Preface

In 2009, in his first address to a joint session of Congress, President Barack Obama shared his goal that “By 2020, America will once again have the highest proportion of college graduates in the world.” The President also asked every American to “commit to at least one year or more of higher education” to meet the demands of a changing economy, stating that three-fourths of the fastest growing high-wage, high-skill jobs required at least some postsecondary education (Obama, 2009). Likewise, the Lumina Foundation’s Goal 2025 looks to increase to 60% the proportion of Americans with academic credentials such as degrees and certifications (Lumina Foundation, 2013; 2015). At the same time, however, there are critical problems in higher education around affordability, access, and completion of degrees. Indeed, 46 million adults in the United States have some college credits but no degree (Lumina Foundation, 2014). Furthermore, for those adults who do return to attempt completion, New (2014) estimates that only 66% earn their degree after 6-8 years. Yet these adults continue to attempt degree completion. The National Center for Education Statistics (NCES) projects that ‘nontraditional’ (i.e., adults age 30 and over) college students will comprise nearly 50% of the total college student population through 2021 (NCES, 2012).

While the busy and complex lives of adult college students create barriers to their success, an ongoing struggle to college success continues to be affordability. According to the White House (2014) the average tuition at a public four-year college has more than tripled in the past 30 years and is growing out of reach for many Americans, with the average student loan borrower graduating over $26,000 in debt. In 2013, President Obama outlined an ambitious plan to contain rising college costs. The President’s plan includes three parts: paying colleges for performance; promoting innovation and competition among colleges; and keeping student debt in check (Federal Department of Education, 2013). It is this desire to find innovative solutions that will make college more affordable and accessible to all Americans that has produced increased interest in competency-based education.

BACKGROUND

CBE in higher education is an instructional model that permits students to progress through a course or program based on their demonstrated mastery of required competencies, usually through various forms of authentic assessment such as projects or portfolios. This model contrasts with traditional higher education models in which students progress through courses based on completion of coursework over an established time period such as a term or semester. The intent of the competency-based model is to improve access, equity, and affordability in higher education by offering courses in a way that is flexible and removes the variable of time so that learners can work at their own pace and accommodate the demands of their
busy lives; and awarding credit for demonstration of mastery rather than for completion of a designated number of coursework hours. Specific features of competency-based programs often include:

- **Student-Driven Schedules**: Students take responsibility for their learning and progress through CBE courses at their own speed. Upon demonstrating the required level of mastery of competencies, a student may progress to the next lesson or course; many students complete competency-based courses at an accelerated rate.

- **Multiple Course Completion Pathways**: Various pathways for progression through the CBE course are available to the student, typically based on the student’s performance on pre-tests or self-assessments taken at the beginning of a course or module. Based on their scores, students are directed down various pathways of greater or lesser content with more or less instructional strategy and direction.

- **Authentic Assessments**: Competency-based education requires students to demonstrate their mastery of new competencies by performing real-world tasks that demonstrate meaningful application of essential knowledge and skills (Mueller, 2014).

- **New Forms of Faculty Engagement**: Because the majority of CBE courses in higher education are online and self-directed, lectures are typically recorded ahead of time leaving faculty time during the delivery of the course to answer questions and provide individualized guidance as needed. Faculty may also use tracking and predictive analytics to provide just-in-time assistance as they identify students who are falling behind (Vander Ark, 2015). Finally, faculty may engage their students at the class level through such techniques as discussions around topics that are ‘course relevant’ but not tied to any specific lesson in the course.

**CBE IN THE 21ST CENTURY**

Interest in competency-based education (CBE) has definitely increased, with many higher education institutions exploring competency-based initiatives. Some institutions are well ahead of the majority, with full competency-based degree programs while others are still in the exploratory phase. States and individual institutions that have adopted the competency model have approached its implementation in various ways. For example, Western Governor’s University’s version of CBE uses an assessment-based process. After an initial assessment (i.e., pretest), students are directed to resource materials to assist in achieving specified competencies. The Kentucky Community and Technical College System has expanded this notion by, essentially, having students complete a pretest prior to each course module; if the pretest is mastered, students move directly to the posttest. If the pretest isn’t mastered, students take the class. Another early adopter of CBE, Southern New Hampshire University’s College for America program, developed 120 competencies and separated the competencies completely from course credit and course syllabi. Rather than taking individual courses, students participate in practical activities that show mastery of specific competency areas and may continue their studies until mastery is attained.

