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Please cite the original version:

Aarreniemi-Jokipelto, P. (2020). An Educational Model and Digital Solutions for a Massive Open Online Course. In Proceedings of EdMedia + Innovate Learning (pp. 919-923). Online, The Netherlands: Association for the Advancement of Computing in Education (AACE). Retrieved February 28, 2021 from <https://www.learntechlib.org/primary/p/217398/>

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An Educational Model and Digital Solutions for a Massive Open Online Course

Päivi Aarreniemi-Jokipelto
Haaga-Helia School of Vocational Teacher Education
Finland
paivi.aarreniemi-jokipelto@haaga-helia.fi

Abstract: Recently, there has been a rapid global increase in the provision of massive open online courses (MOOCs). Renowned universities are now providing content in this way, and thousands of people complete these freely available courses. The aim of this ongoing project is to create a MOOC entitled “Steps Towards Responsible Tourism” in which students study individually without a facilitator or peers, and this paper describes the development of the educational model and the digital solutions to be utilized in the learning management system. Typically, MOOCs are designed by one university, but this course is a collaborative project between five universities with many teachers working together, and this has understandably affected the process.

Introduction

Online courses can be roughly divided into two types. First, higher education institutions (HEIs) and schools may organize formal online content for their students as part of an established curriculum, and, second, massive open online courses (MOOCs) may be available in a relatively recent development in distance education. MOOCs are open for all interested individuals but are also sometimes part of traditional qualifications, or competences gained in them might be recognized in a more formal context. Standard online courses can be fully online or provided in blended learning scenarios that also include contact sessions, but MOOCs are always fully online. The number of participants in a MOOC is typically unlimited and can reach hundreds or thousands of people, meaning that MOOC students are ordinarily more numerous as compared to traditional online courses.

MOOCs themselves have generally been divided into two approaches known as connectivist (cMOOC) and extended (xMOOC). cMOOCs involve groups of people learning together and everyone has the dual role of both teacher and learner in the learning environment. Typically, cMOOCs promote interaction through the use of blogs, learning communities and social media platforms. xMOOCs, such as those provided by Coursera, edX and Udacity, further increase the number of students who can study a course platform, and this is often cited as the advantage of the xMOOC approach. However, a disadvantage that is quite often mentioned in relation to xMOOCs is that they almost completely eliminate teacher-student interactions and involve only limited peer-to-peer communication. They are therefore occasionally seen as inferior to other types of online course.

There is a vast number of approaches to the organization, pedagogy, functionality and tutoring involved in a MOOC, and some have been more successful than others (Warburton & Mor, 2015). Although free and open MOOCs can accommodate many students, significant numbers do not actually complete the course, and this is a commonly mentioned issue in the MOOC literature. It is crucial, therefore, to understand what participants’ expectations are and what motivates them to finish a MOOC. According to Salmon et al. (2017), there are critical design components that are likely to increase MOOC completion through supporting the students’ ability to understand and apply their learning in practice. Identifying typical participant cohorts and their likely desired expectations of the MOOC process is a possible approach and particularly offering alternative pathways.

Identifying learner motivations is important because it helps teachers understand what the expectations that learners have and how they might cope with the specific challenges associated with MOOCs (Terras & Ramsay, 2015; Luik et al., 2019). There are two categories of motivation: intrinsic and extrinsic. In a learning context, to be intrinsically motivated refers to an individual’s desire to learn for the sake of understanding, gaining new experiences and having

fun, while an extrinsically motivated learner wants to achieve an externally derived goal or reward. In practice, however, learners usually have a mix of motives including features from both intrinsic and extrinsic motivation. Intrinsic motivation is valued more highly because it is generally thought to be stronger and more likely to take learners towards success (Donald, 2002; Salmon et al., 2017).

The MOOC Project

A design science methodology is being utilized in this project. A design scientist in education attempts to engineer innovative learning environments and simultaneously conduct experimental studies of those innovations (Brown, 1992). Design science research therefore consists of two activities: building and evaluating (Järvinen, 2001). The building element is the process of constructing an innovation, artefact or model for a specific purpose, referring in the present study to the development of a model of MOOC education. Evaluation determines how well the innovation performs; this project is still in process which means we are in the building phase.

This study is part of the “Steps Towards Responsible Tourism” project which is being jointly undertaken by five universities, four of which focus on applied sciences. The project’s aim is to develop a flexible digital learning course for travel and tourism employees to learn how to implement responsibility and strengthen sustainability in their field. The study reported in this paper concentrates on the development of the educational model and the digital solutions to be utilized in the learning platform.

