Chapter 10
Competency-Based Education: The Future of Higher Education

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ABSTRACT

This chapter will review what competency-based education is and how delivering traditional educational credentials and degrees in a non-traditional, non-term program can better engage students and promote their success in the new higher educational market. It will discuss how the CBE model can benefit students, especially non-traditional populations. Students can leverage this type of "just in time" flexible education to obtain credentials, degrees, and certificates needed to meet professional goals and career requirements in the current job market. The chapter will summarize some of the common challenges administrators can face while administering CBE programs related to information technology barriers, student retention and motivation, and faculty perception and make recommendations for addressing these challenges. This discussion will better-prepare institutions of higher education in creating and implementing their own CBE programs.

The current state of affairs within the higher education industry is under intense scrutiny. Tuition increases have fueled a $1.5 trillion student loan debt crisis (Goldrick-Rab & Steinbaum, 2020), six-year completion rates are at a dismal 62%, the highest they have reached in years (NSC Blog, 2022), and enrollment rates have continued to drop by 2.6% annually since 2010 (Hanson, 2021; Saul, 2022). In fact, enrollment has declined by a staggering 6.6% since fall 2019 (Saul, 2022). Furthermore, the higher education system, in its current state, has landed the United States 12th in world rankings when it comes to undergraduate degree attainment for the 25–34-year-old demographic (OECD Data, n.d.).

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Another piece to this puzzle is the shifting demographic of today's college students. The average age of a full-time student enrolled in an undergraduate program is 21.8 years old. The average age of a part-time student is 27.2, and over half (52%) of the university students in the United States are 20 years old or older (Hanson, 2021). As the market shifts, innovative approaches, such as competency-based education, are being explored that allow students choices on how to receive their post-secondary education.

Competency-based Education (CBE) models are gaining traction in the higher education sector because of the flexible alternative pathway they provide to earning a college degree. Although the first higher education CBE models appeared in the 1970s, there were still only twenty documented CBE programs in the United States by 2012 (Gallagher, 2014; Krauss, 2017). Despite their slow start, CBE programs increased exponentially by 2017 to over five hundred programs. In fact, the US Department of Education Undersecretary at the time, Ted Mitchell, described CBE as "the single-most important innovation in higher education" (Krauss, 2017).

In a study conducted by the American Institutes for Research (AIR), Mason et al. (2021) completed three annual surveys from 2018 – 2020 and compiled a report titled, *State of the Field: Findings from the 2020 National Survey of Postsecondary Competency-Based Education*. The mission of the project was to gain an understanding and track perceptions of CBE, interest in CBE, implementation, and adoption progress. The researchers of this study highlighted two key takeaways among the many findings. First, while barriers remain, such as internal business processes and costs and external regulation, respondents remain optimistic about the future of CBE. Additionally, the number of CBE programs continued to grow despite the COVID-19 disruptions. In fact, report findings show COVID-19 may have had an influence on institutional interests in CBE in some cases.

Although CBE lacks a universal definition within the higher education industry, the most often cited definition is that from the Competency-Based Education Network (C-BEN) (n.d.):

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

Despite the lack of an industry-wide definition, there are five hallmarks among competency-based programs, alluded to in the above C-BEN definition, as well as outlined by Bushway et al. (2018). These hallmarks include a focus on learning (rather than time spent in a classroom), a required demonstration of mastery of all course material, a rigorous assessment process to determine a student's mastery of material, a focus on the learner's journey that is guided by faculty throughout the educational experience, and, lastly, a flexible, self-paced environment allowing students to move as quickly or as slowly as they need to demonstrate competence in the material (Bushway et al., 2018). Institutions interested in offering a competency-based model to education will need to consider these hallmarks and the barriers associated with each when outlining their implementation strategy.

This chapter will review what competency-based education is and how delivering traditional educational credentials and degrees in a non-traditional, non-term program can better engage students and promote their success in the new higher educational market. It will cover a brief history of CBE and its growth in higher education and discuss how the CBE model can benefit students, especially non-traditional

populations. Students can leverage this type of "just in time" education to obtain credentials, degrees, and certificates needed to meet professional goals and career requirements in the current job market. The chapter will also summarize some of the challenges associated with administering CBE programs related to information technology barriers, student retention and motivation, and faculty perception. This discussion will better-prepare institutions of higher education (IHE) in creating and implementing their own CBE programs.

BACKGROUND

The University of Massachusetts (UMass) Global, a non-profit university and affiliate of the University of Massachusetts, is a leader in competency-based education. Launched in August 2014, the fully online competency-based modality offers an Associates of Arts in General Business, Bachelor of Business Administration, Bachelor of Science in Information Technology, and a Master of Arts in Organizational Leadership. The program is characterized by its flexible, non-term structure. Students enrolled in the "MyPath" CBE program at UMass Global can start their program at any time, and progress at their own pace through their courses (competencies). There is no fixed schedule, no semester or trimester start and end dates, no assignment due dates, and there are no scheduled exam dates. Students can complete as many courses as possible within defined 24-week sessions. Courses are successfully completed by the demonstration of mastery of the subject matter, and students can move through the program at their own pace with the support and guidance of program-specific faculty and staff. The MyPath competency-based program utilizes a "subscription-based" model of tuition pricing, in which students pay a fixed price for each session and are therefore able to complete as many courses as they can under the set tuition rate.

