MOOCs and the Measurement of Knowledge and Competency

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The emergence of MOOCs has been and will continue to be a catalyst for more discussions among presidents, provosts, trustees, deans, accrediting agency officials, and others about the quality of MOOC courses, the value of MOOC certificates, and the potential threat that MOOCs offered by elite institutions and their partners like Coursera and Udacity might pose to other segments and sectors.[1]

~ Casey Green

In 2012, Pepperdine University provost Darryl Tippens penned a thoughtful *Chronicle of Higher Education* essay in defense of the value of residential liberal arts colleges in response to popular enthusiasm for "distance learning." While declaring the value of liberal education, Tippens noted the extreme variations in higher education in the U.S.: "Higher education is not a single industry producing a single 'product,' but an extremely varied enterprise, with more than 4,000 institutions doing different things in different ways, with different ends in mind. The confusion shows up in the debates about whether technology (specifically, distance learning) will 'save' us."[2]

Tippens went on to declare that "reflection and practice together are the best pedagogy." The togetherness he referenced is the *actual*, face-to-face gathering of people in synchronous time and space. He also acknowledged that interest in MOOCs was driven in part by faults with the current system of higher education, and concerns of taxpayers called upon to cover its costs. "Anything as sprawling and complex as higher education means that something, somewhere, is being done poorly or flat wrong. Too many professors, schooled in the finest research universities in the world, have learned to scorn teaching and even to view undergraduates as impediments to their professional advancement . . . No wonder some people think that

education can be standardized, easily packaged, and cheaply distributed. No wonder taxpayers are less willing to finance the enterprise. As in Hamlet, we are hoist with our own petard."[3]

In response, Clay Shirky pointed out in a February 2013 essay, "How to Save College," that Pepperdine students can secure both masters and doctorate degrees from the University while enrolled in its online learning programs. Shirky, to expand on Tippens's Shakespearian theme, would have us believe that the Pepperdine provost doth protest too much.[4]

Tippens' essay and Shirky's response provide an opening to ask more interesting questions about the future of education, the nature of measuring competency, and how hybridized learning spaces of in-person seminars and online essays and exchanges can be explored, developed, and implemented.

As Shirky argues elsewhere in his response, MOOCs and online education have arrived during a time when students and their parents—given economic realities and the finite capacity of the traditional model—are open to new options. Higher education in the U.S. is not a single industry with a single product line. Rather, it is a complex hybridization of intent and implementation loosely held together by adherence to policies and oversight inherited from a previous century. The traditional and the online are destined to blend and coexist rather than battle for market share until one or the other dies off.

Leadership in all sectors of higher education must take a stance and work together to craft a newly durable model for higher education.

Education as an organized institutional effort evolves and is responsive to cultural and technological developments, just as does any other sector of society. There is nothing sacred about the structure or the administration of the college or university. Organizational design is a tool we use to facilitate the stated objectives of the institution. Metrics of value and accomplishment are reshaped and sharpened as increasingly sophisticated tools become more readily available and require less training to implement and use.

In this context, MOOCs put questions about the measurement of academic achievement, scholarship and scholarly communication front and center.

Calls for the clarification of what is known and knowable at the completion of students' college and university careers are on the increase. Measuring academic accomplishment with the metric of "seat time" and the credit hour is losing purchase. Tools to monitor progress and accomplishment in online learning environments (derivative of similar demands in business and industry) are under development and in some cases already implemented. As Carol Geary Schneider, President of the Association of American Colleges and Universities said, "**Clearly, we need a new system that can demonstrate whether students are gaining proficiency in applying their learning to complex, unscripted problems and new**

settings."[5]

       Credit hours and competency: contextualizing the issues and opportunities. In December 2012, the Carnegie Foundation announced that it would consider alternatives to the century-old credit hour as the unit of measure in higher education. The credit hour (a synthesis of the Carnegie Unit and the Student Hour) is the academic currency used by American colleges and universities to measure academic achievement. Although originally implemented in 1906 to provide a standard of eligibility for, and access to, pensions for college professors, the credit hour has come to measure and inform far more than that. A measure for time spent in a class setting and interaction between faculty and student, it now provides structure and metrics to huge swaths of the business of academe, including the workloads of faculty and students, degree requirements, and student financial aid.

