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Bridging Academic Rigor and Workforce Readiness in Higher Ed through Competency-Based Education

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Abstract: *Competency-based education (CBE) has emerged as a significant innovation in higher education, shifting emphasis from credit hours to demonstrated mastery of specific skills and knowledge. This article examines the landscape of CBE implementation, its evidence base, and practical implications for institutional leaders. Drawing on research in learning sciences, adult development, and organizational change, the analysis explores how CBE models address workforce preparation while maintaining academic integrity. The article reviews organizational and learner outcomes, evidence-based implementation strategies, and long-term capability development. Examples from various institutional contexts illustrate how colleges and universities are adapting traditional structures to competency frameworks. For leaders navigating demands for accountability, accessibility, and relevance, CBE represents both opportunity and operational challenge. The article concludes with actionable recommendations for building sustainable, equity-oriented competency programs that serve diverse learner populations while preserving educational quality.*

Keywords: competency-based education, higher education, learning outcomes assessment, workforce development, adult learners, educational equity, authentic assessment, student success

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Higher education faces mounting pressure to demonstrate value. Employers report skill gaps among graduates; students question the return on investment of degrees; policymakers demand accountability for learning outcomes. Traditional credit-hour systems, designed for an era of campus-

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based, age-homogeneous cohorts, struggle to accommodate working adults, military personnel, and career changers seeking efficient pathways to credentials.

Competency-based education offers a potential response. By defining learning outcomes explicitly and allowing students to progress upon demonstrating mastery—regardless of time—CBE promises greater transparency, flexibility, and alignment with workforce needs. The U.S. Department of Education's 2013 experimental sites initiative catalyzed institutional experimentation, and CBE programs have since proliferated across community colleges, regional universities, and online providers.

Yet CBE remains contentious. Critics worry about quality dilution, assessment validity, and inequitable access to support structures. Proponents cite improved completion rates and employer satisfaction. For institutional leaders, the question is not whether CBE represents a magic solution—it doesn't—but rather how to assess its appropriateness for specific missions and populations, and if pursued, how to implement it with rigor and equity.

This article synthesizes research evidence and practice insights to help leaders navigate these questions thoughtfully. It examines the CBE landscape, consequences for institutions and learners, evidence-based implementation strategies, and long-term capability development. The goal is neither advocacy nor dismissal, but informed consideration of what quality CBE requires and when it makes strategic sense.

The Competency-Based Education Landscape

Defining CBE in Higher Education Contexts

Competency-based education represents a fundamental reorientation: from measuring learning in credit hours (seat time) to assessing mastery of defined competencies (demonstrated knowledge, skills, and dispositions). As Kuh (2008) observed in examining high-impact practices, effective learning experiences share common features: clear expectations, active learning, meaningful feedback, and opportunities for integration—all central to well-designed CBE.

CBE programs typically feature:

- **Explicit competency frameworks**: Detailed statements of what learners must know and do, often co-developed with industry partners and aligned to professional standards
- **Flexible pacing**: Students advance upon demonstrating mastery, not according to semester calendars
- **Authentic assessment**: Performance tasks, portfolios, simulations, and projects rather than primarily multiple-choice exams
- **Transparent expectations**: Rubrics and exemplars clarify performance standards from the outset
- **Personalized support**: Coaching and advising structures tailored to self-directed adult learners

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This contrasts with competency-*informed* curricula, where traditional courses incorporate competency language but retain credit-hour structures. True CBE unbundles time and learning, creating both pedagogical opportunities and operational complexities.

The distinction matters because genuine CBE requires different infrastructure, faculty development, student support, and quality assurance processes than simply adding competency statements to existing syllabi. Many institutions describe programs as "competency-based" when they are more accurately competency-informed hybrids—valuable in their own right but not requiring the wholesale transformation that direct-assessment CBE demands.

State of Practice and Drivers

Adoption patterns reflect diverse motivations and institutional contexts. Community colleges often pursue CBE to serve working adults and accelerate workforce credentialing in high-demand fields like healthcare, information technology, and advanced manufacturing. Four-year institutions may see opportunities for prior learning recognition and degree completion for students who left college with substantial credits but no credential. Online providers leverage CBE's flexibility to reach geographically dispersed learners juggling work and family responsibilities.

Common implementation drivers include:

- *Workforce alignment pressures*: Regional employers seeking graduates with specific, verified capabilities rather than general degree credentials
- *Adult learner demographics*: Growing populations balancing work, family, and education who need flexible pathways
- *Accountability demands*: State performance funding models and accreditor emphasis on documenting learning outcomes
- *Cost and completion concerns*: Interest in reducing time-to-degree and student debt burdens through acceleration and prior learning recognition
- *Competitive positioning*: Market differentiation in crowded higher education landscapes

Several institutions have developed notable CBE programs based on these drivers. Western Governors University (WGU), founded in 1997 by a consortium of state governors, pioneered fully online, subscription-based CBE at scale. WGU's model allows students to accelerate through competencies they've mastered elsewhere while spending more time on challenging areas, within flat-rate subscription periods. The institution serves over 100,000 students primarily in high-demand fields like teaching, nursing, IT, and business.

Capella University's FlexPath model, launched in 2013, offers subscription-based, self-paced learning in graduate and undergraduate programs. Students work through courses organized around competencies, submitting assessments when ready rather than following fixed schedules. The model appeals particularly to working professionals with relevant experience who can demonstrate competency efficiently.

