



The Inclusion of Online Education Data in the MLDS Inventory
A review with Recommendations

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Table of Contents	Page
Executive Summary	1
Introduction	2
Defining Online Education	2
National Trends in Online Education	4
K-12 Education	4
Postsecondary Education	5
Non-traditional Structures and Training	6
Maryland Trends in Online Education	7
K-12 Education	8
Postsecondary Education	9
Non-traditional Structures and Training	9
Summary and Recommendations	10
References	11

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Executive Summary

The rapid growth in “digital connectivity” has dramatically altered how we interact with each other as citizens, students and educators. Along with this change has been the creation of new ways to deliver educational content to students at all levels of education, including online courses, programs, and even virtual schools. The increased “connectivity” created by the Internet and computers and accelerated by increasingly capable mobile devices is rapidly changing the educational landscape. The question guiding this report is whether that change warrants the inclusion of online education data in the Maryland Longitudinal Data System (MLDS). We believe that the answer is a resounding, “Yes, it does.”

Policymakers and educators at K-12 and post-secondary institutions across the state are implementing new instructional technologies and online learning opportunities for their students. Although change is more substantial in post-secondary institutions, which saw dramatic increases in the number of online courses and enrollments during the last ten years, K-12 education has also witnessed increases in online learning for students during this same time period. The growth of online education software, tools and strategies utilized by both public and private institutions also affords emerging opportunities for vocational training and ongoing education for Maryland citizens.

We argue that MLDS is an ideal repository for data about this new and growing format for delivery of education and training. Incorporating data about these digital opportunities in the MLDS will provide both portal dashboards about online education and opportunities to engage in research to inform policy and programming about online education in the state. Although the collection of these data poses challenges, not the least of which is the absence of uniform definitions or standards for reporting online education data, we at the MLDS Center believe that the inclusion of these data will provide a richer picture of the educational landscape in Maryland, one that can better inform state policy in the years to come.

Introduction

A large and growing majority (84%) of Americans now have access to and use the Internet (World Bank, 2014), with Maryland being a leader in connecting its citizens (third highest state percentage of “highly connected” individuals; File, 2013). However, low income and students and families of color are overrepresented among those who still do not have internet access (File, 2011). Still, such connectivity is dramatically changing the way we interact with each other, deliver goods, provide services, and search for information (Fox & Raine, 2014; Smith 2010). One of those services is education. Schools, colleges and universities are investing more and more financial and intellectual resources in digital services and private sector investors are racing to develop and provide new web-based educational options to students and educators (Ahn, 2011; Ahn, Quarles, & Beck, 2014; Means, Toyama, Murphy, Bakia, & Jones, 2009; Molnar, 2013). With increased connectivity, the educational landscape is changing quickly, so the question guiding this report is whether that change warrants the inclusion of online education data in the Maryland Longitudinal Data System (MLDS). We assert the answer is resoundingly, “**Yes**, it does.” Doing so will provide both portal dashboards about online education and provide opportunities to engage in research to inform policy and programming about online education across Maryland.

To that end, we first offer a definition in this report of what “online education” includes. Then we detail overarching national trends and patterns with respect to the emergence and evolution of online educational services at both the K-12 and post-secondary levels, including the use of online education for career training. Then we detail what we know about online educational opportunities provided by Maryland schools, colleges and universities. Finally, in the context of our review of current trends in online education, we make recommendations about how the MLDS Center and the state of Maryland should approach the inclusion of online educational data. Our recommendations are based on our assertion that online education services will continue to grow in the state and nation, fueled by market demands and the desire to provide greater access to educational opportunities to students and citizens throughout the country. Maryland will participate in the growth of digital education and training services nationwide, and the MLDS Center should incorporate indicators of these new digital educational opportunities to better inform policymakers and education providers across the state.

Defining *Online Education*

Shortly after the development of the Internet in the early 1970s, educators started using applications such as email and teleconferencing to communicate, deliver educational content and services (Harasim, 1996). These early education services were referred to as “networked classrooms,” and as the term suggests used computer networks to extend what was going on in classrooms to other locations, creating opportunities for *distance learning* or *distance education*. Education until then had always been something that happened in

specific places and during specific times. However, a critical characteristic of online education is that it is not bounded geographically or temporally, providing opportunities to broaden the delivery and access to quality educational services, especially to communities underserved by traditional educational service delivery formats.