The credit hour was implemented in an era of great expansion of the traditional campus, as more colleges and universities with more classrooms and more seats in more cities opened up across the country. We are now in a different era—one of expanding virtual curricula and courses with no seats and limited student contact with faculty in the traditional manner. The rise of MOOCs and other iterations of online learning programs, with little or no emphasis on traditional classroom participation, intensifies the debate over learning metrics that do not measure instructional time spent in non-existent seats in non-existent classrooms.

Schools with online education programs need appropriate systems for assessing learning and academic achievement in the online environment, and to devise such a system while still appropriately valuing and measuring learning wrought by the talented and caring faculty cited by Tippens. It is no less challenging to find a way to sever the link, where appropriate, between the century-old credit hour, tied to seat time, and student access to financial aid for courses in which there is no seat time.

In a 2006 article titled, "No College Left Behind?" Doug Lederman of *Inside Higher Ed* crystallized this issue and its history. Lederman noted that Charles Miller, then chairman of the Commission on the Future of Higher Education, called for colleges and universities to do a better job of measuring knowledge acquired by students and sharing assessed results with the public. Miller had declared that tools were available to measure academic achievement and student learning. "We need to assure that the American public understand through access to sufficient information, particularly in the area of student learning, what they are getting for their investment in a college education," Miller wrote in a memo sent to fellow commission members. Similarly, Patrick Callan, president of the National Center for Public Policy and Higher Education, was quoted as saying, "Higher education has deflected the idea for the past quarter century by arguing that the kinds of things we want undergraduate education to teach are not really measurable." Callan acknowledged the concerns of administrators and faculty on the ground: "There's been this idea that we'll just pull some standardized test off the shelf, resulting in a dumbing down of what higher education means."[6]

Faculty and campus leaders worried then—and continue to worry—that a federally mandated metric for academic success, applied equally to online learning programs, universities, colleges, community colleges, and across a student population ranging from the traditional 18-22-year-old to adult learners balancing full-time jobs and education, must necessarily fail. In opposition to sweeping mandates and national approaches, Stanley N. Katz, Princeton University professor and former president of the American Council of Learned Societies, warned of the negative impact of sweeping federal policies implementing a common standard across American higher education. Katz cautioned, "Either there won't be agreement, and it will be overly controversial, or it will be reduced to an elastic, lowest common denominator, as in No Child Left Behind, in which case it will become trivial."[7]

Polarization among prominent figures in higher education notwithstanding, work on new approaches to assessment has progressed. In 2011, the Lumina Foundation released the *Degree Qualifications Profile.* Written by four authorities on assessment and student learning (Clifford Adelman of the Institute for Higher Education Policy, Peter Ewell of the National Center for Higher Education Management Systems, Paul Gaston of Kent State University, and Carol Geary Schneider of the American Association of Colleges & Universities), the *DQP* was intended to "help transform U.S. higher education." The framework provided in the document sought to clarify parameters regarding "what students should be expected to know and be able to do once they earn their degrees—at any level." The *DQP* outlines five learning outcomes "critical for all academic programs in higher education," represented on a graphic depiction of the framework called the "Degree Profile Spiderweb":

1. Applied learning is used by students to demonstrate what they can do with what they know.
2. Intellectual skills are used by students to think critically and analytically about what they learn, broadening their individual perspectives and experiences.
3. Specialized knowledge is the knowledge students demonstrate about their individual fields of study.
4. Broad knowledge transcends the typical boundaries of students' first two years of higher education, and encompasses all learning in broad areas through multiple degree levels.
5. Civic learning is that which enables students to respond to social, environmental and economic challenges at local, national and global levels.

"As students progress through higher education, earning associate, bachelor's and master's degrees, their knowledge, skills and abilities in each of the five areas of learning grow. Like the spiral threads of a spider web, the profile for each degree level grows outward as each builds upon the one before it, and supports those that follow."[8]

