link:** https://doi.org/10.1002/cbe2.1003

Improving the Validity of Objective Assessment in Higher Education: Steps for Building a Best-in-class Competency-Based Assessment Program

**Abstract:** This describes 12 steps for building a best-in-class objective assessment program; it describes four key assessment performance indicators and documents the continuous quality improvement cycle.

**Stage of CBE Development:** Developed

**Topics:** Quality Metrics, Process


**Link:** https://doi.org/10.1002/cbe2.1058
Program Management for Faculty Development: Addressing the Changing Faculty Roles in a Direct Assessment Competency-Based Model

Abstract: Initial training and ongoing faculty development are critical to the success of CBE implementation. Varied and ongoing strategies for engaging and supporting faculty in gaining knowledge and skills needed to be effective in a CBE model are examined.

Stage of CBE Development: Developed

Topics: Faculty/Staff Participation, Instruction, Curriculum Design


Link: https://www.ingentaconnect.com/contentone/aupha/jhae/2018/00000035/00000002/art00011

Real-Time Student Assessment: Meeting the Imperative for Improved Time to Degree, Closing the Opportunity Gap, and Assuring Student Competencies for 21st-Century Needs

Abstract: Chapter 4: “Guiding Principle #4 – Anchored in Continuous Reporting and Interrogation of Assessment Results” – A shared commitment to students’ equitable long-term success is anchored in continuously reporting assessment results to track students’ general education and major program outcomes.

Stage of CBE Development: Developed

Topics: Quality Metrics, Reporting


Two Underused Best Practices for Improvement Focused Assessments

Abstract: The article discusses the value of identifying (1) the planned uses of assessment data and (2) where bottlenecks to learning may occur. These two best practices are often overlooked. Intentionally planning for the use of assessment data improves the assessment process itself, and identifying bottlenecks improves learning outcomes.

Stage of CBE Development: Developed

Topics: Assessment Design, Hallmark Practices


Generalizable

Assessment Rubrics: Towards Clearer and More Replicable Design, Research and Practice

Abstract: Source identifies 14 different rubric design elements. Each is defined and serves to frame conversations around how to build effective rubrics.

Stage of CBE Development: Initial

Topics: Scoring/Feedback, Grade Is Meaningful and Interpretable by a Range of Stakeholders


Link: https://doi.org/10.1080/02602938.2015.1111294

Learning in Action: How Competent Professionals Learn

Abstract: This article is intended to identify the instructional principles that are effective in accelerating the performance of journeymen, considering the significant impact of the journeyman stage and the need for hastening performance in that stage. With the introduction to the major scholarly works and principles that have led to the elaboration of training methods, strategies, and materials, this review of literature proposes a learning model that has four components: (1) development plan, (2) action, (3) reflection on action, and (4) remedies.

Stage of CBE Development: Advanced

Topics: Assessment Design, Transfer


Link: https://doi.org/10.1002/piq.21209

Individualized

About the Proficiency-Based Learning Framework

Abstract: This is a framework for proficiency-based learning that is focused on prioritizing and assessing the most vitally important knowledge and skills while also balancing these high academic expectations with the need for flexibility, responsiveness, and creativity in the classroom.

Stage of CBE Development: Initial

Topics: Assessment Design, Quality Framework


Link: https://www.greatschoolspartnership.org/proficiency-based-learning/about-pbl-simplified/
Assessment Challenges in Competency-based Education: A Case Study in Health Professions Education

Abstract: This discusses challenges faced when transferring a program to CBE. It demonstrates the use of an independent assessment committee and a learner repository.

Stage of CBE Development: Developed

Topics: Assessment Design, Quality Framework


Link: https://doi.org/10.3109/0142159X.2015.1047754

Coaching by Design: Exploring a New Approach to Faculty Development in a Competency-based Medical Education Curriculum

Abstract: This article explores evidence on the use of coaching techniques to support student learning in competency-based medical education. It looks at specific coaching techniques and how these can apply to faculty development in CBE programs.

Stage of CBE Development: Developed

Topics: Faculty/Staff Participation, Faculty and Staff Roles, Coaching, Goal Setting, Self-direction


Link: https://doi.org/10.2147/AMEP.S191470

Fact Sheet: Universal Design for Learning

Abstract: Introduction to UbD

Stage of CBE Development: Initial

Topics: Assessment Design, Quality Framework


Link: https://lincs.ed.gov/state-resources/federal-initiatives/teal/guide/udl

Guiding Principles and Standards for Business Accreditation

Abstract: This provides guidelines/standards (including assessment requirements) for AACSB accreditation.

