

# MOOCs for Professional Teacher Development

**Abstract:** A MOOC is a trending concept in education that is disrupting traditional methods of learning consumption. The emergence and use of MOOCs for professional teacher development is still uncommon, but on the verge of gaining a foothold. Research regarding MOOCs typically focuses on impacts for higher education and lifelong learning. However, the specific intersection of MOOCs and professional teacher development is poorly researched. This concept paper contemplates the benefits and drawbacks of using MOOCs for professional teacher development and calls for more practical studies and explorative research. This paper also speculates on the basic MOOC design criteria and principles needed to maximize engagement and course completion, which are currently common issues with general MOOCs. The conclusion is that MOOCs can be a cost- and resource-effective means to deliver quality education in order to further professional teacher development. However, possible risks are employers' reluctance to accept MOOC accreditation as equivalent professional development and the lack of relevant MOOC courses for professional development.

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## Introduction

Massive Open Online Courses (MOOCs) are currently one of the most discussed and debated topics in higher education. Researchers and practitioners fervently study outcomes and participation of these courses, and higher education institutions keenly attempt to determine the effects of this latest educational revolution. For example, Shirky (2012) speculates that these massive courses will be equally disruptive to higher education as the MP3 music file format was to the music industry by explaining that the MOOC is the MP3 and Udacity is Napster. Despite the cloudy future of these courses and their possible effects on traditional education in higher learning, participation is significant and increasing steadily. For example, in roughly one year over 6.5 million students have enrolled in over 800 free courses from over 200 different learning institutions (Gallagher & Garrett, 2013). There are numerous MOOC providers, but the three largest are Coursera, Udacity, and EdX (Shumski, 2013). As of 2013, Coursera is the largest with roughly four million students and 400 courses from 80 different institutions, EdX has approximately one million students and 60 courses from 28 different institutions, and Udacity has around one million users and 30 courses taught by faculty from five universities as well as private partners (Shumski, 2013).

Professional teacher development is in itself an established and growing research field (Evans, 2002). Evans (2002) elaborates on the lack of a clear definition of the concept of professional teacher development, but provides a broad definition that focuses on professional development as a process, where a teacher performs an activity to achieve attitudinal and functional development. For the sake of simplicity, professional teacher development in this article refers only to the actual learning activities available to elementary and secondary school teachers. These efforts are typically criticized for their costs and lack of clear goals, despite participation being extremely high. The most recent study by the Department of Education regarding professional development in the US showed that 97% of teachers reported participation in various professional development activities related to teaching in the previous 12 months (Choy, Chen, & Bugarin, 2006). A more recent study by the National Staff Development Council found that 92% of teachers participated in some form of professional development during the previous 12 months, but only 31% participated in traditional professional development such as taking university courses (Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009). Furthermore, the study by the Department of Education regarding professional development in the US also found that 54% of teachers reported receiving various rewards professional development (Choy et al., 2006).

The costs associated with professional teacher development are difficult to measure. Most states and districts do not know actual spending on professional development and estimates generally vary between \$1000 to \$3000 USD per teacher per year (US Department of Education, 1995). Odden, Archibald, Fermanich, and Gallagher described in detail the various issues with measuring expenditures for professional teacher development and created a cost-framework to categorize professional development costs that consisted of six key elements: 1) teacher time, 2) training and coaching, 3) administration, 4) materials, equipment, and facilities, 5) travel and transportation, and 6) university tuition and conference fees.

A logical combination is to use the MOOC concept to meet the apparent high demand for professional teacher development. Such a solution makes traditional educational courses available for free. Coursera recently took a step in this direction and announced the addition of education schools to their course providers, which offer courses specifically catered towards professional teacher development (Pope, 2013). In addition, Coursera added a search parameter for course type entitled “Teacher Professional Development”, and 42 courses are currently available in this category. The support for MOOC providers moving from offering only traditional learning to even offering career development (lifelong learning) and blended learning opportunities is supported by Emanuel (2013), whose study showed that 83% of MOOC participants already have a two- or four-year post-secondary degree. This fact implies that current participants are already using MOOCs to extend their learning beyond existing degrees. Therefore this paper intends to present design principles that will allow MOOCs to become a viable means to offer cost-effective, high quality professional teacher development.

