

Designing quality into direct-assessment competency-based education

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Background: Meeting the nation's need for 60% of its working age population to hold postsecondary education by 2025 is not possible through traditional educational institutions and formats. They simply do not have the "seats" available. Students, employers, and regulatory agencies are actively exploring educational alternatives, such as competency-based education, rightfully expecting assurances of quality.

Methods: In this study, we apply design principles using the Association of American Colleges & Universities quality framework to direct-assessment CBE. This quality framework arises from AAC&U's Liberal Education and America's Promise. The University of Wisconsin Flexible Option (UW Flex) is used to illustrate the application of the AAC&U quality framework.

Findings: The LEAP design principles are used to create an aspirational vision to guide the development of direct-assessment CBE. We describe the work and design decisions made when creating UW Flex to illustrate how the LEAP quality framework can ensure high-quality direct-assessment CBE programming.

Conclusion: This study builds the case for how quality CBE can expand opportunities for more Americans. We promote a particular vision of quality that is an aspirational model for CBE, based on the AAC&U LEAP design principles of *Proficiency, Agency and Self-Direction, Integrative Learning and Problem-Based Inquiry, Transparency and Assessment, and Equity*. The intense excitement over CBE presents an unprecedented opportunity to design high-quality educational models that focus emphatically on student learning versus faculty teaching, allowing higher education leaders to remove impediments to optimal learning. Only then will all students have the chance to reach the levels of talent and ability needed to navigate and flourish in today's world.

KEYWORDS

competency-based education, direct-assessment competency-based education, educational access, educational innovation, liberal education, pedagogical innovation, quality, quality standards

1 | INTRODUCTION

Demand is too great and timing too short for business as usual in higher education. By 2025, 60% of jobs in the United States will require postsecondary education, prompting development of a national "completion agenda" urging more citizens to achieve higher education credentials (Obama, 2009). Yet the country's higher education

rate is not even close. According to the National Center for Education Statistics, 44% of the nation's working age population had earned any postsecondary credential in 2014, a growth of only 5% from a decade ago (U.S. Department of Education, n.d.a.).

Policymakers and organizations such as Lumina Foundation have recognized the limitations of traditional educational models to fill the gap and have been looking for new ways to educate more people in less

time at a lower cost *without sacrificing quality* (Lumina Foundation, 2016). Regulatory agencies and accreditors, too, are allowing select higher education institutions to experiment with new delivery models and still receive federal financial aid—as long as they can do so while assuring a high-quality educational experience (U.S. Department of Education, 2014).

Public and private non-profit and for-profit colleges and universities are exploring competency-based education (CBE) as a nontraditional model to address the nation's need to provide higher education to its citizens. Public Agenda reports that the number of CBE programs in the United States grew from about 20 in 2012 to more than 500 by 2015 (Public Agenda, 2015). While CBE is a decades-old idea, direct-assessment CBE is a newer approach receiving attention from higher education leaders. A key distinction of direct-assessment CBE is that students progress toward their degrees entirely based on completing projects or competency assessments, independent of courses and semesters. In true direct-assessment CBE, projects and assessments are also independent of the credit hour, even though federal financial aid regulations require behind-the-scenes “crosswalks” to credits. Direct-assessment CBE will be explained further as the University of Wisconsin Flexible Option, or UW Flex (www.flex.wisconsin.edu) is explored below. Like all CBE models, however, direct-assessment CBE is a viable solution to our nation's needs only if students are graduating from high-quality programs where they develop the knowledge, skills, and abilities required for an educated workforce and engaged citizenry.

2 | WHY QUALITY STANDARDS?

One of the most prevalent critiques against CBE programs is that they are diploma mills that preference efficiency over quality, that simply grant credentials to anyone with accumulated experiences tangentially related to a degree area. Critics claim that CBE will further stratify education into the “haves” who have access to high-quality liberal education, and the “have nots” who can only afford poor-quality employment credentials (Slaton, 2013; Ward, 2016).

The promise of CBE is to truly move the needle on educational access and attainment. CBE aspires to high quality that shifts educational activity from being teacher centric to learner centric, measuring student progress through demonstrated mastery of knowledge and skill versus through accumulated “seat time” (Brower, 2016). Living up to this promise requires that CBE programs are designed with high-quality standards, standards that assure mastery-level student learning. Depending on the standards used, quality can be defined specifically to assure broad and deep knowledge and skills—even in spheres traditionally assigned to liberal education—diminishing educational stratification and creating greater access to quality education for all.

3 | QUALITY STANDARDS THAT INSPIRE AND PROVIDE GUIDANCE

The quality framework presented in this study focuses specifically on direct-assessment CBE programs, offering five design principles to

guide these programs toward quality student learning outcomes. In addition, and more importantly, the framework presented here is intentionally an *aspirational framework*—providing design principles that scaffold a vision of quality education that leads to the learning needed from liberally educated citizens of the world.