The development of specific software programs—for example, BlackBoard, DigitalChalk, or the freeware program Moodle—have allowed the creation of whole courses delivered in “virtual classrooms,” freeing education services from the bounds of place and time. The benefits associated with these educational opportunities have spawned a lexicon of new terms and services, including “e-learning,” “Internet learning,” “networked-learning,” “tele-learning,” “virtual learning,” “computer-assisted learning,” and “web-based learning” (Ally, 2008). Students and workers, young and old, can log on and listen to a lecture from a world-renowned scholar, access course materials and interact online with other students and employees engaged in a myriad of trades and professions who are interested in the same topics or tasks at a time that fits their life schedule. There are entire courses, degree programs, colleges and universities, and professional training programs that are now delivered completely online. Although traditional formats for education that require meeting in a specific location and specific time still dominate the educational landscape, this landscape is quickly changing to accommodate online formats for education (Monolescu, Shifter, & Greenwood, 2003). Further, many providers of traditional education and training service delivery are increasingly providing parts or aspects of their service online, and some traditional institutions of higher learned are offering complete degree programs online.

Maryland public schools, colleges and universities, and training programs have incorporated online learning opportunities into their educational offerings, although to widely varying degrees. The Maryland State Department of Education operates the Maryland Virtual Learning Opportunities Program, which includes guidelines for school districts providing digital services to students and a series of online courses that meet state education standards. The program defines a credit-bearing online course as one in which 80% of the instruction is delivered online with the student and teacher separated by space, time or both (Sandusky, 2012). Similarly, the Maryland Higher Education Commission (2012) defines distance education courses as classes in which at least half of the course instruction/interaction is conducted via distance learning technologies rather than in the traditional classroom or face-to-face setting.

For the purposes of this report, online education is the use of digital services by educators and educational organizations to deliver learning content—from lessons to the completion of entire degrees—that allow students to access that learning unbounded by place, time or both. We suggest considering a course or program to be a form of online education if the *majority* of the learning content is delivered online (greater than 50%). Currently, most distance education courses are offered online and therefore the terms distance education and online course taking are often used interchangeably. When some

although not all of a course is delivered online, with the rest delivered in a traditional classroom, the term *hybrid* is often used to refer to such a course.

National Trends in Online Education

National trends identify rapid growth in online education in K-12 and post-secondary educational institutions. Growth has been greatest in post-secondary institutions, where the use of the Internet and other digital services has been strongly promoted, but K-12 educational systems have also seen rapid growth in the use of online education as a major format for providing educational services. Although data about participation in online education are difficult to verify given the absence of a uniform definition and format for reporting, we report available data to describe national trends in the provision of online education.

K-12 Education

The U.S. Department of Education's (US DoE; 2010) national technology plan sets an ambitious agenda for the development digital education services nationwide. The plan calls for, among other things, the development of new digital services and infrastructures that will allow "24/7 life long learning," as a way to meet national goals to increase post-secondary attendance to 60% of all graduating high school students and close the achievement gap. Federal programs, such as *Race to the Top*, provide incentives to states to develop new education technologies because policymakers believe that these new technologies can, in the words of the plan (US DoE, 2010), "power learning." Many states and local school systems also have developed incentives to encourage the development of digital services, including online learning.

According to the International Association for K-12 Online Education (2012), growth in online course taking in the past decade has been dramatic. In 2000 the Association estimated that 40,000 to 50,000 K-12 students participated in online education; by 2010 that number had increased to 1.8 million. The growth in enrollment has been especially pronounced for high school students, who represented 74% of online enrollment in 2010. States with the greatest number of students enrolled in online courses were Florida and North Carolina, which reported 377,508 students and 104,799 students respectively (Watson, Pape, Muriin, Gemin, & Vashow, 2014). Based on these figures, for K-12 currently an estimated 4% of all public school students, and 8% of all high school students nationwide (grades 9-12) take at least one online course annually, and that is increasing each year.

