CAEL

GIVING CBE A JUMPSTART:

STORIES OF INSTITUTIONAL PROGRESS ON CBE FROM THE JUMPSTART INITIATIVE

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Linking Learning and Work

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INTRODUCTION

Since 2012 the higher education community has experienced significantly increasing interest in and development of competency-based education (CBE) programs. The reasons behind this recent surge in CBE programs include the development of better technologies to help manage instruction and learning (particularly online); increased acceptance within institutions of outcomes-based and non-traditional instructional approaches; and greater pressure from policy makers on institutions to offer low-cost educational models that are accessible to a wider range of non-traditional students (Nodine, 2016). Institutions are also responding to employers' need for graduates who can demonstrate proficiency around certain skills as well as employer perceptions of graduates as unable to demonstrate key workplace competencies (Hart Research Associates, 2015).

Large-scale changes in higher education models can be difficult to implement, however. One of the greatest obstacles faced by developing CBE programs is internal resistance to change, despite a growing acceptance of CBE models broadly. Recognizing this challenge, the Council for Adult and Experiential Learning (CAEL) has been working since 2013 to provide special outreach and training around CBE to faculty and staff interested in implementing CBE programs. At the center of this work has been the CBE Jumpstart initiative, funded and supported by Lumina Foundation.

In August 2013, CAEL put out a call for applications from individual institutions as well as college and university systems from across the country who were interested in receiving further training around essential CBE concepts and models. Over 40 institutions and systems responded, and based on their level of interest and commitment to developing a CBE program as well as their existing infrastructure and prior experience around outcomes-based learning and assessment, 14 entities—12 individual institutions and 2 college and university systems—were selected as the first two cohorts to receive training and limited technical assistance. In February 2015, another call for participants was issued and, once again, over 40 applied. The final six institutions and one system were chosen from this group (see Table 1 for a list of the 21 Jumpstart participants).

The Jumpstart training was not intended to be the main factor that would help an institution launch a CBE initiative. Whether and how to proceed depended on the institutions' cultures, structures, and capacities. One result of the project, then, was that it provided CAEL with a close look at the journey that institutions take in moving from a strong interest in CBE to eventual design, development, and implementation—as well as the specific barriers that might prevent an institution from moving forward.

Table 1. Jumpstart Participants by Cohort

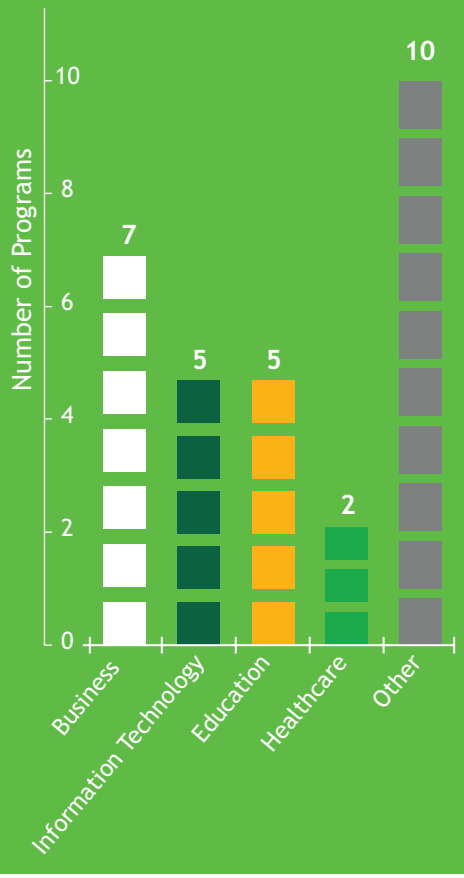
COHORT #1 (SUMMER 2014)
Indiana University-Purdue University Indianapolis (IUPUI)
The New School
Valdosta State University
LA Trade Technical College (LATTC)
Kalamazoo Valley Community College (KVCC)
Minnesota State Colleges and Universities/ Metropolitan State University
LeTourneau University
Golden Gate University
COHORT #2 (FALL 2014)
Davenport University
Granite State College (GSC)
University of Toledo
Pace University
Missouri Department of Higher Education
Community College of Philadelphia (CCP)
COHORT #3 (SUMMER-FALL 2015)
Peirce College
Colorado Community College System (CCCS)
Lincoln Land Community College
Viterbo University
Western Michigan University
Boston Architectural College
University of Cincinnati

JUMPSTART TRAINING DESCRIPTION

Jumpstart training, conducted in person whenever possible, covered basic concepts and processes critical to CBE programs, such as:

- How to define and assess competencies
- The relationship between CBE and PLA
- The definition and scope of the faculty role in assessment and instruction
- The variety of CBE models that exist
- Tracking student progress and success
- Administrative/accreditation considerations

Figure 1.
Jumpstart Program Disciplines Selected for Development



This report describes the efforts of the 18 institutions and 3 systems that participated in the Jumpstart training, the decisions they have made around their developing programs, and the challenges that have delayed some programs or prevented others from moving to implementation. A number of lessons emerge from these stories: the importance of an institution cultivating support among faculty and higher-level leadership early on in the development process, the usefulness of initially identifying and developing a smaller-scale pilot program prior to scaling CBE up across the institution, and the critical role that networks of leading CBE institutions are playing and will continue to play in identifying best practices and building the CBE movement overall.

