

Chapter 7

Inclusivity Instead of Exclusivity: The Role of MOOCs for College Credit

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ABSTRACT

Higher education has been perceived as exclusive to those who have the means to purchase the course-work. Many students globally have been alienated from advancing their education, not because of a lack of access, but due to financial barriers. Online education has already transformed the delivery and accessibility of courses for traditional credit toward degrees. MOOCs have been proposed to help bring education to global audiences at little or no cost, creating an inclusive environment for education and skill development. MOOC offerings by colleges provide a method that is disrupting the ways to receive academic credit. Using third-partner vendors to certify knowledge in a similar manner to assessment processes for advanced placement, credit for work experience, and prior learning, MOOC completion is being accepted for college credit. This chapter reviews the extant model, programs, and available outcomes for the MOOC credit acceptance process.

INTRODUCTION

Access to global networks and open education have allowed learners from a myriad of countries to reach education that has been limited by geographical bounds for generations (Baker & Passmore, 2016). Learner engagement in an open education experience has resulted in enacted cognition, where the learners create meaning through interactions with the global members, and the development of global citizenship (Childs & Wagner, 2016). One modern source of open education includes the Massive Open Online Course (MOOC), an online course that usually has open access via the Internet to large-scale

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enrollments. Education within a MOOC exceeds what is learned in the textbook through the enrichment of the course by the diverse cultures and geographic regions represented in the participants (Chan, 2016). “The astonishing global reach of MOOCs permits students to access U.S. (United States) higher education who normally would not have had an opportunity to do so” (Sandeen, 2013, 39).

MOOCs have offered students a stepping stone to other educational experiences by gaining prerequisite knowledge and academic program credit (Ng & McRae, 2017). Colleges and universities began to accept credit for MOOC participation shortly after the introduction of MOOCs. In 2012, the University of Helsinki was one of the first institutions to offer college credit for work performed within a high-quality MOOC (Kuruhila, 2012). Analysis of MOOC enrollment and completions indicated that more students finish a MOOC when they have committed to earning credit (Chamberlin & Parish, 2011). MOOCs are accessed through a number of academic platform providers, among which are Coursera, edX, Udacity, Kadenze, and FutureLearn (Shah, 2016a), and business platforms in partnership with academic institutions such as OpenSAP (SAP, 2017).

BACKGROUND

The focus of this chapter is to review the extant model, programs, and available outcomes for the MOOC credit acceptance process. How has higher education’s exclusive nature changed to be more inclusive? What has been the role of online education to increase accessibility to a global audience? How have MOOC enrollments changed since the initial offerings of modern MOOCs in 2011? How have external vendors helped to document learning and performance? Which colleges and universities have offered MOOCs for college credit? What are the challenges for offering MOOCs for college credit and their solutions? What is the focus of future research of MOOCs and college credit?

The volume of literature on MOOCs has expanded similarly to the number of MOOCs available globally. Applications of Information Technology in Open and Distance Education, the first MOOC, was offered in 1999 within The Open University, United Kingdom (UK), to 800 students. In 2016, more than 6,850 MOOCs were offered through over 700 universities and institutions (Shah, 2016a). In 2008, the first MOOC related paper was published and over the following years, the number of published papers and articles increased annually (Liyanagunawardena, Adams, & Williams, 2013). Searches within Google Scholar with a custom range of 2016 – 2016 for MOOC “Massively Open Online Course,” and MOOC “Massive Open Online Course” as search terms resulted in 74 MOOC-related articles published for the first search and over 2,380 results for the second search. Adding “and ‘college credit’” to each of the searches with the custom range 2016 – 2016 resulted in 28 articles for the first search and 54 articles for the second search.

Initially, the plans for MOOCs were to provide free courses on a variety of topics with an expectation that awarding credits would have a negative impact on enrollments and require additional resources and structures for testing and validation (Gaebel, 2013). A driving factor of participating in MOOC offerings was to extend the university brand to a larger domestic and international audience (Leeds & Cope, 2015). The goal of MOOCs for credit was to have rigorous design and requirements for the students. An offering of a degree program made up of MOOCs by a university was “...intended to carry the same weight and prestige as the one it awards students in its regular on-campus program” (Kahn, 2013). Faculty using MOOCs have reported favorably about the use of the platforms. Results from a survey conducted by

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The Chronicle of Higher Education reported the majority of the 103 professors who had taught within a MOOC environment responded that their MOOC course should be integrated into traditional programs (Kolowich, 2013b).

