

Expanding Student Success: A Primer on Competency-Based Education from Kindergarten Through Higher Education

Executive Summary

The education system of the United States is not adequately preparing a large proportion of its students for college, career-training, and, ultimately, jobs that provide enough income to support a middle class standard of living. Only about one-third of students are proficient on national math and reading tests. Each year, more than 1 million students drop out before completing high school. The percentage of students in two- and four-year institutions of higher education enrolled in a remedial class can be as high as 60 percent.¹ Those and other statistics fuel the demand for more and better education. In addition, changes in the economy have elevated expectations for student achievement and the rigor of education standards. Because the education system has failed to attain hoped-for outcomes, some states are investigating new systems, including competency-based education (CBE).

In the traditional model of education, student advancement is closely tied to time spent in a classroom where all students are typically taught as a group and expected to move ahead at more or less the same pace. In contrast, a model based on CBE starts by assessing what a student knows and then allows that student to advance at a pace that reflects his or her knowledge and skills. In the process, CBE encourages student success by providing targeted learning support, thereby creating a more personalized educational experience. Although further research and piloting are necessary

and significant challenges to implementation exist, CBE shows promise for helping more elementary and secondary students meet higher standards of learning and become better prepared for college or a career training program. Once in higher education or job training, CBE allows older students (traditional-age college students or adult learners) to learn on their own time at their own pace.

As competency-based pilot projects are developed in kindergarten to high school classrooms and schools (K-12) and higher education institutions, policymakers at the federal, state, and local levels are discussing options about how to support and expand CBE in both K-12 and higher education, as well as strengthen the bridge between the two systems.² Because governors are the only policymakers who oversee both the K-12 and higher education systems, they are well-positioned to lead discussions about those changes. To help states to overcome the major barriers to broadening implementation of CBE and explore bringing such a system into wider use, governors should consider changes in three main policy areas:

- **The role of the educator and opportunities for learning.** In a CBE system, the role of the educator changes from an individual lecturing in a classroom to that of a coach or facilitator who guides learning. In a CBE system, the training, certification, evaluation, pay, promotion, and

¹ Nation's Report Card, "Are the Nation's Twelfth-Graders Making Progress in Mathematics and Reading?" http://www.nationsreportcard.gov/reading_math_g12_2013/# (accessed September 23, 2015).

² Alliance for Excellent Education, "The High Cost of High School Dropouts: What the Nation Pays for Inadequate High Schools" (Washington, DC: Alliance for Excellent Education, 2011), <http://all4ed.org/wp-content/uploads/2013/06/HighCost.pdf> (accessed September 23, 2015); and the National Center for Public Policy and Higher Education and the Southern Regional Education Board, *Beyond the Rhetoric: Improving College Readiness Through Coherent State Policy* (Atlanta: Southern Regional Education Board, 2010), http://www.highereducation.org/reports/college_readiness/gap.shtml (accessed September 23, 2015).

leadership role of educators should all be reexamined. In addition, online resources play a larger role in teaching and learning. Policies should reflect those shifts and enable educators to use those resources effectively and cost efficiently;

- **Assessment and accountability.** Specific and timely assessment is a key element of CBE. Policies should be designed to facilitate more flexible testing of students' learning based on personalized pacing and progress. Assessment is frequently tied to accountability in K-12; therefore, policymakers should rethink what their accountability systems measure and value. In higher education, policymakers can encourage institutions to better articulate and assess student learning outcomes by program; and
- **Funding.** No state has changed its K-12 funding structure to facilitate a CBE system. State funding formulas for K-12 education are typically based on average daily attendance. In higher education, dollars typically are allocated to institutions on the basis of numbers of enrolled students. Neither system allocates core funding based on a measure of what students learn. Altering structures to award funding based on learning could provide incentives for the wider adoption of CBE efforts and allow states to pay for the learning outcomes according to their value.

Advancing CBE in K-12 and higher education requires that governors pursuing that goal explain the need for change at both education levels and make

the connection between the proposed CBE-related changes and a student's success in a job and beyond. Exploring CBE-related changes in both systems at the same time has the potential to bring about stronger and smoother transitions for students from one system to the next. In addition to focusing on the three policy areas highlighted in this brief, governors seeking to advance CBE in their states can focus on explaining to the public the advantages of CBE compared to the current system of advancement based on time students spend in the classroom.

Introduction

The education system of the United States is not adequately serving a large proportion of students. Consider the following statistics:

- Only about a third of all students nationwide are considered proficient in reading or mathematics on national assessments at grades 4 and 8;³
- Perhaps 60 percent of students who graduate from high school and progress to higher education need substantial remediation, which causes students and parents to spend money on catching up instead of moving forward.⁴ Students who require remedial education are also at significantly higher risk of dropping out;⁵
- Many employers express disappointment with college graduates' knowledge and skills;⁶
- American college graduates score no better than average on international assessments of numeracy and literacy;⁷ and

³ The Nation's Report Card, "How Are States Performing?" http://www.nationsreportcard.gov/reading_math_2013/#!/state-performance (accessed June 9, 2014).

⁴ *Beyond the Rhetoric*.

⁵ Paco Martorell and Isaac McFarlin, Jr., "Help or Hindrance? The Effects of College Remediation on Academic and Labor Market Outcomes," *The Review of Economics and Statistics* 93 no. 2 (May 2011): 436–454.

⁶ *The Chronicle of Higher Education* and American Public Media's *Marketplace*, "The Role of Higher Education in Career Development: Employer Perceptions," <https://chronicle.com/items/biz/pdf/Employers%20Survey.pdf> (accessed September 23, 2015).

⁷ Madeline Goodman et al., *Literacy, Numeracy, and Problem Solving in Technology-Rich Environments Among U.S. Adults: Results from the Program for the International Assessment of Adult Competencies 2012*, U.S. Department of Education, National Center for Education Statistics, Institute of Education Sciences, <http://nces.ed.gov/pubs2014/2014008.pdf> (accessed September 23, 2015).