BRIEF SUMMARY OF THE JUMPSTART INITIATIVE

During its three years (August 2013 to September 2016), the Jumpstart initiative worked with these 21 higher education entities in order to train a total of 612 faculty and staff from diverse academic departments and across a wide variety of institutional functions and roles. These trainings built off of a similar content and structure (see sidebar) with occasional modifications to meet specific needs of participating institutions.

There is no single way for institutions to employ a competency-based approach to a degree or credential program; the CBE programs that have emerged in recent years have been highly diverse in terms of their areas of study, the types of degrees offered, and programming structure. Highlighting diverse CBE models and approaches was a key focus of the Jumpstart training, and Jumpstart institutions were selected in part because of the diversity of the programs they were interested in implementing.

Diverse Program Types Pursued

From its outset, the Jumpstart initiative provided training to institutions and systems interested in developing programs in a wide variety of disciplines, across every level of credential. Among the institutions that successfully moved out of the early CBE exploration and planning stages, common areas of program development included business, information technology, and education (see Figure 1 and Table 2). Still, the experience of Jumpstart institutions—and the field as a whole—makes it clear that CBE programs may be developed in a wide variety of disciplines, from culinary studies to general studies to architecture.

Jumpstart participants have also made clear that CBE is a method of learning that can be implemented at any educational level, including certificate programs, associate degrees, bachelor's degrees and graduate programs (Table 2 and Figure 2).

Table 2. Discipline Areas and Credential Levels Chosen for CBE Development

Institution/System	Discipline	Credential Level
Boston Architectural College*	-Media Studies -Architecture	-Certificate -Bachelor's, Master's
CO Community College System	-Information Technology	-Certificate
Davenport University	-Business Administration	-Master's
Golden Gate University	-Business (Finance) -Business (Human Resources) -Business (Business Analytics)	-Bachelor's (concentrations)
Granite State College	-Education	-Master's
Indiana University-Purdue University Indianapolis	-Business Administration	-Certificate, Bachelor's
Kalamazoo Valley Community College*	-Sustainable & Innovative Food Systems -Culinary Studies -Noncredit Career Academies	-Associate -Associate -Certificate
LA Trade Technical College	-Healthcare -Advanced Transportation and Manufacturing*	-Certificate -Certificate, Associate
LeTourneau University	-Engineering	-Bachelor's
Lincoln Land Community College	-Information Technology	-Certificate
Minnesota State Colleges and Universities/Metropolitan State*	-General Studies -Public Administration -Education	-Bachelor's -Master's -Certificate
Peirce College	-Information Technology	-Bachelor's
University of Toledo*	-Education -Business Technology -Information Technology	-Bachelor's -Bachelor's -Bachelor's
Valdosta State University	-Education	-Graduate Certificate (Endorsement)
Viterbo University	-Business Administration -Healthcare	-Bachelor's -Bachelor's
Western Michigan University*	-Education -Information Security -Leadership	-N/A (Still in planning)

*Program still in planning stages—discipline and credential level may not yet be finalized

Figure 2.
Jumpstart Program Credential Types Selected for Development

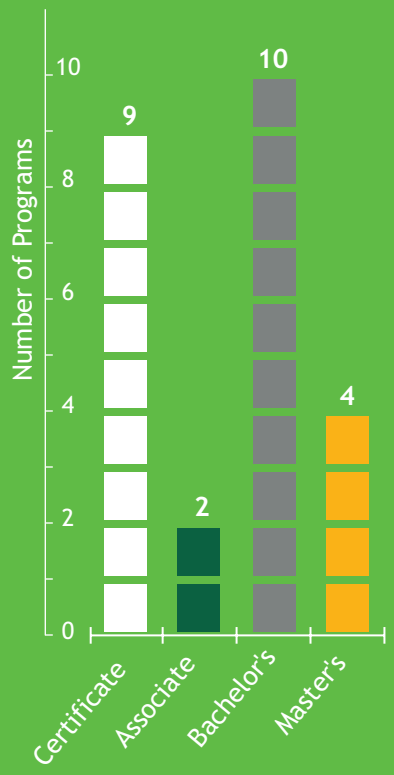
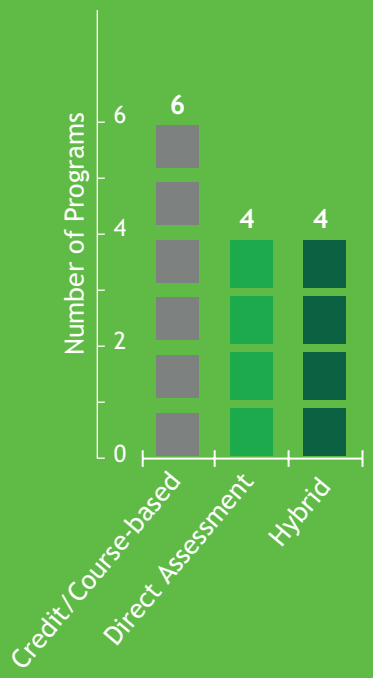


Figure 3.
Jumpstart CBE Program Types Selected for Development



Diverse Program Models Pursued

The United States Department of Education's (D-ED) Office of Postsecondary Education has outlined three categories of CBE programs: traditional course/credit-based, direct assessment, and hybrid approaches (see sidebar for definitions of each). Most CBE programs must ultimately determine their eligibility for financial aid according to this framework.