As it turned out, Katz's warnings about a sweeping plan with national scope failing to gain traction had merit. In 2013, two years after the release of the *Degree Qualifications Profile*, Peter Ewell, one of the primary authors, drafted a follow-up report. The follow-up tacitly acknowledged that the *DQP* was not generally accepted or understood, much less

implemented. Schneider wrote candidly in the Afterword to Ewell's report about the challenges the *DQP* faces in calling for a more "organized and strategic campaign if colleges and universities are to be more intentional and more effective in graduating students who are demonstrably well prepared for work, for civic responsibility, and for realizing their hopes for a better life." Schneider outlined some specific challenges including lack of agreement among "influential leaders" as to the benefits of the framework, campus resistance to assessment, and the reality that the persistence of colleges as "a set of separate, discrete, and even 'siloed' units—individual courses, the majors, general education, the co-curriculum, and so on —works at cross-purposes to the DQP's conception of a more intentional and, ultimately, integrative educational experience."[9]

In support of the "intentionality" of the original framework, Ewell exhorts faculty and administrators to "develop consistent and systematic ways to gather evidence that the competencies the DQP describes are actually being mastered at the levels claimed." The follow-up report and Schneider's reasoned Afterword offer more specific examples of how to make effective use of the framework, and are well worth review and discussion at the campus level.

In the meantime, direct assaults on the credit hour have persisted. In September 2012, Amy Laitinen, deputy director for Higher Education at the New America Foundation, issued *Cracking the Credit Hour*, a report arguing that the extension of the credit hour beyond its original intent is the source of many of the problems in higher education today. The report raises several examples of why the traditional metric is flawed and should be replaced, including:

- Limitations to acceptance of transfer credits by institutions themselves.
- Grade inflation.
- Failure of a model that measures seat time and classroom participation in an era of increasing online education.[10]

Carol Geary Schneider had it right. In her Fall 2012 *Liberal Education* essay, "Is It Finally Time to Kill the Credit Hour?", Schneider makes a persuasive case that we are very far from a coherent national plan. In light of that reality, taking the opportunity to review examples of existing competency-based learning programs is time well spent. "We need to take the time and learn from the assessment experiments that are going on all over higher education. We also need to build broad and compelling agreement on what twenty-first-century markers of student accomplishment actually look like. And, soberingly, that work is still in draft form."[11]

Models for Review and Consideration. Competency-based education is not new. Examining the development and attributes of programs currently in place will be critical to understanding their relationship to emerging online education, curricular development, and the roles of faculty and learner. Most important, such a review will provide context for making informed strategic decisions about MOOCs and online education at your campus.

Some interesting models include the Western Governors University, founded in 1997 by nineteen state governors, which has been steadily developing and extending a program of online degree offerings for over a decade; Southern New Hampshire University, which more recently made significant strides in implementing new models accommodating the needs and academic ambitions of contemporary learners; and—fully a quarter century before the founding of WGU—Alverno College and Empire State College, which began developing bold approaches to ability-based learning assessment. In order to properly study the question of whether or not, or to what extent, to implement competency-based programs, we need to review established ones, including their intellectual, pedagogical, technical, and policy frameworks. The following brief review of examples will highlight what can be accomplished after hard and honest evaluation of institutional strategy and educational opportunity.

Alverno College. The roots of competency-based education stem from traditional face-to-face learning in brick-and-mortar campuses. In 1973, after nine years of focused development, Alverno College launched its *Competence Based Learning* program. The new program had at its core the idea of "teaching students to learn, internalize, and then externalize and apply knowledge gained in the classroom to their life and their workplace."[12] The genesis and development of the program is recounted in the July 1985 *Alverno Magazine*: "Beginning in 1964 and continuing through 1969, the Alverno administration recognized the impact that rapid changes in technology, the economy, politics and sociological shifts were having on the process of educating college students. The complexities of modern society were eroding away the effectiveness of traditional teaching techniques that had been used for centuries."

Keenly aware of the impact of these changes, Alverno administration scheduled a three day workshop for faculty and students to review and (eventually) rebuild "Curriculum integration and reorganization, the traditional grading system and the learning process itself." In support of this effort a "new academic planning committee was developed to analyze and make recommendations based on all of the data collected at the meetings."[13]

This description of the forces encouraging development of Alverno's program would sound familiar to all of us forty years later. Significantly, the hallmarks of the program (as it has evolved since 1973) closely resemble components of the MOOC model that incorporates programmatic systems enabling assessment, feedback, and individual performance data.

