Research Explainers: What Are We Learning about Postsecondary Competency-Based Education?

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Overview

Practitioners considering the development of competency-based education (CBE) now have an important resource: colleges have already built hundreds of CBE programs from which key lessons may be learned. Existing programs vary widely in terms of both design and implementation, with a range of interesting and creative choices, and researchers have begun to explore important questions and share their findings.

This series of "explainers" provides brief summaries of the existing research on CBE. This series is intended to be useful for practitioners, program leaders, and researchers—both those already working in CBE and those interested in pursuing work in this area. The three explainers in this series focus on key topics related to the National Research Collaborative's research agenda:

- **Foundational knowledge**: Understanding the landscape, efficacy and equity, and quality measurement

- **Design**: Digging deeper into how programs work and their connection with foundational knowledge

- **Public perceptions**: Gauging stakeholder perceptions and understanding policy implications

The American Institutes for Research (AIR), which hosts the National Research Collaborative on Competency-Based Education and Learning, produced this series.

Foundational knowledge: What we know about the landscape, quality, and benefits of CBE programs

A strong understanding of the CBE landscape is vital to informing practitioners' efforts to foster growth and development within their programs and institutions. Exploring key foundational questions regarding factors affecting design choices, strategies of implementation, methods of evaluation, and outcomes is essential in building that understanding.

Some key questions include the following:

- What does the **current landscape** of CBE programs look like?

- How is the **quality** of CBE programs being measured and assessed?

- How **effective** and **equitable** is CBE for students compared with traditional programs?

- What are the **benefits** of CBE for practitioners?

This explainer provides a summary of the existing research on foundational questions in CBE. The following sections outline key lessons learned about the landscape of CBE programs nationally, understanding and measuring quality in CBE programs, and the degree to which CBE programs are both effective and equitable.

Current landscape of CBE programs

Being informed about the existing CBE landscape can help practitioners determine which type of program might work best for their institution as well as provide strategies for the implementation process. One of the largest sources of information on the state of the CBE field is the [National Survey of Postsecondary Competency-Based Education (NSPCBE)](#), conducted by AIR. The NSPCBE is a

HOW CAN THIS INFORMATION HELP YOU IN YOUR WORK?

- Use and/or adapt a quality framework to inform your program design.

- Consider how you are tracking implementation steps and measuring outcomes, with attention to addressing equity gaps.

- Participate in partnerships with research, providing access to students, faculty, student-level administrative data, and other information when appropriate and protected.

comprehensive survey of more than 600 institutions that aims to develop a better understanding of the current and changing landscape of CBE in postsecondary education in the United States. High-level findings include the following:

- CBE adoption efforts **span all institution types**, and students enrolled in CBE programs are more likely to have prior college credit than those enrolled in traditional programs.

- Of the 602 institutions responding to the survey, just over half (51%) reported being in the process of adopting CBE, 23% reported being interested in CBE but had not started adopting, and 15% expressed no interest in CBE.

- Of those survey respondents who reported current or in-progress adoption of CBE, most were in the **planning stages**, although nearly one-third reported they offered at least one course.

Other research sheds additional light on existing programs, identifying models of CBE implementation, shared design elements, and different approaches to CBE. *For more information on different approaches to CBE, see* Ordonez, 2014*; for more details on the overall landscape, see* Nodine, 2016*.*

Quality in CBE programs

Ensuring that the adoption and administration of CBE programs is high quality is vital to success. However, as CBE is still a growing field, those working to develop or improve programs may have had challenges in determining best practices.

- One key resource is the **Competency-Based Education Network (C-BEN)**, which has made substantial progress in establishing quality standards and best practices. A taskforce of C-BEN members developed a **Quality Framework,** which lays out eight key elements of quality and an associated rubric for CBE programs, including institutional commitment, clear and measurable competencies, coherent curriculum design, collaboration with external partners, and evidence- driven improvement. The Quality Framework is an effective tool to help standardize CBE programs and contains a **development guide** applicable to all stages of adoption (*for more information, see* C-BEN, 2017).

- **Other efforts to define quality** also may be useful to consider, including, for example, a study of CBE course quality based on a rubric consisting of seven measures of course quality: (1) competencies and learning activities, (2) assessment and evaluation, (3) learning resources, (4) technology and navigation, (5) learner support, (6) accessibility, and (7) policy compliance (*for more information, see* Krause, Dias, and Schedler, 2016).