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The University of Wisconsin Flexible Option represents a consortium approach, with multiple UW System institutions offering direct-assessment CBE credentials vetted through the Higher Learning Commission's innovative pathways. Programs in fields like business administration, diagnostic imaging, and information science technology serve Wisconsin residents seeking flexible degree completion.

Southern New Hampshire University's College for America serves employer partners—companies that sponsor employees' CBE credential completion. The subscription model includes built-in coaching support and competency-based associate and bachelor's degrees aligned with business and nonprofit sector needs. SNHU reports that the employer partnership model creates accountability and completion support often lacking in individual enrollment contexts.

Purdue University Global (the former Kaplan University, acquired by Purdue in 2018) has integrated competency-based elements into programs serving working adults, military personnel, and online learners. The institution emphasizes prior learning assessment and flexible pacing within structured course frameworks—a hybrid approach balancing CBE principles with traditional academic organization.

Institutions like UMass Global (formerly Brandman University), Excelsior College, and Charter Oak State College have long histories serving adult learners through flexible, competency-oriented pathways emphasizing prior learning assessment and self-directed study. These pioneers often operated before "competency-based education" became trendy terminology, grounding their models in adult learning theory and practical accessibility rather than primarily in workforce alignment rhetoric.

These examples illustrate varied approaches—some disaggregating courses entirely (direct assessment), others maintaining course shells with competency-based progression (course-based CBE), still others creating hybrids. The diversity reflects different institutional missions, student populations, regulatory environments, and implementation capacities. There is no single "right" CBE model, but rather design decisions that must align with context and resources.

Assessment and Accreditation Landscapes

Regional and programmatic accreditors have developed frameworks for reviewing CBE programs, but approval processes remain complex and sometimes inconsistent. The Higher Learning Commission created a direct-assessment pathway with specific requirements for competency definition, assessment rigor, student support, and faculty qualifications. The Western Association of Schools and Colleges (WASC) and other regional bodies have issued guidelines emphasizing that CBE programs must demonstrate equivalent rigor to credit-hour programs, not merely alternative structures.

The challenge centers on demonstrating equivalency. Accreditors traditionally evaluate faculty qualifications, library resources, credit hour definitions, and degree requirements—constructs that don't map neatly to CBE. How does one establish "faculty qualifications" when content experts, coaches, and assessors may be different people? What does "credit hour equivalency" mean when time

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is decoupled from learning? How should prior learning assessment integrate with competency validation?

These questions remain actively negotiated. Institutions pursuing CBE should expect substantial accreditor engagement, documentation requirements, and likely multiple review cycles before approval. The regulatory infrastructure is adapting but has not yet fully normalized CBE within traditional quality assurance frameworks.

Organizational and Individual Consequences of CBE Adoption

Institutional Performance Impacts

Research on CBE outcomes remains developing, with methodological challenges including selection effects (students choosing CBE may differ systematically from traditional students), varied program quality, and difficulty isolating CBE effects from other variables like intensive advising or technology platforms.

Available evidence suggests mixed but promising results when programs maintain rigorous design standards and adequate support structures. Eynon and Gambino (2017), in their extensive study of ePortfolio initiatives (often integral to CBE assessment), found that well-implemented programs showed positive effects on student success metrics, particularly for underserved populations. Their multi-institutional analysis, involving over 20,000 students across diverse institution types, revealed that integrative learning opportunities—a hallmark of quality CBE—correlated with improved retention, graduation rates, and student self-reported learning gains.

The ePortfolio research offers relevant insights for CBE because both emphasize making learning visible, integrating knowledge across contexts, and reflecting on competency development. Eynon and Gambino documented that when institutions invested in professional development, clear rubrics, and structured reflection opportunities, students showed measurable improvement in critical thinking, integrative learning, and written communication—all transferable competencies central to CBE frameworks.

Operational implications of CBE adoption prove substantial:

- *Faculty role transformation*: Shifting from primary content delivery to assessment design, coaching, and competency validation requires new skills and potentially threatens professional identity tied to disciplinary expertise and classroom authority
- *Technology infrastructure demands*: Learning management systems must track competency mastery, not just course completion; assessment platforms require sophistication to manage submission, evaluation, feedback, and revision workflows at scale
- *Financial model disruptions*: Subscription pricing and self-paced progression challenge traditional tuition revenue patterns based on credit hours; financial aid administration becomes complex when students aren't enrolled in discrete courses

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- *Advising and support redesign*: Traditional advising focused on course selection and degree requirements; CBE coaching requires understanding of competency progression, self-regulated learning support, and proactive outreach
- *Assessment workload considerations*: Performance-based assessment is labor-intensive; faculty evaluating portfolios, projects, and simulations report significantly higher time investments than grading exams

Institutions report implementation timelines of 18–36 months for program launch, with significant upfront investment in competency mapping, assessment development, faculty development, technology configuration, and regulatory approval. The assumption that CBE offers quick, cheap scalability often proves mistaken—quality implementation requires sustained resources.

Financial sustainability remains an open question for many programs. Subscription models can generate revenue efficiently when students complete quickly, but extended completion times within flat-rate periods can become financially unsustainable. Some institutions have adjusted models to include maximum competency completion limits per subscription period or moved toward competency-based pricing (charging per competency or assessment attempt) to balance flexibility with cost recovery.

