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TWELVE TIPS

Twelve tips for integrating massive open online course content into classroom teaching

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ABSTRACT

Massive open online courses (MOOCs) are a novel and emerging mode of online learning. They offer the advantages of online learning and provide content including short video lectures, digital readings, interactive assignments, discussion fora, and quizzes. Besides stand-alone use, universities are also trying to integrate MOOC content into the regular curriculum creating blended learning programs. In this 12 tips article, we aim to provide guidelines for readers to integrate MOOC content from their own or from other institutions into regular classroom teaching based on the literature and our own experiences. We provide advice on how to select the right content, how to assess its quality and usefulness, and how to actually create a blend within your existing course.

Introduction

More and more massive open online courses (MOOCs) are becoming available in the field of medical education. MOOCs are a new way of delivering interactive learning activities to large numbers of participants worldwide. They offer the advantages of online learning and provide content including short video lectures, digital readings, interactive assignments, discussion fora, and quizzes. Creating a MOOC is a time consuming and resource expensive process which contains multiple steps (Pickering et al. 2017). Although MOOCs originally have been developed for stand-alone delivery to students outside of the regular curriculum, schools around the world have started to integrate MOOC content from their own or from other institutions into the curriculum (Robinson 2016; Swinnerton et al. 2017; Bralić and Divjak 2018), with students indicating high satisfaction with the online materials provided as an inspiring addition to the traditional course materials (Aboshady et al. 2015). The use of open materials offers the educator opportunities for reforming and innovating regular face-to-face programs with easily available high-quality materials offered by other institutions. However effective integration of such resources is not an easy process. This article offers 12 tips for educators to consider before starting integrating MOOC content into their own teaching. Although we focus on MOOC content in particular, many of these tips are also relevant to integrating on-line material in general.

Tip 1

Clearly define what content you want to include in your course

Before you even start looking for MOOC content, it is important to have a clear view of what you are looking for. For many educators, this is already "in their head" which makes it very tempting to skip this first step but in order to make the following steps efficient it is advisable to define the scope in detail. What are the topics that lack in your teaching and which you want to supplement with outside resources? What kind of online activities do you envision your students to do? Is it more focused on reading materials or watching videos, or do you want your students to self-explore resources and discuss and collaborate with peers? For this, create a one-page detailed description of the integration you are looking to establish.

Tip 2

Determine the way you like to use the online materials

The second step is to determine in which way you envisage integrating the MOOC content you are going to find into your classroom course. The most basic way to use parts of the online course is to offer small elements like a reading or a video clip as additional learning materials to your face-to-face teaching. In this scenario, the student only enters the MOOC to study this particular element. A more intensive way to use a MOOC is to replace one or several teaching sessions in the classroom with some specific MOOC materials or sections, like one or two entire activities. A MOOC can also be offered in full, where participation in and completion of the course is conditional to enter a face-to-face training program. Finally, the MOOC can also be offered as a stand-alone online course, of which completion will be rewarded by educational credits for the students. It is important to think the integration model through carefully, as it determines which kind of materials you need to select in a later phase and how to

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align these materials with the classroom teaching activities (see Tip 9). In selecting a scenario, take also into consideration that engagement of students with the online materials and the level of participation in discussion fora often seems to be higher in compulsory scenarios than in voluntary ones.

Tip 3

Search for MOOCs on the selected topic

Medical MOOCs can be found through MOOC search engines such as Class Central and MOOC List or through the platform websites themselves such as Coursera, EdX, Futurelearn, Udacity, or Canvas Network (Liyanagunawardena and Williams 2014). Perform your search in medicine but also explore health or life sciences related categories. Often searches can be performed on content keywords, language, start date, level of the learner, skills that are taught, offering institution, or the availability of a certificate. Searches yield information about the course, specifically the objectives, target audience, course outline, number of study hours per week, number of weeks to complete the course and the associated costs. Take into account that search engines do not use the same databases and that search results may differ, with specific platforms only showing their own offerings. We, therefore, advise you to browse multiple engines and platforms when looking for a MOOC on your desired topic. The number of results you find might be high; already 511 medical courses were identified in 2017 through Class Central alone and the number keeps growing (Goldberg and Crocombe 2017).

Tip 4

Determine the availability of the specific MOOC and its contents

Having selected the MOOC, understanding its accessibility in terms of availability and duration are essential for effective integration, especially if you want to tightly synchronize your classroom learning with the MOOC discussion fora or the presence of online moderators. The availability of courses varies from monthly to annually or biannually, and others being solely one-off events. The duration of courses varies from short 1-week courses to 6, 7, or 8 weeks being common. These course characteristics will largely be out of your control unless you are integrating a MOOC from your own institution into your teaching. To overcome timetabling restrictions there are a few solutions. First, most MOOC platforms allow users to continue accessing the course for several weeks after the official end date as long as they have enrolled onto the course during the relevant enrollment window. Second, some platforms like Coursera offer the option of "private sessions" to be created by the owner of the course, which can have tailored start and end dates and exclusively is focused on your students. Finally, most MOOC providers allow users to download content that can be repackaged and released to your students on your institutional learning management system. The main issue with all of these approaches is the loss of discussion with external peer students or moderators.

