

## MOOC Design Principles. A Pedagogical Approach from the Learner's Perspective

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The debate around Massive Open Online Courses (MOOCs) is much more focused on the social, institutional, technological and economical aspects than on the need for development of new pedagogical approaches that provide consistent guidance on how to design for this emergent educational scenario. A new understanding of knowledge production and learning challenges the core of learning design, demanding innovative and appropriate approaches to teaching and learning. We present a set of learning design principles drawn from the learner's perspective. They focus on empowering learners in networked environments for fostering critical thinking and collaboration, developing competence based outcomes, encouraging peer assistance and assessment through social appraisal, providing strategies and tools for self-regulation, and finally using a variety of media and ICTs to create and publish learning resources and outputs.

### 1. Introduction

The advent of Massive Open Online Courses (MOOCs) is generating worldwide interest and lively discussions in Higher Education. The debate is focused in the social, institutional, technological and economical aspects overshadowing the need for development of new pedagogical approaches that provide consistent guidance on how to design for this emergent educational scenario.

A MOOC could and should be much more than a traditional course delivered online. Packing face-to-face classes to an online system does not make sense from a pedagogical perspective. A long tradition and successful experience coming both from the educational technology and distance learning fields should be taken seriously and as source of inspiration.

Considering the diverse learning modes, ranging from face-to-face to fully online, (Guàrdia, 2012; Bach, Haynes, & Smith, 2007; Bates & Poole, 2003) we can conclude that there is a considerable number of identifiable online delivery models in education, and that MOOCs are just one more in this possible combination of ICT use. It is also possible to situate MOOCs at the far right end of the online learning continuum.

Aligned with the continuum classification, Hill (2012, p. 86) contextualizes MOOCs within a "landscape of educational delivery models" considering the role of the educational technology and instructional design. Researchers and experts in this field are discussing about the best pedagogical approach to MOOCs. We could also ask: Where is the value of MOOC's beyond a massive and open delivery?

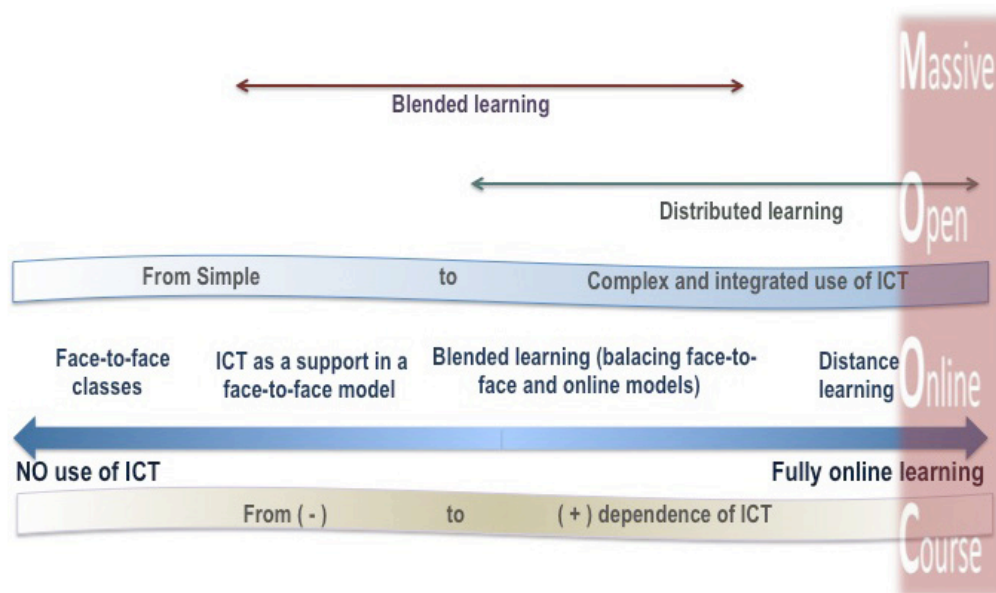


Fig. 1 The interpretation of online learning continuum, Guàrdia (2012). Adapted from Bates & Poole (2003), and Bach, Haynes & Smith (2007, p.34) approaches.

A distinctive asset of MOOCs is to offer an unprecedented opportunity for recasting well-established educational models and systems. They motivate new ways of understanding the knowledge production and the learning that in turn challenge the core of learning design, demanding innovative and appropriate approaches to teaching and learning.

Writing conclusive principles for MOOC design is a difficult venture as such initiatives are still in an exploratory phase.

Even though, the availability of a significant number of MOOC experiences provides a fertile ground for eliciting design principles that can be drawn from at least three perspectives:

- A reverse engineering approach of MOOC as artefacts.
- An evolutionary approach linking the cumulated body of knowledge about online course design to MOOC.
- A learner’s perspective reporting “from the field”.