Among the Jumpstart institutions that have begun the process of developing CBE programs, six have employed a more traditional, course/credit-based approach. For example, Granite State College has implemented CBE by introducing competencies and competency-based assessments (primarily through portfolio assessments) into the existing curricula of master's level educational leadership and management programs. On the other end of the CBE spectrum, four institutions are developing direct assessment models, such as Lincoln Land Community College, which is in the process of developing a direct assessment format for its cybersecurity certificate program. Finally, four institutions are pursuing a "hybrid" approach (currently, hybrid programs are not eligible for Title IV funding).

VARYING DEGREES OF PROGRESS IN PROGRAM DEVELOPMENT

The Jumpstart trainings were intended to provide initial support and information to institutions that were strongly considering, if not already actively planning, CBE programs. The initiative also provided additional technical assistance to a subset of institutions with specific needs. Examples of this technical assistance include help with developing a competency framework as well as with how to document the completion of competencies. Institutions then worked independently to implement their own development plans, using their own financial resources, technology, tools, staff, faculty, and leadership (note: this distinguishes the Jumpstart participants from other institutions that received significant technical assistance and funding directly from foundations; as part of special initiatives, such as the EDUCAUSE's Next Generation Learning Challenges Breakthrough Models Incubator; or as part of the U.S. Department of Labor TAACCCT grants).

As of mid-2016, the institutions are at various stages of program design, development, and implementation, with the earlier training cohorts (trainings conducted mostly in 2014) further along than the final cohort (trainings conducted in 2015) as illustrated in Table 3.

U.S. DEPARTMENT OF EDUCATION CBE PROGRAM CATEGORIES

In order to qualify for accreditation, a competency-based program must fit one of three defined approaches outlined by the United States Department of Education (US D-ED):

1. **Couse/Credit-Based Approach:** "programs are organized by competency but measure student progress using clock or credit hours" (Federal Student Aid, 2015, p. 2-24)
2. **Direct Assessment Approach:** "a type of CBE program that does not use credit or clock hours. Progress…is measured solely by assessing whether students can demonstrate that they have command of a specific subject, content area, or skill" (Federal Student Aid, 2015, pp. 2-24-2-26)
3. **Hybrid Approach:** "direct assessment program that measures student progress using both direct assessment and credit or clock hours" (Office of Postsecondary Education, 2015, p. 1)

NOTE: "Hybrid" CBE programs are not Title IV-eligible

There are examples of institutions beginning to implement CBE programs, institutions making significant progress around program development, institutions that have moved forward in their planning activities, and institutions that are still exploring the idea of CBE development. The overwhelming majority remain committed to making CBE a reality. The stages of CBE program development among the Jumpstart institutions and systems are described below.

Successful Program Implementations

Five different institutions, at least one from each of Jumpstart's three cohorts, have already launched (or are close to launching) CBE programs.

- **Indiana University-Purdue University, Indiana** has already run six pilot courses in its CBE Human Resources Management certificate program, with several expected to be fully developed by the end of 2016.
- **Davenport University** successfully launched its competency-based MBA program in January 2015 and has seen growing interest in the program among students.
- **Valdosta State University** recently launched the first part of its own pilot CBE program—a science and math endorsement program for K-5 teachers in Georgia—in January 2016.
- **Peirce College** successfully launched its CBE program in information technology (with a concentration in networking, administration, and information security) in September 2016.
- **Los Angeles Trade Technical College** implemented a CBE component in its Health Occupations credentialing program in the Fall of 2015, allowing students with previous knowledge from life or work experience to attain the credential by way of assessment.

Table 3. Number of Participants at Various Development Stages

COHORTS	1	2	3	TOTAL
IMPLEMENTING	3	1	1	5
DEVELOPING	3	1	1	5
PLANNING	1	2	4	7
EXPLORING		1	1	2
NO LONGER PURSUING	1	1		2

There are some common development processes that helped many of these institutions move quickly to implementation. First, most worked early on to secure the support of not only faculty but also their institutional leadership. The institutions also developed strong core development teams, led by enthusiastic and knowledgeable CBE champions, that worked to develop the programs from start to finish and will continue evaluating them even after they have launched. Finally, most of these institutions sought to develop and implement initial, limited pilot programs in areas where a CBE approach seemed to be a good fit. This strategic, small-scale approach allowed them to quickly implement CBE programs, while developing the infrastructure and systems necessary to develop additional programs in the future.

JUMPSTART PARTICIPANTS IN DEVELOPMENT STAGES

- LeTourneau University
- Granite State College
- Golden Gate University
- Kalamazoo Valley Community College
- Colorado Community College System

Significant Progress in CBE Program Development

Five of the Jumpstart participants, while not yet ready to launch, have made significant progress in developing CBE programs. This includes the Colorado Community College System, which has progressed the furthest towards CBE implementation out of the three college and university systems that participated.