- Experts consider a workforce certification or postsecondary degree that accurately attests to a graduate’s skills and knowledge the “new minimum” for reaching the middle class and beyond.⁸

Competency-based education (CBE) is an option that governors can pursue to improve their states’ kindergarten through grade 12 (K-12) and post-secondary educational systems. The premise of CBE—also called mastery learning or proficiency-based education—is to move students through a class or course of study as they master clearly specified content instead of advancing all students at the same pace regardless of what they have learned.⁹ Instead of holding time constant and varying learning, CBE strives to have all students achieve high minimum standards for learning while varying the time it takes to get them there and beyond. CBE advocates recognize that additional education reforms—for example, implementing more rigorous standards in K-12 and initiating wider use of online learning—will also be necessary if CBE is to improve educational outcomes. CBE focuses on the following key elements:

- **Mastery.** Students advance to the next level, course, or grade based on demonstration of skills and content knowledge as outlined in clear, measurable, and rigorous learning objectives;
- **Pacing.** Students progress at different rates in different areas rather than on a class-wide schedule. Students who do not demonstrate mastery of a competency on the first attempt continue learning and have multiple opportunities to try again. Those

who demonstrate mastery quickly move ahead;

- **Instruction.** Students receive customized instruction to match their individual learning needs in each subject, which keeps them learning increasingly challenging material in a developmentally appropriate and motivating manner. Thus, those who struggle in any area will be able to reach proficiency before being offered more challenging material, and those who excel are constantly challenged;
- **Assessment.** Meaningful, high-quality assessments allow students to demonstrate their mastery of skills and concepts when they have mastered them rather than at a specific time in the class or school year; and
- **Funding and accountability.** CBE can be a way for states to pay for the outcomes they want if supported by a funding formula that allocates dollars based on student learning, not simply time spent in a classroom or full-time equivalency (FTE).¹⁰

Moving toward an education system organized around competency will prompt changes in each segment of the pipeline, from early education to college and career training and, ultimately, to the workforce. Regardless of the grade level, this change will face implementation challenges as it will demand changes in approaches to instruction by teachers. The challenges will differ for K-12 and higher education and even within different segments of K-12. For example, it is common practice in the early elementary grades to allow students to progress at different rates within the same classroom.

⁸ Garrett Groves, *America Works: Education and Training for Tomorrow’s Jobs. Achieving Better Results for Individuals, Employers, and the Economy* (Washington, DC: National Governors Association, 2014), <http://nga.org/files/live/sites/NGA/files/pdf/2014/CI1314AmericaWorksGuide-Final.pdf> (accessed September 23, 2015).

⁹ Traditionally, students earn credit for completing a course based on the amount of time they spend in class. This approach is called *seat time*, and the credit earned is called a *Carnegie Unit*. Funding is typically linked to the Carnegie Unit, but recently, many states have created policies that allow for more flexibility and experimentation. Tabitha Grossman and Stephanie Shipton, “State Strategies for Awarding Credit to Support Student Learning,” *Issue Brief* (Washington, DC: National Governors Association, 2012), <http://nga.org/files/live/sites/NGA/files/pdf/1202EDUCREDITBRIEF.PDF> (accessed September 23, 2015).

¹⁰ Definition derived from CompetencyWorks, “What Is Competency Education?” <http://www.competencyworks.org/about/competency-education> (accessed September 23, 2015); and Cecilia Le, Rebecca E. Wolfe, and Adria Steinberg, *The Past and The Promise: Today’s Competency Education Movement*, <http://www.jiff.org/sites/default/files/publications/materials/The-Past-The-Promise-091514.pdf> (accessed September 23, 2015).

In many instances, however, more significant changes will be necessary if CBE is to be put in place in middle and high schools. Moving secondary schools from traditional learning to a CBE approach would be similar to the shifts already happening in some colleges and universities. Some CBE-based high schools are already starting the transition; if high schools begin to shift toward a CBE system, higher education institutions will need to adjust to respond to the earlier or later entry of better-prepared students, including adjusting admission standards for students graduating from CBE high schools (see box below). As both K-12 and higher education develop competency-based systems, an increasing number of students will benefit from a consistent approach to their demonstration of mastery to ease the transition between the two systems.

For governors interested in advancing CBE, the policy changes required to move the current system in this

direction are significant in both time and energy. Governors are key to making those changes, because they are the only state policymakers who oversee policies and resources for both K-12 and higher education. As such, they are uniquely positioned to explore CBE as an alternative to traditional systems. Efforts to start transitioning to CBE systems have begun in both K-12 and higher education through discussions at the federal, state, and local levels. Governors have the opportunity to be at the forefront of shaping these discussions and taking related policy actions that have the greatest likelihood of success.

On the K-12 side, as of 2014, only one state had abolished the use of the Carnegie Unit, a unit for measuring credits earned based on time. Forty states provide flexibility or waivers to districts so that they can explore basing credit on mastery of content, but nine states still require time-based credits.¹¹ Schools

Transitions and the K-12, Higher Education Connection

The University of Maine at Presque Isle (UMPI) illustrates the potential for creating a more streamlined education system that improves students' transitions unconstrained by the boundary between K-12 and higher education. UMPI has signed a memorandum of understanding (MOU) with 17 CBE high schools in **Maine and New Hampshire** to:

- Conduct connected, joint professional development tied to CBE;
- Share resources;
- Create dual-enrollment courses; and
- Increase alignment in expectations to reduce remediation.

In addition, UMPI is moving to base all of its academic programs on *proficiencies* (UMPI's term for competencies) rather than grades. The institution has transitioned its general education courses and will transition all degree programs by 2015 to give the in-person, traditional undergraduate class a personalized approach to education.