Roughly one third (36%) of the school districts in the country reported one or more students enrolled in online courses during the 2002-03 school year. By the 2009-10 school year, that number had increased to more than half (55%) of all school districts nationwide (US DoE, 2011). Forty states operate virtual schools or programs that provide guidelines for online education and state-sponsored online curriculum for public school students. Thirty

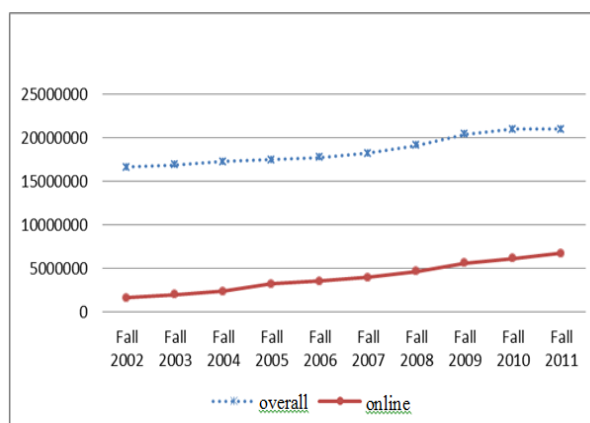
states plus the District of Columbia operate fulltime online schools in which students can enroll and complete a degree (International Association for K-12 Online Education, 2012). Postsecondary institutions and private vendors developed and provided the majority of these courses to states and schools systems in 2010 (US DoE, 2011).

Online education has helped local educators address a number of challenges associated with raising standards and state policy initiatives, such as providing students with greater access to challenging coursework. While the most common reason given by local educators for online enrollment is credit recovery (62%), that is, permitting students to retake a course or material that they have not mastered, other reasons include dual enrollment in postsecondary institutions (47%) and the provision of advanced placement courses (29%), especially in small schools or schools with low numbers of qualified students (US DoE, 2011). Online courses allow local educators to pool resources and provide students with access to courses that they might not have an opportunity to take otherwise.

Postsecondary Institutions

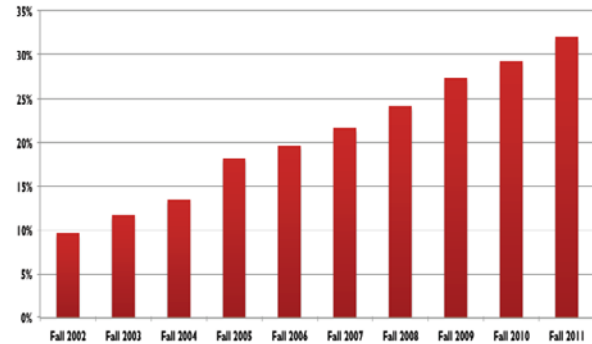
Over the past ten years, distance education has moved from a peripheral endeavor to even more center stage in postsecondary institutions (Saba, 2011). In this time span, the

number of college and university students taking at least one online course skyrocketed. In 2002, 1.6 million students were enrolled in at least one online course while in 2011, this number reached 6.7 million, which means that on average 568,000 more students took at least one online course per year (Allen & Seaman, 2010; 2013). Figure 1 shows this steady and up-going trend of students participating in online courses nationally. The dotted line shows



enrollment in degree-granting postsecondary institutions from 2002 to 2011; the solid line represents enrollment in online courses during the same time span. While overall enrollment increased by only 2% during this time span, the number of students enrolled in at least one online courses increased by 21% (Allen & Seaman, 2010; 2013).

Another way to think about growth in enrollment is to examine the change in the percentage of all students enrolled in postsecondary degree-granting institutions that report taking at least one online course during the year. Figure 2 provides these data in the form of a bar graph. As demonstrated by the graph there has been a steady increase in the percentage of students who take online courses. The percentage of students taking at least one online course in 2002 was less than 10%. However, by 2011 the percentage had increased to 32% or nearly one third of all higher education students. According to Allen and Seaman (2010; 2013), the percentage of students taking at least one online course has increased steadily and almost linearly over the years (Allen & Seaman, 2013).



Even in 2002, the vast majority (72%) of higher education institutions had some form of online offering, among which about half offered only online courses while half offered both online courses and online programs. This percentage increased to 87% in 2012, among which, nearly two thirds offered both online courses and online programs. This increase in offerings also stimulated the continued growth in online enrollment over the years (Allen & Seaman, 2010; 2013). Opinions of chief academic leaders of higher education institutions about online education have also shifted. In 2002, less than 50% of all higher education institutions reported online education as critical to their long-term strategy while this number in 2012 increased to 69% (Allen & Seaman, 2013).