The process of the integration of MOOCs for college credit has varied from individual courses for credit combined with traditional courses for credit to earn degrees to integration of the MOOC within a single course as a method to have the students within the traditional course interact briefly with the students enrolled within the MOOC to provide a more global experience. Certifications offered to MOOC participants have a variety of standards unlike the specific criteria necessary for an accredited institution. Approved recognition for MOOCs has the potential to expand access to education for those not able to qualify for affordable education (Vovides & Inman, 2016).

The variability of MOOCs and MOOC offerings is nearly as different as the thousands of courses that are offered annually through the hundreds of institutions on the many different MOOC platforms. This chapter explores this variability.

Exclusivity of Higher Education

Historically, higher education institutions have been the source for knowledge obtained within undergraduate and graduate degrees. Changes in access to financial aid and educational requirements for employment have influenced the level of enrollment within U.S. institutions. After a 21 percent growth from 1994 to 2004 in degree-granting postsecondary institutions, the decade from 2004 to 2014 reported a 17 percent growth to 20.2 million undergraduate and graduate students; however, the undergraduate enrollment in 2014 was lower than the enrollment in 2010 (18.1 million; U.S. Department of Education, National Center for Education Statistics, 2016). The total enrollment from 2000 to 2010 in degree granting institutions in the United States increased from 15.3 million to 21.0 million, a 37% growth (U.S. Department of Education, 2012). The number of international students increased by 32% during the period from 2004 to 2014 to 0.3 million students (Institute of International Education, 2013).

This increase in domestic and international enrollments has been at a potentially great expense to those who have made the purchase of a U.S. college education. Between 1985 and 2012, the costs of consumer goods in the U.S. have doubled and the increase of the cost of a college education was five times greater than this increase in consumer goods (Baker & Passmore, 2012; 2016). Academic institutions in the U.S. experienced closures, and acquisitions of private colleges and mergers among all types of colleges were at alarming rates just before the rise of the modern MOOC offerings. Between 2008 and 2011, private college closings and acquisitions doubled, and between 2006 and 2009, mergers among all U.S. colleges tripled (McDonald, 2014). MOOCs might have been envisioned as a way to do more with less at the time of these financial challenges.

The number of students who start a degree has not been the same as the number who complete. Sadly, nearly half of the students who enrolled in the 2009 cohort did not finish their degree by 2015; the six-year degree completion rate for the cohort was 53% (Shapiro et al., 2015). A comparable alienation of global audiences occurs in higher education. Reports of the segregation of classes by economics and language litter the literature with negative comments about separation by social class and ability to speak, write, and read English. One such comment within the literature asserts that the original MOOCs were created by members of the elite educated class from elite or well-funded top tier and middle tier colleges (Bennett & Kent, 2017).

As technology advanced the capacity and capabilities of presenting educational materials, colleges and universities experienced an expansion of online education and the development of competency based education and MOOC platforms. The Desire2Learn learning platform was created to provide technology-enabled learning environments such that the learners could receive a high-quality learning experience without barriers (Desire2learn, 2013). A competency based credit system personalized learning in higher education and allowed students to complete their studies at their own pace to obtain a predetermined set of proficiencies (Aithal & Aithal, 2016).

MOOC platforms were developed in the wake of declining college enrollments as a promising way to resolve the higher education crisis by creating and offering a world class education at no cost that was available to all (Waks, 2016). MOOC2Degree courses were offered at no cost to participants through a partnership between Academic Partnerships and Canvas on the Canvas Network (Academic Partnerships, 2013). The founders of edX stated when referring to their partnerships with academic institutions, “The partnership was established to provide quality higher education opportunities to anyone, anywhere in the world.” (edX, 2017b, n.p.). One of these partnerships with edX was with Charter Oak State College, whose statement is “degrees without boundaries” (edX, 2017c).

Access to knowledge that had been formerly sequestered in traditional educational institutions became available to those who had the bandwidth capacity to access the courses and the ability to read and write the language of the online course. Not all courses were offered in English. In 2015, the primary language of MOOCs offered in Europe between January 2012 and October 2013 were in Spanish (Montgomery, 2016). At the same time, non-European courses were not only U.S. courses; many MOOCs were created in Jordan (Montgomery, 2016), Australia, China, Latin America, and India (Shah, 2017).