¹¹ Developed in 1906, the Carnegie Unit is used by most K-12 and higher education systems. The number of units and credits is not the same everywhere, but the formula is simply and routinely applied: A certain number of hours equal a unit, a certain number of units equal a credit, and a certain number of credits produce some sort of credential or degree. Elena Silva, "The Carnegie Unit—Revisited," the Carnegie Foundation for the Advancement of Teaching Blog, entry posted May 28, 2013, <http://www.carnegiefoundation.org/blog/the-carnegie-unit-revisited> (accessed September 23, 2015); and Carnegie Foundation for the Advancement of Teaching, "50-State Scan of Course Credit Policies," http://cdn.carnegiefoundation.org/wp-content/uploads/2013/08/CUP_Policy_MayUpdate1.pdf (accessed September 23, 2015).

and districts rather than states are taking the lead in implementing pilot programs based on competency, but a few states have established task forces to begin exploring CBE on a broader scale. For example, **New Hampshire** and **Maine** are undertaking statewide K-12 CBE reforms. A few states are exploring CBE at the state and system level in higher education, but many colleges and universities are experimenting with the model on their own. Potential cost savings realized by accelerating students through programs has been a prominent driver of CBE in higher education.

Promises and Challenges of Competency-Based Education

A CBE approach could offer advantages over the current time-based system. In principle, CBE programs increase the likelihood that all students learn the material being taught, because students must demonstrate that they have mastered content before advancing to the next grade or set of coursework. The approach allows some students to move more quickly through material than they would in traditional classrooms; other students can spend more time on topics they find challenging and receive targeted help on concepts they do not understand. Because students can earn credit in multiple ways in a CBE program, those who have particular out-of-classroom experiences can test out of traditional on-site courses or demonstrate their learning in some other way. Because CBE allows personalized, flexible ways to learn, it better serves a wide range of students than

the current system does, including traditionally underserved populations such as those who are:

- At risk of dropping out or aging out of the system;
- Lack enough credits to graduate because they have failed courses;
- Live where there is limited access to certain classes;
- Have significant experience or many credits but no degree;
- Move frequently or are connected to the military;
- Are home- or hospital-bound; or
- Are adults in the workplace who lack skills.

Case studies and preliminary information from recently established programs at the school and district level suggest that CBE could have a positive effect on student success.¹² For instance, research shows that students who are motivated by performance-related goals (such as good grades) are more likely to be discouraged by setbacks and less likely to choose challenging learning experiences than those who are motivated by mastery goals or the challenge of acquiring and applying new knowledge.¹³ In addition, research behind the CBE concept indicates that “students in mastery learning programs at all levels show larger gains in achievement over those in traditional instruction programs...Students retained what they had learned longer under mastery learning, both in short-term and long-term studies.”¹⁴ Research also indicates

¹² Jenny Brundin, “How a District and School Outpace Others on TCAP Scores for Third-Graders,” Colorado Public Radio, aired May 7, 2014, <http://www.cpr.org/news/story/how-district-and-school-outpace-others-tcap-scores-third-graders> (accessed September 23, 2015); Linda Kuk and James Banning, “Student Affairs Preparation Programs: A Competency Based Approach to Assessment and Outcomes,” *College Student Journal* 43 no. 2 (June 2009): 492–502; Lindsay Unified School District, “Performance-Based System,” <http://www.lindsay.k12.ca.us/District/Department/689-Performance-based-System/13566-Untitled.html?printview=1> (accessed September 23, 2015); Nora Priest, Antonia Rudenstine, and Ephraim Weisstein, *Making Mastery Work: A Close-Up View of Competency Education* (Quincy, MA: Nellie Mae Education Foundation, 2012), <http://www.reinventingschools.org/wp-content/uploads/2013/02/Making-Mastery-Work-NMEF-2012-Book-View.pdf> (accessed September 23, 2015); and Rebecca E. Wolfe, *Aligning Competencies to Rigorous Standards for Off-Track Youth: A Case Study of Boston Day and Evening Academy* (Boston: Jobs for the Future, 2012), <http://www.jff.org/publications/aligning-competencies-rigorous-standards-track-youth-case-study-boston-day-and-evening> (accessed September 23, 2015).

¹³ P. Pintrich, “Multiple Goals, Multiple Pathways: The Role of Goal Orientation in Learning and Achievement,” *Journal of Educational Psychology* 92 no. 3 (2000): 544–555; H. Grant and C. Dweck, “Clarifying Achievement Goals and Their Impact,” *Journal of Personality and Social Psychology* 85 no. 3 (2003): 541–553.

¹⁴ Thomas R. Guskey and Sally L. Gates, “Synthesis of Research on the Effects of Mastery Learning in Elementary and Secondary Classrooms,” *Educational Leadership* 43 no. 8 (1986), http://www.ascd.org/ASCD/pdf/journals/ed_lead/el_198605_guskey.pdf (accessed September 23, 2015).

that “mastery learning reduces the academic spread between the slower and faster students without slowing down the faster students.”¹⁵ Finally, a meta-analysis of 108 evaluations of mastery learning programs showed a positive effect on the test performance of K-12 and college students, and the effect appeared stronger on the weaker students in a class.¹⁶

As states experiment and innovate with new education models, including CBE, it is important to collect data to evaluate the effectiveness of these efforts. Although an emerging research base suggests that CBE is a promising model, it includes only a few rigorous evaluations and analyses of current and ongoing CBE pilots and similar programs.¹⁷ Beyond pilot programs, there are many challenges to bringing

a CBE system to scale. An effective education system based on competency requires that what students learn be well-defined and measured. For many topics, the field does not yet have a solid grasp on how to determine when students are ready to move to the next set of competencies. Moreover, the current education system is tied to time-based advancement through policy structures, funding formulas, labor agreements, school calendars, and traditional practices. All of those challenges will make it difficult to convince students, teachers, community leaders, higher education faculty and administrators, and policymakers to change how education is delivered. And unless parents are reassured CBE won’t harm their child’s higher education opportunities, they will be resistant to the change (see box below).