A survey cited by Lurie and Garrett (2017) indicated that institutions may be interested in CBE but have no clear direction and may become "stuck" in the interest or "aspirational" phase rather than moving on to implementation. In constructing this chapter, we have drawn upon our years of professional experience working in and helping to administer the UMass Global MyPath competency-based program. As we will be making recommendations and suggestions to address potential barriers and roadblocks in the implementation of CBE programs, it may be helpful to provide a brief background of our experience, roles, program, and department for greater context.

The UMass Global MyPath program supports a growing student population of around 1000, comprised of undergraduate and graduate students, many of whom are considered "non-traditional" students and are working adults needing greater flexibility in their degree programs than a term-based program can offer. The Academic Coach and One Stop Specialist roles that make up the student-facing section of our program provide customized guidance to students in the areas of academic support and financial advisement. We have also drawn upon industry experience by interviewing several leaders in competency-based education in academic, technological, and institutional roles. We do wish to note the experiences and recommendations included here, as based on our individual professional experience in CBE, may be naturally influenced and bound by our levels of expertise and our roles within the university.

PRIOR TO IMPLEMENTATION

Before embarking on the journey of planning and implementing a competency-based education program, an institution can help best-prepare itself by posing relevant questions, identifying needs and readiness, and forecasting what required essentials must be in place to support the process. Implementing a CBE program is no small feat, and in starting out, the organization must understand that it will not initially be an easy or efficient process (B. Bourdon, personal communication, January 27, 2022).

Defining the CBE Model

Prior to beginning, the institution will need to first define their version of the CBE model—so implementation can align with the definition—and choose the way the program will be delivered. As stated previously, there is no agreed-upon universal definition of competency-based education. An institution will need to ask itself what type of CBE model will best meet the needs of the institution, students, staff, and faculty: will the program be cohort-based, non-cohort, term-based, non-term-based, individual self-paced, online, or blended (Lurie & Garrett, 2017)? How will the institution structure its tuition model? Collaboration between key stakeholders will be instrumental in answering these questions that will first define the version of CBE the college or university hopes to offer, which will in turn help them understand the institutional needs and readiness to offer such a program.

The institution should decide early on between a direct assessment or credit-based model. A direct assessment CBE program does not default to the traditional credit hour or "seat time" to measure student learning and success. Instead, direct assessment involves a structure where students demonstrate proof of mastery of the subject matter within variable, high-touch, self-paced timeframes (Gervais, 2016; Kelchen, 2016; Lowe et. al., 2021, Nodine, 2016). Conversely, credit-based CBE models similarly offer flexible learning in which students demonstrate competency, but the coursework is still measured by credit hour or clock time (Gervais, 2016; Nodine, 2016). Students enrolled in credit-hour based CBE programs may still be able to learn at their own pace, but with some limitations. For example, a student may be able to complete a certain number of credit hours within a certain timeframe, at their own pace, within that defined timeframe.

While the direct assessment model may be considered to offer the most flexibility for students and potential to be customized by the institution, the implementation process may be more challenging than opting for a credit-hour model. Using a credit-hour model may allow institutions to adapt existing policies, practices, and technology to be used for the CBE program, if the existing infrastructure is already based on credit-hour degree programs and practices. Although direct assessment CBE is eligible for Title IV funding, federal financial aid, and other methods of financial assistance such as military benefits, these financing options are typically structured around and are most compatible with credit-hour based programs and associated tuition models. The IHE may find unique challenges arise that are specifically related to direct assessment CBE programs, so evaluating readiness to address these challenges early in the implementation process will be key.

Institutional Support

If an organizational culture does not already exist that supports innovation, flexibility, and collaboration, all of which are necessary to implementing a successful CBE program, institutional mindset will need

to be changed. Culture shifts can potentially take a long time, and often must be initiated by leadership. When the MyPath CBE program was initially planned and launched at UMass Global, competency-based education industry leader Laurie Dodge noted that success in the implementation phase was partly due to a culture of support from the board and senior leadership (L. Dodge, personal communication, January 27, 2022). Since an institution is unlikely to see immediate measurable success when beginning a new program such as CBE, having strong visible support from those in executive leadership positions can help create buy-in and should be considered a top organizational need.

The institution should also assess its available resources to determine what internal infrastructure may already be in place to support program implementation. Are there already policies which may be adapted to support the unique structure of a CBE program? Are there processes and methods that may be adapted to support the new program, and are the right individuals in place to help conduct these processes? When answering these questions, representatives from both academic affairs and student affairs should be "in the room" to help each other understand the implications such policies may have in the future. As academic affairs leadership build academic policies around the new CBE program, student affairs leaders can proactively prepare their departments for the unique changes that will be necessary for successful implementation. It is possible that CBE initiatives may fail when significant changes or overhauls to existing business processes are required, so it may be to the benefit of the institution to start with small changes to existing structures (L. Johnston, personal communication, January 28, 2022). Lastly, an institution should ask itself *why* it wants to implement a CBE program. Answering this question can help assess the potential level of commitment to a process that may be both lengthy and challenging.