The University of West Florida began development of its first CBE program as part Complete Florida, a statewide initiative created by the Florida Legislature in 2013 to recruit, retain and graduate over 2.2 million Floridians who have some college courses but have not completed their degrees. The “typical” adult learner who is returning to college through Complete Florida is:
• 24-56 years of age,
• Working,
• Actively seeking employment or career advancement and needs a rapid increase in job skills,
• A parent or has other family responsibilities, and
• Often a veteran.

A primary goal of Complete Florida is to help these adult learners complete their degrees as quickly and economically as possible through innovative strategies. CBE is one example of an instructional approach that seems particularly well-suited to meet the needs of the adult learner.

In spite of all the interest in CBE, there is relatively little established in the way of agreed upon standards, guidelines, and best practices for CBE’s definition, development, and assessment. Perhaps more importantly, little work has been done in clarifying a theoretical framework to support CBE which is necessary for effective analyses of cost, effectiveness, and scalability and for determining appropriate avenues of ongoing research and development. Furthermore, the administrative and support demands of CBE can be significantly different from those of traditional credit-hour, classroom delivery courses. Existing policies, practices, and infrastructure pose barriers and challenges to the implementation of CBE and retention and program completion rates remain problematic.

With the activity swirling around CBE, what is missing is a formal declaration and description of CBE as a field of practice. According to a RFP from the National Research Center for Distance Education and Technological Advancements (DETA Research Toolkit, 2016) for the purpose of advancing research into the design and delivery of CBE: “As a field of research, CBE is relatively unexplored, and this RFP offers the opportunity to have a foundational impact on our understanding of student success in CBE...” (p. 6). For CBE to survive and flourish, the field must coalesce around certain principles, practices, and foundations. Specifically, the field must:

• Establish CBE’s theoretical framework which is necessary for effective, grounded future research and development;
• Systematically conduct the research necessary to validate CBE as a solution to problems of access, equity, and affordability in higher education; and
• Based on the research, create the infrastructures and practices in policy, technology, and capacity building - needed to implement and sustain CBE.

This Research Handbook on CBE is intended to lay the foundation for researchers and practitioners of CBE by assembling into one comprehensive work an overview of the field of CBE in higher education, the work that is currently being done as part of the modern CBE movement, and the research and development work that must be conducted to expand the field and support the many development efforts going on statewide and nationwide.

INTENDED AUDIENCES

This Research Handbook is intended primarily for researchers and practitioners of CBE in higher education. It will also be useful for institutional leaders and administrators who, in anticipation of creating CBE programs, want to improve their understanding of CBE’s value proposition as well as the challenges
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that commonly confront the development, implementation, scaling, and sustainability of it. In addition, graduate students who are learning about CBE could use the Research Handbook as a reference and jumping off point for future research.

OVERVIEW OF THE CONTENTS

All contributors to this book are innovators in higher education. They are the visionaries who have dared to challenge the status quo in higher education and propose innovative ways to deliver post-secondary education to more people, more effectively, and more equitably at an affordable price. They are experts in their field of CBE practice and research and their work in this book represents their experiences and their recommendations for moving the field of CBE forward. The Research Handbook has been organized into four sections. Readers may read the handbook cover-to-cover, section-by-section, or chapter-by-chapter depending upon need and level of understanding.

Section 1: Setting the Stage

Section 1 provides the reader with foundational knowledge of competency-based education: its definitions, its history, and its potential for transformational impact on higher education.

In Chapter 1, Competency-Based Education in Higher Education, authors Christine Sorensen Irvine and Jonathan Kevan describe CBE’s background and current status in higher education, including drivers of demand such as changing demographics, public concerns over cost and accountability, and rapidly evolving technologies. The chapter concludes with a discussion of the challenges and opportunities for CBE.

The frequency with which CBE now appears in the literature and in popular conversation gives the false impression that practitioners 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 CBE, its history, and its potential role in the transformation of higher education. In Chapter 2, Building Competence: A Historical Perspective of Competency-Based Education, author Kristen Jones explores the historical basis of CBE, its benefits and detriments, and its operational elements.

