The Connected Learning Environment

“The ‘e’ in e-learning initially meant electronic. Now it means everyone and everywhere. It means effective and engaged experiences. It means experiential. Now we’re talking about the connected learner.”

—Elliott Masie, CEO, The Masie Center

Connected learning environments are changing education, student engagement, and college completion. While e-learning often connotes delivery of information in a sequential, linear fashion, the connected learning environment is integrative, personalized, interconnected, and authentic. Across higher education, leaders and learners are taking note of this evolution in education.

With connected learning environments, everyone and everything is interconnected. The connections magnify the reach and value of not just information but also our relationships, creating opportunities for learning, working, and collaborating on an unprecedented scale. Information technology is about connections, which are fundamental to our institutions, our faculty, and our students. There is no single example of the connected learning environment; it takes various forms. However, there are three hallmark characteristics and many examples of each.

Characteristics of the Connected Learning Environment

Seamless integration with planning and advising services helps students connect each course with long-term goals and a plan for success.

The pathway to success may not be obvious. Students enter an often confusing ecosystem of higher learning. Many attend multiple institutions in pursuit of their goals. Integrated systems are essential in helping students find their way efficiently to degree completion.

A connected learning environment enables a highly productive learning experience. Students complete courses that count toward long-term goals. Learners know how they are doing in the course, in real time. They know how any particular course fits into their plan for degree completion or credentialing and do not accrue unnecessary expense. Sophisticated systems help students find their way and persist. The connected learning environment is invaluable to success.

Personalized learning helps students connect with optimal opportunities to progress.

Personalized learning is learning tailored to individuals—the format, time frame, and content most appropriate for their goals. Today’s students have diverse learning options: online, on campus, or through a blended alternative, depending on their personal learning styles and goals. Competency-based learning, in which placement testing and self-paced curricula determine credit, is a growing alternative to traditional models that base credit on compulsory seat time.

Students may gain momentum toward their goals through programs that take prior learning, experience, and
achievement into account. Prior learning assessments help link informal learning—such as efforts on the job or training, for example—to formal educational pursuits. Credentials from different sources may be stacked to achieve academic or career goals. Some programs provide degree completion completely online, while others launch from community college initiatives designed to facilitate advanced degree completion.

**Engaged and authentic learning experiences help connect learners to scholars and researchers, to workplace and industry, to local communities, and to global challenges.**

The connected learning environment is not old-school online learning, turning virtual pages click by click. Instead, instructors and learners draw upon expertise in their professional fields, developing meaningful connections in the community or workplace. Students are deeply engaged, manipulating and examining digital artifacts while conducting research, immersed in simulated environments for experimentation and exploration. They take on real-world challenges through serious gaming. Data analytics and visualizations bring vast quantities of otherwise incomprehensible data into focus.

**The Connected Learning Environment in Higher Education**

The examples below illustrate how the characteristics of the connected learning environment manifest in the connected age of higher education.

**Seamless integration with planning and advising services help students connect each course with long-term goals and a plan for success.**

- Students advised to take the right course at the right time are well served in expeditious degree completion. Sinclair Community College’s My Academic Plan (MAP) links approved curricula, current course offerings, program requirements, prerequisites, course sequencing, and student major/program to ensure that students **take the right course, in the proper sequence, for the intended purpose**, saving both time and money. Sinclair’s Student Success Plan software suite incorporates the expertise of advisors, coaches, and faculty to monitor student progress and to intervene when students stray from planned pathways or encounter unanticipated hurdles to completion.

- Advising students in course selection can impact success. The Degree Compass system at Austin Peay State University **recommends courses most likely to result in successful course and degree completion.** The system analyzes hundreds of thousands of students’ grades, along with each student’s personal academic achievement, requirements for the current program of study, and graduation requirements, to make personalized recommendations for courses that meet degree completion requirements and in which the student will also be likely to succeed. Fall 2012 data confirm the accuracy of the grade prediction engine across diverse academic settings at four other institutions. Eighty-nine percent of students predicted to pass a course did so. Effects have been especially pronounced for Pell grant recipients who follow Degree Compass recommendations.

