Towards a Heutagogy-Based MOOC Design Framework

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Abstract. MOOCs are particular learning environments due to their massiveness and openness. Creating learning environments for masses is extremely complex and raises a lot of design questions because of the large variety of participants in terms of background, skills, and experiences. This paper aims to give an overview of the current trends in MOOCs design and to present a draft of the conceptual categories of an alternative design framework for MOOCs based on a heutagogical approach. A heutagogy-based MOOC can be described as a MOOC where the emphasis is on acquiring knowledge on the own learning through the meta-cognitive work of critical reflection (double- and triple-loop learning) for the sake of cognitive and behavioural change; and on developing self-determined learning skills for successful learning in an open, barely structured, and self-organized environment.

Keywords: Design frameworks, Heutagogy-based MOOC, MOOC design, Learning environments

1   Introduction

This article is part of a work in progress research which objective is to identify the main features of a heutagogy-based MOOC (hMOOC) and to subsequently create a framework for designing hMOOCs. The article (a) analyses the current trends in MOOCs pedagogical design, (b) argues how a heutagogical design could contribute to creating more effective MOOCs that address properly the diverse learner needs and enable them to succeed in their environment; and (c) presents the description of conceptual categories of an hMOOC that will be further developed into a design framework. This article is based on a preliminary scoping literature review that will be further extended.

2   MOOCs based on pedagogical design

2.1   The MOOC Learning Environment and the MOOC Pedagogical Design

MOOCs are part of the open online education movement [1, 2] aiming to provide quality and equal education to anybody and all over the world. What makes a MOOC learning environment different from other online learning environments is that it is designed to welcome and include a large number of learners [2]. Designing effective learning

environments to masses is quite complex given the high level of variety of learners' backgrounds and interests. A series of design questions emerge when creating environments to masses. Both xMOOC and cMOOC have contributed to answering those questions.

xMOOCs are teacher-based, centralised and follow a cognitive-behaviourist or instructivist pedagogical approach [3, 4]. Those MOOCs answered the questions raised by massiveness by focusing on content delivery, automatized self-assessment quizzes and e-tests, and very limited interaction possibilities. However, this model seems to be outdated when considering the 21st-century highly networked context that we are living in [5]. A linear and rigidly paced pedagogical model does not provide adequate territory where competencies for the 21st-century could be easily developed.

cMOOCs, on the contrary, emphasise interaction and collaborative learning. They are based on connectivism, self-organized learning and networking [3, 4]. They are non-linear learning spaces, low-structured and lack teacher presence. These courses require a high level of autonomy and a series of skills and competencies for surviving in their environment. The cMOOCs' underlying network-based pedagogical design not only answers well to massiveness but is also in line with the 21st-century mindset that frames learning within the powerful idea of co-construction of knowledge. However, the cMOOC learning environment appears to be a challenge for many learners. cMOOCs are very different from traditional face-to-face and online learning environments and become intimidating to those who have no or little experience in low-structured contexts that require autonomy and self-directedness.

The pedagogical design models that ground xMOOCs and cMOOCs tried to devise solutions to the problems raised by massiveness. However, there is a lot of concerns about MOOCs and their effectiveness. Researchers have become aware that understanding the learners and their motivations and needs in a MOOC is essential to designing and delivering effective courses [2, 6, 7], hence new design models for MOOCs already tend to take into consideration the diversity of MOOC learners.

2.2 Designing more effective MOOC learning environments: solution proposals

There have been several proposals for designing more effective MOOC environments that were created based on a more learner-centred approach to well meet the diverse learner needs.

Anders [3] developed a conceptual model based on the existing learning theories, pedagogical design and applications, and proposed that the hybrid design supports well the diversity of MOOC learners and promotes engagement because it both carries the values of networked, emergent learning and provides a social context and learning structure that helps students to succeed in a MOOC environment [3].

Christensen [5] came up with the idea of MOOSL (Massive Open Online Social/Scaffolded Learning). The model is based on the idea of social learning, a student-centric and community-based pedagogy: "The idea of MOOSL is that learners are gathering around common learning interests to obtain specified competencies and that they work collaboratively to achieve them as well as their personal goals." [5].

An agent-based framework for designing more automatized and personalised MOOC learning environments has also been proposed [8]. Intelligent agents could collect and process the big data automatically that would contribute to designing a more learner-centred environment by customising the learning path and the content. All the data collected by agents would contribute to improving the design, delivery, and assessment of MOOCs.

