

# GAME CHANGERS

## EDUCATION and INFORMATION TECHNOLOGIES

Edited by **DIANA G. OBLINGER**

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Game Changers: Education and Information Technologies

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#### FROM THE EDITOR

I would like to thank the many people who made this book possible, particularly Gregory Dobbin for managing the project and Karen Mateer for her research.

—Diana G. Oblinger

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# Providing Quality Higher Education for Adults

**Susan C. Aldridge**

UNIVERSITY OF MARYLAND UNIVERSITY COLLEGE (UMUC) first opened its classrooms in 1947 as a special college at the University of Maryland, created specifically to serve the state's returning World War II veterans with GI Bill in hand. That was the spark that in many ways ignited America's adult-learning movement and paved the way for open-access institutions such as UMUC, founded in the belief that higher education should be available to anyone, anywhere, at any time—institutions that forged new trails in adult-focused curriculum design, instructional methodologies, distance delivery, and student service.

Consequently, by 1970, what had once been a "grand experiment" became a separate degree-granting institution within the University System of Maryland. Today, UMUC is the nation's largest public university and a truly global academic enterprise, with three divisions in Europe, Asia, and the United States serving 94,000 students in 28 countries. It also continues to forge new trails.

Having now spent sixty-four years educating adults, UMUC has come to appreciate how different its students are from students who go on to college right out of high school. For the most part, their families and careers are already well under way, which means they often come with a good bit of experience and a lot of responsibility in their lives. Adults also tend to be highly self-directed and problem-oriented learners, with clear academic goals in mind that are, more often than not, tied to professional advancement. Likewise, they have a strong penchant for experiential learning that is meaningful, as well as an intense need to apply what they are learning immediately and effectively.

That being said, they are looking for academic opportunities that help them bridge what they know with what they need to learn in a way that is both easily transferrable beyond the classroom and tailored to meet them

“where they are” dispositionally and experientially. Moreover, they demand market-driven degree and certificate programs—full time and part time, online and in class—with options that include prior learning credits, accelerated program formats, and targeted career counseling.

Because the college day begins after rush hour ends for most of these students, their success depends on wraparound support services that are as easy to access as they are to use. They are also more likely to take a course or two at a time; “stop out” altogether when life gets in the way; or simply move on to other, more promising academic options when their needs go unmet.

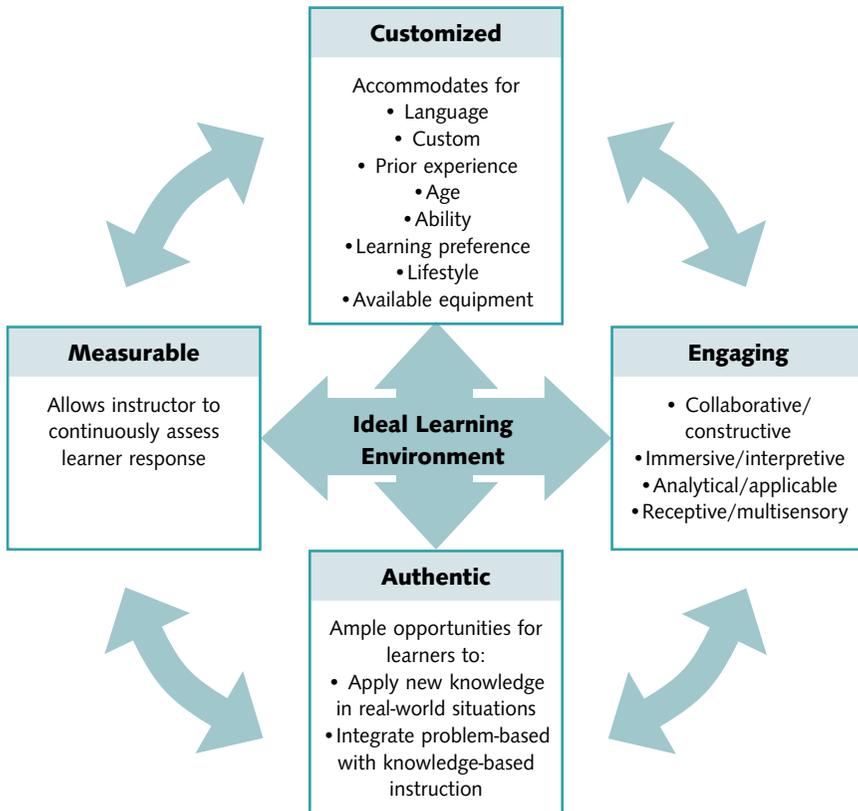
## **Harnessing the Power of Technology**