Learner and Stakeholder Impacts

Student outcomes show considerable variability based on program quality, support structures, and student characteristics. Working adult learners with substantial professional experience often report high satisfaction with CBE's flexibility and relevance. The ability to accelerate through familiar content while spending more time on challenging competencies appeals to self-directed learners who can effectively assess their own knowledge gaps and regulate their progression.

However, research on self-regulated learning suggests that flexibility alone does not guarantee success—particularly for students without strong metacognitive skills or prior academic success. Bransford et al. (2000) emphasized that effective learning requires metacognitive support: helping learners recognize what they know, identify gaps, deploy appropriate learning strategies, and monitor their understanding. CBE programs lacking robust coaching and formative feedback may disadvantage students who need more structured guidance in developing these self-regulatory capabilities.

The risk is particularly acute for students from under-resourced educational backgrounds who may lack foundational competencies and have less experience with self-directed learning. If CBE's flexibility primarily benefits already-advantaged students with strong prior preparation and professional experience, it could exacerbate rather than reduce educational inequity.

Programs serving community college populations and first-generation students report success when combining CBE flexibility with high-touch advising, structured peer community opportunities, embedded academic support (writing assistance, tutoring, study skills development), and proactive outreach when students show disengagement patterns. The paradox is that CBE's promise of

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efficiency through self-pacing may require *more* intensive support structures to ensure equitable access to success.

Student financial implications are complex. Subscription models can reduce total degree costs for students who complete quickly, potentially saving thousands compared to traditional per-credit pricing. Prior learning assessment can further reduce time and cost by awarding credit for work experience, military training, or industry certifications. However, students who progress slowly—whether due to academic preparation gaps, competing life demands, or underestimation of program rigor—may find subscription models expensive relative to progress achieved.

Financial aid administration adds complications. Federal Title IV aid regulations have specific requirements for CBE programs, including academic year definitions, pace of progress standards, and satisfactory academic progress determination. Students accustomed to traditional financial aid may find CBE models confusing, and institutions must invest in specialized financial aid expertise to ensure compliance while serving students effectively.

Employer and Workforce Perspectives

Employer perspectives on CBE vary considerably. Some organizations value CBE's transparency—detailed competency frameworks clarify graduate capabilities more precisely than degree titles alone. A bachelor's degree in business administration could mean many things; a competency-based credential specifying mastery of financial analysis, data interpretation, project management, and cross-functional communication provides clearer signals.

Industry sectors with defined competency standards—healthcare, information technology, advanced manufacturing—often align well with CBE models. Nursing programs, for example, already emphasize clinical competency demonstration; CBE extends this principle across theoretical and applied domains. IT certifications from vendors like Microsoft, Cisco, and CompTIA provide industry-recognized competency frameworks that CBE programs can integrate, creating stackable credentials with immediate workforce currency.

However, many employers remain unfamiliar with CBE credentials or skeptical about quality, preferring traditional degrees from recognized institutions. Hiring managers report uncertainty about how to evaluate CBE transcripts that list competencies rather than course grades. Without widespread employer education and credential transparency infrastructure, CBE graduates may face labor market disadvantages despite potentially stronger demonstrated capabilities.

Digital credentialing and comprehensive learner records represent emerging solutions. Platforms allowing students to earn verified digital badges for specific competencies, aggregate them into shareable portfolios, and provide detailed evidence of mastery (assessment artifacts, reflections, contextual applications) could address employer information needs. However, these systems remain nascent and unevenly adopted.

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The most successful CBE-employer connections involve direct partnership: employers helping define competency frameworks, providing internship or applied project opportunities, and committing to hiring or advancement pathways for program graduates. Southern New Hampshire University's College for America model, where employers sponsor employee participation, creates built-in labor market relevance and graduate employment. Similarly, community college CBE programs developed with regional industry consortia tend to show stronger employment outcomes than programs developed primarily from academic perspectives.

Evidence-Based Organizational Responses

Rigorous Competency Framework Development

Effective CBE begins with well-designed competency statements that balance specificity with meaningful integration. Research on expertise development emphasizes the importance of organizing knowledge around core concepts and transferable skills rather than fragmented facts (Bransford et al., 2000). Experts don't just know more; they organize knowledge differently, recognizing patterns, connecting principles across contexts, and deploying strategies adaptively.

CBE competency frameworks should reflect this understanding. Overly atomized competencies—endless checklists of micro-skills—fail to capture integrative thinking and adaptive expertise. Overly broad competencies—"demonstrate critical thinking"—lack specificity for meaningful assessment. The sweet spot involves competencies defined at levels specific enough for clear assessment criteria but broad enough to require synthesis and application.

Successful approaches include:

- *Backward design from desired outcomes*: Starting with program-level graduate competencies (what should graduates be able to do in professional contexts?), then mapping to intermediate competencies and learning progressions
- *Multi-stakeholder input*: Engaging faculty across disciplines, employers from relevant sectors, professional association representatives, recent graduates, and current students to ensure relevance, rigor, and feasibility
- *Granularity calibration*: Defining competencies at levels that enable meaningful assessment without checklist reductionism—typically 8-15 major competencies per program, each with 3-6 sub-competencies or performance criteria
- *Integration with existing standards*: Aligning to accreditation requirements, professional certifications, and disciplinary frameworks rather than creating entirely novel structures disconnected from recognized quality benchmarks
- *Iterative refinement*: Pilot-testing competencies with students and assessors, gathering feedback on clarity and assessability, and revising before full implementation

Excelsior College, which has served adult learners through flexible, competency-oriented pathways for over 50 years, emphasizes alignment with established frameworks like the Lumina Foundation's

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Degree Qualifications Profile and professional accreditation standards. Their approach grounds CBE innovation in recognized quality benchmarks rather than treating competency-based learning as entirely separate from traditional higher education values.