Higher Education’s Endorsement of Competency-Based Education

In New England, 55 public institutions of higher education that have endorsed CBE have attempted to reassure parents who may be concerned about the way educators responsible for college admissions view CBE transcripts by signing a pledge to:

- Endorse competency-based approaches to instruction, assessment, reporting, and graduation that establish universally high learning standards and expectations for all students in K-12 schools;
- Accept a wide range of transcripts if the students meet the institution’s stated admissions requirements and if the transcripts provide a full and accurate presentation of what an applicant has learned and accomplished; and
- Not disadvantage applicants who hold competency-based transcripts.¹⁸

¹⁵ Daniel U. Levine, *Improving Student Achievement Through Mastery Learning Programs* (San Francisco: Jossey-Bass, 1985).

¹⁶ Chen-Lin C. Kulik, James A. Kulik, and Robert L. Bangert-Drowns, “Effectiveness of Mastery Learning Programs: A Meta-Analysis,” *Review of Educational Research* 60 no. 2 (Summer 1990): 265–299, <http://www.ic.unicamp.br/~wainer/cursos/2s2004/impactos2004/kulik90.pdf> (accessed September 23, 2015).

¹⁷ Jennifer Steele et al., *Competency-Based Education in Three Pilot Programs: Examining Implementation and Outcomes* (Washington, DC: RAND, 2014), http://www.rand.org/content/dam/rand/pubs/research_reports/RR700/RR732/RAND_RR732.pdf (accessed September 23, 2015).

¹⁸ New England Secondary School Consortium, “55 New England Colleges and Universities Support Stronger Student Preparation,” Press Release, June 3, 2014, http://webiva-downton.s3.amazonaws.com/342/2c/3/2961/NESSC_Collegiate_Endorsement_PRESS_RELEASE.pdf (accessed September 23, 2015).

Competency-Based Education Policy Considerations

Governors who seek to move their states toward a CBE system should consider several policy changes to overcome the barriers embedded in the current system. In a CBE program, the role of the educator and how he or she delivers the content can look different from current practice. Educators must be able to guide learning in a variety of ways, not simply supply content. Changing the role of the teacher has significant implications for teacher-preparation programs, certification, professional development, labor contracts, and evaluation. Computer-based learning is likely to be even more important in a CBE system than in the current time-based system. In addition, robust assessment is a key element of CBE, designed to facilitate more flexible and better testing of students' learning. Assessment is frequently tied to accountability in K-12; therefore, policymakers might have to reconsider what they want their accountability systems to measure. In higher education, policy can encourage higher education institutions to better articulate and assess student learning outcomes. Finally, policymakers who want to implement CBE will need to figure out how to fund the transition to such a system and create the right incentives for educators and administrators. If policymakers want to pay for student learning instead of seat time, they will have to fundamentally change the way they budget and allocate dollars to school districts and higher education institutions.

The Role of the Educator and Opportunities for Learning

In CBE, the role of the educator goes beyond an individual standing at the front of the classroom delivering content to a room full of students. Because learning is personalized for each student and depends on that student's needs and pace of learning in relation to specified standards, a CBE classroom could take the form of several educators working together, each with a different specialty in instruction, assessment, or targeted support. In another model of CBE, classrooms could be set up in various ways to allow one educator to work

with a group of students while another group works independently through online resources in a facilitated blended-learning environment. Each possibility requires the reimagination of the role of the educator and the way education is delivered. To provide that type of personalized experience, state policy must be more flexible. More personalized learning environments help education systems better serve all students, particularly as students transition from K-12 to higher education.

K-12 Policy Environment

In K-12, states must reexamine policies related to how educators are trained, certified, evaluated, paid, and promoted if they want to support a CBE model. Because the role of the teacher in the classroom may be different, preservice and in-service training and certification programs should be adjusted to encourage new techniques. For example, teachers will need to build the skills necessary to work with individual students who are moving at different paces while managing a classroom full of students who may be working on different concepts at the same time. The changes necessary to support CBE could be difficult to implement as schools also strive to implement new, more rigorous standards to prepare students for college and career-training programs, which require teachers to present new content and skills. As the way educators teach changes, systems to evaluate their work will also need adjustment. Evaluation guidelines will need to be created to assess the particular role each educator fills and to value the skill set that each brings to the school. Data will be necessary to support that evaluation, with the recognition that several teachers may be responsible for teaching each student an individual course or discrete portion of a subject. To support all that work, principals must be trained to conduct fair and thorough evaluations and to manage schoolwide change. In addition, leadership, promotion, and pay structures might look different in a CBE system that asks educators to take on new, specialized roles. Underpinning many current policies are labor contracts, which specify the educator's role based on specified amounts of class time. Such policies would not only be unnecessary

in a CBE system but would significantly impede the adoption of such a system.¹⁹

Because CBE is only beginning to spread, the policy groundwork needed to support K-12 teachers' shift to CBE is incomplete. States that are starting to rethink the role of the educator are primarily focused on professional development. In 2012, Iowa Governor Terry Branstad supported and signed legislation designed to promote CBE and make competency-based pathways attainable for students without a waiver.²⁰ The state convened a diverse task force to grapple with regulatory impediments, develop student-centered accountability and assessment models, empower learning through technology, and promote professional development. Three key recommendations emerged from the task force discussions:²¹

- Instruct the Iowa Department of Education to establish a collaborative team, including higher education representatives, to create training for preservice teachers and future administrators in CBE environments;
- Request that the Legislature allocate funding for at least five years to transform the current system to a CBE system, including resources for professional development; and
- Ask the Iowa Department of Education, in conjunction with a CBE Collaborative (10 pilot districts), to define the support that districts need and ensure that professional development is aligned to state academic standards.²²

Iowa provided funding for the CBE Collaborative during the 2013 legislative session. The 10 pilot districts are working with the Iowa Department of Education to move the recommendations forward. In addition, some other school districts outside the collaborative are developing plans for competency-based education.

