# An Alternative Pedagogical Design Model for MOOCs: A Research Approach for a Heutagogy-Based Framework

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**Abstract.** There is a critical need for seeking alternative, learner-centred, and more supportive design solutions for the MOOC learning environment since that currently existing design models do not seem to take into consideration the diversity of MOOC learners in terms of their skills, capacities, and experiences. Researchers have already called attention to the fact that for designing effective learning environments it is essential to understand the learners. The present work in progress paper introduces an early stage PhD research project which situates in the context of alternative design proposals for MOOC learning environment and aims to develop a heutagogy-based framework for MOOCs. In this paper, the proposed methodology and research design for developing a heutagogy-based framework will be described. The three-stage research design model includes both theoretical and empirical study. At the first stage, qualitative data will be retrieved from the literature and an initial framework will be proposed. At the second stage, an empirical study will be carried out with a convergent parallel, mixed methods approach. At the third stage of the study, the results from the empirical study will be reconciled with the initial framework, eventual changes will be done, and a final framework will be concluded. The hereby presented project would contribute (a) to two research fields: heutagogy and MOOC design both with the generated literature and with the results of a non-commonly used research design; (b) and to the MOOC developers' community with an alternative design model to be used.

**Keywords:** MOOC · Research Design · MOOC Learning Environment · Heutagogy

## 1 Introduction

### 1.1 The Context of the PhD Research Project

The current work in progress paper aims to present the research design model of a PhD research project that will be implemented in the next two years. The PhD Research Proposal was developed within the PhD Program *Technology Enhanced Learning and Societal Challenges* funded by Fundação para a Ciência e Tecnologia, FCT I. P. – Portugal, under contracts # PD/00173/2014 and PD/BI/127979/2016; it was presented and successfully defended in June 2017. This PhD research project has been approved by

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the Ethics Committee of the Instituto de Educação, Universidade de Lisbon and has been officially registered by the same institution.

### 1.2 Heutagogy as the Theoretical Structure

Most of the today's existing MOOCs is based on the original pedagogical models (cMOOCs and xMOOCs) that, however, have been questioned by researchers. The rigidly paced and linear xMOOCs seem to be outdated when considering the 21st century networked and non-linear context [1]; and the low-structured, teacher-lacking cMOOCs are often intimidating for those who are not used to such a learning environment. Both cases require a high level of autonomy and certain skills to succeed that learners might not possess [2].

Since the MOOC learning environment is aimed to accommodate masses, the diversity of learners is extremely high in terms of their skills, background, and experiences. Research has also found that course designers' assumptions about the participatory skills learners would possess when they start the MOOC does not seem to match the reality [3]. Today's MOOCs do not seem to preoccupy with the diversity of learners, they are designed to masses rather than masses of *individuals*. For designing effective learning environments, it is essential to get to know the audience and understand its needs [4–6]. Alternative, learner-centred and more supportive design models have emerged that try to fulfil those diverse learner needs [1, 7–10].

Heutagogy is the theory of self-determined learning according to which the learner has responsibility for deciding not only how to learn but also *what* to learn [11]. For that to happen, the learner has to gain knowledge about the own learning and development, therefore in heutagogy self-reflection has a very important role. Through double-loop and tripe-loop, learning learners gain self-awareness and knowledge on the own learning which will enable them to participate actively in the whole learning experience, from defining the curriculum and the learning outcomes through choosing useful sources to evaluating the own development process.

Designing MOOCs based on heutagogical principles would mean to include in their design elements that would permit to sensitise learners to become more responsible for their learning and development besides, it would develop certain skills that are crucial to autonomous online learning. In this way, learners could learn how to personalise consciously the learning experience by themselves and they could acquire or refine the necessary skills to succeed in a MOOC learning environment.

### 1.3 Actual Trends in the MOOC Research Field

The scientific productivity on MOOCs reached a peak between 2014 and 2015; for 2016 MOOCs have become a consolidated area of research and have kept their topicality according to a recent bibliometric study on scientific production on MOOCs [12].

The original trend in MOOC research was qualitative, but with the appearance of xMOOCs and easy access to big data, it became more quantitative [13]. A recent study on the empirical MOOC literature published between 2013 and 2015 found that there was a dependency on quantitative approach; data were collected mainly via automated

methods (such as clickstream and observational data) [14]. What is known about MOOCs might be the result of the strong influence of a dependency on this particular data collection and analysis methods, say Veletsianos and Shepherdson [11], and they urge the expansion of the methodological approaches used in MOOC research.

## 2 Research Design and Methodology for Developing a Heutagogy-Based Framework

### 2.1 Preparation Stage

As a very first step, a preparatory scoping literature review has been conducted which objective was to get familiarized with the existing literature of both heutagogy and MOOC research fields. The preparatory review also helped in identifying problems in those research fields and so in defining the purpose and later the research design of the current project.