PROGRAM DEVELOPMENT

In 2017, the Competency-Based Education Network (C-BEN) released the *Quality Framework for Competency-based Education Programs*. This publication includes universal principles and standards that can inform an institution's development and implementation process. Thirty institutions, four state university systems, and over one hundred individuals across the country offered input to the C-BEN Quality Standards Task Force. Regardless of an institution's chosen CBE model, the principles and standards suggested in this publication can be used as a guide in the CBE implementation process. Additionally, the standards outlined can be used by policymakers and accreditors as guideposts in regulating the field.

The *Quality Framework for Competency-based Education Programs* (2017) outlines the following eight elements of quality:

1. Demonstrated Institutional Commitment to and Capacity for CBE Innovation
2. Clear, Measurable, Meaningful, and Integrated Competencies
3. Coherent Program and Curriculum Design
4. Credential- level Assessment Strategy with Robust Implementation
5. Intentionally Designed and Engaged Learner Experience
6. Collaborative Engagement with External Partners
7. Transparency of Student Learning
8. Evidence-driven Continuous Improvement

For each element, the guiding principle of the element is defined, several standards are outlined, and several performance indicators are identified.

In our experience, we have found program development to fall into the hands of both Academic Affairs and Student Affairs. Academic Affairs is tasked with competency development, learning platform development, faculty development and accreditation. Meanwhile, Student Affairs develops the administrative structures that help students navigate admissions, financial aid, and a myriad of student services, such as academic coaching, tutoring, and the library. While these units each play a unique role in the overall CBE program development, both units will want to connect as much as possible to understand the barriers faced by each side. Constant communication can help each side quickly understand any new pain points that have been identified and adjust to meet the needs of the university and the student.

For example, a bi-weekly MyPath Tutorial Faculty meeting allows multiple departments to come together to provide updates on initiatives, pain points, and maintenance issues happening between each unit. These meetings are facilitated by the Associate Dean of Curriculum, Assurance Learning and Competency-Based Education, and include the following representatives: faculty (represented by all tutorial faculty), academic affairs (represented by the Dean), and student affairs (represented by the academic coaches). Such meetings allow multiple departments to understand the big picture and collaborate when changes are needed or wanted. Additionally, this allows the coaches and faculty, both of whom are the student-facing representatives of the university, to face students with educated answers to the many questions that arise in various situations. In our experience, it has been vital for key players to meet regularly to compare notes and adjust dysfunctional patterns early to support student success.

Competency Development

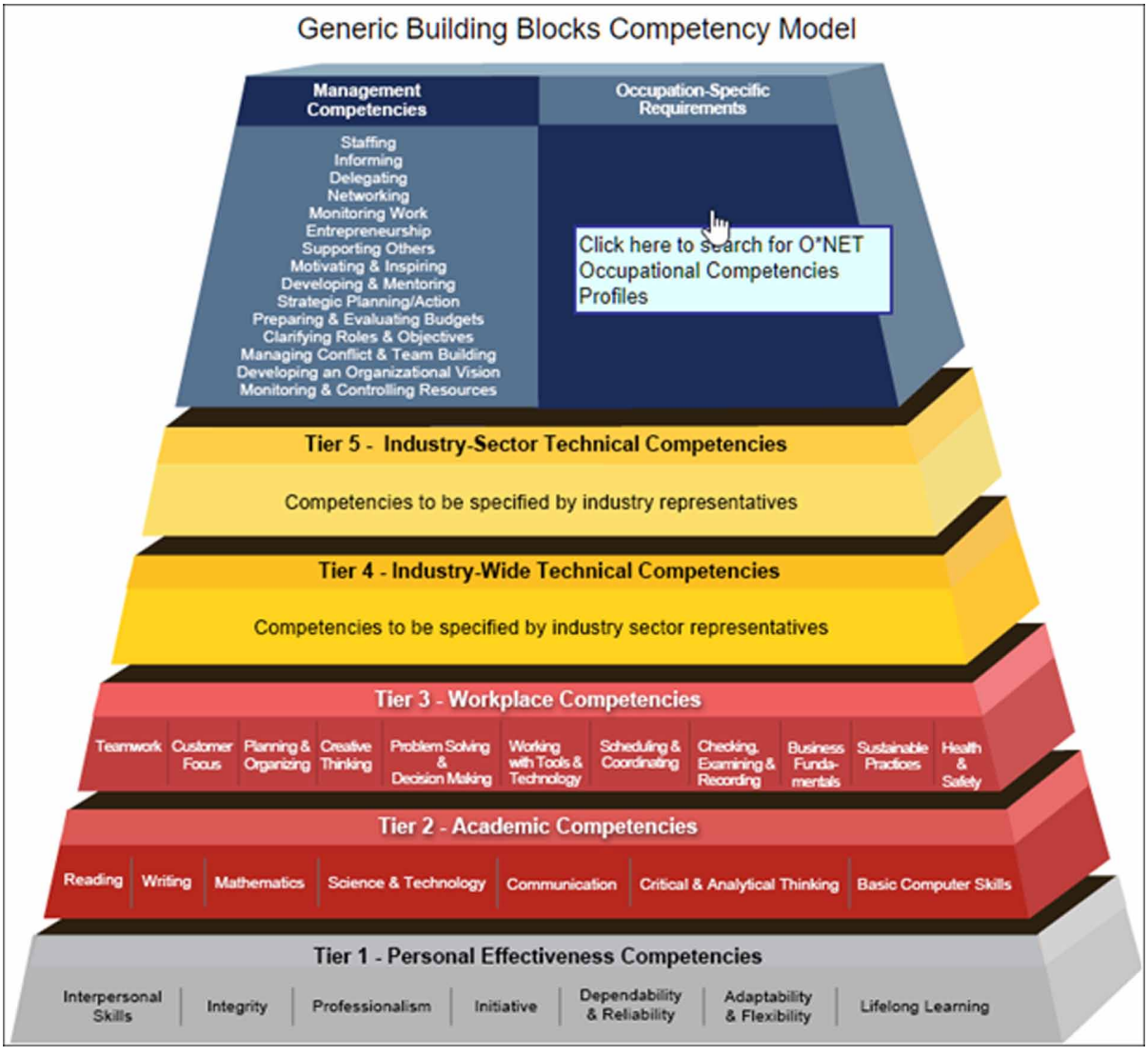
The Cambridge Dictionary (n.d.) defines competency as "an important skill that is needed to do a job." If the goal of an institution's competency-based education program is to produce graduates that will be entering the workforce, it will be important to not only include the academic minds of the institution, but also employers in developing the list of skills, knowledge, and abilities students should be competent in upon program completion. Developing an advisory board that includes industry leaders can be a good place to start when deciding what competencies should be included in curriculum development (Western Governors University, 2022).