Higher Education Policy Environment

In higher education, the role of faculty could change substantially with the implementation of CBE. For example, one institution assigns a team of faculty members to each course, and that team collectively sets desired educational outcomes. Then, two team members identify or create the educational resources, and another team member creates the assessment.²³ Another faculty member checks the alignment between the educational resources and the assessments. That unbundling of roles allows faculty members to focus on a specialized task in more courses as they develop their expertise.²⁴ Changes in roles will affect faculty contracts, job descriptions, and evaluations for tenure and promotion. Faculty contracts and job descriptions will need to reflect those new, differentiated roles. Current promotion and evaluation for tenure are not typically tied to the quality of education that students experience. Depending on the type of institution, they might not be tied to teaching at all. Future evaluations could shift toward measuring faculty performance against whether students have acquired the learning outcomes set for the courses they take. That shift will also require training for faculty to help them adapt to instructional design; understand the different roles in content delivery; and conduct regular, authentic assessment. States could support that work by deliberately engaging faculty and faculty unions in the creation

¹⁹ In addition, structures like CBE may provide opportunities and resources for parents who educate their children at home.

²⁰ The Iowa Legislature, Senate File 2284 (2012), <http://coolice.legis.iowa.gov/Cool-ICE/default.asp?Category=billinfo&Service=Billbook&menu=fa&ga=84&hbill=SF2284> (accessed September 23, 2015).

²¹ Iowa Department of Education, *Competency-Based Education: Task Force Final Report. Senate File 2284* (Des Moines: Iowa Department of Education, 2013), <https://www.educateiowa.gov/sites/files/ed/documents/CompBasedTaskForceFinalReport.pdf> (accessed September 23, 2015).

²² Ibid.

²³ Sally M. Johnstone and Louis Soares, "Principles for Developing Competency-Based Education Programs," *Change*, March–April 2014, http://www.changemag.org/Archives/Back%20Issues/2014/March-April%202014/Principles_full.html (accessed September 23, 2015).

²⁴ *Unbundling Versus Designing Faculty Roles*, Presidential Innovation Lab White Paper Series (Washington, DC: American Council on Education, 2013), <http://www.acenet.edu/news-room/Documents/Unbundling-Versus-Designing-Faculty-Roles.pdf> (accessed September 23, 2015).

of CBE programs; providing high-quality, tailored professional development for faculty; and supporting technological solutions for scaling those programs.

The **Washington** State Community & Technical College system has focused on systematically engaging faculty as it develops a pilot program that provides a competency-based degree in business administration. The program is building on the momentum created by a partnership among Western Governors University (WGU), the state, and four community colleges. WGU is a private nonprofit institution that provides CBE online. The planning of the pilot project engaged faculty in several ways. Administrators brought faculty union leadership into the planning process. Throughout the process, the system engaged faculty to address concerns up front rather than waiting until the pilot program was launched. As part of that consultation process, faculty agreed to a phased rollout of the program, which is currently underway. In the first phase, the four community colleges began to offer competency-based certificates in autumn 2013. In the next phase, the system will work with a small group of volunteer institutions to create the 18 courses of a shared degree program. Faculty are now working with experts to validate competencies for each course; identify high-quality, free educational resources; and create assessment criteria for each competency. With timing not yet determined, the final planned phase involves expanding the program to include other interested institutions and degree programs.²⁵

Creating and operating high-quality CBE programs in

higher education also requires that those institutions use computers and online resources in new ways. Online CBE teaching tools can provide customized learning for individual students.²⁶ Beyond changes in the deployment of instructional equipment, institutions of higher education would need to reconfigure back-office systems that manage data to support everything from assigning physical space to managing instructional loads. Currently, many of the institutions experimenting with CBE programs manually track enrollment and support for students, working around the automated systems currently used to collect and store student information.²⁷ Those arduous processes prevent programs from reaching a large number of students and schools, and they create institutional resistance.

Kentucky's statewide virtual campus is beginning to support institutions of higher education in overcoming those challenges by pooling state resources to provide computer support for many of the online degree programs at Kentucky's public colleges. That support will soon be translated into back-office assistance for enrollment and student tracking in emerging CBE programs. Kentucky is in the early stages of planning a four-year CBE venture called the Commonwealth College. With the help of the virtual campus and the state, the Commonwealth College will be able to use pooled resources to create routine solutions to the technological challenges of offering competency-based degrees.

In both K-12 and higher education, states can play an active role in supporting the shift toward CBE systems. Governors can advance the work by seeking educator

²⁵ Washington's community and technical college presidents endorsed the plan, and eight colleges plus the state board have agreed to share the first year's costs for developing the 18 competency-based courses, organizing the infrastructure to share course enrollments, and setting up support services for the students. Currently, approximately 3,000 students are enrolled in Learn on Demand courses. Competency-Based Education Network, "Kentucky Community & Technical College System," <http://www.cbenetwork.org/about/institutional-participants/kentucky-community--technical-college-system> (accessed September 23, 2015).

²⁶ Michelle R. Weise and Clayton M. Christensen, *Hire Education: Mastery, Modularization, and the Workforce Revolution* (San Mateo, CA: The Clayton Christensen Institute for Disruptive Innovation, 2014), <http://www.christenseninstitute.org/wp-content/uploads/2014/07/Hire-Education.pdf> (accessed September 23, 2015).

²⁷ Leo Irakliotis and Sally M. Johnstone, "Competency-Based Education Programs Versus Traditional Data Management," *EDUCAUSE Review Online* (2014), <http://www.educause.edu/ero/article/competency-based-education-programs-versus-traditional-data-management> (accessed September 23, 2015).

input, advocating the creation of specialized training and professional development programs, supporting technological innovation, and allocating funds toward the transition to a new system.