While these institutions and systems differ as to which program components they have developed so far, all five have identified and selected a particular program for development. Now they are working to build the necessary infrastructure and systems—curriculum, competency-based transcripts, funding, business process systems, etc.—in order to move towards implementation.

Working to build these systems raised some other challenges, such as how to compensate faculty acting as student coaches or how to track and record student completion of competencies. In some cases, these challenges were technological. According to Elizabeth Lyons at Kalamazoo Valley Community College, the institution's key challenge in moving towards implementation centers around how to transcript competencies and integrate this method into their existing student information system (SIS). Even so, institutions continue to develop innovative solutions to these challenges.

Ongoing Program Planning—Laying the Groundwork

Most Jumpstart institutions—8 out of 21 total—continue to push forward in planning CBE offerings; although these institutions and systems have not yet selected a specific program to develop, they have started identifying existing programs that may fit their needs and have taken significant steps towards development. A prime example of an institution at this stage is Western Michigan

University, which has convened a working group composed of college representatives from across the university, identified a number of programs that could benefit from CBE development, and built institutional support by presenting at their academic and faculty forum.

A primary challenge faced by Western Michigan and others at this stage is the prospect of submitting potential CBE programs for review by regional accreditors and federal financial aid regulators. An uncertain policy environment around CBE (locally and nationally) leaves institutions wrestling with how to develop innovative approaches to CBE that also meet financial aid regulations.

Still Exploring

For the two institutions that are still exploring the possibility of developing CBE (Community College of Philadelphia and University of Cincinnati), this process of research is ongoing. While Jumpstart helped move many participating institutions forward by providing CBE resources and models (as will be discussed shortly), most of the institutions that were able to move into active planning also engaged in ongoing research and exploration, typically within the context of a core planning or exploratory group, and by engaging directly with other CBE-focused institutions.

No Longer Pursuing CBE

Two Jumpstart participants are no longer pursuing the development of a CBE program: Pace University and the New School. A core group at Pace University planned to develop a CBE program by weaving together already-existing competency based elements using a hybrid approach. Although Dr. Christine Shakespeare, the institution's CBE program development lead, had gathered an excited coalition of faculty and staff to plan and develop the program, they had underestimated the extent of the University's involvement in other significant, new academic initiatives at the time. Key faculty members, who were not engaged in the project at its start, urged the CBE team to postpone implementation until a time when it could be properly resourced and prioritized. On the other hand, faculty and institutional support for CBE was strong at the New School, with institutional leaders advocating for a new program that would allow students to develop—in conjunction with faculty coaches—their own competencies and learning plans. After further research, however, leaders determined that this model would not be feasible under the U.S Department of Education's current policy guidelines around financial aid eligibility.

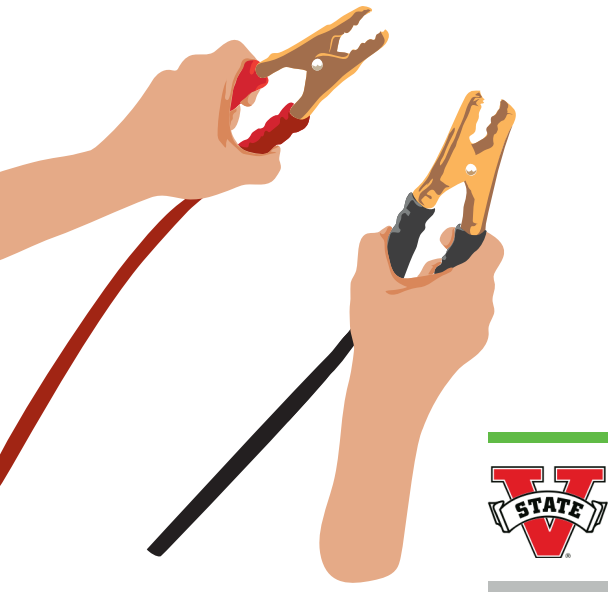
JUMPSTART PARTICIPANTS IN PLANNING STAGES

- Lincoln Land Community College
- University of Toledo
- Boston Architectural College
- Viterbo University
- Western Michigan University
- Minnesota State Colleges & Universities/Metropolitan State University)
- Missouri Department of Higher Education

THE ROLE OF JUMPSTART TRAINING IN THE PROGRAM DEVELOPMENT PROCESS

For the Jumpstart participants committed to program implementation, the project's training sought to move them forward in two key ways: 1) by providing the information necessary to help participants make informed and strategic decisions in their own unique contexts or 2) to help bring as many people at the institution as possible into the conversation around CBE development. In order to determine whether the trainings were successful in accomplishing these goals, attendees were asked to participate in both pre- and post-training surveys. The greatest positive change from pre- to post-test was in the area of general knowledge about CBE. Follow-up interviews with CBE program leaders at Jumpstart institutions reinforced this feedback, showing that the training provided, first and foremost, a valuable overview of the overall field of CBE as well as the various models of learning and instruction being implemented by institutional leaders in the field.