Tip 5

Gauge the credibility of the MOOC before deciding to integrate

Before you start doing more research into the complimentary availability of the MOOC (Tip 6) and making an assessment of its educational quality and key attributes (Tips 7 and 8), it is helpful to get a quick first impression of the credibility of the course. An easy way to do that is to rate the institution and instructors who developed and teach the course. Many MOOCs are being led by prominent scientists or leaders in their field and offered by leading international institutions. These "house-hold" names bring a level of credibility to the course. Realize that MOOCs are subject to a huge exposure from the outside world, and those individuals and schools will not hazard their reputation by delivering poor content. The credibility of the MOOC is particularly important for your students to offer them a high level of academic worth from participating in the course. If you really want to evaluate a course in more depth, there are many more variables to consider (Chapman et al. 2016). But, from our experience, we feel assessing the credibility is enough at this stage to move forward.

Tip 6

Ensure the MOOC content is freely available to your students

A key aspect of MOOCs is their openness regarding prerequisite qualifications, personal background, age, country of residence, and very little, if any, financial costs associated with participation. The only requirement is having a digital device and connection to the internet. It is, therefore, reasonable to encourage your students to enroll and utilize the open content alongside your existing course or program. However, caution is needed. Some aspects of the MOOC experience are being placed behind a pay wall. There is a financial cost attached to obtaining a certificate showing how much of the course has been completed including details about performance on assessments. Some MOOCs are also now credit-bearing, and obtaining these credits has a financial cost attached. More recently, some platforms have started to charge to allow longer-term access to the MOOC and its resources for more than a few weeks after the MOOC end-point, whereas previously enrollment on a MOOC generally allowed unlimited future access. Therefore, it is useful to check the access rules for the MOOC you are interested in, as they vary per course and per platform. Also, for each of the resources that you choose to use, you should identify the Creative Commons (CC) license attached to it, which specifies how you can use, edit, and share the material, and for what purposes. You should retain that license when you use the resource. If the resource does not have a CC license or copyright details specified, then it is good practice to check with the content providers that it can be shared.

Tip 7

Determine if the MOOC contains the desired teaching modes

Now you have identified one or more MOOCs you are interested in, check the courses for their availability of specific teaching modes by simply enrolling in the course as a student to find out what options are available. When browsing the course, it might be helpful to distinguish between instructional modes, interaction modes, and assessment modes (Toven-Lindsey et al. 2015). Most MOOCs offer all of the three modes; however, some courses do so more abundantly than others. For instruction, materials like short videos, digital texts, illustrations, PowerPoint slides, audio clips, and links to external websites can be found. These instructional materials are generally information dense (Harder 2013) and are well suited for students to prepare. For interaction, most courses offer discussion fora to introduce oneself, to ask questions or to discuss content-related topics. Interactions within MOOCs are extremely powerful due to the interesting audience of peer learners (Reinders and de Jong 2016). A diversity of peer medical students, medical specialists, other health professionals, and even patients and their families from all over the world contribute to discussion fora of different kind (Goldberg and Crocombe 2017). This offers an opportunity to learn about medical concepts from different perspectives, cultures, and religions. Most medical MOOCs include assessments consisting of automatically graded multiple choice quizzes and exams, automated or peer-assessed short open-ended questions, and open question that require a long answer such as a reflection or an essay (Reilly et al. 2014). Also, virtual patients and educational games are being used for assessing learners on clinical reasoning skills (Stathakarou et al. 2014; Subhi et al. 2014; Reinders and de Jong 2016; Berman et al. 2017). Formal MOOC assessments usually include a combination of assessment modes, and for the integration into your course it is up to you if the MOOC assessment of your choice counts as a high or low stake assessment.

Tip 8

Determine the social-epistemological dimensions of the course

Teaching materials can be categorized into different social and epistemological dimensions of learning (Toven-Lindsey et al. 2015). When integrating MOOC materials, it is important to use materials in the appropriate dimensions relative to the rest of your course. For the social dimension, learning activities can be designed to either focus on learning individually or learning in a group. One of the basic tenets of the first MOOCs is that knowledge is something that exists in networks of people instead of in individuals and many MOOCs are, therefore, aimed at group learning (Bradshaw et al. 2017). As MOOCs have evolved, more traditional individual e-learning components have been implemented. Studies have described that campus students tend to not use the online interaction options when they also have access to their fellow students in other ways (Swinnerton et al. 2017; Dandache et al. 2017). Epistemologically, teaching can be focused on more objectivist or constructivist views on learning. Objectivist teachers consider reality to exist independently from the human mind, so teaching is essentially the transmission of known facts about reality (Arbaugh and Benbunan-Finch 2006). Constructivist teachers consider reality to be located in the human mind, it is constructed as we experience it and thus multiple realities exist in multiple minds. Teaching is the cultivation of the constructing mind (Vrasidas 2000). In general, objectivist approaches are more structured and thus might be more appropriate for novice learners while constructivist approaches rely on engagement with content and demand some maturity in task skills from the learners. To categorize teaching modes into dimensions, the Teaching Approach Framework can be consulted which combines social and epistemological dimensions (Arbaugh and Benbunan-Finch 2006; Toven-Lindsey et al. 2015).