The University of Michigan's Master of Health Professions Education redesigned its curriculum using backward design principles, mapping competencies to authentic workplace performance requirements in health professions teaching, curriculum development, and educational research. Faculty collaboratively developed assessment rubrics tied to each competency, creating transparency and consistency while allowing for disciplinary expertise in evaluation.

Competency language matters. Effective statements use action verbs specifying what students will *do* to demonstrate mastery, not what they will "understand" or "appreciate." They include context (under what conditions will performance occur?) and criteria (what standards define adequate versus excellent performance?). For example:

Weak competency: "Understand statistical analysis"

Stronger competency: "Design and conduct appropriate statistical analyses for research questions in organizational contexts, interpret results accurately, and communicate findings to non-technical audiences using data visualization and plain-language explanation"

The stronger version specifies actions (design, conduct, interpret, communicate), context (organizational research), and implicit criteria (appropriateness, accuracy) that inform assessment design.

Authentic, Valid Assessment Systems

Assessment quality determines CBE credibility. Multiple-choice tests rarely capture complex competency demonstration; performance-based assessments require sophisticated design and evaluation to ensure validity, reliability, and fairness.

Evidence-based assessment strategies include:

- *Portfolio development with integrative reflection*: Eynon and Gambino (2017) documented how ePortfolios—where students curate evidence of competency mastery across multiple contexts and reflect on learning processes—enhance both assessment validity and deeper learning. Portfolios allow students to demonstrate competency through authentic work products (project reports, design artifacts, case analyses, creative works) while developing metacognitive awareness through reflection on growth and connections
- *Performance tasks and simulations*: Authentic problems requiring application of multiple competencies simultaneously, mirroring workplace complexity. Simulations in nursing education (clinical scenarios with standardized patients), engineering (design challenges with real-world constraints), and business (case competitions requiring analysis and presentation) provide rich assessment data

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- *Rubric-based evaluation with transparent criteria*: Detailed scoring guides defining performance levels across competency dimensions. Effective rubrics are ideally co-created with students or at minimum shared before assessment, building metacognitive awareness of quality standards
- *Multiple assessors and calibration protocols*: Inter-rater reliability procedures ensuring consistency, particularly important when different faculty assess different students' work. Regular calibration sessions where assessors evaluate common work samples and discuss criteria application help maintain standards
- *Formative feedback loops*: Low-stakes opportunities to demonstrate emerging competency, receive detailed feedback, revise, and resubmit before summative evaluation. This mirrors professional practice (where drafts and revisions are normal) while supporting learning

Alverno College pioneered outcomes-based, assessment-intensive education where students demonstrate competencies through multiple contexts and receive detailed developmental feedback from multiple perspectives—self, peer, faculty, and external evaluator. Their multi-dimensional assessments provide validity evidence that single tests cannot, while the feedback-rich environment supports continuous improvement rather than one-shot high-stakes judgment.

Capella's FlexPath program uses detailed rubrics for all assessments, with faculty trained in consistent evaluation through calibration exercises and ongoing norming discussions. Students receive narrative feedback on each competency dimension, clarifying what mastery requires and guiding revision when performance doesn't yet meet standards. The model allows unlimited resubmission, emphasizing mastery over speed—though institutional data suggests most students require no more than 1-2 revisions per assessment, indicating that clear rubrics and formative guidance help students self-assess effectively before submission.

Assessment validity in CBE requires attention to several dimensions:

- *Content validity*: Do assessments adequately sample the competency domain? A single assessment task may not capture all facets of a complex competency.
- *Construct validity*: Do assessments measure the intended competency rather than confounding factors? If a performance task requires sophisticated writing, are we assessing the target competency or writing ability?
- *Consequential validity*: What are the consequences of assessment decisions? If assessments advantage certain student populations over others not due to competency differences but cultural bias or access to resources, validity is compromised.
- *Reliability*: Do assessments yield consistent results across evaluators, occasions, and equivalent tasks?

Institutions pursuing CBE should invest in assessment validity studies, not just assume that performance tasks are inherently valid. Collecting inter-rater reliability data, analyzing assessment

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results by student demographics to identify potential bias, and gathering student and employer feedback on assessment authenticity all contribute to continuous improvement.

Adaptive Learning Support and Coaching

Self-paced progression demands sophisticated student support that recognizes the paradox: independent learning requires well-structured guidance. Research on adult learning and communities of practice emphasizes that self-direction develops through supportive relationships, not isolation (Wenger, 1998).