In support of the transformative program, Alverno worked to develop specific components, assessment, and support models. As described in "Out of Crisis, Opportunity" (From *Reform of General Education to Transformation: Creating a Culture of Learning*, Alverno College Institute, 2009), "The core of Alverno's new curriculum model would consist of eight abilities, experiential learning, mastery and assessment . . . Assessment and the eight ability levels would become the means for determining the depth of understanding and learning a student experienced while at Alverno College…." What most clearly distinguishes Alverno's learning process and assessment from testing is best described in the following quote from

Sister Austin Doherty: "Because assessment focuses on the application of abilities, students learn to tie knowledge, theory, motivation and self-perception to constructive action. They discover early that assessment is not a concluding step to learning; it is a natural part of every learning step we take." In essence, each assessment concludes one step in the learning process while beginning the next.

In order to "bridge the gap between the classroom and practical application within the workplace and community," the college fostered a culture of self-evaluation culminating in individual demonstration of competency and learning outcomes based on a common currency expressed in the *Eight Abilities*:

1. **Communication** makes meaning of the world by connecting people, ideas, books, media and technology. You must demonstrate and master the ability to speak, read, write and listen clearly, in person and through electronic media.
2. **Analysis** develops critical and independent thinking. You must demonstrate and master the ability to use experience, knowledge, reason and belief to form carefully considered judgments.
3. **Problem Solving** helps define problems and integrate resources to reach decisions, make recommendations or implement action plans. You must demonstrate and master the ability to determine what is wrong and how to fix it, working alone or in groups.
4. **Valuing** approaches moral issues by understanding the dimensions of personal decisions and accepting responsibility for consequences. You must demonstrate and master the ability to recognize different value systems, including your own; appreciate moral dimensions of your decisions and accept responsibility for them.
5. **Social Interaction** facilitates results in group efforts by eliciting the views of others to help formulate conclusions. You must demonstrate and master the ability to elicit other views, mediate disagreements and help reach conclusions in group settings.
6. **Developing a Global Perspective** requires understanding of — and respect for — the economic, social and biological interdependence of global life. You must demonstrate and master the ability to appreciate economic, social and ecological connections that link the world's nations and people.
7. **Effective Citizenship** involves making informed choices and developing strategies for collaborative involvement in community issues. You must demonstrate and master the ability to act with an informed awareness of issues and participate in civic life through volunteer activities and leadership.
8. **Aesthetic Engagement** integrates the intuitive dimensions of participation in the arts with broader social, cultural and theoretical frameworks. You must demonstrate and master the ability to engage with the arts and draw meaning and value from artistic expression.

Based on local experience as well as inter-institutional collaborations in project teams and as consultants, Alverno faculty and administrators developed an empirical analysis of successful student transformation, identifying "how and when students' learning is most strongly a

product of their curricula." Three "stances" or "postures" inform the process:

1. *1.	The more local study and evaluation of teaching and learning, particularly at the course and department level that are part of any ongoing educational enterprise in a particular place.*
2. *2.	The periodic program and institutional evaluations that are part of both formal accreditation and special larger evaluative projects, in which outside or external information begin to inform practice.*
3. *3.	And finally, and perhaps most significantly, a more comprehensive scholarship of teaching and learning in relationship to institutional culture in general, where we learn from our own studies and those of colleagues at other institutions and bring those findings back to inform analyses of questions on our campus.*

In *Learning That Lasts* (Mentkowski & Associates, 2000), Alverno College articulated these three postures as *standing in*, *standing beside*, and *standing aside* the educational practice of the college:

- **Standing in***: Developing an integrated understanding of what kinds of learning frameworks, strategies, and structures work at one's own campus, arrived at through analyses of practice and campus documentation.*
- **Standing beside***: A continuing analysis of practice in partnership with other institutions that can shape one's own transformational acts and guidelines of institutional transformation.*
- **Standing aside***: Tailoring literature and practice review to specific campus issues.*

Alverno's curriculum enables faculty to thoroughly document individual student accomplishment, using common assessment tools and persistent feedback. Echoing the intent to position Alverno graduates to be successful citizens, the program is established to parallel the workings of the "real world." Grades are eschewed. Mastery of content is demonstrated and acknowledged in narrative transcripts detailing the individual assessment of each student. More recently, Alverno has developed a **Diagnostic Digital Portfolio** (DDP) to provide an effective and manageable process for this program.