In searching for innovative ways to deliver high-quality, affordable academic programs beyond its physical campus in Maryland, UMUC turned to technology early on, investing in everything from instructional television in the 1950s to video conferencing in the 1990s. In 1994, the university launched its first proprietary, computer-based learning management system, with little more than a hundred enrollments in only a handful of courses. Since that time, we have built a full-blown virtual campus, which has grown to include nearly 235,000 enrollments in more than one hundred undergraduate and graduate degree programs and certificates that are offered entirely online. And while UMUC also offers face-to-face and hybrid courses, the majority of its students now prefer the online option.

With the advent of Web 2.0 and its highly interactive technologies, UMUC has come a long way since 1994, when its course modules were essentially a series of handouts, published and delivered online. As digital technology continues to evolve, it has proved to be both a flexible platform from which to teach and a dynamic tool through which to learn, while allowing individuals of all ages, abilities, ethnicities, and economic circumstances to move seamlessly in and out of the classroom, at different times, in different places, and for different reasons.

By harnessing the power of technology, UMUC can now connect a student in Okinawa, Japan, with a professor in Adelphi, Maryland, or transport a wheelchair-bound, Iraq War veteran into the virtual classroom from the comfort of his living room. Similarly, it can bring real-world practitioners, in any given field, on board to teach a class, conduct a webinar, or mentor a student, while at the same time providing our instructors with the training they need to do their jobs effectively.

Figure 1. Ideal Learning Environment



UMUC can furnish 24/7 access to high-tech, high-touch student-support services and a vast selection of digital library resources, which means that its students never have to wait in long lines to register for classes or stay up all night doing research in the far corners of a library. It can also facilitate online communities of practice, connecting students and faculty members from various institutions and organizations around the world, to create new knowledge, share information, and engage in cooperative problem solving.

More importantly, however, technology has made it possible for UMUC to create what research has repeatedly shown to be an ideal learning environment,<sup>1</sup> which allows students to take greater control over their learning process while also achieving at higher levels (see Figure 1).

## Maximizing Student Success

While this ideal learning environment is certainly essential in meeting the academic needs of our students, curriculum plays an equally significant role in their ultimate success, particularly when it comes to the development of career-relevant programs and coursework. With that in mind, the academic model itself must be flexible enough to address the rapidly evolving needs of both a changing workforce and a changing world by enabling the university to adapt its curriculum, content, and instructional technologies as needed. This focus on relevance and flexibility thus became the driving force behind UMUC's ambitious undergraduate curriculum reengineering project.

### The Project

In 2009, after conducting an exhaustive, five-year study on student engagement and persistence, UMUC realized it needed to take a long hard look at its undergraduate curriculum, especially given the dynamic and highly specialized nature of today's knowledge work. With this data in hand, UMUC's undergraduate division launched Project SEGUE (Supporting Educational Goals for Undergraduate Excellence) to develop and implement a transformational academic model that would

- generate a UMUC-defined curriculum, which when delivered within the ideal learning environment would enable our students to move more successfully from coursework to real work;
- streamline the degree completion process to boost student retention; and
- furnish students and faculty alike with a better process for tracking academic progress, while also measuring the value of a UMUC degree.

In framing the project, UMUC's undergraduate school identified one simple question that would guide its efforts going forward: *"What should our students be able to do 'out there' that we are responsible for teaching them 'in here'?"* That meant looking more closely at what employers were actually seeking in the college graduates they hired. In 2008, the American Association of Colleges and Universities published a national survey of more than three hundred business leaders, which laid the groundwork for subsequent inquiry. Those leaders polled indicated that today's employer is more likely to hire graduates who have studied at universities where educational achievement is measured using assessments of real-world and integrative, applied learning.

They also reported that student preparedness was lowest in the areas of global knowledge, self-direction, writing, critical thinking, and adaptability.<sup>2</sup>

Using this and other relevant research, the Project SEGUE leadership team members settled on a curriculum redesign process that would allow them to “begin with the end in mind.”<sup>3</sup> As such, UMUC’s undergraduate faculty would collaborate with industry experts to identify appropriate learning outcomes for each program and every course—which were aligned with real-world professional expectations—while also incorporating the application of complex abilities and knowledge. For example, outcomes for UMUC’s legal studies program would better reflect activities that legal professionals regularly engage in (Table 1).

