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Principles for Developing Competency-Based Education Programs

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PRINCIPLES FOR DEVELOPING

COMPETENCY-BASED EDUCATION PROGRAMS

By Sally M. Johnstone and Louis Soares

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In the twenty-first century, a high-quality, affordable postsecondary education is the key to both national competitiveness and individual success. So not surprisingly, public policymakers, students and their families, and business leaders all express a sense of urgency with regard to college policy and practice. This is reflected in the concern over rising costs, student debt levels, and the lack of alignment between college graduate skills and labor-market demand.

This urgency infused the 2013 summer announcement by the Obama Administration of a renewed federal policy focus on innovation in higher education. The announcement of a new college/university policy agenda, "Making College Affordable: A Better Agenda for the Middle Class," highlighted the role of the developing technologies, institutional curriculum-design processes, and new delivery methods as keys to providing an excellent and affordable postsecondary education. MOOCs, flipped classrooms, learning analytics, and competency-based education (CBE) are given as specific examples of new approaches that can do just that.

In Short

Successful models demonstrate that competency-based education (CBE) can fit into existing campus structures, if certain principles are followed:

- The degree reflects robust and valid competencies.
- Students are able to learn at a variable pace and are supported in their learning.
- Effective learning resources are available any time and are reusable.
- Assessments are secure and reliable.

Among these examples, CBE stands out in two ways. The first is that it reorients the educational process toward demonstrated mastery and the application of knowledge and skills in the real world. This reorientation builds a bridge between academics and employers, resulting in a better understanding of the knowledge and skills that students will need to succeed in work and in life.

The second is that, while it can be a tactic or a tool to improve teaching and student learning, CBE's greatest strength is that it provides a means for helping quality and affordability co-exist in higher education.

CBE has been called by some policy thinkers, including the co-authors, a *disruptive innovation*, which can be generative for colleges and universities. CBE requires a deep exploration and often significant re-design of administrative, financial, and academic systems within institutions. This process, when done well, brings together leadership, administrators, and faculty in conversations that lead to a new equilibrium between quality and affordability.

CBE is still in its infancy, and there are many experiments emerging from different types of institutions and system levels. At the standards-setting level, the Degree Qualifications Profile initiative, supported by the Lumina Foundation, establishes expectations about what students should know and be able to do once they earn their postsecondary degrees. The initiative proposes learning outcomes and competencies along five dimensions: applied learning, intellectual skills, specialized knowledge, broad knowledge, and civic learning. It also sets levels of performance on each of these for the associate, bachelor's, and master's degrees.

At the national level, another initiative that focuses on liberal arts education is taking hold among colleges and universities . More than 150 members of the Association of American Colleges and Universities have adopted the learning goals, high-impact educational practices, and authentic assessments of the Liberal Education and America's Promise initiative (LEAP). Their aim is to integrate the elements of a liberal education across all areas of study, including career and professional disciplines.

An emerging experiment at the university system level, the University of Wisconsin's UW Flex Option, incorporates many customizing-learning innovations enabled

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by technology: competency- based education, self-paced learning, and modular course work. At the non-profit private institution level, Southern New Hampshire University has launched an initiative called College for America, a competency-based, self-paced, online program that offers an associate of arts degree based on definable skills and measurable results.

Still other competency-based programs are emerging from the business sector. The National Association of Manufacturers' manufacturing skills certification system has developed a structure of stackable credentials warranting that workers have attained the competencies required for increasingly sophisticated levels of work across many areas of manufacturing, from machine operation to engineering to management.

This initiative is beginning to bridge the gap between the workplace and postsecondary education. In 2011, the National Association of Manufacturers announced a partnership with the University of Phoenix, in which the association's competency-based curriculum and credentials will form the core of a bachelor's in management at the online university.

But prior to them all was Western Governors University (WGU). In the 1990's the governors of the western states called for the development of a new, low-cost, competency-based institution. WGU, which enrolled over 40,000 students in this, its 17th year, has become a proof of concept for CBE.

This article describes work conducted by WGU over the last year, supported by grants from the Bill & Melinda Gates Foundation and the US Department of Labor, to share its CBE model with eleven community colleges across the country.

