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MOOC factors influencing teachers in formal education

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MOOC factors influencing teachers in formal education

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Abstract

This paper takes a look at the differences between face-to-face teaching and Massive Open Online Courses (MOOC) opportunities for teachers, in order to provide insight in the necessities of teacher development. In order to do this a short overview of MOOC is provided, including pedagogical options, the necessary skills needed, and some MOOC opportunities to increase academic success for vulnerable socioeconomic students by using MOOCs.

Teachers in formal education provide the learning path towards learning objectives and learning outcomes that need to be achieved. In order for teachers to deliver quality in both face-to-face and online learning environments, it is pivotal that they experience and understand MOOC options. Overall the paper suggests that teachers need to be informed about MOOC diversity to enable them to perform in the MOOC learning and teaching environment. This will allow teachers to overcome their own doubts, the complexities that come along with these new online environments, and provide them with the confidence and insights needed to use MOOC for their own teaching goals.

Keywords

MOOC, online learning, pedagogy, assessment

Introduction

This paper looks at the Massive Open Online Courses (MOOC) opportunities for teachers working in formal education. In order to do this a short overview of MOOC is provided, including pedagogical options and necessary skills and needs, and some MOOC opportunities. Teachers need to be informed about MOOC to enable them to perform in the MOOC learning and teaching environment.

History and range

MOOCs have been steadily gaining attention in Higher Education since they first came into being in 2008 during the CCK08 course organised by George Siemens and Stephen Downes (de Waard, et al., 2011). In 2012 the next MOOC evolution took place when the University of Stanford organised the Artificial Intelligence course, attracting over 100.000 interested learners. MOOC were new and they shook the educational establishment (Mazoue, 2013; Adams, 2012; Pérez-Peña, 2012). Since then a lot of MOOC research and experimenting has been done, resulting in a better understanding of how MOOC can help teachers and learners in this new eLearning era.

From small to massive

A MOOC, is an online course which is mostly provided for free, where a gathering of participants willing to exchange knowledge and experience for individual or collaborative learning. A MOOC provides information and content links on a particular topic, and engages participants throughout the course to enable them to understand that topic. The interactions within a MOOC can vary from a more transformative approach to a constructivist or networked approach. In the transformative approach content is provided to be consumed and interactions are mostly limited to peer discussions per topic (cfr. most MOOC provided in big US, UK, or EU platforms such as Coursera, FutureLearn, Iversity, EdX, Canvas.net). In the more constructivist approach the content, questions and/or problems are provided as a starting point for all the participants to build upon: either by providing fixed information with additional links, or by providing basic information onto which the participants can add their own resources and produce additional, contextualized content (cfr. connectivist MOOC such as DS106, oldsMOOC, or rhizo-MOOC).

Although the choice of which MOOC will be used is up to the institutional management, teachers need to understand the MOOC options to plan learning objectives and interactions in an optimal online course. All of these differences result in multiple formats all entitled MOOC. As a teacher it is of interest to understand the biggest differences in terms of pedagogy and focus to understand the learning/teaching options in a MOOC.

Diversity from transformative to constructive

When looking at the spectrum of MOOC, there is a clear difference in pedagogical approach between what is known as xMOOC (provided by big MOOC platforms) and cMOOC (the first MOOC using all the options of contemporary internet: social media, producing content by peers). This has led to multiple articles on the MOOC differences in terms of instructional design, innovation, pedagogies used, institutional disruption, and learning opportunities of these different formats (Rodriguez, 2012, 2013). There are differences between these two most discussed MOOC formats.

	xMOOC	cMOOC
Main learning approach	Transformative learning and teaching: information delivery (multimedia) and assessment	Collaborative, authentic learning: more constructivist and networked learning approach.
Student interactions	Mainly discussion forums, or commenting on videos. Assessments and self-assessments. Content consumption.	Multiple and varied peer interactions (e.g. discussion forums, peer reviews), content consumption as well as content production.
Teacher input	Mostly expert on the stage, sometimes using colleagues to address different sub-topics.	Mostly guide on the side, co-participant with expertise on the subject but open to learn from participants.
Content resources	The Intellectual Property is in the hands of the MOOC organizer, with restricted (re)use.	The content offered or produced is often an Open Educational Resource (OER). Open to all.