The DDP supports Alverno's ability-based program *as an integral component of the curriculum*, not an afterthought or an add-on. Prefiguring some of the attributes of digital badge metadata, it provides accessible performance data enabling the student to follow learning progress throughout her career at Alverno. It helps process feedback from faculty and peers, and provides viewable patterns of academic work to ensure students' control of their development and encourage development of authorized and autonomous learners. The DDP is designed to measure key "performances" in students' work. Designed and activated by faculty, they may include activities, assignments, and assessments to be completed by each student as an integral part of degree performance. Within the DDP, each performance contains criteria and feedback critical to the self-assessment that is a hallmark of the

program. Students use the system to review and document progress across courses and the "eight abilities," and to set goals for further learning. The DDP provides a window into students' work for faculty to view and assess progress, and to provide feedback and commentary on observed patterns of performance. The commentary informs student goal-setting and faculty mentoring. Ongoing course curriculum development relies on aggregate data from student portfolios to evaluate program objectives and outcomes. In this way, the curriculum of Alverno College undergoes continuous review and renewal.

The components of the Alverno College curriculum and supporting systems anticipate the development and implementation of online competency-based programs and MOOCs. The DDP is a practical tool to be evaluated by any school interested in the potential of actual tools used in facilitating online learning with competency-based elements. Alverno has made a version of the portfolio available for other institutions to use. DDP (v 3.2), available for download from the Alverno College website, is customizable; other institutions can define the assessment matrices they wish to use and how the developmental levels are to be defined.

Alverno College works in various collaborative ways to assist other schools in defining competency-based programs of their own. Since 1980, the college has hosted the Institute for Educational Outreach to share its approach to competency-based education.

Statement from the President of Alverno College

In the best interest of students – who will one day be future leaders – effective teaching needs to go beyond the simple presentation of information. That is why for more than 40 years, Alverno College has been committed to ability-based curriculum design and the assessment-as-learning approach to education. Alverno's curriculum requires all students to master, within the disciplines, what the faculty has developed as eight core abilities critical to the worlds of work, family and civic community. These abilities include communication, analysis, problem solving, valuing in decision-making, social interaction, developing a global perspective, effective citizenship and aesthetic engagement.

Integral to students' mastery of Alverno's abilities is a rigorous and individualized assessment process involving observation and judgment of each student's performance. Students are taught to self-assess their performance based on public criteria. Feedback from faculty acts as a mirror, providing students with matter for both reflection and growth while raising questions that enable students to critique and further develop their abilities and ideas. This assessment process takes learning one step further—from knowledge to performance, from thought to action, from belief to practice.

Technology presents opportunities to enhance this learning process in amazing new ways. Alverno has introduced hybrid courses that blend the benefits of online and classroom learning. While the delivery mode is different, these courses remain rooted in our pedagogical belief that students should be active learners who effectively demonstrate they have learned the subject matter.

To preserve the abilities-based curriculum and assessment-as-learning approach in this new format, Alverno faculty members attend intense, specialized training before teaching hybrid courses. This training assists faculty in developing performance-based assessments of the abilities in a hybrid format. In addition, the training guides them in developing meaningful communication and collaboration between students and faculty and among students to ensure effective delivery of the feedback that is so critical to Alverno's learning process.

Because we expect constant learning and improvement from our students, it's only fair that we ask the same of ourselves. That is why we constantly strive to find new ways to explore teaching with technology while staying true to our unique curriculum. We intentionally consider not only content but competency and encourage others to do the same. It is the through assessment of defined abilities that education becomes a model of the real world, where learning comes from engaging in complex tasks, versus simply reading about them.

~ Dr. Mary J. Meehan

President, Alverno College

SUNY Empire State. On March 19, 2013, the State University of New York (SUNY) board of trustees announced a bold vision outlining how prior-learning assessment, competency-based programs, and MOOCs will inform a plan to ensure that students complete degrees on time and for reduced cost. According to the announcement, the new initiative—*Open SUNY*—will "bring all online courses offered at each of the system's 64 campuses onto a shared and comprehensive online environment, making them accessible to all of the system's 468,000 students and 88,000 faculty."[14]

Significantly, the pre-existing prior-learning assessment and competency-based programs of SUNY's Empire State College will serve as the mechanism driving the initiative. Nancy L. Zimpher, SUNY chancellor, cited SUNY Empire State College's expertise in this area as the foundation for the system-wide initiative: "The prior-learning expertise at Empire State would make it possible for the New York system to undertake the new effort."