Industry leaders can provide valuable information about the competencies needed to be successful in the workplace upon graduation. Additionally, Margolin (2017) cites further resources in their research that aid educational leaders in defining the industry competencies necessary for students entering specific professions. Through a grant from the U.S. Department of Labor/Employment and Training Administration, the North Carolina Department of Commerce developed the Occupational Information Network (O*NET). The O*Net program provides a free database that is regularly updated to include occupation specific descriptors covering approximately 1,000 jobs over the entire U.S. economy. O*NET collects data from incumbents, occupational experts, and occupational analysts to gather specifics on tasks, work activities, work styles, abilities, and skills to provide a comprehensive analysis of the needed competencies for each job within the database. This allows industry leaders or academics to review the necessary competencies that could be used as a starting point for curriculum development (O*NET, 2022).

A similar database cited in Margolin's (2017) research was CareerOneStop, also sponsored by the U.S Department of Labor. CareerOneStop.org is a website serving many stakeholders: job seekers, business leaders, educators, and career advisors among them. For educators interested in developing competency-

based curriculum, the website provides a Competency Model Clearinghouse where industry partners and The Employment and Training Administration (ETA) work together to maintain competencies that are needed to support the development of a workforce that can compete in a global market (CareerOneStop, 2022). The Building Blocks Model (Figure 1), offered by CareerOneStop, is a useful resource for leaders interested in the development of a competency-based modality as it outlines the specific areas that should be considered when developing the CBE program.

Figure 1. Generic building blocks competency model (CareerOneStop, 2022)



This competency model is the beginning of curriculum development. It is a resource that can be used by program planners and curriculum developers in the planning, development, and curriculum evaluation phases. Additionally, the Occupation-Specific Requirements section of the model, when viewed from the

CareerOneStop website, allows you to choose the occupation you wish to research to view more specific competencies for specific jobs and disciplines. Using this model, the foundational workplace knowledge and skills that today's workforce needs can be mapped back to specific classes or assignments offered in the CBE program. Once competencies are identified for programs offered, faculty will take on the role of curriculum development.

Once desired competencies have been laid out for an industry, they are inherently laid out for the program educating the students who plan to enter that industry, and the development phase moves into the faculty's hands (Bushway et al., 2016; Echols, 2018). The design process should start with faculty members identifying learning outcomes, creating learning materials to support students' mastery of the competencies, and developing assessments where students can show their mastery of the material (Bushway et al., 2016). This is a backward design process and may not be the typical way faculty have designed curriculum in the past. In many cases, faculty's prior curriculum design experience may come from the development of traditional coursework where the curriculum was designed around a certain outline for a textbook (Echols et al., 2018).

Faculty Development

Although faculty can take on many roles in a CBE program, Bushway et al. (2018) cite the primary role of faculty in any CBE program is developing the curriculum and assessments. Stewart (2021) agrees and further adds the obvious significant role faculty play in course delivery as well. While this is the case, Kellogg (2018) points out the differences in what course delivery means in CBE versus traditional programs. Faculty skepticism can arise in CBE programs from no longer being what Kellogg (2018) refers to as the "sage on the stage" (p. 28), and faculty will need to adjust to a huge change in roles and job descriptions (Kellogg, 2018). As the new roles emerge, faculty are finding themselves more involved in areas they may not have direct experience in and feel fully prepared for (Kellogg, 2018). Although the faculty role may change in CBE programs, faculty remain just as important as ever.

Institutions cannot deny the critical role faculty play and would be wise to focus on establishing a comfort level among faculty regarding how to create CBE curriculum and how to deliver instruction as a subject matter expert (SME) (Echols at al., 2018; Stewart, 2021). In fact, Echols et al.'s (2018) research suggests faculty member's perceived levels of confidence in CBE curriculum development skills are affected by the type and amount of training they receive. Echols et al. (2018) found a significant relationship between the number of hours faculty spent in training and level of competence faculty feel in curriculum development. It is recommended to train faculty in content development, assessment development, technical skills, collaboration skills, and communication skills, because faculty are likely to be more engaged based on their level of competence (Echols et al., 2018).