Others, too, are developing quality standards for CBE. The Competency-Based Education Network has begun creating quality standards meant to encompass all types of CBE programs, whether direct assessment or not, and whether credit based or not (CBEN, 2016). Their purpose appears to focus on providing guidance to accreditors who wish to accredit CBE programs.

When creating UW Flex, leaders needed a crystal-clear vision of high-quality and student-centric education to serve as a beacon guiding countless on-the-ground decisions: What are the full range of competencies necessary for students to master? What does “mastery” mean, and how is it defined (and transcribed)? How many chances should students have to complete their assessments, and what is the right kind of feedback and support for each step along the way? How will students be billed for their educational engagement? What is full-time versus part-time engagement (for financial aid purposes), and how can UW Flex adhere to federal financial aid regulations without its course-based and credit-based regulatory limitations dictating, and even corrupt, CBE educational program structures? All these questions, and countless more, required a sharp focus on a vision of quality education that put student learning at the center. The quality framework that was established provided that focus.

The quality standards to be described in this study are used specifically to maintain strict focus on high-quality student learning from a liberal education perspective. These quality standards build on the research and advocacy of the Association of American Colleges and Universities' Liberal Education and America's Promise (AAC&U's LEAP), which itself is designed to provide high standards for all college graduates' levels of learning and knowledge, including intellectual and practical skills (AAC&U, n.d.a). AAC&U points to the hundreds of campuses benefitting from the LEAP initiative and projects (AAC&U, n.d.a) and to 13 states participating in the LEAP States Initiative (AAC&U, n.d.b.). Those states used the LEAP framework, in part, to advance a set of Essential Learning Outcomes (AAC&U, 2012) developed through research with employers and through campus-community dialogues across the country.

Lumina Foundation also used the LEAP Essential Learning Outcomes as it developed the Degree Qualifications Profile (DQP), which defines what students should know and be able to do once they have graduated with a postsecondary degree (associate, bachelor's, or master's; AAC&U, 2012). The National Institute for Learning Outcomes Assessment (NILOA) studied about 400 higher education institutions that used the DQP beta form between its 2011 introduction and 2014 revision. NILOA's June 2016 impact study on the DQP confirmed positive impacts on faculty, staff, and students, including student persistence, and noted that impacts were greatest when the DQP was integrated with other quality improvement initiatives at the institutions (Jankowski & Giffin, 2016). As of 2016, more than 680 higher education institutions have used the DQP.

The application of the LEAP Essential Learning Outcomes and related research demonstrate the value of this quality framework. While this work emerged initially in the context of traditional educational programs, designers of UW Flex recognized the value of applying a quality framework anchored in LEAP standards to CBE. This study will demonstrate how design principles from the LEAP quality framework apply to CBE, using UW Flex as an example. That application first requires a brief description of UW Flex.

4 | ONE DIRECT-ASSESSMENT CBE MODEL: THE UW FLEXIBLE OPTION

The UW Flexible Option is the University of Wisconsin System's version of direct-assessment CBE. Key differences from traditional education include the following:

1. Academic activity, pricing, and enrollments are not tied to the credit hour, traditional semesters, or terms.
2. The enrollment model allows students to stop in and out with no penalty.
3. Multiple curricular paths are available, with each student's path developed individually.
4. Faculty roles are unbundled (i.e., one person does not necessarily create curriculum, teach, and grade)
5. Students support is proactive (intrusive) and wraparound (comprehensive).

Students enroll in a 3-month subscription period, at the start of any month. During that time, they access the faculty-developed curriculum, and they work through as much, or as little, of the curriculum as they choose. Curriculum consists of competencies (well-defined learning outcomes), assessed through projects (papers, presentations, exams, etc.) that are designed for students to illustrate their knowledge in an applied area, and supported through curated learning materials available online to students at no cost. Students also receive support from faculty and staff, with Academic Success Coaches providing proactive wraparound advising and working with each student on a personalized learning plan, and with faculty providing individualized feedback on assessments (University of Wisconsin-Extension, n.d.). The program allows students to build upon knowledge, skills, and abilities gained through prior coursework, military training, on-the-job training, or other learning experiences. Students progress at their own pace by demonstrating their mastery of learning outcomes by completing faculty-developed assessments when students believe they are ready.

UW Flex was designed to focus on programs that serve the public interest. These include, for example, healthcare, information technology, and business programs (Burning Glass, n.d.).

UW Flex launched in January 2014 with its first cohort of academic programs. UW Flex programs are collaborations among UW System institutions. UW-Extension provides leadership and operational and academic support, and other UW partners provide faculty and curricular oversight, which allows students to graduate from their UW institution. Initial UW System institutional partners included the University

of Wisconsin Colleges, which is comprised of 13 freshman-sophomore campuses, and the University of Wisconsin-Milwaukee, which is among 13 four-year universities in UW System. Both UW Colleges and UW-Milwaukee received accreditation for their UW Flex programs from the regional accreditor, the Higher Learning Commission. Both received approval from the U.S. Department of Education to award Title IV financial aid through UW Flex.

