

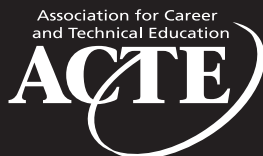


EXPANDING CAREER READINESS THROUGH ONLINE LEARNING

Ensuring students are “college- and career-ready” has become a critical issue as concerns rise about the success of the U.S. education system and, ultimately, the country’s economic competitiveness. The discussion surrounding college readiness is generally limited to academic skills, but actual career readiness requires an even more rigorous blend of academic, technical and employability skills, and the ability to apply these skills in authentic environments.

As both secondary and postsecondary institutions strive to provide students with this comprehensive skill set, new delivery systems and engagement strategies must be utilized to better serve students and ensure they have the access and support necessary for true career readiness.

In many places, the foundations for strengthening career readiness are already in place through career and technical education (CTE), which offers a unique blend of academic, technical and employability skills through comprehensive programs of study. However, these comprehensive programs are not available to all students or in all places. Online learning is one strategy that is increasingly being employed to ensure



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students have access to high-quality CTE programs and the necessary skills to be successful in the 21st century workplace.

While online learning, in some form, has been in place since the 1960s¹, its overall use and scale have exploded in recent years. Over the past decade, online learning has experienced significant growth at all levels of education. The number of elementary and secondary students taking online courses increased tenfold between 2001 and 2007, from about 200,000 to almost 2 million, and projections estimate the number could reach well over 2 million by 2012.² The Innosight Institute predicts that in less than 10 years, 50 percent of the nation's secondary courses will be taken over the Internet.³ Furthermore, in 2009, nearly 12 million U.S. postsecondary students took some or all of their classes online. This number is expected to jump to more than 22 million in the next five years.⁴

The reasons for this growth are varied—online learning helps provide access to course material that students might not otherwise have, especially in rural areas; allows working adults to more conveniently engage in postsecondary education

Most importantly, online learning can provide students with a comprehensive set of academic, employability and technical skills to ensure career readiness.

and lifelong learning opportunities; and provides more individualized learning experiences. Most importantly, online learning can provide students with a comprehensive set of academic, employability and technical skills to ensure career readiness.

DELIVERY OF ONLINE LEARNING

Online courses can be structured in various ways to deliver these skills. At both the secondary and postsecondary levels, courses can be offered completely online, delivering



At Northern Virginia Community College (NOVA), online courses are designed to offer flexible and convenient access to higher education. These courses are largely administered through NOVA's Extended Learning Institute (ELI), with some courses also offered through individual NOVA campuses.

Online courses largely utilize asynchronous Web-based instruction through the content-management system Blackboard; however, a growing number of courses now utilize eNOVA, NOVA's online, real-time student learning environment. eNOVA allows students to interact with faculty and other students by providing real-time two-way audio, application sharing, Web browsing, white-boarding and text chatting. In addition, many courses also use synchronous and asynchronous video technology.

NOVA offers a number of CTE-related online courses, including Intro to Engineering, Basic Electric Circuits, Health Information Systems, General Pharmacology, Web Design and Database Management. In addition, NOVA also offers CTE-related hybrid courses, such as Veterinary Technology and Nursing, which usually consist of 50 percent face-to-face or classroom time and 50 percent online activities. Examinations for online courses are usually taken at NOVA campus testing centers.

In addition to individual courses, NOVA offers 13 complete degree programs through ELI, including an Associate of Applied Science in Accounting, an Associate of Science in Business Administration and an Associate of Science in Information Technology. ELI also offers certificate programs in both Bookkeeping and Small Business Management. In addition to these programs, ELI offers five career studies certificates in Accounting, Business Management Principles, Business Information Technology, Desktop Publishing and Leadership Development. Courses in these programs are designed to prepare students for immediate work placement, as well as for continuing studies at four-year institutions.