- Having a clear path to degree and efficient transfer of credits can help students reduce their time to degree, contain costs, and improve success. The University of Central Florida **guarantees admission to graduates of four area community colleges** through a program called Direct to Connect. Four of five Valencia students transfer to UCF, composing nearly one-quarter of UCF’s junior class. To make degree completion easier, two community colleges share facilities with UCF; students at Valencia and Seminole can complete their bachelor’s degree without relocating. A new 2+2+2 program allows Valencia students to transfer to UCF and then to the University of Florida **to earn a master’s degree within six years for less than $40,000 in total tuition.**

- A predetermined pathway from community college to a four-year institution presents fewer hurdles in degree completion. Students at Maricopa Community Colleges
transfer to Arizona State University on track to graduate in two years with fixed tuition expenses. The Maricopa to ASU Pathways program guarantees transfer students’ admission into their major of choice with junior status upon entrance at ASU. Community college transfer students are also included in ASU’s tuition commitment program and charged the same rate as other students in their cohort at ASU.6

- A streamlined program to an easily transferrable degree can help students achieve academic goals. Kentucky Technical and Community College System’s Direct to Degree is a series of 81 sequenced online course modules culminating in an associate’s degree. The program is designed in block-style format; students focus on one course at a time. Graduates are guaranteed acceptance at any public institution in the state. The program uses a monthly subscription model, providing a financial incentive for efficient completion. The program is seeking accreditation to open in fall 2013.7

Personalized learning helps students connect with optimal opportunities to progress.

- Students may achieve goals more quickly and cost-effectively by earning credit for prior learning. Northern Arizona University’s Personalized Learning initiative is a competency-based approach to a bachelor’s degree, where students are pretested to ensure proper placement and awarded credits for prior learning. A flat annual fee of $5,000 and no restrictions on credit accumulation incentivize students to complete degrees. There are no additional charges for books or fees. NAU has partnered with Pearson and is currently pursuing accreditation.8

- Self-paced, personalized curricula can provide a foundation for learning. Knewton Adaptive Learning Platform analyzes individual performance data, similar students’ data, and educational content to recommend personalized objectives for college-level math readiness at Arizona State University. Students self-pace through the curriculum and test out when they have demonstrated concept mastery. Collecting points and earning badges help motivate students. Those who complete the course within 7.5 weeks have the opportunity to take another course in the mini-semester schedule. These adaptive and active learning approaches to content mastery are now being applied to six for-credit courses.9

- Programs designed to develop marketable competencies can help students succeed. Southern New Hampshire University’s College for America program is a self-paced, online, competency-based associate of arts degree program. Students develop evidence to demonstrate mastery, documenting progress in an online Knowledge Map. After graduation, competencies may be mapped to traditional course credits for continued academic pursuits. The program launched in 2013 with a general studies degree, priced at approximately $2,500 per year. More degrees are planned for 2014.10

- Bridging the continuum of K-12 to higher education through multiple access points gives students a great opportunity to complete college. The University System of Georgia, in partnership with Columbus State University, is building an accelerated, online bachelor of arts degree with a strong service-learning component. Features will include multiple entry points for students, such as dual credit in high school, prior-learning assessment, the College-Level Examination Program (CLEP), and transfer of core courses from 60 state institutions.11

Engaged and authentic learning experiences help connect learners to scholars and researchers, to workplace and industry, to local communities, and to global challenges.

- Games engage learners. Those same gamers connect virtually with researchers to address important real-world problems tied to health and medicine. The Foldit simulation of model protein folding was developed by the University of Washington’s Center for Game Science. The community is invited to help solve problems that even computational science has difficulty addressing. In 2011, a decade-old
AIDS enzyme puzzle was solved within days by gamers. The highest-scoring proteins are analyzed by researchers seeking cures or a biological innovation.

Remote web-based science laboratories allow students to see the science behind the experiments, to talk with peers, and to gain a better understanding of concepts. Experiencing what real, high-tech equipment is like, students benefit from hands-on and real-time technical support that would not be available to the typical science gatekeeper courses of biology, physics, and chemistry. The North American Network of Science Labs Online (NANSLO) is a consortium that helps members develop and deploy modularized courseware. Web-based labs are learner-centered and immersive, using software, video, and robotics for the science studies.

Connecting with the community can keep students engaged in higher learning. The New Community College at the City University of New York (CUNY) provides an inquiry-based liberal arts associate degree connecting field experiences with classroom learning. Students begin in the Summer Bridge Program and participate in a city-centered first-year experience before starting their coursework in one of six degree programs. Teams of faculty, staff, and peer mentors co-create a rich classroom environment. An integrated advisement program will help students stay on the path to graduation and facilitate continuing on to a bachelor’s degree.

Students learn by doing research with the Digital History Project. Students compile historic artifacts and share them with others in a “harvest.” History Harvest brings value to learners as well as the community. At each harvest, community members share personal letters, photographs, objects, and stories and explore the significance and meaning of their materials. This collaborative, team-oriented effort connects student learners, scholars, and the community. The project’s creators are leveraging digital technology to democratize and open American history.