Non-traditional Structures and Training

National trends also indicate a growth in non-traditional structures for providing online education that could have long-term consequences for the educational opportunities afforded students and citizens. Besides the online courses and programs offered by school districts and higher education institutions, numerous organizations and institutions are developing alternative platforms and funding schemes that broaden access to online learning. For example, Massive Open Online Courses (MOOCs) have attracted attention both nationally and globally. MOOCs partner with multiple institutions, creating an online platform for course enrollment and distribution that is dedicated to offering free online education worldwide. On Sept. 26, 2013, the *Wall Street Journal* published a report entitled, “*Job Market Embraces Massive Online Courses,*” in which both the advantages and disadvantages of online education were discussed. Some leading traditional universities including Stanford, Harvard, MIT, and John Hopkins, as well as some institutions focused on distance education including the University of Maryland University College (UMUC) are now offering online courses through MOOCs. For profit companies, including Microsoft, are also involved in developing partnerships in an effort to expand access to MOOCs.

At the same time, online professional certificate programs offer job training outside of the traditional postsecondary format. As an example, Cisco (www.cisco.com) has a long history of offering online certificate programs and has established a complete system of online courses that lead to certification in various skill areas. Cisco offers online certificate programs for employees who work for IT departments at various companies and claims that this employee training model can save their clients money. It also connects the online certifications to specific jobs so that the trainees have clear learning and employment goals in mind. Although there is little data about the extent of online training programs or the success of these program across the nation, the surge in digital services nationwide suggest that this form of online education will continue to be developed by educators in both the public and private sectors.

Although national goals call for an increase in the number of high school graduates who gain some postsecondary education, there is a growing recognition that some students would benefit from training programs that do not necessarily lead to a degree. An analysis by the Brookings Institute (Rothwell, 2013) indicates that about 10% of U.S. jobs require training in science, technology, engineering and math fields, but do not require a four-year degree, all areas that could be acquired by young people and adults through online education. As online education extends beyond the classroom and traditional structures, it may provide new opportunities for training, professional development and job preparation. Indeed many states have begun to develop policies that require students to become “digitally literate” (Ahn et al., 2014; Watson et al. 2014), because policymakers believe that being able to access online education will be a critical tool for students in the future.

One example is the *Future for Kids* program in North Carolina, a state that has aggressively developed online educational opportunities and digital services for students. The program provides students with online tools that help them navigate digital services, including identifying online courses and information about a variety of careers. These tools also link students to real people who can provide valuable perspectives about potential jobs and help students explore educational opportunities, including training, internships, and, scholarship options (Flores, 2013). Along with the advance of technologies that facilitate online education and the global trend of developing online courses, there will likely be an ever-increasing growth in both the number of students taking online courses and the diversity of the online programs public and private institutions offer young people and adults.

Maryland Trends in Online Education

Like the nation, Maryland has seen a rapid increase in online educational opportunities, especially in its post-secondary institutions. Although the development of online education has progressed slowly in K-12 education, the state has promoted online education

enthusiastically, developed policies to help local school districts implement programs, and established advisory councils to help in developing the state's virtual learning programs (Maryland Instructional Technology Advisory Council, 2012). We report data about online education for K-12 education and post-secondary institutions across Maryland.

K-12 Education

Maryland policymakers have highlighted the importance of adopting new instructional technologies in numerous state documents, including *The Maryland State educational technology plan for the new millennium, 2007-2012* (Maryland State Education Department, 2007); *Investing in instructional technology: Accelerating educational reform in Maryland* (Maryland Instructional Technology Advisory Council, 2011); and the state's 2010 federal Race to the Top Application. However, compared to other states, such as Florida and North Carolina, Maryland's digital learning programs are more limited (Watson et al., 2014), as the state has adopted a cautious approach to ensure the quality and alignment with curriculum standards of the online education provided to students.

The central pillar of Maryland's K-12 online education program is the Maryland Virtual Learning Opportunities Program, which was established by policymakers in 2002 and is managed by the Maryland State Department of Education. This is Maryland's virtual school but it is a non-degree granting program; instead, it provides school students and districts access to fully online courses approved by the state that students can take for credit toward graduation for a school in his or her district. Essentially it is a virtual, virtual school. The state offered 70 credit-bearing courses in 2014, and, since the initiation of the program, it has steadily increased its online curriculum in response to the requests from students and school districts. Courses available to students online have been developed by local school districts and private vendors.

The state reviews all courses to ensure alignment with the state's learning standards and provide content in core areas, such as American Government and Biology, as well as content in areas that school districts might be unable to provide by themselves, such as Chinese language or advanced placement courses in specific subjects. In the 2013-2014 school year, Maryland reported 4,817 students taking online courses in the state. However, this number probably under represents the true number of students taking online courses, as districts are not required to report online enrollment statistics.