After having confirmed that there is a need for alternative design solutions in the MOOC research field, the purpose of creating a product (a heutagogy-based framework) was defined. During the review, it has been understood that (a) heutagogy has been applied successfully in several offline and online contexts, however never in a massive context; (b) the research on heutagogy is constituted mainly by theoretical papers; (c) there is a strong need for diversity in data collection and analysis methods on the MOOC research field [15]. Those three findings had high importance in deciding that the research design should include an empirical study where evidences of the viability of the application of the conceptual framework and of its implementation can be captured and analysis could be carried out.

Therefore, a three-stage research design model has been elaborated. The detailed description of those three stages follows in the next sections and the for the flowchart see **Fig. 1**.

The following research questions have been set:

1. What are the heutagogical design principles to be considered when designing learning environments?
2. What are the main characteristics and skills of the self-determined learner?
3. What is the level of learner autonomy, self-efficacy, participatory- and digital literacy and self-reflection of participants at the beginning of the course and how does this level change along the course?
4. How does participants' perception of personal success and self-progress change along the course?
5. What are the guidelines to create a heutagogy-based MOOC?

### 2.2 First Stage: A Theoretical Study for Creating an Initial Framework

The first step of the First Stage will be a systematic literature review on (a) heutagogical design principles and (b) self-determined learning skills. The objective of this review is to collect, organise, and analyse data to create an initial conceptual heutagogy-based

framework. Some preliminary categories of analysis have already been selected from the preparatory literature review (e.g. role of the tutor, role of the learner, design principles, and typology of activities) however, those will be extended during the analysis phase. The corpus for the review will be collected from multidisciplinary bibliographic databases using the keyword: *heutagogy*.

It is planned to conduct a second review in the First Stage on a very specific subarea of MOOC research: alternative, supportive design proposals. The importance of this review is to have a deeper understanding of the present trends and tendencies in MOOC design, which would have a significant contribution to the creation of the initial framework. The base of the corpus for this review will come from the collection Veletsianos and Shepherdson used for their review [14].

As a third step of the First Stage, an initial conceptual framework will be created.

### 2.3 Second Stage: The Convergent Parallel Mixed Methods Empirical Study

The first step of the Second Stage will be the implementation of the framework. It will be used to redesign an already existing Language-MOOC (LMOOC).

The second step will be data collection with a mixed methods approach. A convergent parallel design seemed to be the most adequate where qualitative and quantitative data are collected at the same time [16]. Three distinct instruments will be used for data collection.

A *welcome questionnaire* to gather data to characterise the population of the pilot MOOC. A pre-and post-course *multidimensional questionnaire* that will measure the following dimensions of the self-determined learner: learner autonomy, digital- and participatory literacy, self-efficacy, and level of self-reflection. Participants will be located on a scale before and after the course, and the results will be confronted given that the results will provide evidence of the progress of participants and will contribute both to improve and to validate the viability of the framework. These two questionnaires will be analysed quantitatively. Qualitative data will be collected through *reflective learning journals* that will be both research instrument and assignment inside the MOOC. The selection of reflective learning journals for analysis will be based on the results of the surveys: learning journals of participants from average (mean) and outliers will undergo analysis. This qualitative data will give a better understanding on the learners' perception of their own development and so will contribute to a better interpretation of the quantitative data and the viability of the application of the framework.

The third step will be the data analysis procedure [16]. First, the quantitatively and qualitatively collected data will be analysed separately using analytic approaches that will best suit to the research questions. After that, dimensions through which the results are to be compared will be defined, and the comparison will be conducted. Finally, it will be analysed how the combined results answer the research questions.

### 2.4 Third Stage: Reconciliation of the Framework Proposal and the Results from the Empirical Study

At the Third Stage, the results from the Second Stage will be reconciled with the initial framework and eventual amendments will be done; a final product will be presented. In this way, the empirical evidence will support the conceptually created framework.

It is important to highlight that since the initial framework will be implemented in a specific scientific area (language learning), the validity of the final product is to be intended in the context of LMOOCs. The different scientific areas in massive courses might require different pedagogical approaches and design models to be effective learning environments. Therefore, further analysis, examination and testing of the framework will be required to make it viable in other contexts.