NOVA's online programs have provided a number of diverse individuals the opportunity to pursue degrees that would have otherwise been impossible through traditional courses. For example, the flexibility of online courses has allowed military personnel to continue their education despite reassignments or deployments. Students in rural areas, often limited educationally due to distance and cost, have completed degrees and accessed courses they otherwise could not attend. Stay-at-home parents that cannot afford child care have been able to pursue a degree while still taking care of their children, and busy professionals are able to pursue a degree while maintaining their hectic schedules.

all instruction through online media, or through a hybrid approach that blends online learning with class time, lab work or other face-to-face interactions. The same is true of entire programs. Some degree and certificate programs at the postsecondary level are offered completely online, and some elementary and secondary school students attend “virtual schools” full time, while other students may enroll in only one course that utilizes online learning.

Online learning also has a variety of applications. At the postsecondary level, online learning is offered in credit, non-credit and employer-sponsored courses and programs.⁵ It is also available to students in elementary, middle and high schools across the full range of subjects that comprise the curriculum, and is used for regular instruction, credit recovery and enrichment.⁶

Online learning has the ability to benefit students who might not otherwise have access to educational programs providing all of these skills—and offers quality equal to or exceeding that of traditional face-to-face instruction.

In addition, both fully online and hybrid courses utilize asynchronous and synchronous delivery components. Asynchronous components communicate course content through Web pages, e-mail, discussion boards, PowerPoint presentations, interactive Flash modules and other multimedia programs. Synchronous components, such as Web-based chats or voice communications, allow students to meet online at the same time and interact with their instructor and each other.⁷

While some online courses are developed by individual instructors, educational institutions or school districts, other schools utilize online learning educational partnerships for the delivery of these programs. These partnerships can be especially valuable for small and rural schools and help overcome the prohibitive costs that can be involved in development and maintenance of high-quality online learning opportunities. These partnerships might include work with a public statewide virtual school or an independent vendor. Online learning



In Pennsylvania, Seneca Valley School District’s new online education program provides students with a hands-on learning experience that benefits both students who excel academically and those who struggle in a traditional classroom environment. According to Superintendent Don Tylinski, the overall goal of the program is to provide students “a perfect fit” for their academic interests and abilities and to translate those interests and abilities into a successful job. The program gives students a wide range of academic options: Students can take core classes, such as math, biology, history and English, as well as electives, such as art, economics, personal finance, Mandarin Chinese and a range of CTE courses.

Within the online program, students not only earn credit for graduation, but also can earn an industry-recognized certification through CTE courses delivered by Penn Foster. Students in the online CTE courses can participate in a business co-op program, which allows them to complete theory work online and then be released from school to work at a related job to receive hands-on training. A wide variety of program options are available within the Seneca Valley/Penn Foster partnership. For example, students can prepare for careers as locksmiths, diesel mechanics, veterinary assistants and auto mechanics. The district has also developed an extensive “materials library,” which allows students immediate access to needed resources for coursework and training.

In addition to providing more academic choices for students, district officials hope the non-traditional, hands-on learning keeps potential dropouts in school, as well as entices home-schooled or other students who participate in other online schools back into the Seneca Valley district. At the same time, the long-term goal, according to assistant superintendent Matt McKinley, is that the online program will also be used to serve the local community at large by providing courses for adults wishing to obtain more education or earn a certification. As such, courses within the online program will be tailored to meet the needs of local businesses and industries and provide the means to educate and train a career-ready local workforce.

The online program has experienced significant growth since it began in the summer of 2008. Starting with only four students, the program grew to nearly 45 students during the 2009-2010 school year. Enrollment nearly doubled for the 2010-2011 school year, growing to nearly 90 students attending either part time or full time.

vendors provide rigorous course content for both core classes and electives, hard copies of curriculum resources, tests and other assessment materials, and customer and tech support for administrators, teachers, students and parents. They also may facilitate instruction and provide training for in-house teachers.