Current partners also now include UW-Madison, UW-La Crosse, UW-Oshkosh, UW-Parkside, UW-Superior, and UW-Whitewater, whose faculty all teach in UW Flex programs. In addition, in December 2015, UW-Extension was authorized by the UW System Board of Regents to award its own degrees through the UW Flex direct-assessment CBE format; its first degree, the Bachelor of Science in Business Administration (BSBA), became available in December 2016.

5 | FROM THE REAL TO THE IDEAL: FULFILLING THE PROMISE OF CBE

Fulfilling the promise of CBE will require high-quality programs; programs that provide quality educational support, experiences, and outcomes that produce graduates who become productive citizens. As expressed earlier in this article, AAC&U's LEAP has this as its goal: to provide standards for quality education that produces productive and engaged citizens of the world. One of AAC&U's LEAP projects is General Education Maps and Markers (GEMs), which outlined design principles as the foundation of quality general education. GEMs focuses on "core proficiencies, intentional educational pathways within and across institutions, and students' engagement in work that allows assessment of their demonstrated accomplishments in inquiry- and problem-based learning" (AAC&U, 2015a).

With support from the Bill & Melinda Gates Foundation, AAC&U's GEMs design principles propose five key areas essential to effective design of general education (AAC&U, 2015b):

1. Proficiency
2. Agency and Self-Direction
3. Integrative Learning and Problem-Based Inquiry
4. Transparency and Assessment
5. Equity

These five principles identify how educational models should be designed to assure quality student learning. They are offered by AAC&U as aspirational principles, recognizing that institutions of higher education strive to meet all principles at all times.

The same can be said for direct-assessment CBE programming. That is, while these design principles were developed for general education, it is also the case that direct-assessment CBE can strive to meet these same design principles to assure quality student learning. The remainder of this article describes and applies these five design principles to direct-assessment CBE, identifying challenges and opportunities in CBE program development. UW Flex is used as an example throughout this article.

5.1 | Principle 1: Proficiency

GEMs recommends that all “colleges and universities should provide clear statements of desired learning outcomes for all students...and... should provide programs, curricula, and experiences that lead to the development of demonstrable, portable proficiencies aligned to widely valued areas of 21st century knowledge and skill” (AAC&U, 2015a, p. 3). In particular, GEMs makes clear that—in addition to content-specific knowledge and skills—“desired learning outcomes” must include the kinds of generalized professional skills that employers want, such as the ability to communicate well and the ability to solve problems in groups (Hart Research Associates, 2015). “Proficiency” in the GEMs framework refers to an assurance that a curriculum is integrated and holistic with respect to *all* skills and abilities students need to be successful, both in their fields and as citizens of the world.

CBE programs are in a unique position to fulfill the proficiency recommendation exceptionally well, particularly when they build into the curriculum the full set of so-called “hard” and “soft” competencies students will need for future success.

When CBE program curricular design begins with the complete picture of the competencies needed by, for example, a bachelor’s level business administration student, the curriculum will include all of the desired competencies by definition. By design, the UW Flex Bachelor of Science in Business Administration degree began with faculty articulating all competencies required of graduates, composed of the “hard” and “soft” skills required by industry and accreditation standards, and then clustering them into eight program-level competencies that define this degree as follows:

1. Possess the critical and systems thinking required to develop profitable multifunctional corporate strategies.
2. Navigate corporate culture, communication, and teamwork to thrive in a diverse environment.
3. Design and evaluate processes in all areas of business, including operations, supply chain, marketing, human resources, and management systems and structures.
4. Recognize and act on appropriate response methods and communication strategies when managing organizational conflict.
5. Understand and recognize personal and ethical behaviors and responsibilities in the workplace.
6. Comprehend the impact of a global society on an organization and appreciate appropriate economic, political, legal, regulatory, technological, and social contexts.
7. Master the financial tools and techniques required to satisfy and exceed corporate goals.
8. Improve organizational decision making through increased knowledge of IT and research methods (University of Wisconsin-Extension, 2016).

CBE programs can and should aspire to holistic curricular integrity that goes beyond the discrete-course-by-discrete-course curricular structure of traditional course-based education. To ensure that

graduates of CBE programs achieve true “proficiency”—the full set of “demonstrable, portable proficiencies aligned to widely valued areas of 21st century knowledge and skill” (AAC&U, 2015b)—rather than lower-level skill-based competencies contained within discrete courses, educational designers should use curricular development as an opportunity to look holistically at what industry and society need from its graduates. Many models exist to facilitate this process, including “backward design” (Wiggins & McTighe, 2005), which guides curricular designers through the process of starting with an integrated whole of competencies needed by graduates of a degree program, and working backward to identify the discrete skills and abilities that make up this whole. Important in backward design is both the process of breaking down program-level competencies into specific, discrete skills and abilities and the challenge of building them up again to assure coherence and curricular integrity.