MOOC Enrollment and Platforms

The number of MOOC courses offered globally has grown from the initial modern MOOC movement offerings in 2011 (Shu, 2013) to over 6,850 courses from over 700 universities in 2016 (Shah, 2016a). The top five vendor platforms for MOOC courses reported millions of enrollments in courses offered in English and in regional languages in 2016; Coursera had 23 million enrollees, edX reported 10 million, XuetangX had 6 million, FutureLearn recorded 5.3 million, and Udacity had 4 million (Shah, 2016a). The variety of vendor platforms has increased to have global and regional providers. Listed and described here are a few MOOC providers who also provide university credit; there are many more MOOC providers for free and credentialed courses (Shah, 2017).

Coursera (2017a) was founded by Stanford Computer Science professors, Daphne Koller and Andrew Ng, in an effort to create a platform to bring education to the world in a manner where anyone who had Internet access could participate in the courses offered within the platform. As of publication, Coursera has partnered with 149 of the world’s top universities and other education providers to provide opportunities to greater than 25 million learners to learn for free and for fee within more than 2,000 courses in over 180 specialization areas (Coursera, 2017a). Coursera offered at the time of writing four degrees, three with the University of Illinois and one with HEC Paris, a leading European business school (Coursera, 2017b).

With greater than 90 global partners at the time of publication, the non-profit and open source MOOC provider, edX, has provided high quality online education to a worldwide community (edX, 2017a). The edX Global Learning Community boasts, “students come from every country in the world!” (edX, 2017a, n.p.). The edX open source platform is used by XuetangX, France Université Numérique (FUN),

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and Edraak (Shah, 2016d). The edX MicroMasters credential was expanded to 14 universities in 2016 (Shah, 2016d).

XuetangX operates on the Open edX platform (Shah, 2016d) to provide education opportunities as the first Chinese MOOC platform for credential courses and open learning (Shah, 2016c, XuetangX, 2017). At the time of publication, XuetangX had over 7 million users, more than 200 partners, greater than 1,000 courses, and in excess of 9 million enrollments (XuetangX, 2017). Courses offered are in cooperation with a number of universities in China and the U.S. (i.e., Tsinghua University, Peking University, Fudan University, Massachusetts Institute of Technology, University of California Berkeley, Stanford University Online, Rice University, and the Association of Chartered Certified Accountants) as well as an exchange program with FUN France and Nile Korea (XuetangX, 2017).

Based in Camden, London, UK, and owned by The Open University, FutureLearn reported over 6 million people were learning together in its high quality online education programs presented by more than 130 top university and specialist organization partners (FutureLearn, 2017a). Deakin University, Australia, partnered with FutureLearn to launch six postgraduate degrees in 2016 (Shah, 2016d). FutureLearn recognized that learning is a lifelong journey and named visitors of the site as FutureLearners (FutureLearn, 2017c).

Udacity's mission is to "bring accessible, affordable, engaging, and highly effective higher education to the world. We believe that higher education is a basic human right, and we seek to empower our students to advance their education and careers" (Udacity, 2017, n.p.). To manifest this mission, Udacity has partnered with industry and educational institutions to provide educational credentials at "a fraction of the cost of traditional schools" through an online university that is informed by industry partners and advisory board members (Udacity, 2017, para 1).

Instituted by the Government of India, SWAYAM offers credentialed courses to students from the 9th class through post-graduate (SWAYAM, 2017). Four of the seven National Coordinators of SWAYAM were the University Grants Commission (UGC, 2017) for post-graduate courses, the Consortium for Educational Communication (CEC, 2017) for undergraduate education, NPTEL (NPTEL, 2017) for engineering and science-related content, and Indian Institute of Management Bangalore (IIMB, 2017) for management related content. NPTEL reported that over 160 engineering and science courses were ongoing and more than 1.5 million candidates had enrolled in courses to complete certification exams (NTPET, 2017). SWAYAM's platform reported capabilities to host 2,000 courses and 80,000 hours of instruction (SWAYAM, 2017).

The learning management system for EduOpen was designed using Moodle and an OpenLMS for the delivery of its MOOCs in partnership with the Italian universities in the EduOpen Network (EduOpen, 2017a). Students who have taken courses offered through EduOpen have received credit by exam for courses or pathways offering University Credits (ECTS), Capstone credentials, Specializations, or Master's degrees (EduOpen, 2017b).