Table 1. **UMUC’s Legal Studies Program Outcomes**

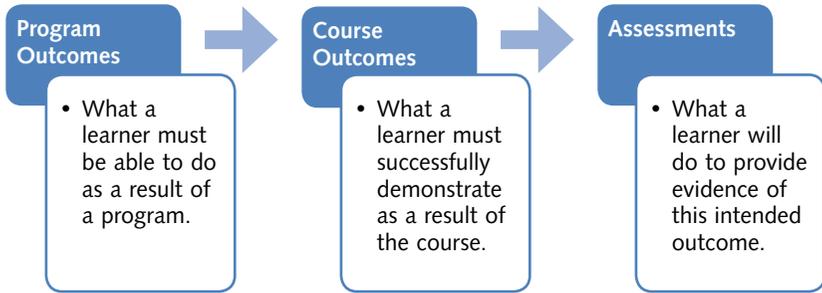
	Old	New
Program Outcomes	Recognize and discuss ethical considerations involved in the practice of law.	Apply knowledge of legal systems, concepts, and methodologies to efficiently and ethically support the resolution of legal disputes.
Course Outcomes	Explain the various forms of alternative dispute resolution and their common applications.	Draft a comprehensive interest analysis of a party to a dispute based on a client interview and development of evidence.

Once these more robust outcomes were in place, the faculty would then work backward, using the latest research in teaching and learning to build in effective learning experiences and assessments that provided ample opportunities for students to synthesize and demonstrate what they learned as they moved through their programs. Figure 2 shows what the end result would resemble.

## The Process

Given the size and scope of Project SEGUE, the undergraduate dean created a complement of interdependent teams, tasked with developing a set of policies and procedures. These teams included a five-member SEGUE steering committee, a curriculum redesign group, a communication and linkages committee, and a student-success group. UMUC also hired The Learning

Figure 2. **Desired Learning Outcomes**

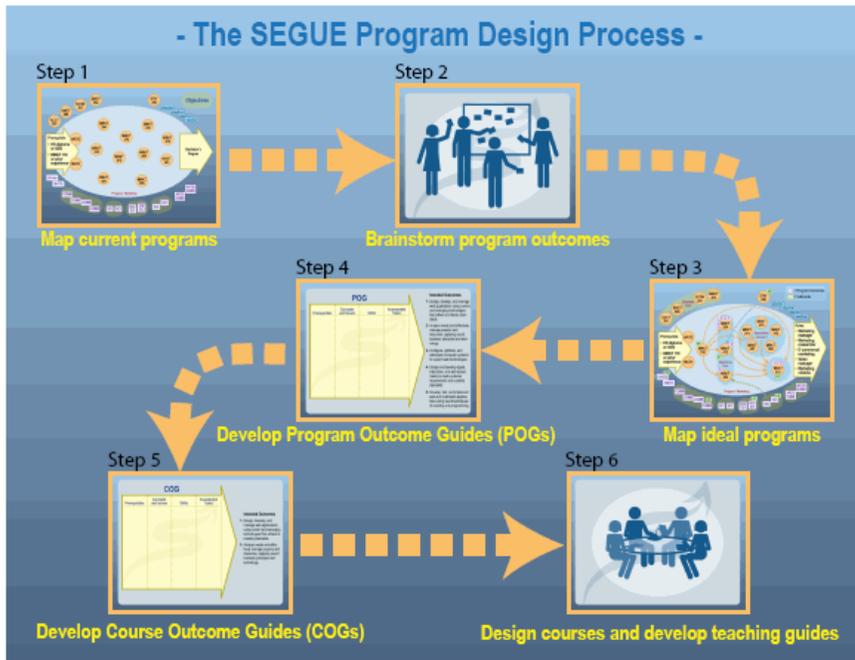


Organization, a consulting firm founded by Dr. Ruth Stiehl, professor emerita at Oregon State University, and a group of college faculty members with broad-based experience in building internal capacity for curriculum redesign efforts such as this one. Working with undergraduate program directors and university instructional designers, these consultants covered all of the relevant bases, including (1) principles of outcomes-based design; (2) facilitation skills; (3) learning-assessment development; and (4) concepts, skills, and issues that support learning outcomes.