Both breaking down and building up—between the program-level competencies that define the degree (“P” in Figure 1), the competencies (“C”), and the more granular student learning outcomes (“O”)—are incorporated into the curriculum of UW Flex programs: Each program contains the discrete competencies (skills and knowledge) necessary to qualify for the degree, *and* organizes competency assessments that allow students to apply their skills and knowledge to a range of problem areas.

P = Program-Level Competency
C = Assessment-Level Competencies
O = Learning Outcomes

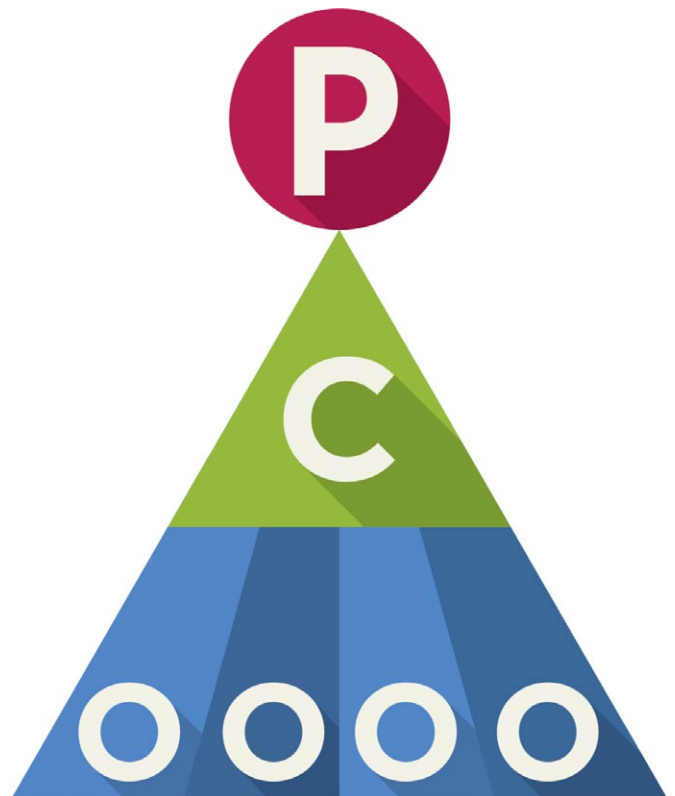


FIGURE 1 Competency Pyramid. P, Program-Level Competency; C, Assessment-Level Competencies; O, Learning Outcomes

As another example, the UW Flex nursing program includes six program-level competencies that define the RN-to-BSN degree-completion program. One program-level competency addresses chronic care management, which is broken down into subcompetencies including chronic disease management, self-management, and transitional care. Each of those three areas is further broken down into projects (the assessments) representing the real-world settings in which many of the students already are working. A project example would be to develop a patient self-management care plan. In addition to projects within each of the six program-level competencies, the program further integrates student learning across the entire program by culminating in a capstone project requiring students to apply, synthesize, and demonstrate their mastery of competencies from across the entire RN-to-BSN curriculum.

This is not to say that CBE programs will necessarily be built for curriculum integrity and proficiency through curricular integrity. And this is not to say that course-by-course models necessarily are not able to address proficiency through its curricular design. In fact, some CBE programs simply replicate the course-by-course structure—good or bad—by building competencies directly from existing courses and programs. This approach speeds program start-up but will replicate any existing competency gaps and unintended redundancies from the original course-based curriculum. When faculty and curricular designers begin with competencies articulated only within a discrete course, no discussion is required that breaks free of a course-by-course structure. As a consequence, course-based activities, written assignments, and projects only demonstrate attainment of the specific learning outcomes of that course. Thus, CBE programs built by converting courses do not necessarily address proficiency through curricular integrity issues because they do not change the structure of the curriculum in terms of its ability to assure an integrated and holistic set of competencies.

5.1.1 | Recommendation

To assure that “programs, curricula, and experiences... lead to the development of demonstrable, portable proficiencies aligned to widely valued areas of 21st century knowledge and skill” (AAC&U, 2015a, p. 3), CBE programs should be developed from an integrative perspective. Curriculum should be structured from the “top” of the pyramid down, and independent from a course-by-course structure. CBE curriculum should be explicit about articulating *all* competencies required, including “soft skills.” Through this approach, students will have a greater chance to learn within a comprehensive and integrated learning environment with clear and demonstrable objectives and skills.