## **MOOCs**

In 2008 Dave Cormier devised the term MOOC when analyzing a course offered through the University of Manitoba in Canada entitled *Connectivism and Connective Knowledge* (Mackness, Mak Sui Fai, & Williams, 2010; Weller & Anderson, 2013). This course had 24 participants enrolled for credit and more than 2000 informal participants. Since this meager start, Stanford released three such massive courses in the fall of 2011 that attracted hundreds of thousands of students and spawned two of the leading private MOOC providers: Coursera and Udacity (Cooper & Sahami, 2013). The popularity of these courses culminated in 2012, when it was crowned “The Year of the MOOC”. Modern MOOCs are now more loosely defined as free, non-credit, massive courses (Pappano, 2012). Despite these courses being open and free competitors to traditional online courses that charge a tuition and provide credit, many traditional institutions have created MOOC platforms such as edX from Harvard and MIT (Pappano, 2012). There are now even private portals that aggregate various course offerings under one umbrella such as Coursera and Udacity, and Coursera is growing faster than Facebook (Pappano, 2012). The growth and popularity of these massive courses is enormous, and they are highly disruptive for higher education (Weller & Anderson, 2013). As previously mentioned, Shirky (2012) states that MOOCs will be equally disruptive to higher education as the MP3 music file format was to the music industry. Shirky (2012) even explains how this technology will be disruptive by positing that such massive and open courses expand the audience for education to individuals who deem traditional educational avenues inaccessible.

However, everything is not perfect with MOOCs and key issues are assessment and recognition, validation, and accreditation (RVA). Regarding RVA, the use of certificates of accomplishment and digital badges are two of the most common ways for participants to show that they have completed a course or obtained a specific skill. Accreditation is a challenge for MOOCs, especially regarding how credit fits into the higher education landscape (Pappano, 2012). Weller and Anderson (2013) address this issue stating that institutions must implement informal assessments such as digital badges and connect these to official accreditation in order to ensure a good student experience. Finally, other crucial issues with MOOCs are engagement and completion rates. Tens of thousands of students enroll in courses but few are engaged enough to complete the courses. For example, a recent study shows that the average completion rate for MOOCs is 6.8% and for courses with active examination only 4.8% (Parr, 2013).

## **xMOOCs, cMOOCs and quasi-MOOCs**

MOOCs have evolved overtime into three different variations: xMOOCs, cMOOCs, and quasi-MOOCs. Traditional learning institutions typically use an xMOOC, where the teacher is the expert and the learner is the consumer. An xMOOC has a traditional view of knowledge based on the “hub and spoke” model, where the hub is the teacher and the spokes lead to the learners. These courses primarily consist of little external materials, and mirror traditional learning by using video lectures and quizzes (McGreal, Kinuthia, Marshall, & McNamara, 2013). A cMOOC is based on a connectivist pedagogical model, and the original courses offered by Siemens and Cormier were cMOOCs (King & Nanfito, 2013). cMOOCs are largely open and decentralized with limited structure.

Learners are autonomous and view knowledge as generative with a focus on sharing and connecting with other participants through blogs, forums, and an LMS (McGreal et al., 2013). A quasi-MOOC is a third variation that provides web-based materials as open educational resources (OER). This MOOC type intends to support specific learning tasks and provides little or no social interaction or grading, and a representative example is Khan Academy (McGreal et al., 2013).

### **Recognition, Validation, and Accreditation**

The key aspects to be addressed for formalizing non-formal learning are recognition, validation, and accreditation (RVA). Singh (2012) defines recognition, validation, and accreditation (RVA) of learning outcomes as a process that makes visible and values the knowledge, skills, and attitudes that individuals have obtained in various contexts and means in different phases of their lives. Furthermore, Singh (2012) states that the RVA of non-formal and informal learning is a key aspect in making lifelong learning a reality. Singh (2012) defines these three concepts accordingly:

- Recognition is a process of granting official status to learning outcomes and/or competences, which can lead to the acknowledgement of their value in society.
- Validation is the confirmation by an approved body that learning outcomes or competences acquired by an individual have been assessed against reference points or standards through pre-defined assessment methodologies.
- Accreditation is a process by which an approved body, on the basis of assessment of learning outcomes and/or competences according to different purposes and methods, awards qualifications (certificates, diplomas or titles), or grants equivalences, credit units or exemptions, or issues documents such as portfolios of competences.