Student Support Services Development

Faculty and staff are an important part of program design and implementation for any CBE model. If one were to review models within the current CBE programs today, they are not likely to find a universal model among institutions. Position titles at one institution may be responsible for an entirely different aspect of the job as the same title at another institution (Bushway et al., 2018). For example, a faculty mentor in a competency-based model at Western Governors University may perform much of the same role as an academic coach at UMass Global. For any institution interested in developing their own CBE

program, it will be important to understand the distinct roles needed for student success and decide on the model that the structure of their institution can support.

Academic Coaching

There are several names for the service an academic coach provides, such as success coach, academic advisor, and mentor. Regardless of name, the role plays a critical part in student success. Stanford University scholars, Bettinger & Baker (2014), conducted a seminal study on academic coaching in higher education. Their research evaluated 13,555 students across eight universities, including public, private, and proprietary universities. Through random selection, some students received academic coaching consisting of goal setting, skill building, self-advocacy, and study skills. Researchers tracked the persistence of coached versus non-coached students over a period of two years and found statistically significant differences in retention and completion rates. Coached students were found more likely to persist than non-coached students by a staggering five percentage points (Bettinger & Baker, 2014).

There is plenty of research on college student retention stating one of the best predictors of student success and persistence is meaningful interaction with someone from the college (Drake, 2011; Kuh et al., 2005; Pascarella & Terenzini, 1977). For many institutions, the role of the academic coach in CBE programs is a constant through the student's academic journey and oftentimes a perfect place for the student to build a meaningful relationship with a college representative. Many students start a relationship with their academic coach immediately after the admission process. Regular meetings thereafter can provide diverse levels of support that are outside faculty's purview. For example, as outlined in Bushway et al. (2018), academic coaches are there to explain how CBE differs from the traditional approach, track students' overall progress in the program, help students navigate the competency sets, set goals of completion, and provide motivation to students to reach their goals. Additionally, coaches proactively check in with students, identify at-risk students, and refer students to campus resources when appropriate (Bushway et al., 2018).

Just as important with faculty, proper training for academic coaches will be important to ensure the coaching being provided to students aligns with the core principles of the coaching model. Coaching aims to promote choice by the student. The student must choose the path they want to take for the follow-through on implementation to occur (Sepulveda, 2021). Without proper coaching training, academic coaches may end up providing standard academic advising services. Although similar in relationship building, advising and coaching do provide a different aspect to the student experience (NACADA, 2022). Academic coaches will use many advising strategies in their day-to-day operations, such as helping students understand degree requirements. Coaches will take the relationship a step further and help students develop confidence in their own skills over time. Both roles, advisor and coach, make positive impacts on student retention and persistence, however, while an advisor can help a student understand what the semester goals are, the academic coach helps a student break down weekly or bi-weekly goals (Sepulveda, 2021).

TECHNOLOGICAL CHALLENGES

Early in the implementation process, the institution may ask the questions: how do we want to deliver instruction and curriculum in a competency-based program? If the program will be entirely virtual, do

we have an online learning system that will support this? Do we have faculty and staff in place with the knowledge and skills needed to work with any new technology needed?

The CBE program at the UMass Global is considered a fully online program, and because of this, is characterized by a high level of flexibility and accessibility. In a fully online program such as this one, the student engages with the curriculum, faculty, and university staff in an online environment. Students access and engage with all coursework using an online platform, and virtual resources are used by faculty and staff to support students through the use of learning management systems (LMS) (Bushway et al., 2018). Other online systems include those used to administer financial aid and manage registration of competency-based coursework. The institution will need to assess whether an existing financial aid or registration system can support the functionality needed for a non-term model, or if they will need to consider adopting entirely new technologies, such as Regent Technologies for financial aid administration, or Strut Learning as a learning management system.

A survey by Kellogg (2018) indicated that many participating institutions encountered challenges when trying to adapt existing systems, including LMS and financial aid, to fit a self-paced CBE program. The existing systems may be designed specifically for traditional and term-based academic programs, and so issues were identified in processes such as registration, billing, and financial aid. Traditional technological systems may simply not be capable of accurately handling any of these back-end processes for a non-term, self-paced program. In these cases, the institution may encounter significant difficulties in accurately managing federal financial aid awards for CBE program students, tuition billing and payment challenges, insufficient virtual support for students, and registration issues. All these challenges have the potential to disrupt the student experience and cause significant barriers to success.

FINANCIAL CHALLENGES

Cummins and Floten (2016) cite the steps of determining how to apply federal financial aid rules to a non-term program as a potential hurdle in CBE implementation, and a perceived lack of compatibility with federal financial aid was identified as a significant barrier in surveyed institutions (Lurie and Garrett, 2017). If the institution wishes to offer a program in which students may utilize federal financial aid, they must take the necessary steps to receive Department of Education approval for federal funding. Since federal financial aid is often based on time or hours spent in a classroom and the structure of a traditional academic year, both areas in which most CBE programs differ, understanding how to fit a flexible CBE program into time-based financial aid regulations may present a necessary hurdle for many institutions. However, if an institution wishes to implement a competency-based program to appeal to a demographic of students in need of more flexibility, not only in the academic sense but also in terms of tuition and finances, *not* offering federal financial aid may prove to be a detriment to success.