Regional MOOC providers in non-English offerings include Miríada X, XuetangX, France Université Numérique (FUN), and Edraak. Partnered with 93 universities, Miríada X is a Spanish language MOOC platform and is reported to have more than 2.7 million users in over 350 courses (Shah, 2016d; 2017). FUN has nearly 1 million users in 250 courses with more than 70 university partners (Shah, 2016d, 2017). Supported by the Queen Rania Foundation of Jordan, Edraak is presented in Arabic and has almost 1 million registered users (Shah, 2016d; 2017).

The number of MOOC providers and people seeking education through MOOCs has rapidly expanded. A common goal of the MOOC providers has been development of a skill or interest through lifelong learning. As more universities partner with MOOC providers, the model for gaining access and credentialing the knowledge will continue to grow.

Value Pricing for MOOCs

Review of performance in MOOCs has been conducted by grading assignments, analyzing input into discussion boards, and exams. Credentials have been offered through freemium services within MOOCs and payment for certification of performance, such as Coursera's Signature Track (Coursera, 2016), as a measure to document what was learned during the educational experience (Baker & Passmore, 2016). One method of certification has been the use of third party vendors to administer exams as proctored face-to-face, online using identification such as video or typing identifiers, or computer testing sites. For example, Pearson VUE partnered with FutureLearn to offer global based testing services for certification assessments for courses completed in the UK MOOCs (Pearson VUE, 2017), MetaCog Solutions in India for Supply Chain (Fletcher, 2014), and the University of Colorado (Ng & McRae, 2017).

The services offered within a MOOC are value priced. For example, students wanting to gain college credit for the Global Freshman Academy must register for the Verified Track and pay the fee to be eligible to apply for credit once the course is complete (edX, 2017b). MOOC providers have created platforms that support six-figure enrollments and are determining the price that MOOC users are willing to pay for the value offered. The promise of reduced total tuition cost seems to be attractive to an increasing number of students based upon observations of enrollments and the growth in the number of programs linked to college credit.

MOOCs FOR COLLEGE CREDIT

The marketing of college credit through MOOC enrollment often has the words or words that have a similar meaning: accessible, cost-effective, personalized (edX, 2017b; edX, 2017c; Lequerica, 2016). Based upon the 2011 American Community Survey, U.S. Census Bureau researchers created a Synthetic Work-Life Earning (SWE) estimate to calculate likely median earnings for people who earn or do not earn a diplomas or degrees. In the report of the application of the SWE estimates, the work-life earning difference between earning a high school diploma and earning an associates degree was \$450,000, about one-third of the median lifetime earning of \$1.37 million if a high school graduate; however, the difference between the diploma and a bachelor's degree was over \$1 million, a master's increased the difference in median lifetime earnings to \$1.5 million, and earning a doctorate increased the difference of median lifetime earning to nearly \$2.2 million (Julian, 2012). If a learner were looking at earning potential as an incentive, the motivation would be high.

Many entry-level jobs require a degree and work experience (Griswold, 2014). An analysis of entry-level positions in a region of the U.S. often known for technology revealed that 72 percent of positions examined in the decade from 2000 to 2010 showed an increase in educational attainment of the industries examined incumbent workforce and 15 percent increased their training requirements for entry-level employment (Agnone & Corwin, 2012). Given the requirements for work force entry and advancement opportunities and the potential income incentives for educational attainment, marketing of

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MOOCs such that there is an implied promise of success upon completion would inspire those looking for a change in social status to acquire the solution, a degree through a MOOC. The marketing message for the MicroMasters at The Georgia Institute of Technology in the U.S. said, “Georgia Tech will offer its top-10 ranked Online Master of Science in Analytics (OMS Analytics) degree for less than \$10,000 beginning in August 2017 with courses delivered on edX” (edX, 2017d). The return on investment could possibly be 50 times the initial educational investment and have a payback of the investment in as short as a single working year.

Accessibility has been phrased as anytime from anyplace, open to anyone, everyone everywhere, and without any barriers or restrictions. Accessing higher education has had barriers to entry through completion of some type of diploma, a specified level on a test to assess prior knowledge, geographical locations, time to attend classes, and financial burdens. In an attempt to promote a global mass market that is open to all with access to the Internet, MOOCs are a commodification of knowledge that was previously available to the elite and middle classes (Bennett & Kent, 2017). An experience of no barriers or restrictions is not what students have faced for generations and MOOCs are making it possible to attain what has been out of reach for many.