The educational model is based on the xMOOC idea that no teacher or facilitator will be involved in the learning process; enrolled students will study whenever they want and follow their own personal learning paths. Thus, there will be no interaction or collaboration with other learners either. The participants will be a heterogeneous group with different backgrounds and existing competencies. In addition to current employees, learners could be those interested in pursuing a tourism career or university students of tourism. Consequently, it is vital that participants are able to either study the whole course or choose the themes in which they need to improve their knowledge; ways of assessing one’s existing competencies and receiving suggestions about what to study when are vital.

There are two approaches to designing MOOCs; first, to adapt and transform existing courses into a MOOC format, or, second, to develop entirely new programmes (Buhl et al., 2018). The approach here is to use existing learning resources and only partly develop new materials as required, although the existing course content has been used in contact or blended learning contexts and a new educational model is therefore needed. There are also some topics for which new material needs to be produced. Figure 1 illustrates the design process and timescale of this MOOC.

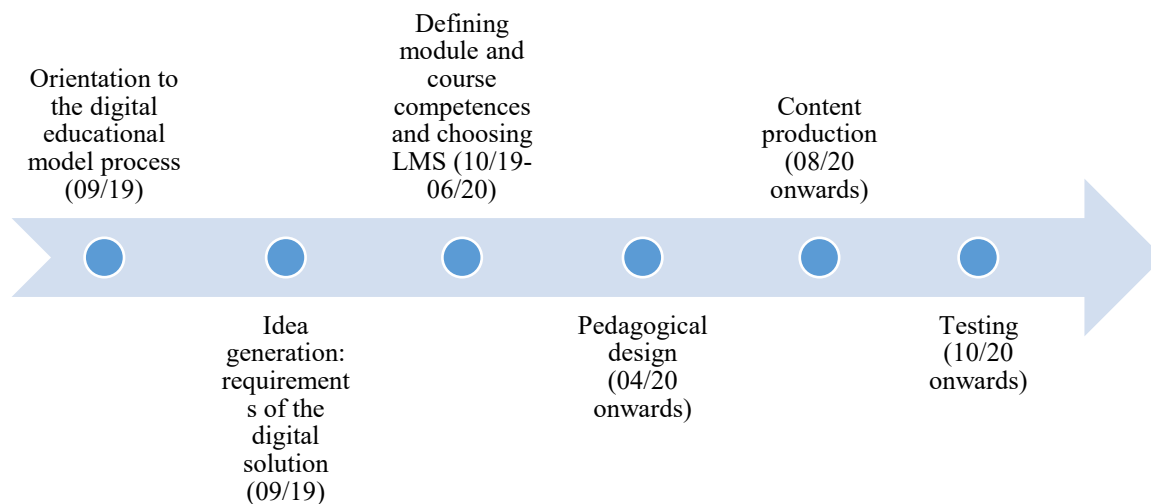


Figure 1: Design process of the pedagogical model and digital solutions.

Solution Requirements

The initial meeting to discuss the educational model was held in October 2019 although work on the project started a month earlier. This meeting included a presentation on current digital trends and future technological opportunities to boost a brainstorming session regarding the pedagogical model and potential solutions. Participants from the five organizations discussed the needs of the learners in this model and the requirements of the learning platform. There seemed to be a common understanding that the digital solution would need to be something other than a traditional learning management system (LMS) like Moodle.

To develop deeper knowledge about what would be required of the digital solution, a survey of the project collaborators was organized and disseminated. The survey ran on the Tricider voting platform from 14th to 29th October 2019, and nine teachers from the five organizations participated. The questionnaire was organized in two phases, namely idea generation that aimed to list all of the possible requirements and a voting stage to rank the named requirements in order of importance. In total, 26 requirements for the digital solution were identified, and these could be categorized into four themes: usability, functionality, accessibility and miscellaneous. The table below presents the named requirements and their ranked priority.

Theme	Requirements	Priority
Usability	Easy to use	1
	Easy to navigate	1
	Tailored outlook	2
	No need to upload other apps	2
	Easy to save learning materials	3
Functionality	Intelligent system	1
	Assessment book	1
	Embedding enabled	1
	Reflection with peers enabled	2
	Collaboration enabled	2
	Gamified features	2
	jpeg, mpeg and AR enabled	3
Accessibility	Mobile optimized	1
	Accessible via mobile device and laptop	1
Miscellaneous	Easy registration	1
	Certificate	2
	Possibility to test the environment under design process	2
	No advertisements	3

Table 1: Summary of LMS requirements and priorities.