Basic federal financial aid requirements state that a student must be enrolled at least half-time within an academic year, and maintain sufficient academic progress, or SAP (U.S. Department of Education, 2022). An institution wishing to implement a CBE program with approval for federal aid must decide how to define half-time enrollment and academic progress within non-traditional terms or sessions which may not be defined by traditional time constraints or academic calendar dates. Per the Department of Education rules on satisfactory academic progress, the maximum time frame in an undergraduate program may be no longer than the published length of the program multiplied by 1.5. An institution must make a reasonable determination regarding the expected time from start to completion in a non-term

program and use that determination as its published length in adherence with this rule (CBE Network, 2016). The most flexible competency-based education programs, including UMass Global MyPath, are characterized by self-paced sessions with no defined end date. This presents a unique challenge in deciding how to implement and reinforce a definition of satisfactory academic progress. Additionally, the GPA and grade-point calculations which define SAP may be challenging to adapt and apply to a program in which students demonstrate mastery or a subject area, rather than passing, failing, or receiving a traditional letter grade (Porter, 2016).

Many competency-based programs, particularly subscription-based models, are characterized by the offering of a set tuition price for an "all you can (compl)eat" amount of courses or credits, rather than billing tuition per unit, credit, or hour. While this affordable tuition model has the potential to attract more students and can be highly beneficial to those looking to maximize their federal financial aid or out-of-pocket expenses, and also can help address the greater issue of climbing student loan default rates, it also poses more unique financial challenges for the institution. The lack of defined deadlines for students in a self-paced program may allow them to progress either too slowly or too quickly, which can in turn result in lower revenue from overall tuition per student for the institution. A college or university interested in offering a CBE program with a flexible or lower-priced tuition model will need to determine how to show that there will be a return on investment from a financial perspective. The key factor of showing a financial return on investment should be considered as important in maintaining commitment and buy-in from all involved, particularly as the implementation of a CBE program has the potential to be significantly rigorous and time-consuming (Bushway et al 2018).

Understanding and planning how to structure a CBE program to be eligible for federal financial aid, determining what tuition model is best-suited for the program and the institution – a unique rate, subscription model, equivalent to the institution's traditional rates – are all major components of the decision-making process that the institution must engage in when in the planning and implementation stages (L. Dodge, personal communication, January 27, 2022).

IMPORTANT AREAS OF COLLABORATION

Successful implementation of a new competency-based program will rely heavily on the contribution and collaboration of almost all key stakeholders and departments within the institution and may require the development of an institutional culture that supports the innovation and collaboration needed for a CBE program to succeed (Bushway et al., 2018). An ongoing process of collaboration may help to address and alleviate identified roadblocks and barriers. Beginning and building a sustainable collaboration process, and setting shared expectations and goals, can help the institution engage in a process of continuous and evolving improvement.

The first step in the collaboration process can be to establish a cross-functional team of key individuals who will be instrumental in understanding and addressing any barriers the institution may face. UMass Global utilized working groups with individuals from areas such as admissions, academic advising, financial aid, faculty, institutional research, and information technology. A cross-functional group should have the ability to meet weekly or bi-weekly in the implementation process, but it is important to maintain established collaborative meetings well beyond implementation so that any unforeseen or future roadblocks can be met with a group, solution-oriented, effort. For example, it can be vitally important for communication between faculty and academic coaches to remain consistent and open so that the

impact of new policies or developments on staff and students may be best understood and shared. Having one or more individuals in executive leadership positions who openly support the implementation of a competency-based program at the institution can also help unify the collaborative group and champion efforts surrounding the new program. Establishing a working group or committee who are dedicated to meeting on a regular and ongoing basis will also help alleviate any information silos that have the potential to develop in larger organizations. Working groups can optimize the sharing of knowledge and ideas from each department with responsibilities towards implementation of the new program.

CBE program implementation and success requires proactivity, open collaboration, data-sharing, negotiations, and adjustments between faculty, administrators, and learners, which needs sustained effort from all groups (Curry and Docherty 2017). The institutional culture must be one which is supportive of the proactive and innovative approaches needed to meet the unique challenges of CBE.

THE FUTURE OF COMPETENCY-BASED EDUCATION

In general, higher education is under intense scrutiny. Between rising tuition costs, the trillion-dollar student debt crisis, low retention rates, and slumping enrollments, higher education institutions are finding themselves providing a traditional model that is unable to accommodate the needs of today's labor force. The American job market is producing more jobs that require a postsecondary degree than there are students graduating with said degrees (Carnevale et al., 2020; Smalley, 2021). Innovation and change will be required if institutions are to keep up with the needs of the American workforce, and competency-based education could very well be a fitting solution.

As more institutions across the country adopt CBE programs, we should consider the innovative potential for CBE programs to adapt to the changing needs of today's students and workforce. This is especially true as enrollment trends shift toward a majority population of non-traditional students. As non-traditional students enter college to become re-skilled and thus more competitive for today's job market, CBE is playing a significant role in their choice of program (Kelchen, 2016). We believe CBE programs will continue to gain momentum in the adult learning sector and can become a hybrid part of the traditional model. Students may find the ability to take both traditional courses while also taking CBE courses, rather than having to choose one model or another.

Additionally, the idea of badging and microcredentials (such as the "Credential as you Go" initiative by SUNY Empire State College) are beginning to emerge in the higher education landscape. As it stands now, far too many students start college but leave before a degree is earned. CBE could be a valuable resource to help students take classes on their own terms and earn microcredentials, or badges, which will have value in the workforce should the student decide to stop out. The student can then have the option to return and complete further competencies in the future.