The marketing message for MOOCs is a lure to those wanting to look for something fun to do that might be more entertaining than television or doing a puzzle in the daily newspaper as well as those seeking to obtain a first or advanced degree. The statements offer the ability to learn when have time to learn and the power to make a change for the better, a change that is personal or professional. “These flexible online course programs will enable you to master a subject in depth — ideal for developing your career or preparing for further study. Learn with a leading university or organisation, and you could earn academic credit or professional accreditation” (FutureLearn, 2017b). The model for the college credit is specific for the goal of the lifelong learner targeted by the MOOC marketing message.

Model for College Credit

Most courses for credit initially were introductory courses and the number of schools accepting credit were few. The model for college credit then changed. The list of schools that have adopted MOOCs for college credit has expanded and now includes college credit for courses and college credit for programs (Lequerica, 2016). The two most common types of educational credentials as a degree advertised on MOOC-based program websites are undergraduate general education and MicroMasters programs (Lequerica, 2016; Shah, 2017). Each degree program provides the learner with part of the courses to be available for little or no cost to attend, a small fee for verification of participation and exams, and a larger fee for assignment of credit (edX, 2017b; edX, 2017c; Lequerica, 2016). These programs offer a credential that is more than a verified certificate or a certificate of participation. The learner earns credit toward a degree.

Opportunities for College Credit

As the thought of earning college credit through MOOCs expanded, the acceptance and approval by accreditation bodies was necessary to ensure that MOOCs had the same academic rigor as traditional courses offered face-to-face or online. The Bill and Melinda Gates Foundation awarded a research and evaluation project grant to explore pathways for integration of MOOCs into traditional degrees in November 2012 to the American Council on Education (ACE), a project that included application of

traditional course-review processes to MOOC courses. Of the initial group of MOOCs receiving ACE credit recommendations, five lower division courses were offered through Coursera and four introduction courses through Udacity (Sandeen, 2013).

Even though MOOCs were achieving recognition of their academic content and rigor, approval by an accreditation body did not automatically mean that all approved courses were acceptable for academic credit or were transferable for credit at another institution. ACE has approved courses offered by Coursera and Udacity; however, universities must decide if they will accept the credit for the students who have completed the approved courses (Hollands & Tirthali, 2014, Kolowich, 2013a, Lederman, 2013).

Early credit courses through MOOCs were offered at Antioch University (2012) and San Jose State University (Young, 2013). Antioch University partnered with Coursera (Antioch University, 2012) and San Jose State University partnered with edX and Udacity (Cheal, 2012; Rai & Chunrao, 2016) to jointly develop and offer MOOCs for college credit. Colorado State University-Global Campus accepted transfer credits for students who completed CS101, Introduction to Computer Science: Building a Search Engine, offered by Udacity, and for other courses offered from StraighterLine, self-paced online introductory courses (Mangan, 2012). A few courses, such as Developmental Math for vocational credit at the University of California, Irvine (Hollands & Tirthali, 2014), were approved by ACE and served to provide students a low-cost method to reach the prerequisite knowledge necessary to enroll and earn academic credit in traditional undergraduate programs.

The adoption of MOOCs for college credit into programs at the undergraduate level has been limited to introductory level courses and has not yet expanded into full undergraduate degree programs. Created through a partnership with Modern States Education Alliance, Texas State offers MOOC courses for the courses required for the freshmen year, up to 30 units (10 classes), for which the students must complete a College Level Examination Program to certify the knowledge after the MOOC course completion (Jackson, 2015). Another undergraduate program is the Global Freshman Academy at Arizona State University and offers students the opportunity to complete classes then pay the fees necessary for awarding college credit (edX, 2017b). The MicroMasters programs have a mixed model of some courses offered through MOOCs then enroll in traditional classes that are offered face-to-face or online or have an entire program that is offered through MOOCs. Deakin University in Australia has partnered with FutureLearn to offer a mix of free courses with tuition-required courses to earn post-graduate degrees and certifications, the tuition-required courses are offered through the FutureLearn platform (Deakin University, 2017).

Global Adoption of College Credit

“What happens when you learn in a highly social environment with people of all ages, cultures and experiences? A richer, more worldly education” (Deakin University, 2017, n.p.). The extent of adoption of MOOCs for college credit has changed the landscape to remove the geographical bounds for education. No longer does a university compete within their region for students, global access of MOOC courses and programs that award college credit have created an opportunity for students to participate in classes with others from cultures and experiences that are different from their own yet have a common interest and goal to learn a particular topic.