The technologies involved in online learning are directly aligned to the real-world lives of students in the 21st century—making education more relevant to their everyday existence.

BENEFITS OF ONLINE LEARNING

In order for students to be truly ready for careers, they must have access to educational opportunities that provide academic, employability and technical skills. Online learning has the ability to benefit students who might not otherwise have access to educational programs providing all of these skills—and offers quality equal to or exceeding that of traditional face-to-face instruction. Its instructional strategies also have the potential to dramatically benefit students with a wide variety of learning styles.

According to a recent U.S. Department of Education meta-analysis of online education research, “On average, students in online learning conditions performed modestly better than those receiving face-to-face instruction.”⁸ This finding is true at both the secondary and postsecondary levels. At the postsecondary level, student achievement in online courses has repeatedly been shown to equal achievement of on-campus students.⁹ At the K-12 level, as the Center for American Progress reported, “student academic performance in well-designed online courses is on average equivalent to performance in high-quality classroom-based courses.”¹⁰ Furthermore, the National Center for Education Statistics claimed that “Distance education [which includes online education] is just as effective as traditional education in regard to learner outcomes.”¹¹

At the postsecondary level, online learning can be particularly beneficial for non-traditional students, many whom are adults who are “citizen-students,” or students “concerned with

working and paying taxes, buying homes, supporting families, and other responsibilities associated with the everyday role of a full-time citizen.”¹² By giving them the flexibility of time, location and courses offered, online programs provide these individuals with the freedom to pursue their educations while continuing with their current jobs and responsibilities.¹³

At the K-12 level, positive results for online learning have been found across a number of research studies. Online courses have been shown to effectively educate students in both acceleration and credit recovery programs,¹⁴ to be effective in educating students with physical and learning disabilities,¹⁵ and to narrow the state testing achievement gap for those in economically disadvantaged subgroups.¹⁶ The Missouri Department of Education found that, in many cases, “students who failed their required high school courses in traditional schools passed online courses based on the same standards.”¹⁷

In online learning, students are no longer restricted to locally available courses and programs. This is particularly beneficial to rural students who might not otherwise have access to specialized courses that can enhance their career readiness. Research has shown that many of the students enrolled in online and distance courses offered by community colleges live “outside the boundaries of the state where the college resides.”¹⁸ Such flexibility also benefits educational institutions by allowing them to expand their enrollment without investing in new physical infrastructure.

Many people only associate online learning with providing academic skills, but, as technology has advanced, the connection to technical and employability skill sets is also growing, especially through CTE programs.

The use of technology in online learning has numerous benefits for both students and teachers. As noted in a *New York Times* article, the real promise of online education is in “providing learning experiences that are more tailored to individual students than is possible in classrooms.”¹⁹ Multimedia and HTML tools can be used to create unique and relevant course content that engages multiple learning styles. Teachers and

students can utilize e-mail, chat rooms and discussion boards to build real-time collaborative learning environments, which allow for more active participation and interaction and build relevant collaboration skills. Web-based learning also puts students directly in touch with a greater breadth of information about course topics. The technologies involved in online learning are directly aligned to the real-world lives of students in the 21st century—making education more relevant to their everyday existence.

A study by the University of Alabama found that teachers also benefit from using online course-management systems by being able to spend more time on advanced material and increase student engagement.²⁰ The flexibility and change of pace offered by online courses can provide the opportunity for teachers to inject fresh ideas into the delivery of their course content. As a result, veteran teachers can find a renewed sense of vigor by trying new teaching activities. At the same time, the promise of teaching online courses is a way to recruit new, young teachers, as teaching online courses allows them creativity within their course content through the cutting-edge, Web-based technologies with which they are familiar. In addition to revitalizing teaching methodologies, the promising results of online education also provide a renewed sense of optimism about student performance.²¹

ONLINE LEARNING IN CTE

Many people only associate online learning with providing academic skills, but, as technology has advanced, the connection to technical and employability skill sets is also growing, especially through CTE programs. A recent study from the National Research Center for CTE (NRCCTE) found that 47.5 percent of community colleges offered credit-granting online occupational programs with at least 50 percent of course content online; previous studies have shown that over three-quarters offer individual courses online.²² While an exact number of secondary students participating in online CTE courses is not available, anecdotal evidence suggests that these offerings are growing.