Stage of CBE Development: Advanced

Topics: Quality Metrics, Policy/Process


High-Stakes Assessments in Online Competency-Based Higher Education: The Assessment Development Cycle

Abstract: A formal, multistage assessment development cycle is articulated, addressing changes and emerging trends in OCBHE assessment practices. The cycle includes four stages that continually recur to establish and maintain the validity of assessment outcomes and test score interpretations.

Stage of CBE Development: Initial

Topics: Quality Metrics, Relevance


Link: https://www.igi-global.com/chapter/high-stakes-assessments-in-online-competency-based-higher-education/288166

Improving the Validity of Objective Assessment in Higher Education: Steps for Building a Best-in-Class Competency-Based Assessment Program

Abstract: This describes 12 steps for building a best-in-class objective assessment program; it describes four key assessment performance indicators and documents the continuous quality improvement cycle.

Stage of CBE Development: Initial

Topics: Quality Metrics, 1st Attempt Pass Rate


Link: https://doi.org/10.1002/cbe2.1058

Measuring and Reporting Competencies

Abstract: Measuring and reporting competencies requires the implementation of new and innovative processes that often conflict with existing systems of measuring and reporting learning outcomes. Examining the ways that some institutions have addressed these issues can be a useful starting point for educators as they begin planning competency-based programs.

Stage of CBE Development: Developed

Topics: Assessment Design, Hallmark Practices


Link: https://doi.org/10.1002/ir.9

Motivation in Education: Theory, Research, and Applications

Abstract: Source presents major motivational theories, principles, and research findings in sufficient detail to help us understand the complexity of motivational processes and principles applied to educational settings.

Stage of CBE Development: Initial

Topics: Scoring/Feedback, Feedback Aligned to Outcomes


**Performance-Based Assessment: Reviewing the Basics**

*Abstract:* This is an introduction to performance-based assessment. It describes what performance-based assessment is, what the essential elements are, and how a teacher can create performance-based assessments.

**Stage of CBE Development:** Initial

**Topics:** Assessment Design, Types of Assessment


**Link:** https://www.edutopia.org/blog/performance-based-assessment-reviewing-basics-patricia-hilliard

**A Review of Multiple-Choice Item-Writing Guidelines for Classroom Assessment**

*Abstract:* This resource is a synthesis of the research literature on effective multiple-choice item-writing guidelines.

**Stage of CBE Development:** Advanced

**Topics:** Assessment Design, Types of Assessment


**Link:** https://doi.org/10.1207/S15324818AME1503_5

**Scoring Models in Competency-Based Educational Assessment**

*Abstract:* The article explores scoring models with implications for CBE programs. Compensatory scoring models allow for strong performance in one content area or section of an assessment to compensate for poor performance in another area or section with a set overall score identified as meeting the performance standard. Conjunctive scoring models require learners to achieve particular performance standards for each content element or section of an assessment.

**Stage of CBE Development:** Emerging

**Topics:** Assessment Implementation/Scoring, Scoring Models, Learner Competence Evaluation


**Link:** https://doi.org/10.1002/cbe2.1173

**Task Analysis Methods for Instructional Design**

*Abstract:* This is a seminal handbook describing the process of breaking down tasks into discrete elements that inform instructional design and assessment decisions.

**Stage of CBE Development:** Advanced

**Topics:** Assessment Design, Task Analysis


Timing Matters: The Impact of Immediate and Delayed Feedback on Artificial Language Learning

Abstract: This resource compares the effectiveness of immediate feedback to delayed feedback with a significant benefit being shown to students who get timely turnaround on their submissions.

Stage of CBE Development: Developed
Topics: Scoring/Feedback, Timely and specific feedback
Link: https://doi.org/10.3389/fnhum.2011.00008

What’s Still Wrong With Rubrics: Focusing on the Consistency of Performance Criteria Across Scale Levels

Abstract: This resource looks at the importance of specificity in rubric creation and the impact that has on feedback.

Stage of CBE Development: Developed
Topics: Scoring/Feedback, Timely and Specific Feedback
Link: https://doi.org/10.7275/jtvt-wg68

Reliable

Advances in the Detection of Differentially Functioning Test Items

Abstract: The development and evaluation of methods for detecting potentially biased items or differentially functioning items (DIF) represent a critical area of research for psychometricians because of the negative impact of biased items on test validity.