So there is something to be said about both approaches. But what effect does MOOC learning have for teachers?

Teachers and MOOC

MOOC offer a wide variety of facilitation, ranging from the traditional expert narrating the topic, to learners that share their own expertise so other peers can learn from it, where the teacher role shifts to being a guide-on-the-side. Although these guides are experts in the field, they are no longer dictating the way to learn for the participants, they use their expertise to guide the learners towards personalized learning goals.

Real teachers are irreplaceable

Experienced teachers deploy multiple teaching strategies. They are experts in teaching, they know how to transform any content and any dynamic into an engaging learner experience. And most importantly, teachers understand where their learners come from and where they need to be heading. As such teachers use creative learning actions which they pull out of their pedagogical backpack.

Ramirez (2014) described research based on the first MOOC in Latin America which sought to provide an option for teachers training on open access to knowledge. This MOOC was delivered by a network of academics incorporated in ten Mexican universities and using Blackboard as its LMS. The study looked at what the learning design components are that aid students and teachers to be successful in a MOOC in Latin America. This contextualized study described by Ramirez (2014) showed that MOOCs act as an environment in which new forms of distribution, storage and retrieval of information, offer the potential for developing shared forms of distributed cognition and knowledge. This can help reduce the digital divide and support educational democratization. But in order to reach this it is also desirable that the designs and resources are accessible in environments where

technology and the internet have not yet reached an efficient connectivity. Providing resources to support the appropriation and technological immersion of the participants having their first experiences in a technology mediated environment is also crucial for success and participant retention.

All of these factors are important to provide teachers with the self-esteem and experience they need to fully understand and lead MOOCs themselves. But what pedagogies work well in MOOCs?

MOOC fitting pedagogy

Online education does not vary much from sound, face-to-face learning in its pedagogical essence. One can make a pedagogical distinction between classical online learning and MOOCs based on the importance of dialogue being present at the core of a MOOC. Dialogue between participants immediately moves the focus from content-to-learner toward learner-to-learner dynamics. As such pedagogies that focus more on learner-centered approaches become more relevant in these types of learning environments.

Constructivism

Constructivism relies on the belief that there is not a single reality to be discovered, but that each individual has constructed their own personal reality of learning (Smith & Ragan, 1999). One of the key persons behind constructivism is Piaget and one of its key tenets is that "knowledge is not transmitted: it is constructed". Which basically means we need to get into dialogues with each other in order to make sense of new information. Any knowledge students gain from those discussions is constructed, added to their previous knowledge by using the scaffolds offered by other learners as well as teachers.

Connectivist learning

The connectivist approach developed by George Siemens (2005) embraces divergent networks, and distributed learning which is often reinforced by different expert sources. This approach strengthens students own understanding, while building a network at the same time. Dialogue, discussion and linking up with peers as well as teachers become the drivers of learning. This means that the learning environment must be optimized to make this connecting for knowledge exchange happen.

Networked learning

Networked learning is similar to connectivist learning, but with a focus on the actual learning. "Networked learning is learning in which information and communications (ICT) is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources." (Goodyear et al. 2004, p.2). The actual learning happens when people come together, sharing and collaborating for learning.

Problem-based learning

MOOCs, and particularly the connectivist MOOCs lend themselves for problem-based learning, as they rely in part on enquiry based peer interactions and these learning models benefit from more interaction and access to information (Williams, Karousou & Mackness, 2011). In problem-based learning the key is to find solutions for problems faced in a certain discipline. The problem based approach fits professional development and authentic learning contexts very well, and can be used easily within a MOOC, letting participants come up with the problems they faced and/or share the solutions they have adopted.

Flipped classroom

In a flipped classroom the face-to-face moments are used for in-depth discussions or (additional) hands-on exercises or workshops. By flipping the class the students are asked to do their homework prior to the collaborative discussion in class. The homework consists of online resources or texts that

need to be reflected upon, taking all the students to a similar starting position before discussing a subject in full. In a MOOC the classroom might be a collaborative space (e.g. discussion forum, synchronous webinars). As a starting point specific MOOC content can be selected by the teacher and shared with the learners, thus gradually allowing both teachers and learners to become accustomed with MOOCs.