5.2 | Principle 2: Agency and Self-Direction

The GEMs principle of agency and self-direction refers to designing educational programs that find the right balance between providing educationally productive support and guidance while ensuring students are “active participants in creating an educational plan in which they identify and produce high-quality work on significant questions relevant to their interest and aims” (AAC&U, 2015b).

CBE programs can be built entirely on this principle of student self-direction. Students work with program support people to find their own paths according to their prior learning and experiences, their ability to approach the assessments in front of them, their time commitments, and their educational goals and aspirations.

One UW Flex student illustrates this principle of agency and self-direction through her approach to tackling competency assessments:

First, I look at the assessments and try to figure out the big picture. Then I go back and fill in the places I know I have the knowledge; then I look at the gaps in my knowledge. For example, one of the first projects I had to do was on quality management—that’s what I do for a living. So I was really able to apply a lot of my experience to that project, which made the knowledge gaps a lot more manageable to work through.

(C. Lundeen, personal communication, 2014).

Best practices suggest that returning adult students—particularly if they are returning to education because their initial experiences were not successful—need strong support in the form of proactive (intrusive) and wraparound (comprehensive) advising and mentoring to be educationally successful (Capps, 2012; Girior & Schwehm, 2014). Many CBE programs have designed new roles for “academic coaches” to provide this proactive support.

This same kind of support, of course, is sometimes needed for traditional students in traditional course-based programs. Students of all kinds too easily walk down their educational paths by simply putting one foot in front of the other. As will be discussed under the design principle of “transparency,” students require support that allows them to understand the holistic design of the program in which they are enrolled. Too often—and this is true of many brick-and-mortar undergraduate programs—faculty and staff do not make explicit and share with students the overall design, purpose, and outcomes of their programs. Faculty and staff do not give students a sense of how the parts contribute to a whole that equals a high-quality, integrated education.

Advising, mentoring, and tutoring can guide students toward the development of a curricular plan that builds on what they already know, and also on their broader goals for work and life. At its best, faculty and staff help all students—CBE and otherwise—understand what today’s workplace needs from them as well-educated college graduates and how their curricular plan will help them develop what they will need for long-term success.

In UW Flex, the proactive advising role is performed by Academic Success Coaches (ASCs). ASCs not only provide advising and mentoring, but low-level tutoring as well. ASCs can provide the type of tutoring that a student might receive at an introductory writing or math tutoring center. They are master’s level-educated professionals with some disciplinary knowledge of the programs for which they serve as coaches. UW Flex students are assigned to an Academic Success Coach when they enroll in their program of study. The ASC works with each student to create an Individualized Learning Plan (ILP). The ILP maps out the order and pace of the work the student expects to

accomplish. The ILP is designed to take best advantage of students' prior learning, prior experiences, and educational strengths and weaknesses, creating a path leading to the program's higher-order competencies. The Academic Success Coaches have frequent contact with UW Flex students on academic matters (they ensure students are making progress, accessing learning resources, interacting with faculty as needed, etc.), as well as enrollment and registration matters (have students paid their fees, re-enrolled in the next subscription period, received their financial aid, etc.).

Not all students, of course, will flourish equally in all models of higher education, whether in a CBE or a course-based format. Ongoing monitoring and additional assistance will be required when students are ill matched to an educational format. For example, in the UW Flex admissions process, students are asked about their ability to organize factors in their lives that UW Flex staff know are conducive to success in this kind of program. In addition to questions about prior experiences and knowledge about online learning, students are asked, for example, whether they have one spot in their house in which they can reliably and consistently work, as UW Flex staff find that locational consistency is essential to successful progress through the program. The admissions counselor and the student discuss strengths and weaknesses and the student's goals. The admissions counselor also conveys that success in UW Flex requires a substantial amount of time.

These discussions all foster student agency and self-direction. For example, one UW Flex student found the program rigor at odds with the amount of time that the student could commit to the program:

[The amount of time UW Flex requires has] been a slap up alongside the head. I found myself not wanting to be up until midnight studying, but the reality of the situation is I do find myself up until midnight studying sometimes and that's because there is so much crammed into three months. That flexibility may be flexible for UW but it's really not flexible for my time

(personal communication, 2014).

Success in higher education takes time, no matter how flexible the format of a program. UW Flex staff discuss this issue thoroughly with each student interested in enrolling, and may suggest alternatives if their life does not fit the time requirements that UW Flex demands. That discussion may include suggesting that the student postpone his or her plans to enroll if the time constraints are temporary, and may also include counseling the student away from UW Flex altogether and toward an equivalent traditional course-based structure if the student is not a good match for UW Flex. Success in UW Flex requires a fair degree of self-reliance and organizational capacity. Maximizing the likelihood for student success means being realistic with students before they enroll and pay their tuition.

Agency and self-direction in the context of higher education mean engaging students in their own educational decision making. Students must "own" their education for it to impact their lives. In addition, CBE programs must provide the support that students need to realize their pathways with agency and self-direction.