Stage of CBE Development: Advanced
Topics: Quality Metrics, Differential Item Functioning (DIF)

Estimating the Consistency and Accuracy of Classifications Based on Test Scores

Abstract: This suggests a generally applicable method for using data from one form of a test to estimate the accuracy and the consistency of classifications based on test scores.

Stage of CBE Development: Advanced
Topics: Quality Metrics, Decision Consistency
Link: http://www.jstor.org/stable/1435147
ETR Contributions to the Quantitative Assessment of Item, Test, and Score Fairness

Abstract: The first section deals with differential prediction and differential validity procedures that examine whether test scores predict a criterion, such as performance in college, across different subgroups in a similar manner. The bulk of this report focuses on item level fairness or differential item functioning, which is addressed in the various subsections of the second section. The third section considers research pertaining to whether tests built to the same set of specifications produce scores that are related in the same way across different gender and ethnic groups. Limitations with the approaches reviewed here are discussed in the final section.

Stage of CBE Development: Advanced

Topics: Quality Metrics, Differential Item Functioning (DIF)


Link: http://dx.doi.org/10.1002/j.2333-8504.2013.tb02334.x

High-Stakes Assessments in Online Competency-Based Higher Education: The Assessment Development Cycle

Abstract: A formal, multistage assessment development cycle is articulated, addressing changes and emerging trends in OCBHE assessment practices. The cycle includes four stages that continually recur to establish and maintain the validity of assessment outcomes and test score interpretations.

Stage of CBE Development: Developed

Topics: Quality Metrics, Common Items


Link: https://www.igi-global.com/chapter/high-stakes-assessments-in-online-competency-based-higher-education/288166

Improving the Validity of Objective Assessment in Higher Education: Steps for Building a Best-in-Class Competency-Based Assessment Program

Abstract: This describes 12 steps for building a best-in-class objective assessment program; it describes four key assessment performance indicators and documents the continuous quality improvement cycle.

Stage of CBE Development: Advanced

Topics: Quality Metrics, Balance


Link: https://doi.org/10.1002/cbe2.1058
Indicators of Higher Education Equity in the United States: 2019 Historical Trends Report

Abstract: This report includes the following: Reports the status of higher education equity in the United States and identifies changes over time in measures of equity; identifies policies and practices that promote and hinder progress; illustrates the need for increased support of policies, programs, and practices that not only improve overall attainment in higher education but also create greater equity in higher education opportunity and outcomes.

Stage of CBE Development: Developed

Topics: Quality Metrics, Fairness and Bias


Scaffolded

Direct Assessment Competency-Based Educational Programs: Policy Statement

Abstract: Southern Association of Colleges and Schools Commission on Colleges policy statement re CBE.

Stage of CBE Development: Developed

Topics: Assessment Design, Formative Assessment, Quality Framework


Link: https://www.sacscoc.org/pdf/081705/DirectAssessmentCompetencyBased.pdf

Driving Lesson or Driving Test?: A Metaphor to Help Faculty Separate Feedback From Assessment

Abstract: Feedback is critical for learners who are building toward competency in the medical field. Effective feedback promotes learner growth and self-reflection. Both faculty and students must recognize the different purposes of feedback and assessment. The authors use a metaphor of a driving test vs. a driving lesson to make the point. Feedback should be constructive and the feedback conversation can be more effective when learners understand that feedback is not a high-stress test but rather a mutual engagement for improvement.

Stage of CBE Development: Developed

Topics: Faculty/Staff Participation, Formative feedback, Summative Assessment


Link: https://doi.org/10.1007/s40037-020-00617-w
Prior Learning Assessment and Competency-Based Education: An Overview of Programs, Policies, and Practices

Abstract: This report addresses the following key questions: 1. How can we help significantly more students reach their educational goals and improve their employment outcomes? 2. How can we reign in the growing time burden and ballooning costs students must shoulder throughout their educational journey? 3. How can we recognize the learning and experience the vast number of nontraditional students bring when they come to our colleges seeking a path to improved career opportunities and family-sustaining wages?

Stage of CBE Development: Initial

Topics: Assessment Design, Pre-Assessment (prior learning)


Link: https://files.ERIC.ed.gov/fulltext/ED570321.pdf

What Is OBE? Unboxing Outcomes-Based Education

Abstract: This is a clear statement of benchmarks for assessing student aptitude.