The American Council on Education (ACE) and Blackboard, along with other researchers in the investigation of outcomes-based innovations, have found competency-based education (CBE) to be a significant source of credentialing that diverges from traditional post-secondary pathways. In Chapter 3, Challenges and Opportunities in the Currency of Higher Education, a review of this work is provided by authors Deborah Everhart and Deborah Seymour who posit that, while credit hour processes are likely to remain deeply embedded in post-secondary systems, there is opportunity for competencies as a complementary currency. The authors discuss the complexity of implementing CBE practices in the credit-hour environment and potential next steps for the field.

Section 2: Building the System

Section 2 of the Research Handbook focuses on the individual elements that comprise the CBE ‘system,’ including administrative, technical, staffing, and instructional components.


Chapter 4, People, Processes, and Philosophies: Designing a CBE Program within a Traditional University, sets the stage this second section of book. Author Tammi Cooper presents general considerations for the design of a CBE program on a traditional campus and explores the implications of CBE implementation on administrative structure, curriculum design, faculty and staff, functional units, technology, and accreditation.

In Chapter 5, The Challenge of CBE Programs: Administrative and Technical Considerations of Non-Semester-Based Programs, authors Julie Uranis and Tanja Bibbs use the student lifecycle as a framework to familiarize readers with the administrative and technical issues (e.g., recruitment, admissions support, advising, orientation, billing, programs of study, access to institutional resources, transcripts, etc.) surrounding the development of CBE programs. The chapter is intended to serve as a starting point for higher education leaders interested in CBE, especially those lacking the resources to develop a program outside existing governance, policies, and systems.

In Chapter 6, Academic Technology for Competency-Based Education in Higher Education, authors Jonathan Kevan and Christine Sorensen Irvine discusses the technology needs associated with managing CBE at scale. The role of technology today and tomorrow is explored, including reviews of vendor-based and open learning management systems (LMS), adaptive technologies, and tools for data analytics as well as a thoughtful discussion of how personal learning environments, more so than learning management systems, may align with the CBE model.

Building on the discussions around the technology challenges facing CBE, authors Jonathon Mott, Rob Nyland, Greg Williams, Michael Atkinson, and Arin Ceglia, propose a “born-CBE” infrastructure intentionally designed to support the requirements of CBE in Chapter 7, The Next-Generation CBE Architecture: A Learning-Centric, Standards-Based Approach. Describing the modular infrastructure and components of the proposed architecture as well as the data standards required for interoperability, the authors conclude with a discussion of essential capabilities including support for backward design, authentic assessments, various learning paths, personalization and adaptivity, and analytics.

Author Mambo Muperi in Chapter 8, Using Communities Of Practice To Identify Workforce Competencies, contends that the success of CBE programs depends to a great extent on the accurate identification of workforce competencies and the key performance indicators necessary for assessment of those competencies. The author suggests communities of practice (COP) as effective partners in specifying and operationalizing required competencies and in establishing the required levels of proficiency among various divisions of labor and that distinguish the novice from the expert. Finally, strategies that COPs can use to more accurately and effectively identify workforce competencies are recommended.

Chapter 9, A Framework for the Design of Online Competency-Based Education (CBE) to Promote Student Engagement, authors Robin Colson and Atsusi Hirumi shift the focus away from the administrative and technology requirements of CBE to the instructional requirements. Although advances in technology offer a vast array of capabilities for online learning, few educators are given the time and training to use these capabilities to their fullest. This reality could prove to be particularly detrimental for CBE students who are often non-traditional adult learners who require high levels of support and engagement in their educational experiences. Interactivity is an instructional technique that has proven to be highly engaging in online learning, but is not a casual undertaking. Hirumi’s framework for designing meaningful interactions in online CBE courses is used as the starting point for student engagement.

In Chapter 10, A Return to Doing: How Authentic Assessment Changes Higher Education, authors Karen M. Mattison, Heather Schroeder, Stacy L. Sculthorp, and Jaclyn Zacharias argue that authentic assessment is the heart of competency-based education and the element that most distinguishes CBE
from traditional approaches. Examples of authentic assessment are provided from field-specific domains and the design and evaluation of authentic assessment are explored, including the issues of reliability and validity. The chapter concludes with a forecast for the change that authentic assessment will bring to higher education, in general.