5.2.1 | Recommendation

Engage students in their educational decision making right from the start of recruitment and the admissions process. Provide real data and discussion about what it takes to be successful, and build the educational plans on thorough discussion and understandings of students' unique backgrounds, experiences, and goals. Throughout the program, provide proactive and comprehensive support. Thoroughly assess whether the educational format is a good fit for the student and provide support accordingly. Jointly design an educational pathway that incorporates individual strengths and weaknesses, time commitments, and prior experiences.

5.3 | Principle 3: Integrative Learning and Problem-Based Inquiry

This GEMs design principle suggests that all college students should "demonstrate proficiency through a combination and integration of curricular, co-curricular, and community-based learning, as well as prior learning experiences" (AAC&U, 2015b). The principle of Integrative Learning and Problem-Based Inquiry posits that "students should demonstrate proficiencies through inquiry into unscripted questions and problems that are relevant to [the students'] interests and aims" (AAC&U, 2015b).

When CBE programs assess student learning through real-world projects, they by definition provide the opportunity to put integrative and problem-based learning at the very core of the educational experience. Particularly for direct-assessment CBE, progress toward the degree is measured by students' abilities to master problems and challenges set before them through competency assessments. What is required, then, is for CBE program architects and faculty to design project-based assessments that focus on the demonstration of integrative learning and problem-based inquiry.

In fact, however, UW Flex uses a mix of assessments, from straightforward content-based adaptive learning methods for lower-level, content-rich competency areas, to integrative papers and presentations, and to capstone projects that students complete later in their program. For many competency areas, designing integrative learning and problem-based inquiry is straightforward: for example, by asking UW Flex BSBA students to present a business plan on a new coffee drink for a local coffeehouse.

Other competency areas, however, are not as straightforward. Developing students' teamwork skills is one area of integrative learning that is essential for CBE and all other programs to address because employer surveys consistently identify teamwork and collaborative learning as a top priority for workplace success, to build students' capacity to "solve problems with people whose views are different from their own" (Hart Research Associates, 2015, p. 4). Yet teamwork skills can be difficult to assess, particularly through CBE programs that are not cohort-based.

In principle, classroom-based faculty helps students develop teamwork skills when they structure diverse teamwork and collaborative problem solving in the traditional classroom. In non-cohort-based CBE

programs, however, program designers need to be creative about developing opportunities for their students to demonstrate these same capacities, for instance, through assessments that ask them to engage with their work colleagues and use their workplaces as “laboratories” for teamwork and collaborative problem solving. Program requirements can be linked directly to demonstrating teamwork competencies in work environments. In addition, CBE program designers also will need to ensure that CBE students who are not currently employed have opportunities to develop teamwork skills and other diversity-related learning outcomes.

One example of how teamwork can be assessed in non-cohort-based CBE programs comes from the UW Flex nursing program. Within the leadership and management program-level competency area, students are required to develop and execute a project that demonstrates leadership and change in their healthcare setting. One student saw gaps in how patients were transitioned from in-patient treatment to aftercare; her project led to improved patient outcomes. Faculty designed a grading rubric that specifically assessed the student's ability to apply skills and knowledge to an “unscripted” problem of the student's choosing. This kind of integrative learning and problem-based activity is exactly the type of experience that employers hope they will see in graduates.

5.3.1 | Recommendation

To engage students in integrative learning and problem-based learning, assessments should focus on real-world projects, or at least, applied and “unscripted” projects of the students' choosing. Teamwork is a particularly challenging set of skills to assess in non-cohort-based programs, yet high-quality CBE demands that program designers tackle this assessment challenge head on. Grading rubrics can focus on students' abilities to apply skills and knowledge in their real-world settings. Employers and industry experts can be engaged to assist in developing rubrics and, when available and appropriate, grading students.

5.4 | Principle 4: Transparency and Assessment

The GEMs design principle of transparency and assessment directs programs to be explicit with students about what they are learning, why, and how. This design principle can align easily with direct-assessment CBE programs when programs are built specifically to “understand what proficiencies are being developed...and how these proficiencies can be demonstrated at key milestones in students' progress toward the degree” (AAC&U, 2015b). By explicitly defining the competencies students must demonstrate, CBE programs are transparent with students and other stakeholders (e.g., employers, graduate schools). By definition, competencies make it clear exactly what degree holders know and can do with their knowledge.

Developing authentic assessments that clearly measure student knowledge and ability is paramount to quality CBE programs. This is one insight that UW Flex faculty often articulate with program leaders,

and some have even used their insights from UW Flex to improve their traditional classes. The director of the UW Flex RN-to-BSN degree-completion program at UW-Milwaukee described the impact of her UW Flex faculty role on her traditional teaching as follows:

I began to think carefully about the other courses that I teach both face-to-face and online. The question of “competency” was an important one for me. I began to ask myself questions such as: What would it mean if a student really knew this? How would it look if a student were really competent in this subject area? What do I really want them to know? What concepts are essential to learning in this content area? What are the things that are essential to the discipline of nursing that would show me that a student was competent in this area?