Effective support models include:

- *Proactive coaching structures*: Regular, scheduled check-ins regardless of student progress status, not just reactive responses to struggling students. Coaches monitor engagement analytics, celebrate progress, troubleshoot challenges, and help students maintain momentum. The coaching role differs from traditional advising (which focuses on course selection and degree requirements) by emphasizing learning strategies, goal-setting, time management, and motivational support
- *Data-driven early alerts*: Learning analytics identifying engagement patterns that predict difficulty—declining login frequency, assessment submission delays, repeated unsuccessful assessment attempts—enabling timely, targeted intervention before students become discouraged and disengage
- *Structured peer learning communities*: Opportunities for cohort connection despite asynchronous progression, reducing isolation and creating peer accountability. Online discussion forums, virtual study groups, cohort-based orientations, and peer mentoring programs help students build relationships and share strategies
- *Transparent learning pathways*: Visual tools helping students understand competency prerequisites, see their progression through programs, and plan their routes strategically. Competency maps showing what's been mastered, what's in progress, and what's available next reduce confusion and empower student agency
- *Embedded academic support*: Writing assistance, tutoring, study skills development, and subject-matter help integrated into CBE platforms and proactively offered, not siloed in separate centers that require students to seek help. Many institutions embed academic coaches or subject mentors directly in CBE programs rather than relying on generic campus support services that may not understand competency-based models

Southern New Hampshire University's College for America assigns each student a success coach who monitors progress across all competencies, provides encouragement, troubleshoots obstacles (academic, technical, or personal), and connects learners with additional resources as needed. Students also access subject-matter mentors for content-specific guidance—faculty experts who answer questions, provide feedback on draft work before formal assessment submission, and clarify

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competency expectations. This layered support recognizes that coaching (motivational and navigational) and content expertise are distinct capabilities.

Charter Oak State College, serving primarily adult learners through flexible pathways, emphasizes prior learning assessment and personalized degree planning. Their advising model helps students map existing knowledge to program competencies, identifying what they've already mastered through work, military service, or prior education, then creating efficient pathways to address genuine gaps without redundant learning. This competency gap analysis—a systematic comparison of demonstrated capabilities to program requirements—makes progression transparent and efficient.

The technology supporting these functions matters enormously. Customer relationship management (CRM) systems tracking student interactions, learning analytics dashboards flagging engagement concerns, integrated messaging enabling quick coach-student communication, and mobile-accessible platforms accommodating students' on-the-go lives all contribute to effective support. Institutions implementing CBE without adequate technology for support functions report coach burnout, student confusion, and unsustainable manual workarounds.

Technology Infrastructure for Competency Tracking

Traditional learning management systems (LMS), designed around courses, modules, and gradebooks, struggle with CBE's requirements. Purpose-built CBE platforms or heavily customized LMS implementations must handle complex technical demands:

- *Competency mapping and progression visualization*: Showing students which competencies they've mastered, which are in progress, prerequisites for advancement, and remaining requirements. Visual competency maps provide at-a-glance understanding that text-based degree audits don't offer
- *Assessment workflow management*: Enabling submission of varied artifact types (written assignments, video presentations, portfolios, project files), routing to appropriate assessors, providing rubric-based evaluation interfaces, returning detailed feedback, and managing revision cycles efficiently at scale
- *Prior learning integration*: Mechanisms for documenting competencies gained outside formal education, uploading evidence (licenses, certifications, work products), facilitating faculty assessment, and awarding competency credit. This workflow differs from traditional transfer credit evaluation and requires specialized tools
- *Credential transparency and digital badging*: Generating comprehensive learner records that communicate competency mastery to employers through detailed, verified competency statements, assessment evidence, and stackable digital badges. Integration with platforms like Credly or Badgr enables shareable, verifiable credentials
- *Analytics for program improvement*: Aggregate data on competency mastery rates (which competencies do students master quickly versus struggle with?), time-to-completion by competency, assessment attempt patterns, and demographic outcome analysis. These

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analytics inform competency framework revision, assessment refinement, and targeted support development

The University of Wisconsin Flexible Option developed custom platform integrations enabling competency tracking, prior learning assessment workflows, subscription-based enrollment management, and financial aid compliance reporting—technical infrastructure essential to their direct-assessment CBE model. The implementation required significant IT investment and multi-year development, illustrating that technology costs for quality CBE are substantial.

Some institutions have adopted purpose-built CBE platforms from vendors like Motivis Learning, Chalk & Wire, or Salesforce Education Cloud, while others heavily customize open-source LMS platforms like Canvas or Moodle. Each approach involves trade-offs: vendor solutions may offer sophisticated CBE-specific features but less flexibility and ongoing licensing costs; custom-built solutions provide greater control but require sustained in-house technical capacity.

Critically, technology must serve pedagogy, not drive it. The temptation to let platform capabilities determine program design rather than educational vision leads to compromised quality. Institutions should define competency frameworks, assessment approaches, and support models first, then select or configure technology to enable those designs.

Faculty Development and Role Redesign

CBE transforms faculty work in ways that can be energizing or threatening, depending on institutional culture and change management approaches. Traditional faculty identity often centers on disciplinary expertise and classroom authority; CBE models may require different capabilities and redistribute traditional faculty functions across multiple roles.

Research-informed faculty development addresses:

- *Assessment design expertise*: Training in performance task development, rubric creation, validity considerations, and calibration processes. Many faculty have limited formal preparation in assessment science; CBE implementation requires building this capability systematically
- *Coaching and facilitation skills*: Shifting from content delivery (lecturing) to guided learning facilitation—asking powerful questions, providing developmental feedback, supporting self-regulated learning. These pedagogical skills differ from traditional teaching and require practice and modeling
- *Asynchronous pedagogy*: Engaging students effectively without real-time classroom interaction. Writing discussion prompts that generate rich dialogue, providing video or audio feedback that builds connection, structuring peer interaction, and maintaining presence in online environments all require deliberate skill development
- *Competency framework fluency*: Understanding how competency statements relate to disciplinary knowledge, how competencies integrate across courses or modules, and how

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to align teaching and assessment with competency targets rather than content coverage imperatives

Successful institutions create communities of practice where faculty collaboratively develop CBE courses, share assessment strategies, troubleshoot challenges, and calibrate evaluation standards. Wenger's (1998) seminal work on communities of practice emphasizes that expertise develops through collaborative engagement with shared problems, not merely through workshops or training manuals. Faculty learning communities focused on CBE implementation create spaces for peer learning, experimentation, and collective problem-solving.