With 33 programs and some 1,200 courses to reengineer, there was no question that Project SEGUE would involve a large number of undergraduate faculty and staff. UMUC also wanted to complete this effort within a two-year time frame. Therefore, in choosing a curriculum-design process, the undergraduate division settled on one that was both efficiently organized and logically constructed, as shown in Figure 3.

UMUC began this process at the program level by assembling its undergraduate program directors to identify specific gaps in program content, common barriers to student progress, and persistent problems with course sequencing and integration. Using this information, they produced a series of program maps that outlined a standard path for degree completion, as well as key points for student-learning assessment.

After mapping each program, our program directors convened a group of outside experts from among both the university's industry-learning partners and its alumni to help articulate new learning outcomes for each program based on the twenty-first-century knowledge and skills our students would need in the real world of work. The revised outcomes subsequently became the foundation for a second series of program maps, which were used in developing Program Outcome Guides (POGs). These guides serve as detailed

Figure 3. **SEGUE Program Design Process**

blueprints for measuring the extent to which our students successfully master course content while also meeting program objectives.

Once the program portion was complete, SEGUE leaders deployed teams of instructors in each academic program to tackle the course redesign process. These faculty teams began by matching industry-driven program outcomes with such other competencies as writing proficiency and technological fluency, cultural literacy, and systems thinking. In addition, to provide a context for this phase, they crafted an undergraduate learning model that is highly compatible with the foundational components of an ideal learning environment. Grounded in Chickering and Gamson's seven principles for undergraduate learning,<sup>4</sup> this model also incorporated subsequent research findings in cognitive science, including UMUC's own ongoing studies in the areas of adult and distance education.

Working from both this model and the outcomes alignment, our faculty teams went on to create Course Outcome Guides (COGs), which delineate specific learning outcomes for each individual course, along with appropriate learning content and "best practice" learning activities. They also revamped

each course to fit within a three-term, eight-week format (rather than the conventional fifteen-week semester), which is standard for most adult-focused learning institutions. To better support UMUC instructors, these teams produced Course Teaching Guides (CTGs), as well, which are essentially road maps for effectively delivering the new curriculum—whether online, face-to-face, or a combination of both.

## **The Result**

In the end, more than seven hundred UMUC faculty members worldwide voluntarily joined forces across divisions, departments, and disciplines to complete the project in two years, a record by most university standards. They were also able to reduce the sheer number of courses, which had grown by accretion over the years. On August 22, 2011, UMUC inaugurated its new curriculum. Although the weeks that followed were certainly stormy with respect to the weather in Maryland (thanks to a minor earthquake, followed closely by Hurricane Irene), the rollout itself was remarkably calm.

Given the scope of this launch, there were relatively few problems or concerns overall. Because our faculty members were trained in teaching the new curriculum, they were prepared to support their students throughout the semester. When issues did arise—for instance, a student struggling with the more accelerated pace of work—advisors and student-support specialists were on hand to provide help for as long as it took to get students over the hump. Instructors also stepped in to offer focused support in the classroom. With the initial rollout behind us, our institutional effectiveness team is now evaluating the new curriculum from both student and faculty perspectives to ensure rapid and continuous improvement as we move forward. Moreover, our virtual Center for Teaching and Learning is developing experiential online training modules for faculty members, which will provide additional support for teaching the new curriculum.

All in all, SEGUE has been an extraordinary exercise in synthesis in that it enabled the university to infuse its undergraduate programs and courses with all of the components our students must have to succeed: workforce-relevant skills, industry-driven knowledge, effective teaching and learning strategies, and ongoing assessment. It has also provided the faculty with a highly effective and easily replicable process for ongoing curriculum updating and refinement as needed to ensure that both content and outcomes remain relevant.

As a result, UMUC has created a transformational academic model that is program driven rather than course centered, learner focused rather than teacher directed, with a solid foundation in research-validated practices for

effective teaching and learning, regardless of the delivery system. Even more importantly, however, it redirects the emphasis away from contact hours and toward quality learning outcomes in line with real-world professional expectations. Consequently, this new model furnishes our students with a learning experience that is far more coherent and predictable. Similarly, the new curriculum articulates and embeds career-relevant skills that will make our graduates more attractive to prospective employers.