What is it about Empire State that is relevant to the development and implementation of

successful online learning programs, and how does this relate to our MOOC discussion? Much like Alverno College, Empire State College was born of the educational innovations of the 1960s and 1970s. Founded in 1971, by Ernest Boyer, Empire State forged processes and programs to provide alternative paths to higher education for students outside the mainstream including "forgoing classes in favor of independent and group studies; rejecting traditional disciplinary departments; eschewing grades for narrative evaluations; and, with faculty mentors working with learners individually, devising unique and personalized degree programs that incorporated learning acquired beyond the academy. Unlike prescribed curricula and course outlines, co-developed learning contracts presumed that learners had unique goals and interests and were active partners in the design of their own learning."[15]

The Council on Adult and Experiential Learning (CAEL) website defines prior learning as "learning gained outside a traditional academic environment."[16] Prior learning is acquired through living one's life and includes (but is not limited to) work experience, training programs, military service, independent study, non-credit courses, volunteer or community service, travel, and non-college courses and seminars. The Empire State model recognizes that traditional academic accomplishments are but one component of the continuum of education, and that this "prior learning" is relevant to the development of the whole person. Fundamental to the Empire State program is the acknowledgement that some of an individual's prior learning represents college-level knowledge and thus should be assessed and credentialed as part of the degree completion process.

Like mainstream colleges and universities, Empire State recognizes that the institutional experience is a significant driver in educating individuals and creating engaged citizens, and that the successful acquisition of a college degree is a hugely important milestone in this quest. Minimizing barriers to reaching that milestone is an important tenet of Empire State. (This is not to reduce college to a "milestone," but rather to place it on an experiential trajectory.) In this context, creation of a programmatic approach to assessing and awarding credit for prior learning helps to minimize redundancy, and reduce what is perceived to be unnecessary time and cost in attaining a degree.

As noted in Chapter 7, assessing and awarding credit for prior learning is not new and is not exclusive to schools like Empire State College. Institutions participate in a cooperative network of learning environments that include traditional schools, colleges, universities, and credentialing oversight from agencies like the American Council on Education (ACE). As Benke, Davis, and Travers note in "S*UNY Empire State College: A Game Changer in Open Learning*, there are a variety of means at the disposal of all institutions to recognize prior learning: "Credit for prior learning can be awarded based on a number of assessment options. These include training or exams that have been pre-evaluated through outside organizations, such as the American Council on Education (ACE), through the college's own evaluation, or through an individualized prior learning assessment process."[17]

The cooperative network facilitating assessment and credentialing across institutional

boundaries may be viewed as part of the "unbundling" process that many predict will impact higher education. This unbundling—specifically separation of the acquisition of knowledge from institutional credentialing of that acquisition—has been the topic of much discussion and debate, especially with the advent of online learning and MOOCs. On one level, institutions already agree that it is acceptable to credential a graduate who has not received his or her entire college education from a single college or university; colleges have long accepted some percentage of transfer credits in the credential process. At this point, we may be dickering about the scope and the scale of that process.

Unbundling knowledge and the college credential: look to the past to decipher the future. In 1981, William K.S. Wang, in "The Dismantling of Higher Education," outlined a bundle of five core services provided to students by traditional colleges and universities, including imparting information, counseling, credentialing, "coercion," and "club membership." Wang suggested how elements of these services might be provided by alternative means and agencies. With respect to *imparting information* and *credentialing*, two services pertinent to this review, Wang described how the traditional institution provides information and knowledge via classroom lecture, traditional texts, and the library. Wang proposed that the unbundled model would provide information via *hired lectures*, *commercial tutoring firms*, and *commercially developed course materials*. He also suggested that credentialing would be managed and delivered via external credentialing agencies that would assign and grade papers, develop and grade examinations, and assess progress towards the degree.[18]

In 1981, Wang could not see (or perhaps he could) the future developments of the "adjunctification" of faculty, MOOCs, and the policy decisions of agencies like ACE reviewing and certifying MOOC courses for credit—all developments that reflect much of his thinking. MOOCs and online education are part of a long, persistent progression of educational and institutional change.