Competencies could also be aligned with the job tracks students would like to follow, meaning students could complete competencies that earn them a microcredential, gain meaningful employment due to the microcredential, step out to gain the experience in the field, and return to a set of competencies or a new set of microcredentials when they are ready to move up again in the workforce. Employers may also wish to leverage competency-based credential programs to "up-skill" their workforce for the future long-term success of their organization. Understandably, this particular facet of the future of CBE will require the federal government and regional accreditors to understand the benefits and change policies to allow CBE programs to issue microcredentials and badges as an accredited credential.

RECOMMENDATIONS

The roadblocks and challenges described in this chapter are ones that we have both encountered in our professional careers in a competency-based program, and those that have been identified in contemporary research and described by leaders in higher education. An institution of higher education interested in implementing a new competency-based program should expect to manage and overcome any number of these technological, academic, financial, and organizational challenges. Below is a summary of recommendations that we, our colleagues, and our institution have utilized to remove roadblocks and address challenges, both in the implementation process and as part of the work in ensuring ongoing and sustainable success:

- Assess organizational readiness to adopt a CBE program. Ask key questions: does the institution support a culture of innovation, commitment, and flexibility?
- Align the program and implementation process to the institutional mission, vision, and strategic plan to create buy-in and unified goals.
- Encourage and support ongoing collaboration and working groups between key individuals and departments.
- Understand the importance of assessing and reassessing the definition of program and student success – will new degree programs be needed? What can be established in the implementation phase to ensure continued growth?
- Create ways to collect data to measure and show program success for students, staff, and leadership.
- Hire the "right people in the right places" before the program is launched.
- Get key players in regular meetings during the initial and early phases of the implementation process.
- Set expectations – a new CBE program may not be immediately successful or show a quick return on investment.
- Identify and provide specific training, support, and resources for faculty and staff.

Organizational Readiness and Support

As discussed, a vital component to the successful implementation of a CBE program is organizational readiness and support, from the top down. Existing resources, technology, commitment and buy-in from stakeholders, and an innovative environment can all be leveraged to address the readiness factor.

One recommendation to establish and sustain a culture of support and readiness is to provide structured and ongoing training processes for faculty and administrative personnel involved in implementing and administering the CBE program. Developing required training sessions that focus on the CBE learning process, the learning platform and systems, and how to best guide and support students enrolled in the CBE program is recommended as a best practice, as it creates a culture of support for faculty and administrators and equips stakeholders with the skills and knowledge needed to feel ready and proficient to effectively deliver online instruction and advising (Echols et. al., 2021).

Ensuring that the program and implementation process are aligned with the overall mission and vision of the institution can be important to creating support and buy-in, as a project as substantial as adding a CBE program can represent major organizational change. We recommend that the institution take this

a step further by crafting a customized mission and vision specifically for their CBE program that can help remind all involved stakeholders of their shared goals and commitment to the project.

Measuring Student Success

The nature of a CBE program can imply that institutions, faculty, and staff may need to reframe how they traditionally define student success. Although we may be accustomed to viewing student success through the lens of semester or trimester progression, traditional letter grades, and unit completion, a CBE program (and a direct assessment model in particular) requires that the institution develop new ways of measuring student success, and the overall success of the program itself once implemented.

We have found many students who enroll in the CBE program at UMass Global tend to be working adults, professionals with families, non-traditional students who are returning to school after stopping out, and those who need more flexibility in their degree programs and additional levels of support. Since our CBE program is entirely virtual, our system of student support and resources is delivered in a fully online environment. Meaningful and consistent support and communication in a CBE program have shown to be a key factor in academic success and retention (Echols et. al., 2021). In the UMass Global MyPath program, we have seen significant effectiveness on the administrative side by employing a three-point advising model composed of program-specific Academic Coaches, One Stop Student Services Specialists, and Tutorial Faculty. Our program's Academic Coaches provide administrative academic guidance and motivational support to students, One Stop Specialists guide students through all financial processes, and Tutorial Faculty are readily available to guide students through any curricula questions. Additionally, institutions may wish to evaluate existing online support services, such as remote tutoring services and library support, already in place that could be used by students in a virtual CBE program.

The IHE should determine how to measure and show student success in the CBE program. In the MyPath program at UMass Global, we actively track data points involving student retention, student progression and pace through academic sessions, graduation rates, conversion, and revenue from tuition paid. Managing this process internally allows our team an in-depth look at trends which can be indicative of overall student success and the health of our program. Since the most flexible self-paced, direct assessment models allow students an indefinite amount of time to master CBE coursework, we recommend that the implementing IHE determine how to set rules and standards regarding sufficient academic progress. For example, in building policies for the new CBE program, consider if students must meet set benchmarks or deadlines of academic progress, or show a certain amount of degree completion or completed coursework within an established timeframe.

Addressing Financial Challenges

Although most CBE programs are eligible or can gain eligibility for Title IV funding or other financing methods such as military benefits, those programs are typically structured around and are most compatible with credit-hour based programs and associated tuition models. Institutional staff involved in the implementation and management of the CBE program should be prepared to work closely with the IHE's financial aid department as a critical area of collaboration to gain an in-depth understanding of how financial aid will be awarded and applied to self-paced, non-term academic sessions.