Stage of CBE Development: Initial

Topics: Assessment Design, Benchmarks


Link: http://www.d2l.com/blog/what-is-obe/

Valid

Assessment Design Toolkit

Abstract: This is a website with five modules for instructors to learn about sound assessment design (key concepts, elements of assessment design, writing and selecting assessments, and reflecting on assessment design).

Stage of CBE Development: Initial

Topics: Assessment Design, Assessments


Link: https://www2.ed.gov/teachers/assess/resources/toolkit/index.html

Assessment in Creative Disciplines: Quantifying and Qualifying the Aesthetic

Abstract: This is an introductory text addressing assessment in the arts. Topics include what creativity is; the relationships among expertise, practice, and learning; assessment design, types of assessment, challenges to assessing the aesthetics; and establishing a value to art and assessment in the arts.

Stage of CBE Development: Developed

Topics: Assessment Design, Authentic Assessments


Link: http://www.assessmentincreativedisciplines.com/index.html
Assessment of Competencies in Educational Contexts

Abstract: This provides theoretical perspectives on the concept of competencies in educational contexts. It deals with psychometric models for assessing and predicting competencies and measuring change.

Stage of CBE Development: Advanced

Topics: Quality Metrics, Measuring Competence


Link:

Building Competence: A Historical Perspective of Competency-Based Education.

Abstract: A flurry of new instructional approaches has recently emerged in post-secondary education; one approach receiving the most attention is competency-based education (CBE). While many think CBE is relatively new, its roots are deeply seeded in decades-old pedagogical philosophies. The frequency with which CBE is now appearing in conversations about higher education instruction and reform gives the false impression that most practitioners actually know what CBE is or how it contrasts with other instructional approaches. In fact, the modern dilemma faced by many in higher education is that few institutional leaders have a comprehensive understanding of what CBE is, how it differs from other instructional approaches, the historical significance behind it, and how it might be used to affect pedagogical change and instructional innovation. This chapter explores the historical basis of CBE, its benefits and detriments, and its operational elements.

Stage of CBE Development: Initial

Topics: Assessment Design, Building Competence


Link: https://www.igi-global.com/chapter/building-competence/167894

Building Competency in Competency-Based Education. A Toolkit for Educators

Abstract: The CBE Toolkit is a resource for those who want to know more about CBE. Module 3 introduces rubrics as a way to measure competence and mastery in a CBE learning environment. It describes what a rubric is and how to create and use a rubric.

Stage of CBE Development: Emerging

Topics: Assessment Design, Rubrics


Designing Quality Into Direct-Assessment Competency-Based Education

Abstract: Using the design principles from the Association of American Colleges and Universities can provide a higher-quality educational model that focuses more on student learning.

Stage of CBE Development: Developed

Topics: Assessment Design, Quality Framework


Link: https://doi.org/10.1002/cbe2.1043
Developing Errant Paths in a Simulation Testing Environment: A How To Guide for Assessment Professionals

Abstract: This examines the use of computer simulations as assessment tools.
Stage of CBE Development: Developed

Topics: Assessment Design, Authentic Assessments


Link: https://doi.org/10.1002/cbe2.1198

An Evaluation of Critical Thinking in Competency-Based and Traditional Online Learning Environments

Abstract: This compares critical thinking levels from CBE to traditional online courses.
Stage of CBE Development: Advanced

Topics: Assessment Design, Assessment, Rubrics


Link: https://files.eric.ed.gov/fulltext/EJ1181398.pdf

Healthier Testing Made Easy: The Idea of Authentic Assessment

Abstract: This article presents a brief description of what authentic assessments are and how they differ from traditional assessment types. It includes a working definition that emphasizes hallmark characteristics of assessment in CBE (e.g., real-world tasks and performances, assessment for learning, and transfer of knowledge).

Stage of CBE Development: Emerging

Topics: Assessment Design, Authentic Assessments


Link: https://www.edutopia.org/authentic-assessment-grant-wiggins

High-Stakes Assessments in Online Competency-Based Higher Education: The Assessment Development Cycle

Abstract: A formal, multistage assessment development cycle is articulated, addressing changes and emerging trends in OCBHE assessment practices. The cycle includes four stages that continually recur to establish and maintain the validity of assessment outcomes and test score interpretations.