However, more research is necessary to better inform practitioners, particularly about more recent iterations of CBE programs that more fully center on competencies and competency demonstration.

Efficacy and equity in CBE programs

One of the challenges of drawing on the current literature in this area is that research on student outcomes comes primarily from case studies or small groups of institutions. The case-study approach makes it difficult to reach robust conclusions about how student outcomes are being affected because it limits our ability to generalize to or compare across other institutions. However, it is important for those working in CBE, particularly those proposing CBE to their leadership, to be able to point to data on the success and favorable cost-benefit analyses of these programs. Based on the somewhat limited information available, research has shown the following:

- Research on student outcomes shows that, overall, students in CBE programs appear to be performing on par with, or better than, students in traditional programs based on graduation and employment outcomes. *For more information, see Parsons, Mason, and Soldner, 2016, for a study of student outcomes at six institutions, Rivers and Sebesta, 2017, for a comparative study of postgraduation outcomes, and Whiteboard Advisors and Capella University, 2019, for a look at program-specific outcomes.*

- Current research that explores outcomes and how or whether they vary across student characteristics and demographics is limited. More research that specifically integrates outcomes for students of color and low-income students is critical to building our understanding of CBE's potential to address inequities in degree attainment.

Design and implementation: What we know about CBE program design, workforce alignment, and cost

Building on the knowledge gained through research on foundational questions in CBE, a critical next step is building a better understanding of the details of how CBE programs are designed and implemented. This is important because developing common metrics or definitional elements that will support cross-program comparison will serve to both support practitioners working to design and implement CBE programs at their institutions, and inform the field's understanding of how design elements can contribute to quality and efficacy.

Some key questions to this end include the following:

- **What** are some common program design and implementation approaches? **How** do these approaches address supports for learners, technology services, and business processes?

- **How** do programs align competencies to credentialing and workforce opportunities?

- **What** does CBE cost students and institutions?

Although there are other questions that remain in this area, such as the relationship between program design and equity, and best practices in developing curricula and competency architecture, what we know currently centers on program design and implementation, workforce alignment, and cost. To that end, this explainer summarizes key findings and lessons learned from the research on these three topics.

Program implementation
The bulk of what we know in this area is on program implementation—and what we do know is that CBE

HOW CAN THIS INFORMATION HELP YOU IN YOUR WORK?

- Work with stakeholders in your institution to track student and institution costs associated with your program—especially the cost to students if you operate with alternate pricing models, such as subscription pricing.

- Identify peer institutions or programs to learn from and collaborate with as you work to grow CBE on your campus.

- Share your learnings and key programmatic elements with the field— through collaboration with other practitioners and by conducting your own research.

- Talk to others at your institution, perhaps outside of CBE, to understand how they work with and communicate with employers.

- Work with employers to develop competencies specific to those employers' needs (or to emphasize how existing competencies already do so); this could create or improve pipelines for graduates to help inform more targeted outreach in the future.

programs vary widely in terms of the model they use, such that one clear, common definition of CBE is difficult to establish.

- **Defining CBE:** Researchers and practitioners have identified several common themes in CBE program design: mastery of competencies, flexible pacing, defined and/or measurable learning outcomes, authentic assessment, and programs that lead to recognized credentials. And, some newer features that have emerged in research include learning assessment, online and/or hybrid delivery modalities, and learners' self-direction. *For more information, see [Bushway, Dodge, and Long, 2018](#).*

- **Implementing CBE:** Findings from the [National Survey of Postsecondary Competency-Based Education](#) provide some insight into the "adoption pathway" for institutions implementing CBE. Of those institutions who had implemented or were implementing CBE, the major steps that institutions reported taking involved developing competencies, designing assessments, and engaging external employers/partners.

- **Case studies and literature reviews** are another common area of inquiry and may provide helpful information for practitioners interested in examples of how other programs are working. *For more information, see [Book, 2014](#), or [Burnette, 2016](#), for cross-institution lessons learned about implementation.*

- Some researchers also have taken a **deeper dive** into specific components of CBE program design, which may prove useful for those with existing programs looking to improve or change specific program elements. For example, researchers have explored the student experience (*for more information, see [Baker, 2015](#)*) or the faculty role in CBE programs (*for more information, see [Navarre Cleary, 2015](#)*).