Even more importantly, nearly half of the participants felt that the training also moved internal conversations and planning around CBE program development forward. As Virginia Arthur, president of Metropolitan State University in Minnesota stated, "We accomplished a lot from participating in the training; we may have gotten where we are now without it, but we would have been at least two years behind schedule." Program leaders at other institutions identified similar progress following training. Because of the positive impact of the training, at least seven institutions and one system indicated interest in additional training from CAEL, whether in the form of technical assistance (which five participants have formally requested) or additional on-campus trainings/ workshops providing greater depth into the logistical and administrative processes and challenges of implementing a CBE program.



JUMPSTART PROGRAM PROFILES

Below are closer looks at some of the Jumpstart institutions and systems that have been able to implement CBE programs or are close to implementation. All four institutions profiled below—Valdosta State University, Davenport University, Indiana University-Purdue University Indianapolis, and Peirce College—were successful in implementing CBE programs and had well-documented development processes. A profile of the Colorado Community College System details the ways in which it is encouraging CBE program development system-wide.

Valdosta State University: CBE for a Science and Math Endorsement Program for K–5 Teachers

Administrators and faculty at Valdosta State University (VSU) had been contemplating the development of a CBE program for some time when they were contacted by local school districts looking for a postsecondary partner to offer science and math certification endorsement programs for K-5 teachers. Dr. Anthony Scheffler, interim associate vice president for academic affairs, saw the development of these programs as the ideal opportunity to develop pilot CBE projects: education is a discipline with strong sets of pre-existing skills outcomes that would be easily translatable into program competencies. Most of all, however, the program had strong

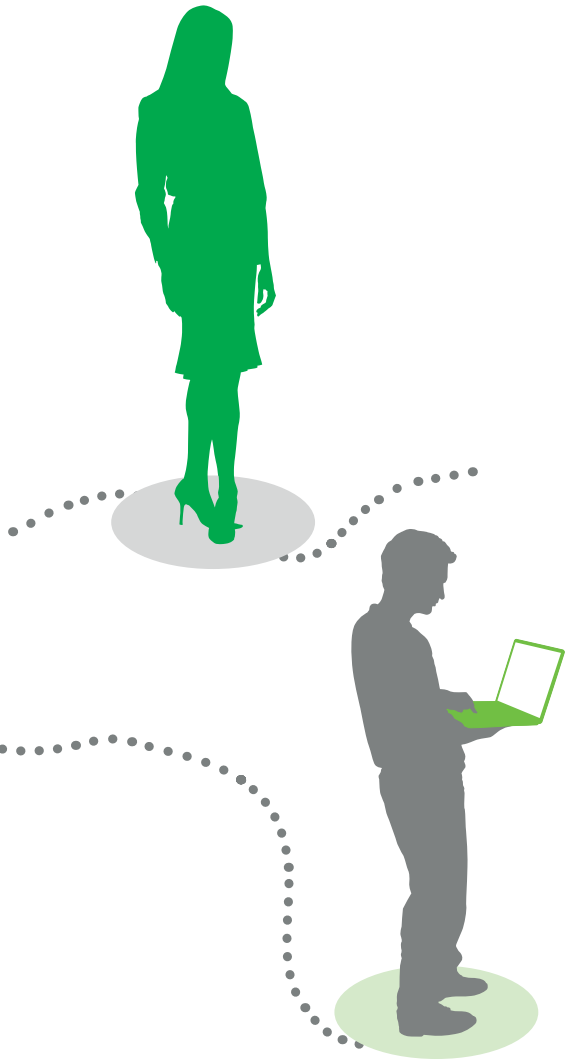
support from the Georgia Department of Education (GA-DOE), which has an interest in the development of STEM teachers.

According to Scheffler, being part of the Jumpstart initiative provided the program with additional credibility among local stakeholders, which opened the door to a significant grant from the GA-DOE for development of the program. Using this money, as well as internal resources, Dr. Scheffler and others drew together a core program development team that included representatives from various departments (registrar, admissions, etc.), primary education faculty, and master teachers from local school districts. This development team then worked over the course of a year to develop an initial competency progression framework through a "backwards design" process. Starting by identifying the overall program competencies, the team then developed summative or "mastery" assessments for each competency as well as a series of learning activities (required and optional) and open educational resources (OER) that would help a student learn the required content to master specific competencies. The design team also worked with the provider of their learning management system (Desire2Learn) to develop the online and technology structures necessary to deliver course content and track student progress.

VSU officially launched a science endorsement program in the Fall Semester 2015. The program began with an initial cohort of 10 students, selected from local school districts based on their anticipated ability to succeed in an online, self-directed learning format. A mathematics endorsement program will be rolled out in the Fall Semester 2017. While the program is still in its initial stages, the first cohort of students has been progressing successfully, and the experience is providing useful insights for the development of future CBE programs. For example, the program was initially offered in a highly sequenced format, allowing students to complete only one competency at a time. However, the early adopting students have expressed interest in being able to access more competencies at one time. The program's leaders feel that the development of a limited pilot has been critical in their ability to evaluate the program's success and make necessary changes before expanding the use of CBE to other programs.