Transitioning the role of educators and opportunities for learning to support CBE—key policy questions for governors to ask state entities that oversee K-12 and higher education:

- Are new models for training teachers for a CBE environment available? Are there different or flexible certification categories and requirements to support changing roles for teachers?
- Do current contracts with educators (in K-12 and higher education) allow for innovative roles?
- Are state laws flexible enough to allow models of technology-enabled content delivery?
- In what ways does the current law allow for alternatives to traditional classroom education delivery—for example, one-on-one environments, online delivery of content, virtual learning, or blended learning?

Assessment and Accountability

High-quality tests are a particularly important element of CBE. Because students advance only after they have demonstrated mastery of content, educators must have good assessments to gauge that mastery and be able to offer those assessments when the student is ready. Current testing schedules are rigid and require all students to take a test at the end of a unit, semester, or school year regardless of whether those students have mastered what is being taught. That approach can be limiting to students who might be able to show mastery earlier and be hindering to others who need more time to grasp the same concepts. At the same time, measuring the performance of schools and districts requires consistent and valid measures of student achievement. State and federal regulations require

performance measures at the K-12 level, and data that measure learning provide feedback on how students, teachers, and schools perform so that all levels can adjust and improve. In higher education, assessment is often left to the instructor’s discretion, with limited thought for a unified set of learning outcomes across a course of study, a wide variability in the quality of tests, and no flexibility in when the test is given.

K-12 Policy Environment

To deliver high-quality instruction in a CBE model, educators require access to assessments that measure learning progress along the way so that they can modify their teaching based on each student’s progress toward mastering the desired content and skills. To draw on the power of those assessments in a CBE system, assessments should be offered on a flexible timeline instead of during one window at the end of the semester or school year. No state has yet figured out how to make the switch to such a model at the K-12 level, but New Hampshire is working toward that goal.

In 2005, New Hampshire passed a law eliminating the Carnegie Unit, which allowed high schools to begin moving toward CBE. Schools across the state chose to work at various paces to implement CBE. The early adopting districts report significant reductions in the number of students who are failing a course or dropping out and strong engagement of teachers and the larger community. Teachers see CBE as a means to better focus their instruction to the style and pace of their students. Parents view this approach as a way to better tailor instruction to their child’s learning needs. To continue to move that work forward, the state has implemented policies, provided technical assistance, and worked with pilot districts to spread CBE. Now, all high school courses must be aligned with course-level competencies. To assess those competencies, the state is taking several approaches. First, New Hampshire is working with other states on a task force as part of the Smarter Balanced Assessment Consortium to describe how the assessments can comprehensively support a

CBE-aligned system. The task force will recommend enhancements and changes to the assessment components to provide more precise information to teachers that they can then use to improve students' learning within a CBE system. Second, the New Hampshire Department of Education is partnering with two organizations (the Center for Collaborative Education and the National Center for the Improvement of Educational Assessment) to develop a performance assessment system that enables more accurate diagnosis of students' knowledge and skills. As a result of that work, New Hampshire high schools will have a set of common performance assessments that are of high quality, valid, and reliable.²⁸

As with changes to assessments, K-12 accountability systems are critical to the implementation of CBE and difficult to create. To implement a CBE model that meets state and federal accountability requirements and provides useful information, states need to find better ways to measure and account for skills and student success beyond just a test score. New Hampshire also is grappling with those issues. In a concept paper from the New Hampshire Department of Education, state policymakers started to lay the foundation for a new accountability system that includes growth measures and gauges learning proficiency.²⁹ The U.S. Department of Education approved a modified version of the concept paper as part of the state's waiver under the Elementary and Secondary Education Act.³⁰ The state plans to include the multiple forms of assessments currently in development. The approved

waiver also proposes a new format for supporting districts and schools—a three-tier network strategy to provide technical assistance, knowledge sharing, and space for innovation as school districts across the state move toward a CBE-based system.³¹

Higher Education Policy Environment

In higher education, the quality of CBE programs is as reliant on assessments as K-12 institutions are, although states have a much smaller role in assessment and accountability in higher education generally. In fact, there is no agreed-on way to measure learning in higher education. Currently, policymakers in a number of states are looking to establish criteria against which to evaluate the quality of higher education by measuring student learning outcomes rather than inputs or the number of graduates. The Multi-State Collaborative to Advance Learning Outcomes Assessment (MSC), which is working with nine states, is an example of an effort to measure the growth of student learning based on student work. MSC's goal is to produce valid data summarizing faculty judgments of students work and aggregate the results in a way that allows for comparisons across institutions and states.³² At the same time, many colleges and universities offer prior learning assessments (PLA), which allow students to prove that they have mastered content for a particular class and earn credit for it, thereby avoiding having to take classes that present material they have already mastered. Each college and university has its own policies in that area, but states could help encourage

²⁸ New Hampshire Department of Education, "NH Performance Assessment Network," <http://www.education.nh.gov/assessment-systems/index.htm> (accessed June 11, 2014); Susan Patrick and Chris Sturgis, "Necessary for Success: Building Mastery of World-Class Skills," *CompetencyWorks Issue Brief* (Vienna, VA: International Association for K12 Online Learning, 2013), http://www.competencyworks.org/wp-content/uploads/2013/02/inacol_cw_issuebrief_building_mastery_final.pdf (accessed September 23, 2015); and Mariana Hayes, *Strengthening High School Teaching and Learning in New Hampshire's Competency-Based System* (Washington, DC: Alliance for Excellent Education, 2013), <http://all4ed.org/wp-content/uploads/2013/06/StrengtheningHSTeachingLearningNH.pdf> (accessed September 23, 2015).

²⁹ New Hampshire Department of Education, *New Hampshire Department of Education ESEA Flexibility Waiver Concept Paper* (Concord, NH: New Hampshire Department of Education, 2012), <http://education.nh.gov/accountability-system/documents/concept-paper.pdf> (accessed September 23, 2015).

³⁰ Ibid.

³¹ New Hampshire Department of Education, *New Hampshire ESEA Flexibility Request for Window 3*, <http://www2.ed.gov/policy/eseaflex/approved-requests/nhapprovalrequest.pdf> (accessed September 23, 2015).