Workforce alignment and signaling

Research in this area is limited. Beyond some insights into how employers perceive CBE, which can be an important first step for program leaders interested in developing or strengthening relationships with employers, more research is needed on collaborating with employers to align competencies.

- Overall, research on employer perceptions suggests that most employers do not know enough about CBE. Still, those employers that do understand CBE generally express satisfaction with CBE graduates and have interest in supporting alignment efforts. *For more information, see [Franklin and Lytle, 2015](#), for a survey of hiring managers' perceptions of CBE and the accompanying explainer on public perceptions of CBE.*

- Areas that have yet to be explored fully include questions related to how to collaborate with employers, how to align competencies with workforce opportunities, and how to

communicate with employers and educate them about CBE. Still, some practitioner-facing guides and tools exist, such as C-BEN's [Employer Engagement Best Practices Toolkit.](#)

Costs

The costs of CBE—both to students and to institutions—is another area that remains underexplored. Also, the variation we see across program design and implementation features makes it difficult to estimate CBE's costs to students and institutions.

- Proponents of CBE often argue that CBE programs have the potential to reduce **costs to students**, and early efforts at understanding these potential cost savings suggest that CBE may reduce costs to students—but costs are largely dependent on pricing models. Pricing models that allow for flexible pacing may be more likely to represent a cost savings for students. *For more information, see [Mason and Parsons, 2019](#), for findings from NSPCBE related to costs to students, and [Kelchen, 2016](#), for a landscape analysis that touches on affordability.*

- **Federal financial aid regulations** have a role to play as well in limiting program choice for students who need financial aid. Because federal financial aid is still largely credit-hour and GPA-based, and therefore not as conducive to CBE, the resulting lack of aid is likely to negatively impact the ability of low-income students to participate in CBE. *For more information, see [Porter, 2014, for more on financial aid](#).*

- Research on **costs of CBE to institutions** is more limited. Research on a set of four CBE programs suggests that CBE has the potential to lower costs to institutions and reduce the time to completion for students. Also, some researchers have explored the "break-even" point for institutions, but questions remain about what this looks like across different institutions and program types. *For more information, see [Desrochers and Staisloff, 2016,](#) for a study of costs to institutions and students, and [Rivers, Gibson, Contreras, Livingston, and Hanson, 2019](#), for a look at the "break-even" point for institutions.*

Public perceptions

Understanding how a broad range of stakeholders (including employers, potential students, policymakers, and providers) perceive CBE is key in growing both the field and individual programs. This understanding is essential to making sure programs can recruit students, connect with workforce partners, and improve postgraduation outcomes for CBE graduates.

Some key questions include the following:

- **How** do stakeholders think about and perceive the value of CBE?

- **What** policies at the state and federal levels impact the development and implementation of CBE programs?

- **What** are the implications of current policies or policies under consideration?

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Perceptions

Research on public perceptions of CBE—currently focused heavily on students—reflects the ways in which different stakeholders view CBE unique to their specific needs. Still, there are several common threads, such as the following:

- **Information:** Information, or the lack thereof, plays a role in public perceptions. For students, studies have shown that the flexibility and potential cost savings associated with CBE were substantial draws when considering program choice. On the other hand, evidence suggests that, for employers, not knowing more about CBE programs has prevented them from

HOW CAN THIS INFORMATION HELP YOU IN YOUR WORK?

- Engage stakeholders and get feedback by building satisfaction surveys into course evaluations for students, connecting with your institution's career services team, and reaching out to local employers.