Davenport University: Competency-Based MBA

Davenport University's development of a competency-based Master's in Business Administration (CMBA) program began when the former dean of its College of Business tasked its faculty and staff with re-designing their graduate-level offerings. The Grand Rapids, Michigan, institution saw CBE as a possible way to attract greater enrollment from working professionals while building on its extensive experience with prior learning assessment. Initially



conceived as a pilot project intended to develop a single CBE course, enthusiasm for the project eventually grew to the point where the entire MBA program was selected for development.

A group of faculty and administrators in the College of Business initially met monthly to plan the program's development. Once a program was identified for development the team began meeting more often. These development efforts were funded primarily by internal monies. As the college had already been using the normed, summative assessment exam provided by Peregrine Academic Services to measure MBA graduate outcomes, the team began developing a set of competencies that matched the 12 areas identified by Peregrine as core knowledges, skills, and abilities for MBA graduates. These competencies were then broken down into proficiency modules: discrete segments of learning that build skills and knowledge related to a specific competency. Completion of each module depends on a student's performance on a final assessment, which requires the student to actively demonstrate skills and knowledge.

While the school applied for and received Jumpstart training almost two-thirds of the way into their development process, they found it particularly helpful in validating those aspects of the process that had already been implemented. The school launched the program in Winter 2015 and has been pleased with its success so far—interest in the program is growing. Students can expect potential cost savings of up to $4,850 if their self-directed progress allows them to complete the program in four semesters, rather than the five it takes to complete a traditional MBA program at the school. While conveying this value to potential students has proven to be a challenge, they are working to address this hurdle by imagining creative methods of outreach and messaging. Securing accreditation and financial aid approval also took longer than anticipated.

Indiana University–Purdue University Indianapolis: Human Resources Management Certificate

CBE efforts at Indiana University–Purdue University Indianapolis (IUPUI) began with a two-year task force that was responsible for making system-level recommendations around CBE (and other policies). As a result of this initiative, faculty and staff in the Organizational Leadership (OLS) program within the School of Engineering and Technology began developing and piloting several courses offered through their Human Resources Management (HRM) certificate curriculum. The pilot program consists of six courses delivered in an online, credit/course-based format

and applies a competency-based assessment method for the evaluation of student learning. The course-level CBE approach permitted faculty to easily translate course outcomes into well-defined learning competencies. Also significant was the fact that the HRM certificate is the most awarded academic certificate within the school, which allowed for a wide pool of prospective students.

Three lecturers in the department worked over the course of four months to lay out grids for each course format (traditional, online, or CBE), showing the original student learning outcomes. They then used these grids to map the outcomes to specific, assessable, and actionable competencies, as well as an associated list of learning activities that would support each competency. The team also worked to secure online and digital learning content through an outside vendor, customize the university's learning management system (LMS), and recruit adjunct faculty with Senior Professional of Human Resources (SPHR) credentials to act as individualized learning coaches for CBE-like sections. After an initial roll-out in Fall 2015, it became evident that additional time would be needed in order to further develop the competencies and refine the integrations between their software solutions. Connecting and syncing their online content management system with their LMS proved to be one of the most significant challenges around the program's early implementation.

Of the six CBE courses, four are in revision following the initial Fall 2015 efforts and were scheduled to run in Spring 2016; the remaining two will be in final format for delivery by the Fall 2016. While the program is already approved for financial aid funding, the team is currently working to place it under IUPUI's new "banded" or flat-rate tuition scheme, which would allow students to complete all six three-credit courses in one semester. They then plan to run the program for two semesters while collecting data on student learning outcomes in order to make a final decision around whether the program is sustainable. The program has experienced early success, however, with two students having already completed the pilot courses run in Fall Semester 2015.

Stephen Hundley, professor in the OLS program and senior advisor to the chancellor for planning and institutional improvement, has also seen beneficial spillover effects from the program's development. Conversations with faculty around how to develop fine-grained competencies—initiated, in part, by the Jumpstart training—have prompted similar conversations around improving and refining learning outcomes in other traditional programs. Ultimately the university hopes to use the program as a "proof-of-concept" for other programs interested in developing similar CBE offerings.

Peirce College: Bachelor of Science in Information Technology (Networking, Administration, and Information Security)

Philadelphia-based Peirce College has a mission to provide working adults with an affordable education, flexible classes, and personal attention. According to Dr. Brian Finnegan, associate professor and assistant dean of information technology and general education, Peirce College is "unapologetically career directed." In an effort to align with its new strategic plan, Peirce was looking for ways to better serve the needs of its primary audience of working adult learners. Competency-based education was identified as an opportunity to offer self-paced and subscription orientated programs, providing adult learners with even greater flexibility and affordability.

Due to high labor market demand and an existing infrastructure, Peirce decided to focus its initial CBE efforts on its Bachelors of Science in information technology with a concentration in networking, administration, and information security. Led by Finnegan and Dr. Rita Toliver-Roberts, vice president of academic advancement, the CBE program development team also included an internal instructional design team, the technology vendor Sagence Learning, Inc., information technology faculty, and a CBE coach. Jumpstart training was important for providing the core team with assurances that they were on the right track in their planning as well as for educating the broader Peirce community about CBE. According to Finnegan, it was important for others outside of IT to hear about CBE from an organization like CAEL, in order to help "socialize it" among the various departments and systems who would at some point be involved in implementing parts of the program.