In her 2013 "Unbundling . . . and Reinforcing the Hierarchy?", Margaret Andrews noted that Wang's article foreshadowed some of what is happening now as networked technology and the agencies and corporations that support and provide it are increasingly integrated into the provision of the college and university experience. Andrews notes that, unlike the environment in 1981, higher education now has an expansive for-profit sector, student access to internet and web services and applications, interest in the development of badges and certificates, and continued work on how to award credit and credentials.

At Empire State College, this unbundling and the assessment of prior learning sets the stage for programmatic development of personalized degree programs that mesh broad guidelines for majors, the academic and professional aspirations of the student, and the body of knowledge the student brings to the college experience. Students and assigned faculty mentors collaborate to create individualized programs that lead to degrees representing successful completion of requirements outlined in the major. Students share responsibility

and accountability for their education as co-creators of the program. As at Alverno College, consciously connecting the educational program to the student's life in a comprehensive manner is designed into the system.

That system of individual review and student accountability is supported by the learner's portfolio. The e-Portfolio at Empire State is used by the faculty-mentor and the student to reflect, assess, recommend, and plan an unfolding educational program. Faculty and learners both contribute to the narrative in the portfolio; the process results in a partnership of assessment and accountability, and aggregated data from student portfolios contributes to a continuous curricular review process.

As Benke, Davis, and Travers explain, "Within this personal degree plan, a learner can design individualized, independent studies in partnership with an appropriate faculty mentor, either face-to-face or online. Learners are expected to be active partners in the design of the learning contract associated with any study, with the faculty mentor acting as a learning coach, posing questions, and helping the learner think through the issues." The students have more "skin in the game" in this model, and with increased authority comes accountability and a new authenticity that is integral to their future: "In the college's mentor-learner model, learners examine what they have learned, where they want to go in their education, and what it takes to get there. Learners note that although the degree planning and prior learning assessment processes are difficult, they develop self-awareness as learners and the capacity to continue their learning in work and other educational settings." This expansive faculty role is key to the development of the learning-centered university.

Lessons from Learning-Centered Institutions. The decades-long trajectory and evolution of the institutions profiled here illustrate successful transformation from learner-centered to *learning*-centered organizations. The former successfully move the learner to the center of the process but retains the traditional boundaries and barriers between faculty and learners. The latter move *learning* to the center. The faculty-learner dynamic is changed, becoming less hierarchical and more concentric in structure and intent around the real objective—learning. Significantly, these institutions have fully integrated metrics for prior learning and competency into the curricular programs proper, rather than including them as add-ons or afterthoughts. A culture of assessment and curricular review, supported by organizational and systemic tools, permeates the operations and academic work of students and faculty.

This is the interesting connection to MOOCs—particularly those developed and implemented by faculty like Siemens and Downes in the connectivist mode.

Alverno College and Empire State College developed themselves as learning organizations—inherently reflective and collaborative—effectively altering their institutional DNA. The interactive, participatory design of the cMOOC has a great deal in common with the faculty-mentor/learner partnerships in these open colleges. Students in both models are required to

take active responsibility for the shape of their education. The systems implemented to facilitate assessment of student progress provide a comprehensive narrative of knowledge gained and competency with the materials in the student's coursework. The measurement of knowledge and competency in open education environments and MOOCs requires active utility of these achievement systems. Alverno and Empire State demonstrate that metrics of academic accomplishment need not rely on seat time and credit hours. Whatever one may think about open education, there are lessons to be learned from these institutions about the mechanics of collaboration and innovation. In response to Carol Geary Schneider's call to explore success stories in this mode, reviewing these structures and functions will help any campus working to make strategic sense of MOOCs, online learning, and open educational resources.

MOOCs and the competency-based educational models of these institutions share another attribute: they make use of systems that collect a great deal of information about students' activities and progress. The achievement systems of Alverno and Empire State are rich repositories of information helping mentors and students analyze and adapt to outcomes in the learning environment. Similarly, commercial MOOC providers are also developing, or collaborating to deliver, data collection systems designed to gather and store massive amounts of information about what students study, when and for how long they do so, while tracking the scope and timeline of their academic progress. "Big data," as it is known, is fast becoming big business, and is advertised as a powerful learning analytic tool. Learning analytics and adaptive learning—and the evaluation of the technologies and services supporting them—will necessarily be part of your review of online learning and MOOCs.

Recommended Readings

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