I began to be much more thoughtful about the assignments and especially the evaluation rubrics I created to use in my other courses. I actually even totally “flipped” a large lecture course based on the issue of focusing more on concepts, competency and learning—instead of content and teaching. UW Flex has had a great impact on my own teaching in all other areas.

(L.E. Muhlbauer, personal communication, 2016)

As this quote reinforces, the quality of CBE programs depends completely on how well designed the assessments are in enabling students to fully and “transparently” demonstrate that they have achieved both individual competencies and the crosscutting proficiencies so important for college degrees of lasting value.

As CBE programs transparently define and describe the competencies within their curricular pathways, it is equally important that students can see clearly *the mastery level of learning expected* throughout degree programs. Research confirms that students are more likely to achieve learning goals when they clearly understand the outcomes sought in different parts of their education, and precisely how they are expected to demonstrate their achievement of competencies and proficiencies (Gaston, 2015). In this way, high-quality CBE programs should result in higher levels of student success when they consist of transparent competencies and clear maps delineating how each fits together.

High quality in this context means that CBE program designers must not only integrate and align the learning outcomes and assessments through which students demonstrate their competence levels, but they must also be transparent about this integration and alignment. How the curriculum “fits together” (curriculum integrity, as described in the first design principle of “proficiency”) and leads to specific student learning outcomes must be understandable to students and employers alike.

The CBE movement, overall, is part of a much larger accountability shift underway throughout higher education, one that asks higher education to demonstrate that students are actually learning what they

are purported to be learning and that they are gaining value from their investment in their education (Arum & Roksa, 2011).

UW Flex programs continue to strive for 100% transparency across the curriculum. Student interviews and focus groups have identified misunderstanding among some UW Flex students about the purpose of some assessments, and how those assessments connect to the rest of the degree program. A number of efforts are underway in three areas: first, how to improve the descriptions of curricular connections; second, how to better orient and onboard students into their program; and third, how to better mentor students and structure student interactions with Academic Success Coaches and faculty.

5.4.1 | Recommendation

Strive for 100% transparency about learning expectations, curricular structure, and the creation of authentic assessments tied to the application of knowledge in real-world settings. Show students, at every step of their program, what they are learning, why, and how. This level of transparency will require continual improvement methods that routinely assess student and stakeholder understanding of their education, which is used to routinely improve all aspects of program delivery.

5.5 | Principle 5: Equity

The final GEMs principle addresses one of the most important issues facing American higher education (Witham, Malcom-Piqueux, Dowd, & Bensimon, 2015):

1. How can we assure that *all* students are equitably treated through the educational program, leading to equal opportunities for success?
2. How well are we serving students from a wide array of backgrounds?
3. How can we reverse the current reality of sizable, and growing, gaps in achievement that are based on socioeconomic status, race, ethnicity, and social capital rather than one's abilities or work ethic?
4. How can we claim that higher education, and America itself, is a meritocracy when student learning outcomes are more dependent on skin color and economic background than intelligence and ability?
5. How can we challenge the current two-tiered system in American higher education in which more privileged students enjoy the considerable advantages that come with a horizon-expanding liberal education while others are tracked into narrower educational programs that limit their long-term success?

UW Flex leaders, and CBE programs generally, have been explicit in aiming their programs at nontraditional students who will greatly benefit from higher education, but who require that the program fits into their lives versus the other way around. UW Flex staff thoroughly evaluate students' readiness to succeed before they enroll, and then provide the support needed once students begin their program.

UW Flex leaders also recognize that equity entails more than student support; it includes pedagogy and curricular design. UW Flex programs build on the UW System strategic framework of inclusive excellence designed to foster "greater diversity, equity, inclusion, and accountability at every level of university life" (University of Wisconsin System, n.d.a). UW System describes four pillars supporting inclusive excellence as follows:

1. *Diversity*: Individual differences (e.g., personality, learning styles, and life experiences) and group/social differences (e.g., race/ethnicity, gender, sexual orientation, gender identity or expression, country of origin, and ability as well as cultural, political, religious, or other affiliations) that can be engaged in the service of learning.
2. *Equity*: Equity mindedness refers to the outlook, perspective, or mode of thinking exhibited by practitioners and others who call attention to patterns of inequity in student outcomes, and are willing to assume personal and institutional responsibility for the elimination of inequity.
3. *Inclusion*: The active, intentional, and ongoing engagement with diversity—in people, in the curriculum, in the cocurriculum, and in communities (intellectual, social, cultural, and geographical) with which individuals might connect—in ways that increase one's awareness, content knowledge, cognitive sophistication, and empathic understanding of the complex ways individuals interact within systems and institutions.
4. *Excellence*: The quality of being excellent; state of possessing good qualities in an eminent degree; exalted merit; and superiority in virtue (University of Wisconsin System, n.d.a).