Purdue University Global invested in extensive, multi-year faculty development when transitioning programs to competency frameworks, recognizing that pedagogical change requires sustained support. Faculty learning communities focused on specific challenges—designing performance assessments, providing effective asynchronous feedback, supporting diverse learners in self-paced environments, using data to improve teaching—with peer mentoring, teaching observations, and iterative course revision. The institution reports that faculty initial skepticism often transformed into enthusiasm as they experienced student engagement and learning in well-designed CBE environments.

Some institutions create distinct faculty roles rather than expecting all faculty to perform all functions:

- *Competency architects*: Disciplinary experts who design competency frameworks, develop assessments, and create learning resources
- *Learning coaches*: Faculty or trained staff who guide students through progression, provide formational feedback, and support self-regulated learning
- *Competency assessors*: Faculty who evaluate student work against rubrics, make mastery determinations, and provide summative feedback

This specialization can improve quality and efficiency—allowing those with assessment expertise to focus on that work, those with coaching strengths to support students intensively. However, it raises questions about integrated educational relationships and whether fragmentation of faculty roles undermines the holistic mentoring that characterizes quality higher education.

Faculty compensation models require attention. Traditional workload calculations based on credit hours taught don't map to CBE where student progression is asynchronous and assessment is performance-based. Institutions have experimented with various approaches: compensation per student enrolled (regardless of pacing), per competency assessed, per coaching hour, or hybrid models. Each has trade-offs regarding faculty income predictability, institutional cost control, and incentive alignment.

Faculty governance and shared governance processes are critical for sustainable CBE implementation. When CBE is imposed top-down without faculty input and ownership, resistance is predictable and often justified. Programs developed collaboratively, with faculty agency in competency definition and

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assessment design, show stronger buy-in and quality. This requires patience—participatory processes take time—but the investment yields more sustainable and educationally sound results.

Building Long-Term Institutional Capability

Quality Assurance and Continuous Improvement Systems

Sustaining CBE quality requires systematic evaluation beyond traditional metrics like course grades and credit accumulation. Accreditors increasingly expect evidence that competencies align with stated program outcomes, assessments validly measure competencies, and graduates demonstrate intended capabilities in professional contexts.

Continuous improvement infrastructures include:

- *Competency mastery analytics*: Tracking which competencies students master quickly (possibly indicating appropriate prior learning or effective instruction), which require multiple assessment attempts (signaling difficulty that may need additional learning resources or assessment revision), and where demographic disparities exist (potentially indicating bias or inequitable access to preparation)
- *Assessment validation studies*: Regular inter-rater reliability checks to ensure consistent evaluation; correlation analyses examining whether different assessments of the same competency yield convergent results; employer and alumni feedback on whether assessed competencies transferred to professional contexts
- *Graduate outcome tracking*: Employment rates by program and competency area, employer satisfaction surveys, alumni self-assessment of competency retention and application, and longitudinal career progression data. These outcomes provide consequential validity evidence—do CBE credentials predict professional success?
- *Regular competency framework review*: Convening stakeholders (faculty, employers, professional associations, recent graduates) periodically to assess whether competency frameworks remain current given evolving workforce needs, technological changes, and disciplinary advances. Competencies shouldn't be static; they require regular updating

Institutions report that CBE's explicit competency frameworks actually facilitate program review and improvement. Traditional programs often struggle to assess student learning outcomes meaningfully; course grades are opaque proxies for varied outcomes. CBE makes learning outcomes transparent, assessment direct, and data on mastery rates readily available. When 40% of students require multiple attempts to demonstrate a specific competency, that signals a problem warranting investigation—inadequate learning resources? Unclear competency definition? Assessment misalignment? Unrealistic expectations?

The key is building data-informed improvement cycles into regular practice rather than treating assessment as compliance theater. Faculty need time, support, and authority to act on assessment data. Administrators must resource improvement rather than simply demanding it. Students should see

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evidence that their assessment experiences inform program evolution—closing feedback loops that demonstrate their input matters.

Equity and Access Considerations

CBE's flexibility can promote equity—enabling working adults, caregivers, military personnel, and others with time constraints to earn credentials at their own pace. Prior learning recognition values diverse experience that traditional higher education often ignores. Competency transparency clarifies expectations, potentially reducing hidden curriculum advantages that privilege students from college-educated families who understand unspoken academic norms.