Educational Model

The educational model in this MOOC context includes features from constructivist learning theory and problem-based learning (PBL). Constructivist educational theory holds that learning is enhanced by the ability to use content and context to link and structure existing competencies in a meaningful way (Newman et al., 1989), and it provides grounding principals to support the design of an online course (Rossner-Merrill et al., 1998). However, the constructivist elements of this MOOC will not occur in social interaction between peers but outside of the course in authentic situations that are personal to each student. PBL is itself a constructive approach but generally assumes a collaborative perspective which is missing in this context. As such, the model of learning here will require self-direction from the participants; learning occurs individually. In this way, learning is not seen as the transformation of received knowledge but the construction of new knowledge using prior experience and existing competencies. Authentic situations are particularly important to the learning process.

Figure 2 illustrates the learning process that a participant in this MOOC might engage in. To begin, the learner has the option of taking a pre-test or following some path examples. The pre-test assesses existing competencies and makes

suggestions about what to study and in which order. The path examples have been developed by the MOOC designers according to different student personas that relate to, for example, learning styles and programme concentrations. As a result, the parts of the course that an individual studies and the order in which they are completed are personalized based on existing competencies and expectations. This are key factors that content producers must consider in designing the LMS.

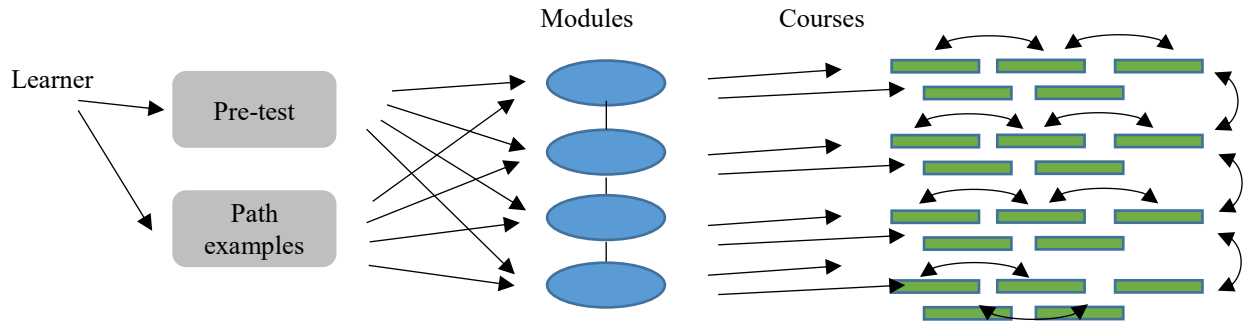


Figure 2: Options during the MOOC learning process.

When a programme is being jointly developed, it is important to consider the usability of the programme and what the outcomes look like from a learner's perspective (Aarreniemi-Jokipielto, 2018). Each MOOC course within a programme needs to have the same kind of structure, so that the outcomes, themes and tasks are represented in similar ways and a comparable sequence. In addition, the platform has to be intuitive so that it is easy to learn and obvious how to study. Because participants will complete the learning process in different orders, the required existing competencies should be described at the beginning of each course including educational elements that should already have been taken and competencies gained from outside the programme.

The courses are grouped together to form bigger learning themes or modules, and, because there are more than 10 educators working jointly on learning design and content production, it has been important to ensure that these modules and courses do not overlap. It has also been important to make sure that there are no missing topics. In order to cover these concerns, a content mind map was created which also defines the credits available through completion of each element. With the help this map, it has also been possible to design and verify cross-disciplinary themes that can be studied from different angles on separate courses.

Discussion

The wider project in which this study has been conducted is ongoing, and so the final version of the educational model remains in progress. Due to the number of teachers involved, the process has been relatively slow. Co-creating the programme is a fruitful process, but it has meant more meetings than was originally expected. It has also become clear that our expectations of the LMS have been unrealistic in terms of technical solutions and it will not be possible to develop all of the requested features due to this limited understanding and also funding. Something other than Moodle was intended that optimized mobile environments and offered gamified features. The Sensei LMS has now been chosen which, though not in line with all of the defined requirements, it meets the project's budget and supports the requested features as well as possible.

Five features in the MOOC educational model are seen as crucial in the study: First, learners need to be able to choose their own educational path; Second, the digital solution needs to motivate and attract different personas to participate fully; Third, gamified features are required to engage the learners; Fourth, good quality video and podcasts are needed to enrich the learning materials; And fifth, it is important to keep in mind that learners may study using mobile devices.

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Acknowledgements

The Steps Towards Responsible Tourism project has been funded by the European Regional Development Fund (ERDF).