- Understand the policy landscape relevant to your institution to help determine avenues for growth and potential stumbling blocks.

having stronger opinions on their value. *For more information, see [Morrison, 2016](#), for a look at student college choice factors, and [Franklin and Lytle, 2015](#), for a survey of hiring managers' perceptions of CBE.*

- **Satisfaction:** Students are just as, if not more, satisfied with their CBE programs as students in traditional programs. Also, although developing CBE courses may mean a heavier lift than developing traditional courses, some faculty still find the format beneficial overall. From the employer perspective, those that have enough information about CBE are satisfied with CBE graduates, considering them to be viable candidates for hiring, and expressed interest in learning more and being involved in alignment efforts. *For more Information, see [Rainwater, 2016](#), for a study of student and faculty experiences with CBE programs, and [Henrich, 2016](#), for an exploration of how human resources professionals value CBE credentials.*

- Findings from the [2019 National Survey of Postsecondary Competency-Based Education](#) indicate that practitioners and faculty sense **barriers** to CBE growth, which can lead to a lack of buy-in. These barriers include federal financial aid policies, alignment of existing institutional business processes, and start-up costs. The **facilitators** that respondents described included the ability to align competencies with industry standards, available evidence about the potential impact of CBE, leadership support, and faculty buy-in.

- **Does it fit?** Similarly, research on perceptions of stakeholders within institutions have included questioning if CBE fits within the purpose of an institution and where faculty fit with CBE programs, given that the nature of CBE often requires faculty to rethink how they teach courses and take on roles beyond traditional course delivery. Also, findings from the NSPCBE suggest that senior leaders' perceptions of CBE's "fit" for their institution is a facilitator for CBE implementation. *For more information, see several studies that have explored faculty perceptions of CBE: [Rainwater, 2016](#); [Navarre Cleary, 2015](#); and [Mason and Parsons, 2019](#), present national survey findings related to the barriers and facilitators of implementation.*

Policy

Currently, research on policy implications for CBE is primarily focused on understanding what policies and practices are already in place. Much of the research in this area is focused on the layout of the policy landscape and how that impacts business operations outside of instruction, such as financial aid or compliance. There also are some recommendations for policies that could aid and accelerate CBE adoption. *For more information, see the following resources:*

- Currently, policy topics are largely covered by white papers and policy scans, rather than research examining the impact of specific policy changes. In particular, these white papers focus on **identifying the current policy barriers** to CBE, both at the state and federal levels.

For more information, *see [Bell, 2017,](#) for a look at state policy, and [Laitinen, 2012,](#) for recommendations on shifting focus from seat time to learning.*

- Findings from the [2019 NSPCBE](#) suggest that **federal student aid regulations and processe**s are a barrier to CBE implementation, with 46% of institutions with programs or in the process of implementing programs citing this as a major barrier.

What resources are available for advancing research in CBE and supporting quality research-based efforts to implement or improve CBE programs?

Although the existing research has supported a collective understanding of what CBE is—generally, what design elements tend to emerge across programs—we are just beginning to answer questions about workforce alignment and cost. Also, other areas, such as designing for equity and competency architecture, remain largely unexplored, as do potential lessons from cross-program research. CBE practitioners can have a role in shaping this effort, such as:

- Participate in National Survey of Postsecondary Competency-Based Education, or encourage the right person at your institution to do so

- Engage with other CBE practitioners to facilitate information sharing, through outlets including:

  - Conferences, such as CBExchange or Fast Track to Success

  - Competency-Based Education Network

- Participate in research-practice partnerships, providing access to students, faculty, student-level administrative data, and other information when appropriate and protected.

- Conduct or participate in *cross-program* research, in addition to studying single programs.

For those considering, planning, or expanding CBE programs, some additional resources are listed below. This list is not exhaustive, but it may provide a helpful starting point depending on your interest.

Getting started:

- C-BEN's Quality Framework and associated User's Guide

- *A Leader's Guide to Competency-Based Education* (book—introduction available for download; otherwise requires purchase)

Resource libraries or journals:

- C-BEN maintains a searchable resource library of practitioner resources.

- AIR maintains a complementary resource database focused on research related to CBE, particularly for those interested in performing literature reviews.

- The peer-reviewed, online *Journal of Competency-Based Education* hosted by Western Governors University.

Other tools, resources, and research:

- AIR's [modularized webinars](#) about measurement in CBE and continuous improvement processes

- AIR's [research and tools](#) about CBE student outcomes, including a [metrics framework](#), [a tool for articulating and measuring the goals of CBE programs](#), and a [paper containing findings about student outcomes in CBE](#)

- A [Lumina Foundation Issue Paper](#) about CBE and equity

- A [series](#) by Jobs for the Future about CBE and underprepared learners

- Some states have regional initiatives that also share resources; for example, [Texas' Institute for Competency-Based Education at Texas A&M University-Commerce.](#)

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