However, significant equity risks exist:

- *Self-regulation disparities*: Self-paced models may disadvantage students who lack self-regulation skills developed through strong prior schooling. Students from under-resourced high schools, first-generation students, and those whose prior educational experiences emphasized compliance over self-direction may struggle without intensive support
- *Digital access and literacy*: CBE programs typically delivered online require reliable internet, appropriate devices, and digital literacy. Students with limited technology access or skills face barriers to participation
- *Cultural assessment bias*: Performance tasks requiring particular communication styles, cultural knowledge, or ways of demonstrating competence may advantage some student populations over others not due to competency differences but cultural mismatches
- *Subscription pricing inequities*: While subscription models can reduce costs for quick finishers, they may penalize slower learners or students facing unexpected life disruptions (illness, family crises, employment changes). Flat-rate pricing that assumes consistent progression may prove financially punishing for students whose lives are unpredictable
- *Isolation and belonging*: Self-paced, asynchronous learning can feel isolating, particularly for students who thrive on peer interaction and community. Without deliberate community-building, CBE may undermine the sense of belonging that supports persistence, especially for students from marginalized backgrounds

Equity-focused CBE design requires proactive attention:

- *Transparent prerequisite competencies*: Clear communication about foundational skills needed for success, with accessible pathways (bridge programs, embedded support) to develop them rather than assuming students arrive ready
- *Embedded support as default, not opt-in*: Making coaching, peer community, and academic assistance standard program features rather than requiring struggling students to seek help (which research shows disadvantaged students are often reluctant to do due to stigma or unawareness)

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- *Flexible pacing with safeguards*: Encouraging acceleration where appropriate while monitoring for students moving too quickly without genuine mastery or too slowly due to inadequate support. Predictive analytics can identify concerning patterns for proactive outreach
- *Multiple entry points and stackable credentials*: Allowing students to earn meaningful credentials at various points—certificates, badges, associate degrees en route to bachelor's—so that life disruptions don't mean total program abandonment
- *Universal Design for Learning principles*: Building in multiple means of representation (presenting content in varied formats), expression (allowing diverse ways to demonstrate competency), and engagement (providing choices that connect to varied interests and cultures) from the outset rather than retrofitting accommodations (Rose & Meyer, 2002)

Rose and Meyer's (2002) Universal Design for Learning framework emphasizes reducing barriers through flexible design rather than treating accessibility as special accommodation. This philosophy aligns well with CBE's learner-centered orientation but requires deliberate implementation. For example, allowing students to demonstrate a communication competency through written reports, video presentations, or podcast formats accommodates diverse strengths and learning preferences while maintaining rigorous standards for communication effectiveness.

Equity monitoring must be ongoing. Disaggregating outcome data by student demographics (race/ethnicity, income level, first-generation status, age, disability status) reveals whether CBE programs serve all students equitably or replicate traditional higher education's disparities. When gaps appear, institutions must investigate root causes and implement targeted interventions rather than accepting inequities as inevitable.

Strategic Positioning and Mission Alignment

CBE is not universally appropriate. Institutions must assess fit with mission, student populations, competitive positioning, and organizational capabilities before committing significant resources.

Strategic considerations include:

- *Mission coherence*: Does CBE align with institutional values around learning, access, and workforce preparation, or does it represent mission drift? A liberal arts college emphasizing breadth, exploration, and intellectual community may find CBE philosophically misaligned, while a regional university committed to workforce development and adult learner access may find strong resonance
- *Market demand and differentiation*: Is there genuine demand from target student populations and employer partners, or is CBE pursued primarily for competitive positioning in response to peer institutions' initiatives? Sustainable programs require real market need, not just trendy innovation
- *Resource availability and sustainability*: Can the institution sustain multi-year investments in technology, faculty development, student support structures, and regulatory approval

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processes required for quality CBE? Underfunded implementation compromises quality and may harm students while damaging institutional reputation

- *Organizational capacity for change*: Does the institution have change management capability, faculty openness to pedagogical innovation, administrative flexibility, and leadership commitment to navigate CBE's cultural and operational transformation? Imposing CBE on resistant faculty and rigid bureaucracies produces poor results
- *Risk tolerance*: Is leadership prepared for implementation challenges, potential enrollment volatility during start-up, critical scrutiny from traditional higher education peers, and possibility that programs may not achieve projected enrollments or outcomes?

Kilgo et al. (2015), in their longitudinal study of high-impact educational practices, found that practices like service-learning, undergraduate research, and learning communities—many embodying principles central to CBE—show positive effects across institution types but require sustained commitment and adequate resources. Poorly implemented innovations may harm rather than help students. The same applies to CBE: done well with sufficient resources and thoughtful design, it can enhance learning and access; done badly through superficial adoption or underfunding, it risks quality and equity.

Institutions successful with CBE often start small and scale strategically: launching a single program, evaluating carefully, refining based on data and feedback, then expanding to additional programs with lessons learned integrated. Wholesale institutional transformation to competency-based models without piloting and learning proves risky—both educationally and financially.

Some institutions may determine that competency-informed approaches—traditional courses with explicit competency frameworks, rubric-based assessment, and prior learning recognition—serve their missions and students better than full CBE. This represents legitimate strategic choice, not failure to innovate. The goal is educational effectiveness and mission advancement, not innovation for its own sake.