Stage of CBE Development: Initial

Topics: Quality Metrics, Perceived Validity


Link: https://www.igi-global.com/chapter/high-stakes-assessments-in-online-competency-based-higher-education/288166
Making Competent Judgments of Competence

Abstract: Overview of how to measure competence. Scant literature exists concerning sound evaluation principles in higher education, especially in ensuring student competence in critical academic and professional domains. Thus, the question, “competent for (doing) what?” is essential to any competence definition. Competencies can be acquired through experience, gained from relevant contextual situations, or influenced by training or other external interventions. For competency-based institutions to confirm that learners have acquired the knowledge, skills, and abilities (KSAs) to demonstrate successful performance on the job, the definition of competence requires shifting from the conceptual paradigm of an evaluative stance to assuming responsibility for endorsing probable performance. Forces that might aid this conceptual transformation include the growing acceptance of competency-based credentials, which are fast becoming a way of life in many occupations and professions.

Stage of CBE Development: Advanced

Topics: Quality Metrics, Measuring Competence


Link: https://doi.org/10.1007/978-94-6091-867-4

Measuring Mastery: Best Practices for Assessment in Competency-Based Education

Abstract: In this paper, the authors introduce a set of best practices for high-stakes assessment in CBE, drawing from both the educational measurement literature and current practices in prior-learning and CBE assessments. Broadly speaking, there are two areas in assessment design and implementation that require significant and sustained attention from test developers and program administrators: (1) validating the assessment instrument itself and (2) setting meaningful competency thresholds based on multiple sources of evidence. Both areas are critical for supporting the legitimacy and value of CBE credentials in the marketplace. This paper, therefore, details how providers can work to validate their assessments and establish performance levels that map to real-world mastery, paying particular attention to the kinds of research and development common in other areas of assessment. The authors also provide illustrative examples of these concepts from prior-learning assessments (for example, Advanced Placement exams) and existing CBE programs.

Stage of CBE Development: Developed

Topics: Assessment Design, Measuring Mastery


Link: https://files.eric.ed.gov/fulltext/ED557614.pdf
The Operational Definition of Competency-Based Education

Abstract: Through a review of the literature, assessment in CBE is described. “Assessment in a CBE program is a key component to student learning. Assessments provide students the ability to gauge their acquisition and demonstration of a competency and the teacher’s ability to determine (a) the students learning needs, and (b) whether the assessments in place are measuring what they are supposed to measure” (Albanese et al., 2008; Clark, 1976; Grant et al., 1979; Hall & Jones, 1976; Le et al., 2014; O’Connell & Moomaw, 1975). Assessment is based on the performance of the individual learner and not in comparison to other learners. Grading is no longer on a bell curve. Assessments have multiple purposes. Pre- and post-assessments assist the teacher in learning about the learning needs of the individual. They also inform the student on their specific learning needs and where to focus their studies, that is, how many activities to partake in and how much time will be needed to be invested.

Stage of CBE Development: Initial

Topics: Assessment Design, Authentic Assessments


Link: https://doi.org/10.1002/cbe2.1011

PLA and CBE on the Competency Continuum: The Relationship Between Prior Learning Assessment and Competency-Based Education

Abstract: Three forms of CBE: (1) Course-based + prior learning assessment; approach: Partially or entirely competency-based; amount of flexibility: Most flexible. (2) Hybrid CBE + PLA, Approach: Entirely competency-based; amount of flexibility: Most flexible. (3) Direct assessment; approach: Entirely competency-based; amount of flexibility: Moderately flexible.

Stage of CBE Development: Initial

Topics: Assessment Design, Authentic Assessments


Link: https://files.eric.ed.gov/fulltext/ED583050.pdf

Scoring Models in Competency-Based Educational Assessment

Abstract: This resource demonstrates how different models of measuring and scoring assessments impacts inferences of overall competence. Results showed that students assessed as competent overall using a compensatory model (i.e., competence is a holistic, global trait) may not be competent in all areas being assessed. Conjunctive models are more analytic, specifying distinct traits required to demonstrate competence. The choice of model can have a significant impact on judgements of competence.