³² State Higher Education Executive Officers Association, "MSC: A Multi-State Collaborative to Advance Learning Outcomes Assessment," <http://www.sheeo.org/projects/msc-multi-state-collaborative-advance-learning-outcomes-assessment> (accessed September 23, 2015).

these institutions to establish common PLA guidelines and begin to share high-quality PLA.³³

Another way states could ensure the quality of CBE programs is to encourage institutions of higher education to engage in a “tuning” process. Through tuning, faculty meet to decide what students should know and be able to do when they graduate from a certain discipline.³⁴ **Kentucky, Montana, Texas, and Utah** are all engaged in tuning in disciplines ranging from biology to business administration to engineering. Doing such work in CBE programs for particular disciplines can ensure that programs have agreed-on, explicit outcomes that can lead to a productive discussion of how best to teach the content and authentically assess those learning outcomes.

At the same time, policymakers need additional tools to gauge the quality of higher education programs that are not connected to a tuning process. One model for the creation of such a tool was a set of criteria used to judge the quality of online higher education programs. In the early 2000s, when online education was relatively new, 19 **Maryland** institutions of higher education banded together to create criteria for ensuring quality in online education.³⁵ These criteria became *Quality Matters*, which still serves as a common definition for what good online education should be.³⁶ Policymakers could learn from this approach when shaping policy to seed, sustain, and scale CBE.

In both K-12 and higher education, developing high-quality CBE programs requires greater clarity and consistency about what is being taught as well as the use of timely, high-quality assessments. State and federal regulations tie accountability systems to the results of those assessments, but the different policy

environments for K-12 and higher education call for governors to explore different state-level solutions for each system.

Transitioning assessment and accountability systems to support CBE—key policy questions for governors to ask state entities that oversee K-12 and higher education:

- Do state assessment barriers to CBE exist?
- What are the federal, state, district, and school accountability barriers to CBE?
- Are there barriers to CBE in current promotion, retention, and graduation policies?

Funding

The current funding systems in K-12 and higher education are largely based on the number of days a K-12 student attends school and the number of postsecondary students enrolled in an institution, respectively. Those funding structures do not create incentives for educators or institutions to encourage student learning or mastery of the desired learning objectives.

K-12 Policy Environment

No state has changed its K-12 funding structure to facilitate a CBE system, but **Oregon** is exploring a new system that allows for some funding flexibility. Students enrolled in CBE courses that meet outside of classes at district facilities are counted as full-time students. These students must check in with a teacher twice a week on two separate days. If a student fails to check in, he or she will be counted as absent for half the week or the full week.³⁷ In **Arizona** and **Utah**, schools are not penalized for helping their students achieve mastery of the curriculum at a faster pace. **Arizona** includes early graduates in enrollment counts

³³ Amy Sherman, Becky Klein-Collins, and Iris Palmer, *State Policy Approaches to Support Prior Learning Assessment*, http://strategylabs.luminafoundation.org/wp-content/uploads/2013/09/cp_resource_guide_final_0-copy.pdf (accessed September 23, 2015).

³⁴ Degreeprofile.org, “DQP: Degree Qualifications Profile,” <http://tuningusa.org> (accessed August 20, 2015).

³⁵ Rachel Fishman, “State U Online,” *The Weekly Wonk Blog*, entry posted April 23, 2013, <https://www.newamerica.org/education-policy/state-u-online> (accessed September 23, 2015).

³⁶ Quality Matters, “Higher Education Program,” <https://www.qualitymatters.org/higher-education-program> (accessed August 20, 2015).

³⁷ Michael Wiltfong, interview by author, Oregon Department of Education, Director of School Finance, Pupil Transportation and Fingerprinting, June 13, 2014.

until their peers graduate, and Utah schools receive per-pupil funding for early graduates after the students have successfully completed their first year of college coursework.³⁸ There is room for the funding structure to evolve, but to begin, most states are likely to take similar, incremental steps.

If states consider the implementation of CBE, they will have to find a way to restructure the funding system to support a transition from their current system. For example, the Iowa CBE Task Force called for the allocation of \$1 million per year for at least five years to fund the transition, which includes properly training educators and developing high-quality assessments.³⁹

Higher Education Policy Environment

Funding for higher education—state appropriations to institutions and the tuition that students pay—is generally allocated on credit hours of instruction on a per-12-credit-hour FTE basis for a given semester. That structure is inherently time-based and forces CBE institutions to map their students’ learning back to the credit hour. Although no state has yet addressed how to change higher education budgets to support CBE, the Texas Higher Education Coordinating Board (THECB) is creating a CBE bachelor of applied sciences in organizational leadership degree that will provide the lower-division courses online and the upper-division coursework in person at substantial savings to students. In addition to developing the program, THECB is studying how the state can sustain and scale funding in CBE programs and support students who enroll. THECB is working with the RAND Corporation to study funding models for hospitals and how they might be adapted to accelerated degree programs for higher education. THECB is also legislatively mandated to provide a study of how state

student financial aid might flow to CBE programs.⁴⁰ Similarly, **Indiana** created flexibility around its state financial aid program when it signed an MOU with WGU that made students attending CBE institutions eligible for state financial aid on the same basis as students in traditional public universities.⁴¹

Those states interested in pursuing a CBE system must realign state funding structures toward student learning. As long as CBE programs have to work around funding mechanisms that pay for time students spend in seats, the expansion of CBE will continue to face major challenges. By changing their funding systems and the incentives these systems create, states have an opportunity to pay more directly for the results they seek from education.

Transitioning funding to support CBE—key policy questions for governors to ask state entities that oversee K-12 and higher education:

- In what ways could the state’s funding formula be based more on mastery of content and less on seat time or average daily attendance?
- Are there policies that create fiscal disincentives or otherwise limit exploration of new methods of and approaches to learning like CBE?
- Can funding dedicated to teacher professional development and technology be used for CBE implementation? If so, how is that funding tracked, and how are its effects assessed?
- What does the transitional funding formula look like? What new variables may be required when the transition period has ended and CBE is the norm?