Online learning opportunities are offered across all 16 career clusters within CTE, but are more common in technology-rich career fields like business, information technology and health informatics.²³ For example, the Utah Electronic High School offers secondary students online courses in Web design, computer programming and business law,²⁴ while the Kentucky Virtual Schools also offer video game design and health science.²⁵



At Auburn Career Center in Concord Township, Ohio, online courses serve several important purposes. For one, they are a means to expand instruction without infringing upon CTE class time. As such, the online program provides Auburn with the opportunity to better prepare students for the rigors of collegiate study by developing students' independent learning and time-management skills. Also, online courses prepare students for the educational programs and skills needs of the future. With projections that 50 percent of all students will be taking online courses within 10 years and with the prevalence of online certification testing, administrators at Auburn feel that online education "is the learning option for the future" and is "a technology skill our students need reinforced."³⁶

Auburn structures its course offerings into Career Pathway categories. Students take courses to earn career certification in such fields as Alternative Energy Technology, Automotive Technology, Culinary Arts, Cosmetology and Pharmacy Tech in partnership with Penn Foster. Auburn uses Blackboard as its learning-management system and built its own courses through a consortium partnership with several local school districts. Within these online courses, several delivery styles are utilized, such as independent online learning, resource and remote classrooms, and team learning environments.

Success of the online program at Auburn is attributed to the ongoing professional development and teacher support. Online instructors at Auburn have found helpful the regular collaborative, hands-on training, as well as the one-to-one and face-to-face technical assistance and instructional support.

Overall, Auburn has found many strong advantages to online education, according to Jeffrey Butler, director of business development. These advantages include:

- providing course continuity for absent students, teachers or substitute teachers
- automatic access to tutorials
- unlimited student access to review content prior to testing
- compatibility with traditional scheduling
- greater facilitation of differentiated instruction and exponential learning
- complete courses prepared for new teachers
- the possibility of virtual field trips
- the ability to foster multisensory learning
- customizable content for students' learning styles

Online CTE courses utilize a number of different and effective instructional methods and often take advantage of the hybrid approach to online learning. One method is “on-campus skill acquisition.” In this model, class work, lectures and most homework assignments are covered by the online portion of the class. However, students are still required to “complete a laboratory course on campus to acquire their hands-on skill training, as are the campus-based students.”²⁶ One example of this is the emergency medical technician program at Iowa Western Community College, which provides an option for students to complete all lectures, assignments, quizzes and exams online, but includes 32 hours of skills-based lab work that must also be completed by students on campus during the program.²⁷

Another method involves internships or clinical experiences. Like the on-campus method, most of the coursework is completed online; however, to gain hands-on experience, students serve as an apprentice or student intern in a work setting. To prove their competency, students provide evidence of their acquired skills by submitting samples of their work to their instructor.²⁸

In rural South Dakota, access to coursework and career-readiness experiences can be a challenge. However, through the DIAL Virtual School,²⁹ part of the South Dakota Virtual High School, a Youth Internship course is offered to students who may not be able to participate at their home high school. Students in the course spend time at a business, non-profit organization or government agency to increase their knowledge of workplace skills and receive on-the-job experience. Through the online interface, students also explore careers and educational opportunities, create resumes and portfolios and strengthen their ability to apply reading, communication and math skills in authentic career-related activities.