One of the first tasks of the development team was to define the competencies for the CBE program. Developers focused on re-defining the course outcomes from the existing information technology degree as competencies, making them more granular, and ensuring they matched what employees would be expected to know or be able to do on the job. Peirce's CBE team also built on the original outcomes—which were initially developed in consultation with an advisory team comprised of employers, content experts, and recruiters—by using the Lumina Foundation DQP, AAC&U Value Rubrics, and industry competency frameworks (e.g., the Department of Labor's Competency Clearinghouse's Industry Competency Model Initiative, the Association of Computing Machinery) to write the new competencies.

The program's curriculum and online competency-based courses were developed by Peirce faculty in collaboration with Sagence Learning. Students will enroll in the courses and progress through

them at their own pace, with guidance and support from IT faculty and a CBE faculty coach. Competency mastery will be assessed through a variety of methods, including projects, case studies, portfolios, written essays, objective exams, and industry certification exams. These assessments will be administered through the online Flat World proctoring platform and will be graded by members of the program faculty, as well as adjuncts, using rubrics developed by the CBE team.

The Peirce program has been specifically designed for students who have at least two years of professional experience in the IT field. In addition, Peirce recognizes that the format is best suited to independent, self-directed learners. Prior to enrollment, students are asked to complete an initial assessment to determine if the program is the right fit. The program was launched in September 2016. After assessing its current program, Peirce plans to offer a second CBE program in 2018.

Colorado Community College System

In the case of the Colorado Community College System (CCCS) much of the effort has been spent working to facilitate CBE development at the system's 13 individual colleges in two ways: 1) re-evaluating policies, processes, and structures that will affect development and refining them to be more CBE-friendly; and 2) encouraging individual colleges to build programs through ongoing conversations and leadership, and by providing knowledge and resources.

At the beginning of 2015, CCCS incorporated language and performance measures around CBE into its 10-year strategic plan. CCCS then began a systematic review of the course competencies identified for each of the 6,000 courses outlined under the system's common course numbering system. Recognizing that these course-based competencies—which are standardized for courses that are offered across the entire system—often vary in their degree of detail, the goal of the review is to determine which may need to be enhanced. In this way, future CBE program development efforts, regardless of the college, will have a firm base of competencies around which learning activities and assessments can be built.

The system is also working to facilitate conversations across institutions around CBE and to encourage individual institutions and their leaders to begin CBE development. According to Casey Sacks, assistant provost, the Jumpstart training was helpful in its stated purpose of allowing for and encouraging engagement with faculty and staff from across the system. Technical assistance from CAEL will provide faculty and staff from various institutions with training addressing pragmatic and logistical development issues as well as in writing high quality competencies and assessments.

Perhaps the most significant challenge facing the System and its institutions is in finding the resources to develop CBE programs. Since more than half of the System's faculty are adjuncts whose time is almost entirely devoted to teaching, Sacks reports that it is difficult for institutions to carve out the additional faculty time needed to develop competencies and assessments. One potential solution is for a college to pay for a qualified faculty member's time and work with them to develop a particular program, which requires additional funding and also takes them out of the classroom. The support that CBE enjoys from faculty—who Sacks sees as being generally very open to the idea—and from the System's leadership has made it easier to find faculty willing to devote time to CBE program development.

This support and enthusiasm for CBE extends to the leadership at many of the individual institutions where there is already movement around developing programs. The spectrum of development at individual colleges runs from several that are still exploring the concept, to the Community College of Aurora (CCA), which has made great progress in developing a CBE certificate program in information technology. CCA has already established a set of competencies and learning activities and is nearly finished developing an associated series of assessments. It is also working to develop solutions around issues of scheduling, faculty pay, and credit loads. Once individual colleges have paved the way by implementing their own programs the System hopes to expand those programs, encouraging other schools to adopt the discipline-specific content and structures developed by the early adopters.

KEY TRENDS AND LESSONS IN CBE DEVELOPMENT AMONG JUMPSTART PARTICIPANTS

In the progress of the various Jumpstart institutions, there are a number of common practices as well as common challenges that many have faced.

Common Practices in CBE Development

- **The CBE "Champion" and Planning Group**—The most common trend among institutions was the leadership of an individual, or set of individuals, driving CBE efforts forward at their institution—whether by virtue of their pre-existing knowledge around CBE or their ongoing commitment to alternative forms of instruction and learning. In addition, an institutional move beyond individual advocacy to the development of a core CBE planning group with representation across a number

of institutional functions (i.e. registrar, financial aid, faculty, institutional assessment, etc.) was often crucial to successful program implementation.

- **Developing Institutional Leadership, Consensus and Collaboration**—CBE efforts initiated or guided by high level institutional leadership (e.g. Peirce, Davenport, or CCCS) were typically able to move through the stages of development most effectively. While leadership changes often created uncertainty for CBE efforts, the recruitment or arrival of a newly supportive provost or president could invigorate even stalled efforts. Regardless, without also developing active support and collaboration among diverse institutional stakeholders, movement towards development may not find traction within an institution.