³⁸ Tabitha Grossman and Stephanie Shipton, “State Strategies for Awarding Credit to Support Student Learning,” *Issue Brief* (Washington, DC: National Governors Association, 2012), <http://nga.org/files/live/sites/NGA/files/pdf/1202EDUCREDITBRIEF.PDF> (accessed August 20, 2015).

³⁹ The Iowa Legislature, Senate File 2284.

⁴⁰ Texas Senate Bill 215, <http://www.legis.state.tx.us/tlodocs/83R/billtext/pdf/SB00215F.pdf#navpanes=0> (accessed August 20, 2015).

⁴¹ Allison C. Bell and Kristin Conklin, *State Financial Aid Programs and Competency-Based Education* (Washington, DC: HCM Strategists, 2013), http://strategylabs.luminafoundation.org/wp-content/uploads/2013/10/State_Aid_and_CBE_v1-6.pdf (accessed August 20, 2015).

Communicating the Change

A policy change to a CBE system is unlikely to occur unless a governor who supports a move toward CBE can communicate the need for change, the potential value of CBE, and strategies to overcome the associated challenges. The basic message a governor can communicate is that a CBE system is responsive to the learning needs of individual students. CBE would benefit students and families, teachers, communities, and businesses. Well-prepared individuals have a greater potential to be productive members of society who better use taxpayer money by staying in the education system only for as long as necessary to meet their professional goals.

Despite the appeal of CBE and its potential benefits, the structure does not fit within society's current entrenched vision of education and existing policies. State policymakers and the public at large habitually picture desks, a blackboard, and students facing a teacher at the front of the classroom when thinking of a typical K-12 educational environment. Higher education produces a similarly traditional vision of 18-year-olds in ivy-covered buildings. These systems do not work for enough of today's students. CBE is one way to respond to the evolution in the demands of current students and offers a new way to overcome existing shortcomings. Governors are well positioned to lead and encourage a discussion on the potential value of a move toward CBE.

K-12 Policy Environment

If governors want to discuss the benefits of CBE for K-12 students, they should emphasize the ability to provide more personalized instruction so that far more students can meet more rigorous and relevant standards, regardless of background, ability, or stage of development. CBE is designed to meet students where they are and get them the help they need when they need it so that they can master the defined standards of

learning. In a CBE system, the support and incentives are in place to increase the likelihood that students have mastered content and are ready for the next step. Maine produced several communication resources to educate the public about its progress toward a CBE system. The Maine Department of Education home page prominently features the state's plan, *Education Evolving*, for putting students first and a separate Web site devoted to CBE in the state.⁴² In addition to providing easy-to-navigate resources, the state created several informational videos that explain what CBE is and how it is benefiting Maine's students.⁴³ Governors in other states can use similar resources and work with their departments of education to develop plans and tools to publicize the benefits of CBE to students, families, educators, and state and local policymakers.

Higher Education Policy Environment

One way to communicate the benefits of CBE for higher education is to emphasize flexibility, affordability, and acceleration for returning adult learners. The University of Wisconsin's competency-based Flexible Option has enjoyed strong public support from the university chancellor, the board, legislators, and Governor Scott Walker.⁴⁴ To build that type of high-level support, the University of Wisconsin-Extension Division of Continuing Education, Outreach and ELearning framed and communicated its competency-based degree so that it resonated with those audiences. Several messages in particular had an impact:

- Wisconsin has many adult residents who need a bachelor's degree to succeed and continue to build Wisconsin's economy;
- The higher education system should recognize learning that occurs outside of the classroom and allow people to use it to work toward a degree;

⁴² Maine Department of Education, "Getting to Proficiency," <http://www.maine.gov/doe> (accessed September 23, 2015); and Maine Department of Education, "Center for Best Practice," <http://www.maine.gov/doe/cbp> (accessed September 23, 2015).

⁴³ Maine Department of Education, "Videos," <http://maine.gov/doe/cbp/videos.html> (accessed September 23, 2015).

⁴⁴ David Schejbal, interview by author, University of Wisconsin-Extension, Dean of Continuing Education, Outreach and ELearning, February 7, 2014.

- Other states and systems are starting to offer degrees through CBE that address the needs of adult learners by being flexible and low cost; and
- The program will enroll students who are currently not enrolled or enrolling in for-profit colleges.

The extension campus received public praise from state policymakers by creating white papers, a branded web presence, a federal strategy, and a strategy that targets state and national conferences that reiterated those messages.⁴⁵ For instance, when the Flexible Option launched, Governor Walker said it has “the potential to transform education on a national level. We’re pioneering a new way to offer an affordable and quality education and this model allows students to adapt quickly to ever-changing industries and businesses.” That support helped the extension campus start offering programs.

Conclusion

CBE has the potential to improve the education system of the United States by allowing more students to

receive the support they need when they need it to learn effectively and master the desired content and skills. CBE should not be viewed as solely for the high achievers or as an “alternative” approach for the learners who need more assistance. With appropriate support structures, CBE could improve learning for all types of students by altering the system to respond to the learning needs and pace of each individual student. States are beginning to experiment with that new model at both the K-12 and higher education levels, but efforts are largely happening in separate spheres. In addition, data collection on the effectiveness of programs is rudimentary and lessons are not being shared. Governors are in a position to bring these efforts together and explore the transition from an education system that holds time constant and varies what students learn to a CBE system that varies time but holds content mastery constant. The promise of such a system is that it can adjust the methods of instruction and assistance to provide deeper, more personalized learning and help ensure that all students meet or exceed the high expectations of rigorous and relevant standards.

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⁴⁵ *Status Report on the University of Wisconsin Flexible Option* (April 5, 2013), <http://profs.wisc.edu/wp-content/uploads/2013/04/UW-System-Flex-Option-April-BOR.pdf> (accessed May 21, 2015).