**Section 3: Going Live**

While sections 1 and 2 of the book discuss issues associated with the conception and implementation of a CBE system, Section 3 is devoted to issues surrounding ongoing management and sustainability. Authors Michelle Navarre Cleary, Kathryn Wozniak, Catherine Marienau, Gretchen Wilbur, Derise Tolliver, and Pamela Meyer, in Chapter 11, Learning, Adults, and CBE, explore how the levels of learner autonomy in CBE result in the need for CBE students to articulate and to manage their own learning. The authors draw from both their research and experience developing, teaching in, and consulting to competency-based programs for adults to demonstrate the necessity of teaching CBE students to be competence-based learners.

Authors Nancy Hastings and Karen Rasmussen discuss the importance of standards for ensuring quality in the design and development of competency-based education in Chapter 12, Assessing Quality in Online CBE Courses. The authors illustrate how, at the micro-level, standards facilitate direction of the structure, format, and content of a competency-based course while helping administrators and faculty make informed decisions at the macro level.

While the previous chapter focused on quality measures for the development of CBE, authors Devrim Ozdemir and Carla Stebbins in Chapter 13, A Framework for the Evaluation of Competency-Based Curriculum, focus on its continuous quality improvement. An evaluation framework created by the authors in support of a competency-based curriculum in a Masters of Health Care Administration program is presented.

Performance measurement is a major topic of discussion in higher education today, yet coming to agreement on metrics that are equitable across programs and institutions proves difficult. In Chapter 14, Measuring What Matters: The UW Flexible Option’s Framework to Measure Success from the Student Vantage Point, authors Aaron Brower, Sandra Kallio, Rebecca Karoff, Mark Mailloux, and David Schejbal contend that competency-based education requires a different set of student success metrics and introduce the metrics framework developed for the University of Wisconsin’s Flexible Option (UW Flex).

**Section 4: Case Studies**

Section 4 concludes the book with a series of case studies that share experiences of institutions and organizations from all over the United States that have implemented CBE programs. These case studies represent programs of various tenure, from long standing to very recent and are illustrative of both the history of CBE and its 21st century iteration.

In Chapter 15, Child Development Associate (CDA) Credential: A Competency-Based Framework for Workforce, authors Valora Washington and Brandi King share its over 40-year history using competency-based education and assessment as the foundation for the CDA credential program which requires early childhood educators to demonstrate mastery of competencies considered essential for working with young children. The authors describe the role that CDA competencies play in the credentialing process.
but also in the development of state and federal competency frameworks and career pathway systems to provide the early childhood workforce with clearly articulated steps toward postsecondary degrees.

Chapter 16, Polk State College’s Engineering Technology OEEE Associate’s Degree, describes Polk’s Open Entry Early Exit (OEEE) program designed to provide non-traditional students with an affordable, accessible option for the Associate in Science degree by converting the traditional program into a hybrid competency-based, non-term format. Authors Naomi Boyer, Eric Roe, Kenneth Ross, Patricia Jones, Kathleen Bucklew, and Marcia Conliffe share the numerous challenges undertaken, resolved, and still emerging on the pathway to Polk’s reconceptualization of higher education.

In Chapter 17, FlexPath: Capella University’s Innovative Pathway to a Degree, authors Kimberly Pearce and Brian Worden share Capella’s mission to create a non-profit, online, competency-based university that would expand access to affordable higher education by measuring learning rather than time, tying competencies to workplace needs, and use technology to create a new business model in higher education that would lower cost and increase access.

Just as healthcare systems must be continually improved and transformed, so must healthcare education. Authors Wenxia Wu, Brian Martin, and Chen Ni, in Chapter 18, Seeking Order out of Chaos: A Review of Competency-Based Education in the Health Professions explore the conceptual complexity and operational challenges of using CBE in health professions education. The authors summarize the current practice of integration, delivery, and assessment of competencies within health professions education and shares findings from the literature that suggest CBE can be a viable model for the field.

In the final case study, a journey that began nearly 20 years ago and has led Western Governor’s University to its current status is presented by author Robert Mendenhall in Chapter 19, Western Governor’s University: CBE Innovator and National Model. With 70,000 students enrolled nationwide and more than 60,000 graduates in all 50 states, and recognized by the White House as a model that works in postsecondary education and a leading influence in the transformation of higher education today WGU has been an early innovator in CBE.

REFERENCES