Validation of non-formal and informal learning is becoming a key aspect to lifelong learning, and the purpose is to make visible the entire scope of knowledge and experience held by an individual, regardless of the context where the learning originally took place (Colardyn & Bjornavold, 2004). Validation is a vital ingredient to ensure visibility and to indicate the appropriate value of the learning that took place (Colardyn & Bjornavold, 2004). Validation of non-formal and informal learning is often connected to formal education by providing a certificate or diploma, and it links the assessment of any form of learning to the validation proposed in formal educational systems (Colardyn & Bjornavold, 2004). Furthermore, Werquin (2012) even defines the concept of recognition of non-formal and informal learning outcomes (RNFILO) as a promising approach and that the growing focus on learning outcomes, non-formal learning, and informal learning is a strong incentive for external actors and stakeholders to become involved in the definition of standards. Additionally, according to Mazoué (2012), due to the wikification of knowledge, the notion that only certain forms of officially sanctioned learning count is no longer accepted as a given, and colleges and universities must accept competition from badge systems for accreditation. Moreover, Abramovich et al. (2013) found that participatory badges increase motivation and that different types of badges can affect learning performance.

### **Digital Badges**

A digital badge system is a nascent technology that intends to recognize, validate, and in some cases even accredit non-formal learning to realize the aforementioned concepts of RVA. One of the first and largest actors in this area is Mozilla with its Open Badges system (Surman, 2011). Digital badges allow badge owners to digitally show and publicize online an achieved knowledge or skill. As Carey (2012) mentions the MacArthur foundation deems badges validated indicators of accomplishment, skill, quality, or interest. A digital badge system is more than just a simple list of merits like a CV or transcript. It is a way for students to build and display their educational achievements using digital badges as the building blocks. Once again Carey (2012) reinforces this idea by stating that students will not simply earn badges, they will build them in an act of continuous learning. Open badge systems and digital badge systems are legitimate competitors to traditional accreditation systems such as secondary and tertiary educational institutions and quite possibly threats to their dominance. The biggest push for badges is coming from industry and education reformers, rather than from traditional educational institutions (Young, 2012). However, Matkin (2012) emphasizes that the real proof of the badge concept will come with employer recognition. Furthermore, large actors in the MOOC sphere such as Khan Academy and edX are using or intend to use various implementations of digital badges (Young, 2012). Lastly, a potential drawback inherent in online learning environments such as MOOCs is dishonesty, i.e. matters dealing with verifying the identity of a learner and

ownership of work. However, Gikandi et al. (2011) state that dishonesty can be minimized by enhancing the validity and reliability of assessment methods.

## **Related Research**

In general the body of research studying the use of MOOCs for professional teacher development is scarce. This apparent shortage of research is one of the reasons for calling for more research involving massive courses used specifically for professional teacher development. Dabner, Davis, and Zaka (2012) point out that professional teacher development is often poorly done and typically focuses on workshops to develop teachers' technical skills with appropriate technologies such as LMS. The concepts of structured e-portfolios and learning e-portfolios are also closely connected to the concepts of using online learning to partake of professional teacher development. E-portfolios provide a vessel to maintain achievements beyond formal education and provide a means to present, maintain, and demonstrate skills in order to validate and accredit accomplishments (Greenberg, 2004). Another interesting aspect is that formal course credit does not seem to be a necessity for professional development as certificates can be enough evidence of achievement for employers (Yuan & Powell, 2013). Finally, one study shows that small task-oriented MOOCs can effectively support professional development of open academic practice (Mackness, Waite, Roberts, & Lovegrove, 2013).

## **MOOC Design for Professional Teacher Development**

The two major issues that need to be addressed when contemplating the use of MOOCs to complement and possibly replace current efforts for professional teacher development are the type of courses typically used by MOOC providers and validation/accreditation of learning. Most MOOCs follow the xMOOC structure previously mentioned. This structure basically replicates how courses are given on campus. The expert teacher makes video recordings of lectures and creates assignments, quizzes, exams, etc. that must be completed in order to complete the course. xMOOCs also typically follow controlled schedules with fixed start and stop dates. The change needed to address this issue is that MOOC providers need to restructure the pedagogy of courses to become cMOOCs. cMOOCs focus on community building and social interaction. The content and requirements can be the same, but the focus on the teacher as an expert moves to a focus on peer review and interaction, where the teacher is a more of a mentor/guide. Furthermore, cMOOCs tend to have a more self-regulated schedule with flexible start and stop dates.