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2013, with almost 250 students enrolled. Six more launched in spring 2013. As their programs mature, they should be able to revise their processes based on what they learn.

Given the emergent nature of the CBE initiatives described above, institutional leaders who are ready to try this strategy for improving educational outcomes are in search of practical approaches that can help. The principles, articulated below, are intended to be a guide to the creation of a CBE program. They can help guide decisions as new CBE programs are developed within traditional campus structures.

THE PRINCIPLES

1. The degree reflects robust and valid competencies.

Competencies are the core of the CBE curriculum. In professional programs, they should align with both industry and academic expectations. The process by which they are developed should be explicit and transparent. Program-level competencies should reflect the skills and knowledge that students will need at the next stages of their development, whether it be further education or employment.

The process for developing program-level competency definitions should be iterative, evolving to incorporate marketplace demands, academic expectations, and student needs. The validity of program competencies should be determined by student and employer feedback to faculty and program designers.

At WGU, for example, program councils made up of academic and industry experts create high-level competencies that academic staff can use to design courses and learning objectives, as well as assessments. These program councils meet regularly to review the efficacy of their advice and continually update information on the field of practice for the academic staff. Several community-college partners have industry councils already in place and are using these to help guide the development of their CBE programs.

PARTNER COLLEGES

Western Governors University, plus
Austin Community College (TX)
Bellevue College (WA)
Broward College (FL)
Columbia Basin College (WA)
Edmonds Community College (WA)
Ivy Tech Community College Fort Wayne (IN)
Ivy Tech Community College Lafayette (IN)
Lone Star Community College (TX)
Sinclair Community College (OH)
Community College of Spokane (WA)
Valencia College (FL)

Design principles for the development of CBE programs have emerged from this work; they represent goals to which program planners can aspire. Each of the partner colleges adapted the principles to fit their own campuses, systems, and state structures.

Each partner campus started with what they had in place and developed successive approximations of each principle. Four of the partners launched their CBE programs in fall

2. **Students are able to learn at a variable pace and are supported in their learning.**

One of the valuable aspects of the CBE model is its ability to accommodate the realities that people master subjects at different rates and bring diverse levels of prior experience and knowledge to that mastery. A CBE program should allow students to progress through the curriculum at an individualized pace, which means that just-in-time academic assistance and other support must be provided to keep them motivated and academically on track.

This gives rise to a number of challenges within a more traditionally organized learning environment based on holding time (semesters or quarters) constant and allowing the level of mastery (as reflected in grades) to vary.

These challenges include:
- *Adapting regular terms to variable ones for the purpose of student progress*. An institution may maintain a fixed-term billing period for tuition and financial-aid purposes, but learning activities must be able to vary within that timeframe. Students may be able to finish all the courses to which they initially committed within the billing term and should be able to start another course without having to wait for a new term to start.

    Austin Community College is using existing sub-terms during which special classes are offered (e.g., workforce-development programs, continuing education) for this purpose. If students' courses are organized into four- or eight-week intervals, those who finish earlier do not have to wait very long to start a new course. It is also possible to give early-finishing students access to course materials for their next course before the next 'term,' so that they can accelerate their progress and complete assessments soon after that 'term' begins.
- *Keeping students progressing at a reasonable rate*. To do this, learners need to have access both to the course materials and to faculty who can step in when they need help. This requires the asynchronous availability of the learning resources, coupled with flexible access to academic assistance.

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At several partner colleges, faculty and other academic staff are creating or finding good learning-resource materials (commercial or non-commercial) that can be archived for students to use as they progress through the learning objectives for a course. Since the faculty members are not lecturing to the students in real time, they can be available to students for webinars, calls, or face-to-face sessions that cover areas in which some students need more guidance.
- *Providing an orientation program*. Students are unlikely to be familiar with either competency-based education or the institutional processes designed to help them succeed in it. An orientation program is a valuable tool to help them become acquainted with both. Students may not retain all the information in such a program, so it is useful to have a readily available handbook that they can use to answer simple questions about college or university policies and practices.