Although there are many benefits of adoption of MOOCs for college credit, there are challenges for adoption that universities, colleges, and students face. To obtain a Master of Computer Science from Georgia Tech, you must have earned a bachelor’s degree, a barrier or entry for those who do not have the financial resources to pay for the degree. At this time, there is yet a way to completely earn a

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bachelor's degree through a MOOC-based degree program. For others, additional financial costs might make education, even in a MOOC, prohibitive to low income earners (Bennett & Kent, 2017). The requirement to pay for a credential and academic credit are known costs. Unknown costs associated with tutors, engagement within the MOOC environment, and other added costs might make the experience within a MOOC more expensive than traditional education.

Presentation of the information in the online environment and a requirement for self-discipline have not worked well for all students. Students enrolled in the SJSU Plus MOOC courses in the partnership between San Jose State University and Udacity experienced lower course performance than students in the face-to-face class or those in the redesigned online class (Woodhead et al., 2017). After the students in the SJSU Plus courses did not perform as well as the students in the traditional classes, the administration paused its three online for-credit math courses that were priced at \$150 per course and limited to 100 students (Rivard, 2013b).

The majority of MOOC courses that have been offered are presented in English, have American instructors, and are placed within course management systems developed and supported by major American universities, thus reinforcing the dominant academic culture of the west (Altbach, 2014). Transference of credit to international institutions has not yet been standardized and initial credit that is awarded is based upon the policies of the university awarding the credit (Ng & McRae, 2017).

The benefits of interacting in a diverse course environment are attractive. The challenges might be too great for some students to succeed. Designers and instructors for MOOCs for college credit should keep these challenges in mind when creating instruction or interacting with students.

SOLUTIONS AND RECOMMENDATIONS

Because MOOCs have had open-access, the pricing of a MOOC is often expected to be free to students (Baker & Passmore, 2016). If a person does not pay anything for a service, it is assumed that there is little commitment to that service. This is evident in the historic high dropout rates associated with free MOOCs. However, students with a financial commitment and enrollment to earn credit were more likely to complete a MOOC and participate in additional learning opportunities (Baylor Teaching, Learning & Technology Committee, 2012). Credit bearing students in a MOOC-like learning environment had significantly higher scores than those participating in the MOOC who did not care about earning credit or who were in the non-credit bearing group (Kursun, 2016). A requirement to pay something for the MOOC could increase the retention rates within MOOCs. Concern for financial discrimination must be considered so as not to disenfranchise people in countries with lower economic levels and buying power or people who would need to seek financial aid. Competency-based education has been questioned for meeting requirements for the U.S. Department of Education for faculty and student interaction (Camacho & Legare, 2016). Student level assessment was acknowledged in policy of the U. S. Department of Education in 2013 as a means to demonstrate achievement and learning through competency-based programs (Markle, 2017). This acknowledgement allows for financial aid for MOOCs where seeking college credit and for competency-based education although certificates of participation would not qualify for aid. Balance must be given to cost and ability to purchase.

The length of time to complete a MOOC has impacted retention. To combat this challenge, offerings for some MOOCs have become shorter durations. The development of a shorter-term course with networking and interaction resulted in higher engagement of the students and increased retention (Her-

mon, Everitt, Wohltmann, & Heimpel, 2015). Another solution to the problem of retention is to mix free short courses with for-pay short courses. Deakin University in Australia offered six postgraduate degrees through the online FutureLearn platform with five short-courses for free within the MOOC and then tuition costs for the remainder of the degrees, certificate, or diploma, which were also offered as short courses (Bothwell, 2016). Flexible options for adult learners who can complete competency-based programs within a MOOC are another possibility and are being explored by the University of Wisconsin (Herzog, 2013).