Traditional financial aid models may be typically based on enrolled credit hours, letter grades, GPA, and standard academic progress requirements. Furthermore, "all you can (compl)eat" subscription-based

CBE models may involve tuition being billed at a flat-rate amount, rather than itemized or per-credit, which does not always easily align with financial aid practices, military benefits, and other methods students may use to finance their education. IHE's will need to consider how to structure their tuition billing for CBE programs early on in consideration of the methods of payment and financing that students will be most likely to use. The advising and student support model at UMass Global allows our student-facing staff to develop proficient knowledge of how federal funding is applied to competency-based sessions, which becomes important in coaching students through any financial roadblocks or confusion they may encounter. For institutions looking to adopt a similar advising model, we would highly recommend ongoing training and collaboration between student services staff and financial aid administrators.

Virtual Student Support

Just as internal business processes need to be reimagined to serve CBE needs, so must student support services. The typical student population in CBE programs are non-traditional age students, because CBE programs allow adults to manage school on their terms. Self-paced programs allow adults to manage full-time work, family obligations, community involvement, and school without having to rearrange much of their lives to accommodate a traditional school schedule. The same concepts driving the CBE program model should be considered for student support services.

Academic coaching services, financial aid services, faculty involvement, tutoring services, and disability services should all be offered in a virtual format that allow students access on the student's terms. Additionally, the non-traditional nature of CBE programs and student population call for a non-traditional approach to staffing the services needed. Faculty and staff will need non-traditional work schedules to accommodate the needs of students on the students' terms. Just as students are unable to attend class during their work hours, they cannot be expected to take advantage of such things as tutoring services during those same working hours. Offering staff a non-traditional schedule can benefit the university in two ways. First, it allows faculty and staff to meet the students' needs when the students need the service. Additionally, virtual services can be provided from anywhere, and a remote work agreement with a flexible schedule can be considered as part of an employee's benefit package. Much of today's workforce appreciates the opportunities remote work provides and it allows the university to hire and retain top talent from anywhere. This arrangement is a win-win-win for students, the university, and faculty and staff.

A virtual model of student support also allows an institution to develop virtual student communities. Most adult students tend to avoid student communities on traditional campuses due to their focus on traditional age students' needs. However, virtual student communities can be an opportunity for adult students to take advantage of a support service on their own terms. CBE programs are very individualized. Students move through the program at their own pace and would not connect with peers in a classroom, virtual or otherwise. Virtual platforms, such as Slack, Facebook, Twitter, What'sApp, Discord, or communication features within the already used student learning platform can be utilized to help students connect with their peers. Regardless of age, students are interested in who their peers are and how they are doing in the program. Students can gauge their own progress compared to how fast or slow their peers are going. Connecting with peers provides motivation, accountability, camaraderie, and a sense of community. Virtual student communities help students identify as a student, rather than simply identifying as someone who is just going to school. Being able to identify as a student allows one to build habits of that identity and become more likely to succeed (Clear, 2018).

Regular Meetings with Key Players

During the implementation process, frequent meetings with departmental leaders are necessary to discuss barriers and strategies to overcome those barriers. It is often said in the UMass Global MyPath department, the program is a square peg trying to fit into a round hole. This is due to the non-traditional nature of the CBE model trying to fit into the traditional processes and systems built for term-based programs. For example, the financial aid software used by UMass Global, Regent Education, has had a challenging time adjusting to tracking CBE students. Regent's programming was written to accommodate traditional term-based data and adopting the non-term-based tracking needs of CBE took much time and effort between MyPath staff, financial aid staff, and Regent programmers. Regular meetings allow departments to break down silos by sharing information regarding the resources needed to adopt the CBE model within the financial aid department.

Regular meetings with key players at UMass Global consisted of each department within the university system; Admissions, Enrollment Services, Academic Coaching, One Stop Student Services, Academic Program Specialists (Transfer Articulation), Marketing, the Executive Vice Chancellor for Enrollment and Student Affairs, and the Vice Chancellor for Enrollment and Student Success. Weekly meetings included department leads giving updates on CBE integration, barriers faced, and resources needed for solutions. At times when a department leader felt like they did not have a solution, executive leadership would step in to secure necessary resources, allowing the CBE program to thrive.

CONCLUSION

The purpose of this chapter was to identify potential barriers and roadblocks that may prevent institutions of higher education from moving past the aspirational and implementational phases of offering a competency-based education program. The landscape of higher education is changing, and student needs are evolving beyond what traditional educational models may be able to meet. Competency-based education programs have the potential to give colleges and universities the opportunity to meet the needs of diverse groups of learners by offering flexible, timely, and low-cost degree options.

The findings gathered in this chapter through research and professional experience show that institutions seeking to implement a CBE program must be prepared to tackle unique challenges, but that the endeavor will be worthwhile. We hope that the recommendations and experiences shared here will inspire and help other colleges and universities in their future CBE projects. Implementing a CBE program can be a challenging and daunting task but can also allow institutions to engage their students in innovative programs with an eye on the future of higher education. Asking key questions, assessing organizational needs and readiness, fostering a culture of collaboration and innovation, remaining patient and flexible, and keeping the needs of students, staff, faculty, and key stakeholders in mind will help contribute to implementation success and beyond.

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