    At WGU and several partner colleges, academic staff created (and will continually revise) their own online orientation programs, which move students through the requisite information in a style that mimics what they will experience in the CBE program. Successful completion of the orientation program prior to enrolling in courses is required. As the institutional staff finds new student concerns, errors, or confusion, they can build subsequent versions of the program to address them, thereby reducing the need to have staff solve the same problems over and over again.
- *Having a means to identify when a student is struggling and needs help*. There are multiple ways of monitoring student progress, either electronically or through regular support-staff contacts, but it is critical to have a plan for intervening when students are in academic trouble.

    At Sinclair Community College, academic staff regularly check in with students to see how they are progressing and whether they need assistance. They have also developed an early-warning system to identify students who are disengaging or struggling.

    A student who needs academic assistance is referred to a faculty member who has knowledge of the course in which the student is having trouble. If the problem is administrative, the academic staff member can get the student connected to the correct department within the institution to resolve the problem.
- *Continually measuring how well each process and all learning resources offered are working*. Setting up a way to monitor the efficacy of all elements of the program is critical, but it is also critical to have a means for altering the parts that do not work well.

    Since monitoring all students' satisfactory on-time progress (SAP) is already required for financial-aid purposes, it can be used as a global measure to determine if most students are meeting the requirements. At WGU, if too many are not doing well, staff members explore what is not working and take steps to help students progress. WGU also tracks its 40,000 students'

performance on assessments. Unusual variations in assessment scores trigger an examination of possible causes.

- *Having readily accessible non-academic support services*. When these are developed in a campus setting, they are usually available only face to face and during traditional business hours. Since students attracted to CBE programs are generally those for whom a traditional program does not work, it is important that the support services be available at non-traditional times and places.

Most colleges with robust distance learning programs already have a single point of contact for the non-academic services needed by students who do not come to campus. These are usually staffed on a revolving basis by individuals who know how to navigate the institution's various offices (e.g., veterans' affairs, financial aid, tech support, the library).

The person answering that number also serves as an ombudsman for the calling student. Typically, the staff person needs to follow up with the student if the issue cannot be resolved right away. Since it is frequently non-academic problems that slow down student progress, efforts of this sort do help students succeed.

- *Agreeing on the metrics they will use to gauge the success of the CBE program*. Then, the process for collecting and sharing those metrics needs to be put into place. The metrics are likely to be available from whatever student information and learning management systems are already being used at the institution. Results need to be widely reported so that key staff (academic and non-academic) can know whether their strategies are successful.

At WGU's partner colleges, faculty and non-academic staff are just starting to identify some key indicators that they can track over time. A common one is student persistence at 13 months and other regular intervals. If a change in practices or procedures is adopted (e.g., new student-support or learning programs or resources), it will be possible to see if the changes are working by watching for improvements in student persistence and success.

3. Effective learning resources are available anytime and are reusable.

Students' need to work through the learning resources (developed locally, licensed from commercial vendors, or adapted from open educational resources) at their own pace means that the materials must be available when needed. The materials must be of high quality: accurate, engaging, at the appropriate level of difficulty, well matched to the learning objectives defined for the course, and compatible with the institution's technology platform.

In order for these learning resources to be continuously available for students working within and between traditional terms, they should not be designed and developed for use only in a single term.

Once the learning resources (e.g., e-texts, recorded lectures, simulations) are launched and students begin using them, it is critical to ensure that they are helping students master the required competencies by tracking how well those students are doing on the assessments. If they are not being as successful as expected, the resources should be re-evaluated and adjusted. However, when first starting a program with new learning resources and new assessments, it is important to determine through expert review of both whether the problems are in the learning resources or the assessments.

At both Austin and Sinclair Community Colleges, academic staff members (faculty and instructional designers) use the courses' objectives to conduct a search for learning resources. They look to commercial and non-commercial publishers, software companies, colleagues within and outside their institutions, or professional societies for high-quality learning resources. Where there are gaps in what the best resources cover and the course's learning objectives, the academic staff members create short videos, simulations, or problem sets to bridge those gaps.

Once learning resources are identified, WGU staff members conduct an analysis to be sure the costs are appropriate, the materials integrate well with the institution's learning platform, and the resources are available whenever students need them. The same process is used to modify or update the learning resources, which are reviewed and refreshed on a regular schedule to stay current with academic trends, industry demands, and real-world needs, as well as to take advantage of new resources and respond to the feedback of current or former students.