Determination of motivation for students would be helpful to increase retention. The reasons people enroll in MOOCs vary from exploring a topic to supplement traditional education to finding a way to spend free time (Rivard, 2013a). The majority of people who have entered a free MOOC were not seeking certification or college credit. For a student not needing credit or certification, the learning environment within a free MOOC was a low-pressure experience that allowed the student to focus on the learning and less on achievement (Malin, 2016). For students who explored MOOCs for college credit, a formal course offered as a MOOC by a higher education institution has served as an incentive for students to finish their degree through traditional enrollment (Hew & Cheung, 2014). However, offering MOOCs for credit has a risk of diluting the sponsoring university's brand image unless the MOOC is as rigorous as the on-campus offerings (Hollands & Tirthali, 2014). For as many reasons that students decide to enroll in a MOOC, there are as many reasons for why they drop out. One reason that can be addressed in the design of a MOOC, a lack of prior knowledge for a subject, was identified as a cause for discontinuation of study in a MOOC (Khalil & Ebner, 2014). Therefore, the design of the MOOC that incorporates engagement and rigor with links to prior knowledge in a short-course format has the greatest potential for completion and subsequent enrollment in the next course.

Best practices that have resulted in increased engagement and retention in MOOC courses include shortening the length of the MOOC, immediate formative feedback, rewards such as badges, and short videos of seven minutes or less (Montgomery, 2016). These design decisions influence motivation and encourage the students to build communities within the MOOC. No matter how good the design, if the students do not value the outcome, they will not stay. Another solution to retention and subsequent enrollment are certification and assessment.

Mobility of college credits earned in MOOCs is of question and might be hindering adoption rates of the programs. Professional credentials such as Coursera Specializations, MicroMasters, Kadenze Programs, and FutureLearn Programs offer credit in addition to a verified certificate and might have better adoption rates by learners seeking college credits and degrees (Shah, 2016b). Excelsior College president, John Ebersole, stated that his institution would not accept transfer credits from the Coursera MOOCs even though they had received ACE approval unless the assessment was completed in a more rigorous process and within a secure testing facility (Kolowich, 2013a). Course assessment can be used as a means to validate global learning (Mathews & Landorf, 2016) and provide portfolio information for learners as proof of what was addressed in the course. "Those institutions that are willing to accept credits from other institutions and who make it easy to do so, will graduate more people and attract adult learners away from competing institutions" (Mulligan, 2015).

FUTURE RESEARCH DIRECTIONS

Early adoption in Spring 2013 of MOOC platforms and course content by community colleges led to a proof of concept for course credit attainment and retention of community college students in the blended instructional model (Bebell & Petersen, 2015). MOOC courses have been offered by SUNY Empire State College for credit with a fee (Benke, David, & Travers, 2012); however, there has not been much adoption of seeking college credit through MOOCs at the College. Colorado State University-Global Campus faced a similar challenge when it offered students who passed the MOOC and a required proctored exam to pay \$89 for what usually would cost \$1,050 and no one participated in the offer (Kolowich, 2013c). The program at San Jose State University in partnership with Udacity was put on hold after the students' performance was deemed subpar (Rivard, 2013b). These early adopters faced challenges, were studied, and solutions were offered for later adopters to not experience the same lack of adoption by students.

Educational programs have taught students about advances that have resulted in economic and technological changes and need to maintain this same innovativeness to be responsive and proactive to the needs and wants of students (Whitaker, New, & Ireland, 2016). Adopters of MOOCs for college credit have determined what motivates students to participate in the courses: high levels of accessibility and flexibility, rewards and feedback from the instructors and peers, shorter time frames for the course activities and the course itself, and personalization to be able to test out of topics that have already been mastered. Adopters speak with their enrollments. The Global Freshman Academy at Arizona State University has had over 230,000 students from more than 180 countries participate in the program (ASU, 2017). Georgia Institute of Technology has two online master of science degrees within the MOOC format, Computer Science (4,515 students enrolled in Spring 2017; Georgia Tech, 2017a) and Analytics (Georgia Tech, 2017b). Future research to be conducted on these adopters would answer the following research questions. Who enrolls in the courses and who completes the courses? Are enrollees substituting at which university they would be seeking a degree? What are the motivating factors for seeking the degree? What adaptations in the MOOC were most beneficial to increase the flexibility of the course? What professional relationships were built within the MOOC and what impact did these relationships have on the students following the course? For students who completed the freshman academy foundation courses, are there any differences in performance in later, more complex courses compared to students who participated in traditional freshman level courses?