Building Sustainable CBE Ecosystems

Long-term CBE success requires ecosystem development beyond individual programs:

- *Credential portability and transfer*: Working with other institutions to establish competency transfer agreements, ensuring that students who complete CBE credentials can continue to other programs without wholesale re-demonstration of mastered competencies. Regional consortia and statewide agreements facilitate this portability
- *Employer engagement infrastructure*: Ongoing relationships with industry partners who inform competency framework updates, provide internship and applied learning opportunities, participate in program advisory boards, and commit to hiring pathways for graduates. These relationships require sustained cultivation, not transactional one-time consultation
- *Professional development communities*: Networks of CBE practitioners across institutions who share assessment strategies, troubleshoot common challenges, and advance the field

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collectively. National organizations like the Competency-Based Education Network (C-BEN) provide these communities, but institutions should also build regional networks

- *Research and evidence-building*: Contributing to the evidence base through program evaluation, outcome studies, and assessment validation research. The field needs more rigorous research on what CBE designs work, for whom, and under what conditions. Institutions implementing CBE should treat programs as research sites, systematically documenting and sharing results
- *Policy advocacy*: Engaging with accreditors, federal and state policymakers, and financial aid administrators to address regulatory barriers and advocate for frameworks that ensure quality while enabling innovation. Many CBE challenges stem from regulations designed for traditional credit-hour models; updating policy requires collective institutional voice

These ecosystem elements create conditions for CBE to mature from experimental innovation to established, quality-assured educational option. Individual institutional success depends partly on field-level infrastructure development—a collective action challenge requiring collaboration alongside competition.

Conclusion

Competency-based education represents a significant pedagogical and operational shift for higher education institutions, challenging century-old assumptions about how learning is structured, measured, and credentialed. When designed rigorously with attention to assessment validity, adequate student support, and equity considerations, CBE can enhance educational transparency, expand access for diverse learners, and strengthen workforce alignment while maintaining academic integrity.

The evidence base, while still developing, suggests that quality CBE programs can serve working adults, military personnel, career changers, and other non-traditional students effectively—particularly when combining flexibility with intensive coaching, clear competency frameworks with authentic assessment, and efficient progression with robust quality assurance. Eynon and Gambino's (2017) research on high-impact ePortfolio practices demonstrates that integrative, competency-focused learning can improve outcomes especially for underserved populations when institutions invest in professional development, transparent expectations, and structured reflection.

However, CBE is neither panacea nor simple reform. Implementation demands substantial, sustained investment in technology infrastructure, faculty development, student support redesign, and regulatory navigation. The assumption that CBE offers quick, cheap scalability through technology-enabled automation proves misleading—quality competency-based education is labor-intensive, requiring sophisticated assessment, personalized coaching, and continuous improvement.

Equity implications require vigilant attention. CBE's flexibility can expand access for students juggling work and family, but self-paced models risk disadvantaging learners who lack strong self-regulation skills or adequate academic preparation. Without proactive, embedded support and Universal Design

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for Learning principles, CBE may replicate or exacerbate traditional higher education's inequities rather than reduce them.

For institutional leaders considering CBE adoption, several principles emerge from research and practice:

- **Ground decisions in mission and market**: Pursue CBE because it aligns with institutional mission and addresses genuine student and employer needs, not primarily for competitive positioning or innovation rhetoric. Strategic fit matters more than trendiness.
- **Start with learning science**: Design CBE based on evidence about how people develop expertise, transfer knowledge across contexts, and become self-regulated learners. Bransford et al.'s (2000) synthesis of learning research should inform competency framework development and assessment design, not just operational efficiency considerations.
- **Invest in assessment quality**: Competency-based models stand or fall on assessment validity and reliability. Rigorous performance tasks, calibrated evaluation, authentic contexts, and meaningful feedback are non-negotiable. Assessment development requires time, expertise, and resources.
- **Build comprehensive support infrastructure**: Self-paced learning requires more, not less, intensive student support—proactive coaching, peer community structures, transparent progression pathways, and embedded academic assistance. Technology enables scale but doesn't replace human relationship and guidance.
- **Ensure adequate technology**: Platforms for competency tracking, assessment workflow management, analytics, and learner record generation are foundational to sustainable operations. Underfunded technology creates frustration, manual workarounds, and quality compromises.
- **Develop faculty capability through communities of practice**: Faculty need new competencies for CBE success, developed through collaborative engagement with shared challenges, not just workshops. Wenger's (1998) communities of practice model emphasizes that expertise emerges through joint work on meaningful problems.
- **Monitor equity systematically**: Disaggregate outcome data by student demographics, investigate disparities, and intervene when gaps appear. CBE should expand opportunity, not replicate privilege patterns.
- **Commit to continuous improvement**: Use competency mastery analytics, assessment validation studies, and stakeholder feedback to refine frameworks, assessments, and support structures iteratively. Data-informed improvement should be normal practice, not compliance exercise.
- **Start small and scale strategically**: Pilot programs, evaluate rigorously, learn from implementation, then expand with lessons integrated. Wholesale transformation without learning proves risky educationally and financially.

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- **Contribute to field development**: Share results, participate in cross-institutional communities, engage in policy advocacy, and advance the evidence base. CBE's long-term legitimacy depends on collective quality assurance and research, not just individual institutional marketing.

Ultimately, competency-based education represents one approach among many for addressing higher education's contemporary challenges around accountability, access, affordability, and workforce relevance. Its emphasis on demonstrated learning, transparent expectations, flexible progression, and authentic assessment aligns with legitimate demands for educational quality and equity. Yet implementation sophistication, resource adequacy, and cultural readiness vary enormously across institutions.

The most successful CBE initiatives emerge not from bandwagon-jumping but from thoughtful strategic consideration, evidence-informed design, adequate resourcing, inclusive change management, and relentless attention to learning quality and equitable outcomes. For institutions where CBE aligns with mission and capacity, it offers genuine opportunity to serve students and communities more effectively. For others, competency-informed approaches within traditional structures may prove more appropriate and sustainable.

What matters most is not whether institutions adopt the CBE label, but whether they maintain commitment to rigorous, equitable, accessible, and demonstrable learning—the core values that should guide all higher education innovation.

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