The board of AAC&U defined inclusive excellence as follows: "Making excellence inclusive means attending both to the demographic diversity of the student body and also to the need for nurturing climates and cultures so that all students have a chance to succeed" (AAC&U Board of Directors, 2013). Inclusive excellence is analogous to "universal design," which incorporates requirements of the Americans with Disabilities Act to assure digital media is accessible to all people (University of Wisconsin System, n.d.b). Inclusive excellence considers diversity in terms of demographic characteristics, ability and accessibility, pedagogy, academic content, and learning styles, all of which were considered in the initial development of UW Flex curriculum and program delivery.

Serving nontraditional students will be key to addressing part of American higher education's equity challenge. It will not, however, solve all of the equity imperative—including the imperative to provide educational excellence to traditional-aged, low-income, minority students who may have experienced substandard K-12 educational experiences that failed to prepare them for college-level learning.

It is also the case that current higher education policy, particularly policy for Title IV financial aid, disadvantages nontraditional educational models, including CBE. And while this topic goes beyond the purpose of this study, suffice it to say that the U.S. Department of Education continues to be hamstrung by legislative policy mandates

and outdated definitions, even as it is experimenting with its regulations (U.S. Department of Education, 2014).

Focusing CBE on nontraditional students is important given the emerging research about what works for different kinds of students. One of the few studies of CBE students suggests, for instance, that “CBE works best for self-motivated learners...but is likely not the best fit for all students” (Wang, 2016). This research further suggests that “younger, less mature, or less motivated individuals could face challenges completing the program. CBE’s unique format will not work for every student” (Wang, 2016). This research aligns with other research that has emerged from the Community College Research Center (Jaggars, 2015) affirming that the success of some underrepresented students—traditional-aged, low-income, racial/ethnic minority students—depends on robust academic and social support programs and learning environments characterized by nurturing communities of peers and educators. For instance, Jaggars suggested that “students who are more vulnerable, who are younger, who aren’t sure where they are going, and who are still developing academic skills, go to college to *learn how to learn*” and that “many students report that the personal connections they develop with instructors *in the classroom* are vital to helping them learn” (Jaggars, 2015, emphasis added). Clearly, CBE is not the right approach for all students. In terms of the principle of equity, CBE program leaders will replicate inequities if they push CBE on everyone. Instead, CBE program leaders must be willing to acknowledge that the CBE modality is not the right answer for all students. Program leaders will serve all our students well when we diligently assess student program match by continuously monitoring student success—and when leaders can facilitate program transfers when needed.

5.5.1 | Recommendation

First and foremost, build broad accessibility into CBE programs, using frameworks such as inclusive excellence. Second, identify which students CBE does and does not work for, and clearly communicate that to stakeholders. Third, create robust onboarding mechanisms to ensure all students are likely to succeed in programs they enter, and conscientiously monitor student progress and success. Finally, continue to expand policies and practices so that an array of educational formats—from traditional to CBE and beyond—can be developed and adequately resourced to meet the educational needs of an ever more diverse citizenry.

6 | CONCLUSION

This study builds the case for the potential of direct-assessment CBE to meet vexing challenges and competing demands faced by American higher education. It promotes a particular vision of quality—established by AAC&U through its LEAP initiative and projects—as an aspirational model for CBE, and indeed all of higher education. LEAP provides a framework for quality and signposts for reform based on

extensive research and practice from a host of stakeholders, both internal and external to the academy.

We propose that the GEMs design principles—*Proficiency, Agency and Self-Direction, Integrative Learning and Problem-Based Inquiry, Transparency and Assessment, and Equity*—can guide higher education programs, including CBE, toward desired learning outcomes and toward the creation of optimal learning environments necessary for all students to achieve those outcomes. We further propose that these five design principles interrelate and synergize to create an *aspirational vision* of what education, and especially direct-assessment CBE, should look like. The intense excitement over CBE presents an unprecedented opportunity to self-consciously and emphatically design quality into these programs as higher education leaders remove impediments to optimal learning.

The development of CBE is, of course, part of a larger shift underway in higher education today. In fact, a dramatic shift in mindset will be needed—both on the part of students and faculty—to focus directly on student learning versus faculty teaching. Only then will students reach the levels of talent and ability they really need to navigate and flourish in today’s world. CBE development can help with this shift from thinking about a college degree as the accumulation of credits and courses in particular subject areas, to seeing the degree as earned through the achievement of broad competencies—and through demonstration of the ability to apply those skills and abilities to complex problems and real-world issues. Success with this shift is essential to fulfilling the promise of CBE programs and of all traditional programs in higher education.

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