Through Learning Edge simulations of complex systems like renewable resources, clean energy, and commodity pricing, students can connect the dots between their decisions and inevitable consequences. Students role-play as senior managers in a highly competitive industry (e.g., solar energy, hardware platform producers) or as founders of tech start-ups; they can explore the risks of climate change, negotiating international agreements to reduce greenhouse gas. These teaching and learning resources developed by the Sloan School of Management at the Massachusetts Institute of Technology are freely available online.

The Monterey Institute of Technology and Education (MITE) developed an open program for developmental math to meet college entrance requirements. Pre- and postassessment features direct students to the content necessary to help close gaps in math proficiency. Learners are engaged by video, audio, interactive simulations, puzzles, and other learning strategies to develop math readiness in preparation for academic success.

Nursing students at Ball State University are immersed in a variety of safe patient-care training simulations. Students learn through real-life scenarios in the Simulation and IT Center (SITC) in simulation suites. Simulations encompass adult health care; critical care; obstetrics, maternity, and newborn care; and home health care. The clinical simulation program also utilizes virtual reality and volunteer patients to develop expertise.

Medical students’ clinical and decision-making skills are challenged and tested through realistic patient care scenarios with SimMan at the University of Minnesota. The human patient simulator trains students in anesthesia, respiratory care, and critical care. A maternal and neonatal birthing simulator, NOELLE, provides a complete birthing training experience—before, during, and after delivery.

A virtual welding machine allows Ivy Tech Community College students to hone skills and learn muscle memory required for real-world expertise. Virtual machines
increase training opportunities, simulating practice with real tools and expediting the process to develop proficiency. Students in the welding track may pursue expanded career opportunities via an associate’s degree in applied science through the industrial technology program.20

- Students who participate in the Polyark/World Tour offered by Ball State University’s College of Architecture and Planning connect in multiple ways. The world tour is an immersive architectural design learning experience. In 2010, students visited 23 countries and 56 cities to study architecture, landscape architecture, and urban planning on-site. They connect with current events and ancient history while exploring the world. They connect to each other through travel abroad experiences and collaborative teamwork. They connect back to campus, blogging about their experiences. They connect to faculty and other experts in the field, examining artifacts and using tools of the disciplines. Students rely on digital technologies throughout the experience, including gathering data to prepare architectural renderings, sharing experiences and project work, and developing a proposal to address a hometown concern.21

- Teachers-in-training and in-service teachers may practice teaching skills and learn how to effectively address learning needs in a simulated environment through simSchool. Developed by the Association for the Advancement of Computing in Education, the classroom simulator models diverse types of learners whom student teachers may not encounter in their field work. It provides a low-stakes environment to develop skills, confidence, and attitudes needed for the profession. simSchool provides a virtual environment to try ideas and activities for engaging different types of learners. Teachers can test new approaches without disrupting a real classroom or explore accommodations for a particular student’s needs.22

- Faculty and students at the Center for Remote Sensing of Ice Sheets (CReSIS) have developed sensors and uninhabited aircraft systems to collect data on the ice-bed interface and ice-sheet margins in Greenland and Antarctica. Through efforts to measure and predict response to climate change, researchers from the University of Kansas and seven partnering universities are connected to each other and to remote regions of the planet. An electromagnetic anechoic chamber at KU supports this research, serving as a teaching laboratory and providing the opportunity for professional networking and industry partnerships.23

As these examples demonstrate, higher education is evolving to an advanced state of connectedness. The connected learning environment is integrative, connecting students with services and systems designed to facilitate success. It is personalized, enabling students to learn what, where, when, and how it suits them best. It is interconnected with experiences, resources, and knowledge around the world or around the corner. It’s authentic, connecting students to real-world challenges as they develop skills and deepen knowledge. The connected learning environment represents powerful opportunities for student learning and success.

Notes
3. Russ Little and Michael F. Burns, “If You MAP the Way, They Will Follow,” EDUCAUSE Review Online (July/August 2013; to be published August 5).

7. See http://www.kctcs.edu and http://nextgenlearning.org/grantee/kentucky-community-and-technical-college-system; also see James E. Selbe and Sandy Cook, “Direct2Degree: College One Course at a Time,” EDUCAUSE Review Online (July/August 2013; to be published August 5).

8. Frederick M. Hurst, “Northern Arizona University’s Personalized Learning,” EDUCAUSE Review Online (July/August 2013; to be published September 2).


15. See http://historyharvest.unl.edu/.

16. See https://mitsloan.mit.edu/LearningEdge/.