Tip 9

Make sure you align the goals, the teaching activities, and the assessments

For integration of MOOC content in class, the challenge is to develop an integral concept in which the overall learning goals are aligned with the teaching activities and the assessment in which the students will show to have mastered the learning goals. The main theoretical model of constructive alignment is provided by Biggs and Tang (2011). As the integration of MOOC content in class will contain content from the MOOC and from your class, you should make a plan how to align goals, learning activities, and assessments of the chosen education material. Unfortunately, in many MOOCs goals are not well communicated. The study of Margaryan and colleagues (2015) demonstrated that in many MOOCs neither learning objectives nor learning outcomes were specified, and if they were specified they were largely not measurable. Thus, designing your own intended learning outcomes is necessary and learning goals should be made as measurable as possible. Assessment criteria should be designed which meet the intended learning outcomes. Assessments might be fully offered outside of the MOOC or (partly) within the MOOC using the assessments available. Ideally, all assessments, whether used in the MOOC or class should be bespoke (Pickering et al. 2017). However, although this feedback would be possible in the online environment of the MOOC, it is probably easier and more effective to offer the feedback outside the MOOC in class, as there is direct interaction with the students and alignment with your curriculum aims can be made clear.

Tip 10

Provide clear instructions to students on how to enroll onto the MOOC

With a MOOC or its content forming part of your classroom course you will need to inform your student cohort how to access this material and also why this approach is being taken. Traditional strategies, such as teaching guides, announcements, and institutional emails, will usually suffice, but it is important to get the specifics correct. If the MOOC you are integrating is running concurrently with

your course you will need to clearly disseminate the URL and to let the students know when they must register by and that they will need to create a personal account with the host platform. As this is likely to be external from your own LMS, you will need to clearly disseminate the URL and perhaps provide detailed support to ensure the students are enrolled. This is particularly important if the MOOC content is to be undertaken during timetabled sessions.

Tip 11

Provide clear instructions to students on how to utilize the MOOC and its resources

A clear dialog with the student cohort will need to include the rationale for including this content, how you intend to use the resources, and what you expect the students to achieve. Are the resources supplementary to be used for consolidation or is the MOOC content standalone and covers specific learning objectives from the overarching course? And is engagement with the content voluntary or compulsory? It is often needed to help students to understand their responsibilities in the online course as that differs from traditional classroom learning. Guide their new independence in learning by providing a list of tips on how to make the most out of such a massive and open learning environment and how to use the different content types offered most efficiently (Griffiths 2013). For example, watching the online lectures as part of a daily routine works better than trying to sit down and watch a week's worth of lecture videos in one sitting, or students watching videos together during class time and then discussing and absorbing important concepts together. Consider discussion activities from an inquiry perspective and ensure they encourage students to move from awareness to knowledge construction and finally to application (Garrison and Vaughan 2008). A blended course with a MOOC requires students to learn in new ways in a probably unfamiliar online environment. If your group's size allows, it would be beneficial to facilitate the familiarization process by holding the first session face-to-face in a computer lab to show students how to navigate the MOOC.

Tip 12

Determine the success of MOOC integration

The integration of online digital content into campus-based courses is not uncommon (Swinnerton et al. 2017); however, the role of MOOCs as content providers is still nascent. It is therefore important to evaluate the impact the MOOC has made on the cohort of students who received the integration. Early research focused on the perceived success of MOOCs using platform-derived quantitative measures of participation, included the proportion of the MOOC accessed, time before drop-out, and completion rates (Veletsianos and Shepherdson 2016; Deng and Benckendorff 2017). Increasingly recent evaluations have focused on more nuanced quantitative approaches and qualitative analyses that aim to understand learner behavior across a range of performance indicators. To evaluate the impact of MOOCs, you can use a range of research methodologies, such as a survey asking for your students' opinions about the MOOC and its value, an assessment which tests their knowledge gain, or activities where you can monitor and assess whether you think the activity is having the desired outcomes. If you are connected to the MOOC and the developing institution, you may be able to access log file data to explore your students' participation in more detail, and evaluate their engagement both quantitatively and qualitatively. In both cases, in order to assess the impact of the MOOC, you must have a clear rationale for why you chose this approach and what you hoped to achieve.

Conclusions

Effective integration of open materials offered from MOOCs into regular classroom teaching is not an easy process. By establishing a clear rationale on the topics you want to include in your teaching, the way in which you want to do that, the social-epistemological dimensions you want to use most in the online teaching part, and the way you are going to instruct the students on how to engage with the materials, the process of integrating MOOC materials into classroom teaching becomes more efficient and effective.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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