Stage of CBE Development: Developed

Topics: Assessment Design, Measuring Mastery


Link: https://doi.org/10.1002/cbe2.1172
Setting an Optimum Time Limit for a Computer-Administered Test

Abstract: Given the speed/accuracy tradeoff and its influence on examinee performance, different statistical models have been developed to aid test developers in formulating prediction models for setting appropriate time limits. One method, specific to nonadaptive computer-based tests, applies median item response times for non-speeded groups and combines them with the interquartile range (IQR) to derive an estimate – the IQR is the difference between the 25th and 75th percentiles. The procedure for computing the optimum test time by this formula is derived by the equation: \( \sum Mdi + (.5 * IQR) \) – read, the sum of the median response time for each item, plus .5 times the IQR. This method allows approximately 75% of test candidates to complete the exam under power conditions and the remaining 25% to complete the exam under speeded conditions.

Stage of CBE Development: Developed

Topics: Quality Metrics, Assessment Timing


Setting Performance Standards: Concepts, Methods, and Perspectives

Abstract: This book describes some common standard-setting procedures used to derive performance levels for achievement tests in education, licensure, and certification.

Stage of CBE Development: Developed

Topics: Quality Metrics, Passing standards (i.e., cut-scores)


Test Equating, Scaling, and Linking: Methods and Practices

Abstract: This book provides an introduction to test equating, scaling, and linking, including those concepts and practical issues that are critical for developers and all other testing professionals. In addition to statistical procedures, successful equating, scaling, and linking involves many aspects of testing, including procedures to develop tests, to administer and score tests, and to interpret scores earned on tests.

Stage of CBE Development: Advanced

Topics: Quality Metrics, Test Equating


Link: https://doi.org/10.1007/978-1-4939-0317-7

7 Things You Should Know About Competency-Based Education

Abstract: This article highlights what CBE is, how it works, the benefits and downsides of CBE, and the implications for teaching and learning.

Stage of CBE Development: Initial

Topics: Assessment Design


Link: https://library.educause.edu/resources/2014/2/7-things-you-should-know-about-competency-based-education
**DQP: The Degree Qualifications Profile**

**Abstract:** Introduces the five DQP learning categories: (1) Specialized knowledge (demonstrates learning beyond theory and terminology of specialized area); (2) broad and integrative knowledge (integrates learning among disciplines, synthesizes curriculum across disciplines); (3) intellectual skills (possesses traditional and non-traditional cognitive skills, interprets concepts from multiple viewpoints); (4) applied & collaborative learning (demonstrates learning through solving “unscripted problems,” conducts research/reports in creative ways; (5) civic & global learning (demonstrates “integration of … knowledge and skills” through civic engagement)

**Stage of CBE Development:** Initial

**Topics:** Assessment Design


**Link:** https://www.luminafoundation.org/files/resources/dqp.pdf

**Performance Assessment and Authentic Assessment: A Conceptual Analysis of the Literature**

**Abstract:** This article compares and contrasts performance assessment and authentic assessment.

**Stage of CBE Development:** Advanced

**Topics:** Assessment Design, Types of Assessment


**Link:** https://doi.org/10.7275/0QPC-WS45

**Standards for Educational and Psychological Testing**

**Abstract:** Backward design is a suggested planning sequence for curriculum. The design begins with the end (the desired results) in mind. Three specific stages: (1) Identify desired results, (2) determine acceptable evidence, and (3) plan learning experiences and instruction. With background design, assessment and evidence of competence or mastery is defined as one begins planning the unit or curriculum.

The Standards provides criteria for the development and evaluation of tests and testing practices as well as guidelines for assessing the validity of interpretations of test scores for the intended test uses.

**Stage of CBE Development:** All levels

**Topics:** Quality Metrics, General Assessment Standards


**Link:** https://www.testingstandards.net/

**Understanding by Design**

**Stage of CBE Development:** Developed

**Topics:** Assessment Design, Backward Design


**Link:** https://www.ascd.org/books/understanding-by-design-expanded-2nd-edition
**Western Governors University’s Assessment Quality Rubrics: High Standards for Assessments in CBE Programs**

**Abstract:** This presents two assessment quality rubrics used effectively to guide the high-quality development and maintenance of assessments across academic fields. The rubrics are offered to be of use to others in the field, specifically to assist CBE programs in establishing and maintaining high standards of assessment quality.

**Stage of CBE Development:** Initial

**Topics:** Quality Metrics, Quality Rubrics (Objective and Performance)

**Cite:** DeMark, S. (2016, June). Western Governors University’s Assessment Quality Rubrics: High Standards for Assessments in CBE Programs. Journal of Competency-Based Education, 1(2), 85–89. https://doi.org/10.1002/cbe2.1015

**Link:** https://doi.org/10.1002/cbe2.1015