Depending on the learning goals set by the teacher, different approaches might be used to obtain the best learning results. Mixing pedagogies and interactions does imply that additional skills will need to be developed or acquired.

Increased digital and technical skills

MOOC are the next step in the evolution of online learning. But where eLearning was first organized and confined to the boundaries of an institutional Learning Management System (LMS), MOOC made the online courses open to a global, international public. There are however three essential factors needed to be able to follow MOOC: online access, and digital skills to know how to work in the online learning environment, and the capacity for self-regulated learning.

Technological skills

 With the addition of social media tools (= more peer-to-peer interactions and more dialogue in general) and mobile or ubiquitous options to allow the learners to stay tuned to all the interactions happening in a MOOC. This results in an online course that is much more tailored to the time and knowledge demands of the learner, and it can fit more closely to the contexts of the learners as well allowing them to connect to the course with those devices they feel comfortable with. This means that the course is ideally ubiquitous, allowing students to access the course and its interactions with mobile and non-mobile devices (de Waard, 2013).

Digital skills

More digital skills are needed as MOOCs can make use of a variety of social media tools and all the latest online tools. This inevitably results in a need for the participants to practice and acquire new skills. MOOC are also not standardized and when investigating all current MOOC platforms, one can see that there is a difference in pedagogical approach, design of the user interface and the embedding of social media tools, which results in a challenge to really understand all the options within different MOOC platforms.

Self-regulated learning

Within MOOCs learning increasingly becomes the responsibility of the learner. Sometimes that responsibility can be limited to the learner having to take responsibility for their self-directed or self-regulated learning where the learner take their learning into their own hands and regulate their learning using personally constructed learning strategies.

This self-regulated learning is a complex skill to acquire. It is not only complex on an individual level, but also on a group level involving different teaching skills to scaffold and mold the self-regulated skills. Enhancing these self-regulated skills is one of the many challenges MOOC teachers face, as MOOCs gather a very diversified group of learners. A study focusing on self-regulated learning conducted by Gutiérrez-Rojaz et al. (2014) showed that it is crucial to identify the lack of study skills and work habits as a significant factor, hindering the successful completion of MOOCs by less experienced learners" (p. 47)."Considering 'students' to be a stable and universal category with innate abilities and behaviours masks the variations, clashes, and conflicts that make MOOC populations rich, diverse, and intense" (p. 174, Knox, 2014).

The same can be said about the expectations and abilities in teachers. In order for MOOCs to work, it is pivotal to understand and tune what teachers are expecting. That way everyone can understand what teachers can offer to the MOOC process. Like Ross et al. (2014) indicated, it is important to address the different experiences and beliefs about education in order to reveal the deep-seated expectations which are often brought to bear on ensuing MOOC activity to a global audience (Ross et al., 2014).

An important part of any learning and teaching activity is assessment, allowing both the learners and the teachers to evaluate the actual learning taking place.

Rethinking assessment

Multiple choice questions, and traditional assignments such as writing papers were providing teachers with feedback on the students learning curve within classic formal education, but due to the massiveness of participation in a MOOC, the assessment procedures have changed. In MOOC new assessment options are now provided ranging from mandatory participation in discussion forums (with clear rubrics on what is expected from the participants), over student produced content using digital tools such as YouTube and Facebook, to peer-to-peer reviewing (where students review assignments from other students, provide feedback on them, after which each peer reviewed student can rewrite the assignment). Apart from these human driven assessment options, there are also a set of newly, automated assessment options being developed. In science education, for instance, computer simulations, scientific games and virtual laboratories provide opportunities for students to develop and apply skills and knowledge in more realistic contexts and provide feedback in real time by automated processes (Redecker & Johannessen, 2013).

eRubrics are also an assessment tool that gets increasing attention especially in the competency-based educational models which emphasize student's self-regulation skills. De la Cruz Flores and Abreu Hernández (2014) investigated eRubrics and they came up with three key elements from eRubrics that support the learning process: reflexive practice, collaborative learning, and feedback provided by peers and teachers.