In the future, more universities will try to offer courses through MOOCs for college credit. The number of universities offering a MOOC course of any kind at the close of 2016 was over 700 (Shah, 2016a), and at least 6 universities were offering degree programs in early 2016 (Lequerica, 2016). In addition to colleges rethinking degrees and unbundling degree programs to make master's degrees more competitive, faculty are considering alternative delivery methods (Viner, Gardner, & Shaughnessy, 2016). Research to be conducted on institutions and providers would answer the following research questions. What are the educational and financial arrangements to make offering MOOCs for credit profitable? How do faculty approach the development of a MOOC for credit and how do those choices impact learning? How does rolling enrollment differ from fixed enrollment for student retention? What technological advances made adaptation and personalization of the courses possible? What role does artificial intelligence play in the design and implementation of MOOC courses? What do employers say about graduates of MOOC-based degree programs? Do MOOC-based degree programs open opportunities for learners formerly excluded from participating in higher education?

With all innovations, there are laggards who do not and will not adopt the innovation. As with the position of the president of Excelsior College that his institution would not accept transfer credits unless the assessment was completed in a more rigorous process and within a secure testing facility (Kolowich, 2013a), other universities and colleges would likely hold a similar position. Assurances that the person receiving credit is the person who earned the credit is a priority for all engaged in online education. Future research related to non-adoption of MOOCs for credit would answer these research questions. What advances have been made in the design of assessment to assure the credentialing body that the performance is by the actual person seeking the credential? What factors have influenced universities and colleges to adopt or not adopt MOOCs for college credit? How have MOOCs changed in their design to be something acceptable to those who did not adopt MOOCs for credit for courses or for degree programs? Have MOOCs disrupted higher education as they were expected to disrupt higher education?

CONCLUSION

To maintain a sustainable online learning environment, institutions need to be strategic in their thinking as they consider the openness of future programs, revenue models that include freemium and premium services, and service disaggregation that unbundles and re-bundles course content to address the needs of the learner through value-added solutions (Yuan, Powell, and Olivier, 2014). An exploratory study to determine the performance in higher-level courses of students who completed an introductory course through a MOOC is underway with a number of U.S.-based institutions (Sandeen, 2013). The findings of this study, technology advancements, and other research studies will inform future directions of MOOCs for college credit to continue the goal to bring education to the masses.

MOOCs have transitioned from their initial appearance of massive, open, online courses that were free to explore to something much smaller in enrollment and much shorter in duration. MOOCs for credit are not open, usually are not massive, and a payment for education and credit is inevitable (Ng & McRae, 2017). The transition has occurred also from something that one explored similarly to reading a book or attending a lecture to a commitment to complete assessments and earn college credit or a professional credential. Performance within the MOOC can be sold and overall performance can be recorded on a transcript. Companies purchase lists of qualified learners' profiles for jobs or positions from a converged list of learner profiles of mapped skills in a series of identified MOOCs (Song, Wang, & Yoon, 2017).

How MOOC activity is recorded has also changed. MOOCs for college credit are poised to create a disruption in higher education. Programs such as the Arizona State University's Global Freshman Academy are recorded on transcripts with the same appearance as credits earned in traditional courses. The potential for transferability to other institutions, nationally and internationally, from a respected brick-and-mortar institution is a tipping point for the disruption that MOOCs for college credit could cause (Stone, 2016) by reducing the exclusivity of higher education and making higher education more inclusive.

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KEY TERMS AND DEFINITIONS

Academic Platform: The hardware and software necessary to deliver a MOOC or other distance learning experience. Educational institutions use MOOC academic platforms as a means to carry the information from databases to the learner.

Credit: The recognition by a college or university of the fulfillment of the requirements that lead to a credential or a degree.

Educational Credential: A statement of qualification by a school or university about the skills or competencies that a person who has earned the credential would have. An educational credential is often awarded as a certificate or a degree.

Exclusivity: The restriction of participation to selected individuals or groups. The exclusivity of education is due to some type of barrier that prevents some individuals or groups from earning credentials or participating.

Inclusivity: The intention that education is open to everyone and is not limited to selected individuals or groups.

Massive Open Online Course: A set of learning goals and objectives presented through a series of traditional course materials as a distance learning experience. A MOOC can be free or have a cost. Often, the enrollment is large, tens of thousands of students, is open to all, and is presented in an online format.

MicroMasters Program: An educational plan to earn a master's degree. Programs are usually offered as a blend of courses presented in a MOOC format and traditional format and have an expectation to have a lower total cost than a traditional master's degree from the same institution. A number of programs are offering their MicroMasters programs as all MOOC format courses.

Open Education: An educational experience with the intention of having no barriers for access to any individual or group.