Online education is likely to continue to grow in Maryland. State policies, such as the one that requires school districts to provide students with the possibility of dual enrollment in a postsecondary institution, encourage local educators to partner with colleges and universities to provide students with online learning. In 2013, the state created the Digital Learning Innovation Fund, which provides schools with grants to aid in the development of new digital services and learning opportunities for students. During the past two years, the fund has awarded \$7 million to school districts to develop and implement new digital

learning, including online education. As online education continues to grow across the country, Maryland will undoubtedly continue to expand the online education opportunities that it provides to its students.

Postsecondary Institutions

Growth in online education has proceeded more rapidly in Maryland's postsecondary institutions. Between 2008 and 2011 the number of distance learning course sections increased 48% at community colleges, 60% at public four-year institutions, and 95% at private institutions. At community colleges, all but two campuses (Allegany Community College and Wor-Wic Community College) increased their offerings, ranging from a 3% increase to 109% increase, with most campuses increasing their offerings by about 50%. At public four-year institutions, this increase was driven largely by UMUC, which teaches approximately 70% of the distance education course sections offered by this sector in the state of Maryland. However, growth in online offerings increased at every institution except for St. Mary's where no online courses are offered. At private institutions, of the 11 campuses where we could calculate trends, four campuses more than doubled their online course sections and all four of these institutions were offering courses in 2008 (Johns Hopkins, McDaniel, Notre Dame of Maryland, & Stevenson).

Given this increase in the online course sections being offered, it is not surprising to find that, in 2011, about one third of both undergraduate and graduate students in Maryland took at least one online course, a figure that closely mirrors the national trend in online enrollments. A large proportion of these students are from the UMUC campus. Across all levels of education (certificate, Associate's, Bachelor's, Master's, and Doctorate) the number of degree programs available entirely online has increased from 2008 to 2011, with a 30% increase in the number of degree (not certificate) programs available online to students. As campuses seek new ways to broaden access to their programs and make better use of instructional technologies, these trends will continue in the state. With each year that passes, online education is likely to become an increasingly more prominent and important part of the educational landscape in Maryland.

Non-traditional Structures and Training

Of course due to the very nature of online education and training, geographical boundaries are not as relevant. The education and training provided by other than traditional K-12 and postsecondary institutions described in the section above about national trend are of course available to Marylanders. However, we know little about who in Maryland is utilizing such services, nor do we know much about what organizations within Maryland are providing such services. In our recommendations below we make suggestions to begin to fill that current gap in our knowledge of the provision and use of online education and training in Maryland.

Summary and Recommendations

Given the widespread interest in online education and the growth in digital learning at the K-12 and post-secondary levels of education, as documented by the Maryland State Department of Education and Maryland Higher Education Commission, we recommend that the MLDS Center seek to obtain data about online education of its students and citizenry in order to better understand the benefits and possible limitations of this form of education and training. MLDS is an ideal depository for these data. Although multiple organizations collect relevant data about online education, there is little uniformity about how data are collected and reported. Including data about online education in MLDS would help to establish guidelines about these data that could improve their validity and reliability. Moreover, the inclusion of online data in MLDS would provide opportunities to examine who has access and use of online education and to promote research to inform policymakers and citizens about online education in Maryland. Specific recommendations for the MLDS to include data about online education in the data system include:

- Convene stakeholder meetings with K-16 institutions, including alternative agencies that provide online training for young people and adults in the state, to discuss strategies and explore opportunities for collecting data about online education across the state. Further, discuss with those stakeholders the benefits to policy and programming to collecting that data.
- Working with those same stakeholders, develop guidelines and definitions for what activities constitute online education. Develop operationalized definitions to be used state-wide for various levels and strategies in the delivery of online education. Consider other forms of digital learning that policymakers might want to include in MLDS.
- Explore strategies for obtaining data from providers outside of the state, approach such colleges and universities outside Maryland who provide education services online to Maryland residents to participate in the collection of data to inform policy and programming.
- Develop a comprehensive list of providers of online education to provide to students, workers, and citizens in the state. That list should include links for where to find out more information.
- Develop and pilot data collection protocols to be used with different providers.
- Develop a timeline for inclusion of various sources of data about online education in the MLDS.
- After the development of some initial dashboard and research ideas, share those ideas and seek feedback from the stakeholders who helped to design and build the data collection plans.

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