- **Developing Institutional Knowledge and Expertise through a Network of CBE Institutions**—A fundamental activity among various core planning teams was to conduct background research on CBE concepts and best practices. While this often consisted of attending CBE-focused conferences and workshops, or reading research reports and white papers, research into specific programs implemented by other institutions was found to be most useful. The Jumpstart training provided information about a range of different established CBE programs. Building on that, networks of CBE institutions, such as the Competency-Based Education Network (C-BEN) and the Competency-L listserv, provide institutions with a critical ability to share lessons and resources around CBE.

- **Strategic Development, Implementation, and Assessment of Limited Pilot Programs**—An important strategic first step for institutions developing CBE programs was to clarify the reasons a CBE program was necessary or desirable for the institution as well as their goals for development. Following this process, planning teams often chose to select a single course or smaller degree/certificate program for CBE development with plans to test and evaluate CBE approaches before expanding these structures into other programs and departments. The careful selection of a pilot program that would best fit the institution's reasons and goals for development was often seen as key to the program's success. Identifying and building upon a program's strengths was also crucial; such criteria included whether a particular area of study was seen as a good fit for authentic assessments of a student's skills and abilities, as well as whether there was any history of using prior learning assessment.

Common Challenges to CBE Implementation

- **Building Business Process Systems Necessary for CBE Delivery**—Finding solutions to the logistical and business process questions that arise when working to deliver CBE in a credit-based educational system was the most significant challenge faced by Jumpstart participants at the development stage. While many institutions have turned to improved technology platforms in order to streamline these processes, the need to often modify a platform to meet an institution's particular needs delayed program delivery in more than one case (e.g. IUPUI, KVCC). The Gates Foundation-funded Technical Interoperability Pilot is one initiative designed to address five common CBE business process and technology problems: managing competencies and providing a way to convert them to credit hours; recording and tracking assessment results; extracting CBE program information for non-term-based financial aid; measuring regular and substantive faculty interaction; and producing a CBE-based transcript (Leuba, 2015).

- **Technology and Content Development through Outside Vendors**—Because of the complexity of maintaining and integrating multiple technology solutions, institutions have also come to rely more heavily on outside vendors to deliver the multiple platforms necessary for CBE delivery. They have also turned to outside vendors to deliver content that can be accessed online. While these vendors have eased the technical burden on individual institutions, they have also added an additional party that must be vetted and coordinated when delivering a program. The vetting process can take some time. However, as Peirce's Brian Finnegan has observed, choosing the right vendor that can help with overall program design as well as the technology platform and systems can add great value.

- **Funding CBE Program Development**—Securing the internal funding necessary to meet the costs associated with program development can also be a challenge. Some institutions, such as Valdosta, have met this challenge by identifying external funding sources, such as state and federal agencies, or other foundations to help cover the costs of development.

- **Faculty Contracts and Compensation**—The question of how to compensate faculty, not only for the time they spend developing competencies and assessments but also for work delivering instruction and content that frequently lies outside the traditional contracted faculty role, has also proven challenging for institutions. For institutions governed by strong collective bargaining agreements (such as Metropolitan State College (MSC) and others in the Minnesota State Colleges and Universities system), redefining these roles and compensation structures have been particularly difficult. As Virginia Arthur, president of MSC, indicated however, gaining faculty support prior to program development was critical in these cases.

- **Lingering Internal Resistance**—While faculty resistance to CBE remains a hindrance at some institutions, the Jumpstart training did much to mitigate these concerns by working to dispel common misconceptions around CBE: for example, that it is wholly "unproven," or that it is a one-size-fits-all model. Still, no amount of training can diminish the value of engaging key faculty in collaborative conversation as early in the process as possible.

- **Accreditation and Financial Aid**—Over the last few years, changing positions and directives of the regional accreditors and the U.S. Department of Education (D-ED) has led to significant uncertainty in CBE program development. The Jumpstart training quickly evolved to address accreditation and financial aid in more depth, and institutions are advised to begin discussions with both the D-ED and their regional accreditor early on in the planning process.

CONCLUSION: VIEWS ON THE FUTURE OF CBE

These stories from Jumpstart institutions demonstrate both growing excitement for CBE as well as the many challenges and questions that remain around its implementation. As these and many other institutions continue their work, the larger field will continue to address these questions. One key focus is establishing and maintaining high quality standards for CBE, particularly given the field's rapid growth. In addition, more research is needed concerning how to best evaluate individual programs as well as the practice of CBE as a whole. A lack of data on the effectiveness of CBE programs to produce well-prepared, skilled, and creative/critical thinkers shows there is a need for the field to track ongoing data on enrolled students, costs to the student and institution, completion and placement rates, and employer satisfaction.

In the meantime, colleges like the Jumpstart institutions are starting to see how exposure to CBE can lead faculty to think differently about how higher education should function. Throughout program development, CBE requires faculty and institution leaders to be more deliberate in instructional planning, to communicate more clearly with students about what they are expected to learn, and to engage with students in a different way about how their college education connects to their ability to succeed in the workplace. Many of the Jumpstart leaders and faculty interviewed for this report were of the shared opinion that CBE is not a cure-all for the challenges currently facing higher education. Still, they are also convinced that CBE is a critical tool for any institution thinking carefully about how to address challenges around enrollment, access for non-traditional students, and student engagement.

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