3 The heutagogy-based MOOC

3.1 Learning how to MOOC

All the above solutions are trying to provide answers with a more learner-centred approach to the persistent problem of MOOCs: effective design to masses. All recognise that even when designing for masses, the nature of the audience has to be considered and that has a significant impact on the effectiveness of MOOCs. Since MOOC learners are not homogeneous in terms of skills and competencies, the MOOC should be a supportive learning environment, so "learning how to MOOC" should be part of the design. Learning how to learn requires the metacognitive process of critical reflection. When learners are fully engaged in the reflective practice and question their previous assumptions deep learning (transformative learning) can happen [9]. Today's learners must become responsible for their own learning development and more capable lifelong learners. Heutagogy, the theory of self-determined learning, emphasises the control of learning by the learner: a natural state. The heutagogical approach, besides granting space to self-reflection, also develops self-determined learning skills[1] that are necessary to succeed in a MOOC learning environment.

3.2 The 12-dimensional classification schema for MOOCs

Conole [10] has developed a 12-dimensional classification schema that can be used to describe and compare MOOCs. Conole examined five MOOCs and described and classified them by using the schema. Each of them was based on a particular pedagogical approach: associative, cognitive, constructivist, situative, and connectivist [10]. The dimensions cover heutagogical principals, therefore the schema is viable for outlining the conceptual categories for a MOOC based on heutagogical approach.

3.3 Classification draft of a MOOC based on a heutagogical approach

We used the 12-dimensional classification schema as a prescriptive schema to get a classification draft for a MOOC based on heutagogical approach. For this draft, we used only nine dimensions of the original twelve. For choosing the dimensions and making

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[1] A self-determined learner is well equipped to have success in a MOOC environment: is responsible for the own learning and can manage the learning experience, reflects on the process of learning and so conscious about the own learning and development, has the digital and participatory skills that are required to learn in an online and non-linear space, and is capable (able to adapt easily to new situations).

the descriptions, we based on the principles of heutagogy that were identified during the preliminary scoping literature review. Two of the left-out dimensions are related to very specific aspects of MOOCs (the target audience and the scale of massiveness) and are not relevant to be prescribed from the point of view of heutagogy. The third one (quality assurance) is a complex category that has to be further explored.

The below-presented classification draft (Table 1) is the first step towards defining a comprehensive heutagogical design framework for MOOCs and is intended to be further developed.

Table 1. Classification draft of a MOOC based on a heutagogical approach

Dimension	Degree of evidence	Description
Open	High	An open and free environment where learners have the freedom to determine what and how they will learn is one of the core ideas of heutagogy [11]. Use of open source tools, open access to resources, moreover encouraging students to share their artefacts, ideas, feedbacks, etc. strongly uphold the concept of social informal learning and co-construction of knowledge that heutagogy emphasises.
Use of multimedia	High	Using more than one medium of communication addresses different types of learner needs and so gives the freedom of choice to the learners so they can determine which way of communication fits the best to their own learning.
Degree of communication	High	Participants must be encouraged to participate actively in the discussion forums and in other communities outside the hMOOC. *Participatory literacy* is one of the self-determined learning skills and is essential to achieve success in a MOOC [12].
Degree of collaboration	High	Group collaboration must be highly encouraged in an hMOOC since in heutagogy there is an emphasis on social- and community-based learning where knowledge is constructed together [11]. Collaboration is also one of the six design elements for designing heutagogy-based environments [13].
Learning pathway	Low	In an hMOOC learners can have the possibility of creating their own learning pathways and Personal Learning Environments. Flexible curriculum is one of the principles of heutagogy [14] however, the learning leader's collaboration in helping to define the curriculum is important.

Amount of reflection	Very high	Participants are asked to reflect continuously during the course, individually and in group. Critical reflection, double- and triple-loop learning are fundamental since in heutagogy it is critical that learners gain knowledge about their own learning [15].
Certification	Low	Participants can opt for obtaining a certificate of attendance.
Formal learning	Variable	An hMOOC can be informal and optional or part of a formal educational offering.
Autonomy	Medium	Participants are expected to work individually and take control of their learning; however, they get support from the learning leaders. The learning leaders role is to guide, "provide a compass" and to ensure that the learning outcomes are optimised [14].

Based on this classification schema **a heutagogy-based MOOC** can be described as a MOOC where the emphasis is on (a) acquiring knowledge on the own learning through the metacognitive work of critical reflection (double- and triple-loop learning) for the sake of cognitive and behavioural change; and (b) developing self-determined learning skills for successful learning in an open, barely structured, and self-organized environment.

4   Conclusion and next steps

The literature on MOOCs' design urges more learner-centred design models in order to produce more effective MOOC learning environments. A heutagogical approach offers an alternative learner-centred design that would not only make the learning environment more effective but would also contribute to creating more prepared learners. In fact, the emphasis of the hMOOC is on including learning how to learn in its design. A heutagogical approach to MOOC design would challenge the balance of the distribution of responsibility between the course and the learner bringing in the power traditionally recognised in human will.

As next steps, we intend to develop the above-presented classification draft by collecting more data based on an extended literature review to create a framework proposal for designing heutagogy-based MOOCs. The future piloting of a prototypical hMOOC will provide empirical evidence of the added value of heutagogy in its design.

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