WGU has discovered that when working with commercial publishers, the institution, not individual faculty members, should mediate the transaction. Institutions have big numbers on their side, which gives them considerable leverage in negotiations with vendors. And as the institution collects information on the efficacy of the learning resources, it can share its analysis with the vendors to help improve the quality of their resources.

4. The process for mapping competencies to courses, learning outcomes, and assessments is explicit.

Once competencies are established at the program level, academic teams need to translate them into topics that can be formulated into courses of the appropriate length and complexity. The learning objectives of the course then drive the selection of learning resources and assessments.

It is critical to have a well-defined process in place early in the development of the CBE program, with identified individuals responsible for each stage. Making clear who needs to be informed when any changes take place will allow the people in charge of each stage to adjust to those changes.

If a learning objective changes, for instance, the person responsible for the learning resources and the one

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responsible for the assessments need to know right away in order to initiate appropriate changes to their parts of the program. This protects the students in the program from using materials that teach skills and knowledge that are not integrated into assessments.

There should also be an independent check in place to be sure the competencies are fully reflected in the course-level learning objectives and matched to the assessments. When different people are responsible for different parts of the process, someone needs to check that all the pieces match.

At Broward College, the department faculty form teams of three for each course within their CBE program. The team members define the measurable learning outcomes for the course. Then two team members identify, find, or create the learning resources, while the third works independently to create assessments mapped to the learning objectives. A fourth member of the faculty reviews the alignment between the learning resources and the assessments. This approach enables a precise identification of the points where adjustments may need to occur.

5. Assessments are secure and reliable.

Assessments are built using the expertise of industry and academic subject-matter experts, thus ensuring content validity. After the assessments are created, they should go through some pilot testing with a small group of students to reveal any problems that may exist. The pilot can ensure that the assessments use clear language and that the evaluation rubrics work.

At WGU, the assessment developers receive a blueprint from the program developers to guide their work. The assessment-development team works with writers (faculty and other subject-matter experts) to ensure quality and the alignment with objectives and competencies. All assessments are reviewed a number of times during the development process, and modifications and revisions are made as needed.

Assessments can take many forms, from demonstrations to research papers to machine-scored objective tests. Tests should be delivered in a face-to-face or online proctored environment that uses technology allowing

for remote student-identity verification. Several of the colleges offering their first CBE programs are attracting students from their local communities, so they require students to come to campus for proctored testing or demonstration sessions.

For students who cannot come to a proctored setting, there are several companies (e.g., Kryterion, ProctorU) that provide student-identity verification and electronic proctoring of assessments. These services monitor a student's activities while testing via webcams and keystroke analytics. The service can shut down a testing session if necessary.

To increase the security of objective tests, services such as Caveon provide Web crawlers to identify any material that was inappropriately posted to the Web. Student-generated artifacts can be submitted to sites such as Turnitin.com, which provide feedback regarding the originality of the work.

Multiple-choice assessments are scored automatically, and the student receives immediate feedback. For student projects and papers, a mature CBE program uses well-trained evaluators working with a scoring rubric, created when the assessment is developed, to evaluate student submissions and provide feedback to the student and the faculty member about the quality of the submission. These scoring rubrics represent students' and evaluators' shared understanding of the courses' aims and also contribute to the reliability of the assessments.

CBE can serve as a new way of organizing student learning in postsecondary education. Faculty remain in control of the curriculum (defined as what a student needs to learn and how the learning will be measured), while students have well-developed personalized learning resources that continually evolve. They can thus receive a high-quality education that leads to demonstrated learning at an affordable price.

We hope the principles discussed here can help guide higher education leaders as they develop their own CBE programs. Over the past decade and a half, the success of WGU's students has taught the field a lot about the feasibility of CBE programs. However, there remains a great deal to learn about the mix of technology, curricula, pedagogical strategies, and administrative processes that could turn competency-based education into a true game-changer within postsecondary education. ⃞

RESOURCES

http://m.whitehouse.gov/the-press-office/2013/08/22/fact-sheet-president-s-plan-make-college-more-affordable-better-bargain-

http://www.wgu.edu