These additional and complex assessment methods confront teachers with an increased complexity to achieve learning/teaching success in MOOC environments. Ross et al. (2014) emphasize that "MOOCs are not adequately addressing the complexity of the teacher's role" (p. 66) at the moment, and they add that "a teacher in the MOOC are participants in a particular, specific site of knowledge construction … which leaves MOOC teachers with unrealistic expectations about what it means to teach and learn at scale" (p. 66).

Looking at all the additional challenges and skills needed to teach in a MOOC, one can wonder whether MOOC risk to increase existing digital divides and increase socioeconomic gaps.

Increased success for students from vulnerable socioeconomic classes

When MOOCs emerged, they were promoted as delivering education for all. However, the necessary infrastructure (computer, internet access), the skills needed (digital skills, language skills), and the content complexity that often assumes prior knowledge, do put MOOC in a questionable position when it comes to the digital divide. Due to its complex interactions and prior knowledge, MOOCs risk to increase the digital divide between students from different socioeconomic classes. However, recent research from Jiang et al. (2014) have provided proof that with the right approach MOOC can be used to strengthen students from more vulnerable socioeconomic classes. Jiang et al. (2014) looked at factors influencing enrollment and completion in a pre-college preparatory MOOC. University of California at Irvine (UCI) students of all preparation levels, defined by math Scholastic Aptitude Test (SAT) score, were invited to take a Bio Prep MOOC to help them prepare for introductory biology. Students with math SAT below 550 were offered the explicit incentive of an early change to the biology major upon successful completion of the MOOC and two additional onsite courses. Their study showed that university students entering with low preparation outperformed students entering who already had the credentials to become biology majors. These findings suggest that MOOCs can reach students, even those entering college with less preparation, and have the potential to prepare them for challenging science, technology, engineering, and mathematics (STEM) courses.

This makes MOOC a strong contender to enhance the academic achievement of all students, which is an incentive that will appeal to many teachers. The difficulty is to support teacher development, so they can become experienced with the MOOC opportunities, enabling them to become skilled and confident.

Scaffolded teacher development: moving from face-to-face to online learning

The complexity in new teaching and learning skills is a reality within MOOCs. This poses a problem for both the educational institutes, as well as for the teachers. Training teachers to fully grasp the potential of MOOCs would take a lot of time, money and effort, all of which is not always available. But there is an approach which allows teachers to gradually become expert at MOOCs, while staying on top of their field at the same time: MOOC blending. This gradual exposure will allow full MOOC teaching in the long run.

As mentioned before the flipped classroom approach lends itself well for integrating parts of a MOOC into a classroom setting. The teacher can then point towards online resources provided by MOOCs and propose meaningful, difficult questions to their students based upon the content provided in those MOOC resources. The answers to the questions are then discussed in the classroom as "learning is promoted when participants share their views with everyone, interact with the reading material and participate during sessions" (Viswanathan, 2012).By doing this the teacher, as well as the students are emerged in a small fraction of a MOOC. And the relevance of the MOOC content can be easily adapted to fit the curricular needs of the teacher or institute. By screening MOOC for potential resources, engaging in MOOC content within an overall safe classroom setting, the digital literacy of both teachers and students can be enhanced and critically assessed. "teachers' participation in MOOC would help them to encourage their students to effectively use their digital literacy for learning" (p. 32, Viswanathan, 2012).

Conclusion

MOOC are still in a process of transformation, but thanks to a lot of exploratory work, the learning and teaching community is starting to see the potential of MOOC within formal education. "Acknowledging the complexity of teacher positions and experiences can contribute crucial perspectives to debates about what the MOOC is for and what it can accomplish" (p. 67, Ross et al., 2014).

In order to provide teachers with MOOC confidence, it is crucial that their digital and technological skills are enhanced, and that a gradual exposure to MOOC is planned within the educational institute. This will allow both teachers and learners to understand and build upon current MOOC pedagogies and interactions, so teachers can get the most out of this new learning and teaching format.

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