In addition to these hybrid models, specific CTE course elements, such as virtual job shadowing, are often offered online to enrich core curriculum. Computer-based simulations are also becoming more prevalent. This method uses computer simulation software, which allows students to apply their skills in a controlled environment without the danger or cost of a “real-life” situation. Simulation software is used in such areas as landscape architecture, firefighting techniques, electrical troubleshooting, off-highway truck driving and manufacturing processes.³⁰

To strengthen students employability skills, the career and technical student organization SkillsUSA has developed a fully

online program that can be used by teachers to improve student skills in areas like communications, ethics, conflict resolution, teamwork, time management, goal-setting and cultural diversity. These materials can be integrated into an existing course or used independently.³¹

All of these opportunities for online learning in CTE can help to expose students to the full range of career-readiness skills through convenient, innovative approaches.

When it comes to measurable outcomes of online CTE courses, one study showed that, like in online education generally, at minimum, there is no difference between the student achievement measures of online and on-campus students.

BENEFITS OF ONLINE LEARNING IN CTE

Using online learning courses in CTE programs yields a number of specific benefits in addition to those already discussed. For example, the flexibility of online CTE courses yields an effective strategy to “attract a critical mass of students to specific skill areas that are currently under-enrolled or to fields where there is high demand for new employees, [as] lifting the distance barrier of on-campus courses opens the program to a new and previously inaccessible pool of student candidates.”³²

The use of online learning in CTE can also reduce scheduling conflicts that often emerge for students. Providing online options that can be accessed after the traditional school day can free up student time for core academic requirements or other electives, or for intensive blocks of CTE, such as internships or other work-based learning opportunities. The lack of a time constraint allows students to more fully develop all three skill sets involved in career readiness without having to sacrifice in a specific area.

When it comes to measurable outcomes of online CTE courses, one study showed that, like in online education generally, at minimum, there is no difference between the student

achievement measures of online and on-campus students.³³ A number of other studies confirm these findings.³⁴

This has also proven to be true in the areas of both technical skills and employability skills. The NRCCTE found that online CTE courses are an effective way for students to prepare for national board examinations. Specifically, it found that, when an online curriculum was closely aligned with state and national licensing standards, “students who completed the online courses were successful, on the first attempt, in passing the national board exam for their regulated profession.”³⁵ Further, a recent study of baccalaureate nursing students suggests that online CTE courses can significantly contribute to the “soft” skills of students. The study found “a significant difference between online and face-to-face students in their degree of ‘enculturation’ or socialization into the field of nursing,” as the online students had higher socialization scores than the campus-based nursing students.³⁷

As the number of online CTE courses and students continues to grow, the technologies involved are also being expanded. As the NRCCTE reports, in general, future courses “will see expanded use of course management systems, asynchronous discussion technologies, CD-ROM/DVD for the delivery of course content, and streaming media for delivery of live or recorded audio and video.”³⁸ Several specific developments include the use of multimedia and real-time exchanges of voice and images, such as synchronizing PowerPoint presentations with streamed audio and video, the use of real-time voice chat, and desktop videoconferencing. All of the new technologies and delivery methods will further benefit students and increase the number and diversity of programs that can incorporate online learning.

NEXT STEPS

While online learning is clearly growing, expanding into new education environments and providing strong benefits to students, more needs to be done to realize the full potential that this delivery system has to offer to students’ career readiness. Policymakers and education leaders should take these steps to ensure that all students have access to high-quality online learning that includes academic, technical and employability skills:

- Ensure adequate resources to expand the number of schools offering CTE options within online learning programs so the full range of career-readiness skills are addressed, and to support the hardware, software and broadband needs of these programs, especially in rural areas.
- Expand course development to ensure students can complete entire sequences of courses within comprehensive programs of study through online learning.
- Provide more high-quality professional development for those who teach online courses in order to ensure rigorous content and student success in this unique learning environment.
- Continue to improve the integration of online and face-to-face or hands-on learning, which has resulted in the highest student achievement results and allows continued expansion in the number of subject areas offered through online learning. ■

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