The eight-week, three-term course format is a bonus as well, given that part-time adult students may now complete a UMUC degree within roughly the same time frame as any traditional full-time undergraduate—a critical success factor for busy working professionals. In fact, before introducing the new format, the undergraduate faculty conducted eight-week course-demonstration projects, which yielded very positive results. Not only did retention and course-completion rates increase, but student achievement was commensurate with the longer semester format.

UMUC is also better prepared to incorporate the ideal learning environments and next-generation learning technologies our students need to become competent and creative twenty-first-century knowledge leaders—individuals capable of engaging in collaborative and authentic knowledge exchange across cultures and disciplines while working and learning effectively in virtual teams and communities of practice.

## **Taking the Next Step**

As is the case with higher education in general today, UMUC cannot simply rest on its laurels, but must instead remain at the forefront of teaching and learning strategies and technologies that benefit its students by facilitating ever-better learning outcomes. Therefore, with the new outcomes-based curriculum now in place, the undergraduate division is moving on to its next project.

Given that most adults return to college after being out of school for extended periods of time, their academic skills are sometimes rusty and their knowledge deficits, significant—both of which can be especially problematic in the online environment. In looking for ways to boost student success early on, UMUC's undergraduate faculty members have identified and tracked a series of "gateway" courses that serve as foundational building blocks for successful program completion and that represent 21 percent of online undergraduate enrollments in our stateside division.

Gateways include general introduction courses in accounting, business management, criminal justice, student-success strategies, history, sociology,

Spanish, and introductory writing, along with such STEM introductory courses as biology, information systems, economics, computing, natural sciences, math, psychology, and statistics.

Thus, by redesigning the learning environment to improve online achievement in these courses, we can give our students a better chance to realize their academic goals. Carnegie Mellon's Open Learning Initiative (OLI) offers one exceptionally promising approach, based on the principles of adaptive learning. Generally, adaptive learning relies on "intelligent" technologies that recognize and respond to individual learning differences as and when they occur, thereby facilitating personalized instructional adaptations that have been shown to enhance learner outcomes.

Although American higher education has largely ignored existing research around *how* students learn best, OLI has incorporated these findings to develop e-courseware that is now being effectively implemented by colleges and universities across the country. Moreover, to ensure consistent results among all of its course materials, Carnegie Mellon has established a highly respected development team of learning scientists and software engineers, who work in consonance with faculty content and human-computer-interaction experts.

Using a variety of such innovative strategies as supported practice and targeted feedback, the OLI model fosters a far more interactive, flexible, and responsive e-learning environment. With that in mind, it establishes powerful feedback loops for continuous evaluation and improvement, which generate real-time data for mediating course design and instructional activities, ongoing student performance, and the science of learning. Faculty members then have the information they need to quickly measure a student's progress with an eye toward modifying or supplementing instruction as needed. Students are also able to consistently track their own performance and improve upon it as needed.

UMUC has already piloted an OLI statistics course, with excellent results. After administering a common final exam, we found that students who took this course actually achieved better outcomes in the same amount of time than those enrolled in the university's standard online statistics classes. In 2011, we received a Carnegie Corporation grant to partner with OLI, an effort that will not only build upon the current adult- and distance-learning research literature, but will contribute new knowledge as well.

Under this grant, UMUC and Prince George's Community College will work collaboratively with OLI to evaluate outcomes in three of its existing online courses—Introduction to Computer-Based Systems, Introduction to Biology and Lab, and Introductory Business Statistics—all of which are being adapted to meet the needs of each institution's adult-student population. In measuring

results, we will compare learning outcomes between students enrolled in OLI courses and those enrolled in standard versions of the same course. Based on evidence we have already collected from UMUC's initial pilot, we expect that the OLI students will exhibit higher rates of performance and satisfaction, as well as greater knowledge retention.

## Conclusion

As adults continue going back to college at record rates, it is safe to say that technology-enhanced learning and adult-focused education are not just passing fancies, but rather permanent—albeit rapidly evolving—dimensions of today's higher education landscape. Therefore, it is incumbent upon trailblazing universities such as UMUC to continue developing the appropriate metrics and collecting the necessary data to measure the impact of innovative strategies and technologies on its students, its faculties, and its institutions. By doing so, we can create a far more inclusive and empowering knowledge ecology in which information, ideas, and inspiration flourish and cross-pollinate, thereby ensuring even greater success for the students we serve.

## Notes

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