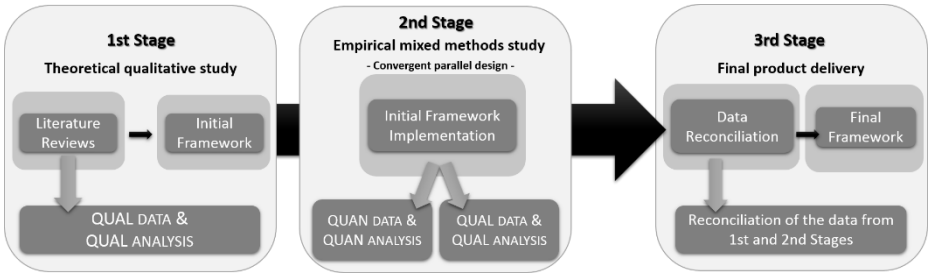


**Fig. 1.** Flowchart of the research design for developing a heutagogy-based framework for MOOCs.

## 3 Next Steps and Final Considerations

The preparation and planning phase has already been concluded. The selection and preparation of the research instruments to be used in the empirical study for the multidimensional questionnaire is still ongoing. Several instruments have already been considered for each dimension, however the selection process hasn't been concluded, yet. The First Stage and the selection process are expected to be terminated until February 2018.

The proposed study would provide a situated understanding on applying heutagogical principles to a MOOC context. It is foreseen that a viable and evidence-based framework could be established. The heutagogy-based framework would serve, on the one hand, the scientific community, and the MOOC designers community on the other, with an alternative solution to designing more effective massive and open online learning environments.

## References

1. Christensen O (2016) MOOSL - Democratizing education with social learning MOOCs. In: Ubachs G, Konings L (eds) Conf. Proc. Online, Open Flex. High.

Educ. Conf. Rome, Italy, pp 632–642
2. Agonács N, Matos JF (2017) Towards a heutagogy-based MOOC design framework. In: Kloos CD, Sanagustín MP, Jermann P, et al (eds) EMOOCs-WIP 2017 Work Prog. Pap. Exp. Res. Tracks Position Pap. Policy Track EMOOCs 2017. CEUR Workshop Proceedings Volume 1841, Madrid, Spain, pp 47–52
3. Beaven T, Hauck M, Comas-Quinn A, et al (2014) MOOCs: Striking the right balance between facilitation and self-determination. MERLOT J Online Learn Teach 10:31–43.
4. Milligan C, Littlejohn A, Margaryan A (2013) Patterns of engagement in connectivist MOOCs. MERLOT J Online Learn Teach 9:149–159.
5. Haywood J (2012) No such thing as a free MOOC. https://www.jisc.ac.uk/blog/no-such-thing-as-a-free-mooc-20-jul-2012.
6. Zheng S, Rosson MB, Shih PC, Carroll JM (2015) Understanding student motivation, behaviors, and perceptions in MOOCs. In: CSCW '15 Proc. 18th ACM Conf. Comput. Support. Coop. Work Soc. Comput. Vancouver, BC, Canada, pp 1882–1895
7. Anders A (2015) Theories and applications of Massive Online Open Courses (MOOCs): The case for hybrid design. Int Rev Res Open Distrib Learn 16:39–61. doi: 10.19173/irrodl.v16i6.2185
8. Daradoumis T, Bassi R, Xhafa F, Caballé S (2013) A review on massive e-learning (MOOC) design, delivery and assessment. In: Proc. - 2013 8th Int. Conf. P2P, Parallel, Grid, Cloud Internet Comput. 3PGCIC 2013. IEEE Computer Society, Los Alamitos, California, pp 208–213
9. Conole G (2015) Designing effective MOOCs. EMI Educ Media Int 52:239–252. doi: 10.1080/09523987.2015.1125989
10. Pilli O, Admiraal W (2017) Students' Learning Outcomes in Massive Open Online Courses (MOOCs): Some Suggestions for Course Design. Yuksekogretim Derg 7:46–71. doi: 10.2399/yod.17.001
11. Hase S, Kenyon C (2000) From andragogy to heutagogy. UltiBase 1–7.
12. Mengual-Andrés S, Vázquez-Cano E, Meneses EL (2016) La productividad científica sobre MOOC : Aproximación bibliométrica 2012-2016 a través de SCOPUS. Rev Iberoam Educ a Distancia 20:39–58. doi: http://dx.doi.org/10.5944/ried.20.1.16662
13. Veletsianos G, Collier A, Schneider E (2015) Digging deeper into learners' experiences in MOOCs: Participation in social networks outside of MOOCs, notetaking and contexts surrounding content consumption. Br J Educ Technol 46:570–587. doi: 10.1111/bjet.12297
14. Veletsianos G, Shepherdson P (2016) A systematic analysis and synthesis of the empirical MOOC literature published in 2013-2015. Int Rev Res Open Distance Learn 17:198–221. doi: 10.19173/irrodl.v17i2.2448
15. Agonács N, Matos JF (2017) Perspectives on MOOCs as heutagogy instances. In: INTED2017 Conf. Proc. IATED, Valencia, Spain, pp 6655–6664
16. Creswell JW, Clark VLP (2011) Designing and conducting mixed methods research. SAGE Publications, Inc., Los Angeles, California, USA