The second issue is the challenges associated with recognition, validation, and accreditation of learning. As previously mentioned, it is crucial to design a massive course to offer some form of free certificate and/or digital badge so that teachers can return to their learning institutions with proof that they have accomplished specific learning outcomes. Therefore, a mandatory design principle for a MOOC to be successful as a form of professional teacher development is that it offers a certificate/digital badge that clearly recognizes and validates the accomplishments of a learner. Another key aspect is that this validation of learning should preferably be obtainable for free or for very little cost. A preferred design element in a massive course would even be accreditation. If a MOOC offered university credit there would then be little issue regarding the acceptance of accomplishments by employers. Accreditation is obviously a difficult goal to achieve, but hopefully popularity will bring about standardization and greater acceptance. The ideal solution is a standardized means of RVA for MOOCs. Such a uniform system would make it easier for learners to substantiate their accomplishments and for employers to evaluate the accomplishments.

## **Discussion**

MOOCs represent an untapped potential for teacher professional development, especially if the actual courses are restructured as cMOOCs and always provide recognition and validation. However, the future of these massive courses is unsure and highly debatable. MOOC providers do not have a clear business model and in general are struggling to make money. Strategically targeting courses for professional teacher development may be a way to find a niche that is financially sound. However, charging eventual fees or tuitions for MOOCs reduces one of the key benefits that these courses hold over traditional university courses. This fact opens the door for hybrid models for offering courses that charge higher, yet reasonable fees, in exchange for traditional university credit.

The eventual acceptance of MOOCs by elementary and secondary level educational institutions as quality replacements for traditional professional development is crucial factor for long-term success and viability. This future is particularly dependent on RVA. Specifically, how employers value course certificates in comparison to traditional course credit will ultimately determine the successfulness of RVA in massive, open courses (Cooper & Sahami, 2013). Furthermore, how are digital badges viewed in relation to certificates of completion? Will badges

and certificates become a form of second-class learning validation; just as online learning was once viewed in comparison to traditional campus learning? Perhaps a need for a paradigm shift regarding online RVA methods and standards is first necessary.

Another potential benefit for using MOOCs for professional teacher development is that they offer increased exposure for teachers to OER resources, which make blended learning and flipped classroom type efforts more accessible. Also, teachers themselves develop an understanding for MOOCs and studying online that they can then bring into the classroom. Additionally, teachers increase their professional network drastically by following courses that can include participants from all over the world. Performing professional teacher development via MOOCs can provide an extended network in which to create a community for learning with like-minded peers in similar situations. In this way these courses can provide an extended peer community that can further increase the learning effects of a course. The potential for community building and exchange of ideas, best practices, and lessons learned increases significantly.

Finally, an existing problem for using MOOCs for professional teacher development is that many courses may be more general in nature and not be specifically directed towards teachers. For example, course offerings currently dominated by computer science (King & Nanfito, 2013). As previously stated, MOOC providers are starting to create courses specifically for professional teacher development. However, specific course offerings for teachers will need to increase in order to ensure success.

### **Concluding Remarks**

The long-term effects and sustainability of MOOCs are debatable, but a general consensus exists that such courses are here to stay, regardless if they are disruptive or merely transformative. The utilization of MOOCs for professional teacher development is relatively novel and uncharted. The combination of MOOCs and teacher development seems to offer an obvious win-win situation. Teachers can receive high quality professional development for free, and MOOC providers can expand their user base with motivated, educated learners. However, only time will tell if MOOC providers concentrate on this market, and whether teacher and employers value and accept these courses as satisfactory teacher development. The combination of MOOCs and professional teacher development warrants more empirical and analytical research in the future in order to better study the potential successes and hazards. Finally, the use of cMOOCs and standardized RVA methods also has the possibility of addressing low engagement and completion rates, which are currently substantial problems for massive courses. Massive courses attract hundreds of thousands of students, but only around 6% actually complete the courses. Once again, motivated teachers may provide an unexploited learner base that both starts and completes a course.

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