In this paper we present results from an analysis of the learners’ voice. By doing so, we endorse the MOOC phenomenon in what is put forward: The learner empowerment and the crowd capacity to orchestrate the learning situation. After reviewing several testimonials from MOOCers we draw a set of design principles that inform MOOC designers.

## 2. Design principles

Before introducing the design principles it is appropriate to stress that there are, at least, two known types of MOOC with clear distinctiveness in terms of embedded pedagogy.

- xMOOC: a more traditional approach to learning where the teacher is the most relevant and reliable source of knowledge and information. As teacher presence is “mediated”, mediatisation solutions point to chunking videotaped classes, providing a set of additional resources and learning activities, and assessing through more or less automated tests. This type of MOOC privileges the knowledge transfer and duplication. Embedded pedagogical approaches highlight behaviourism (Bates, 2012).
- cMOOC: these MOOC were born before their more publicized counterparts and translate connectivist principles to the design of the course. They therefore focus on learners’ networks and learners’ personal learning environments. Less structured and more confident of learners’ capacities for self-organizing and co-participating, they rely on content aggregation and peer evaluation. cMOOC advocate for “knowledge creation and generation” (Siemens, 2012). Underpinning pedagogy are social constructivism and connectivism.

The previous MOOC distinction is somewhat forced to trigger the inherent differences. In fact, as Lane (2012) remarks, a MOOC usually manifests tendencies that put an accent on the network, the content or the tasks.

In all cases, massiveness and low teaching involvement during delivery stages is one the biggest challenges for MOOC design.

### 3. A learners' log for learning design

MOOC offer unprecedented opportunities for scrutiny and analysis of students' learning journeys stored and accessible on the Web. Moreover, wise MOOC participants also put forward thoughtful accounts of their learning experience and useful recommendations for improvement.

To find out a set of principles for MOOC design we carried out a preliminary exploratory study based on the participants' comments about some popular educational technology-related MOOCs (#edcmooc, #etmooc, #foemooc, #oldsmooc, #CCK12). Hashtags of these MOOCs were used to identify quality blog posts presenting deep reflection, founded critique and relevant improvement suggestions of MOOCs. A total of 82 posts following these criteria were selected and discourse analysis technique applied. Categories as content/resources, interaction (either peer or teachers related), organization, assessment and accreditation, and technology issues were used. The selection of these categories was supported on current literature in the field and on emerging concerns from the participants' perspective. The purpose of the exploratory study was not having a sample for statistical purposes, but qualitative insights regarding which are the main design elements that students consider critical when getting involved in MOOC experiences. From this preliminary study, ten initial principles emerged:

1. **Competence-Based Design Approach.** CBDA focuses on **outcomes of learning** and addresses what the learners are expected to do rather than on what they are expected to learn about (Richards & Rodgers, 2001). Learners need to learn in ways which can develop their capacity to solve situations that are commonly encountered in everyday life. This is best achieved by including contextual variation, **situating learning** as part of the learning experience, through Simulations, Problem-Based, Case-Based and Project-Based Learning. Through this kind of learning activities learners should develop the competences better than passively read a large amount of text-based documents or watching and listen traditional video lectures and testing comprehension.

Traditional contents should be a complementary resource. The focus of the CBDA is more learning-activity oriented than content oriented.

2. **Learner Empowerment.** Online learners' attention is much more demanding and what works on campus teaching does not (usually don't) replicate on networked spaces. Regressive pedagogy (Siemens, 2013) is abundant in MOOCs that emphasize a teacher-centred approach difficult to transpose into online learning environments. Recorded long-lasting master classes underestimate the potential of technologies and inhibit interaction. The video technology could be used for broadening communication opportunities and for encouraging learners' expression. MOOC design should privilege a **Learner-Centred Approach**, providing strategies that change the perception of learners as active participants in the establishment of individual goals and a personal trajectory. Self-regulation, self-paced, and self-assessment together with peer support and interest groups formation promote student empowerment and engagement.
3. **Learning plan and clear orientations.** Planning is crucial in MOOC. As the heterogeneity of students is high, their level of maturity and experience is also varied. Since the very beginning, give to the learners a study plan accompanied with detailed templates for the developing of activities. Clarify milestones and "must do's", providing a well-developed **schedule** with tasks, assignments and deadlines. Use a friendly tool easy to integrate with the student digital agenda, providing a suggested **pace for learning**: A detailed description of tasks and subtasks and their estimated time. Suggest clues on how to cope with incidentals and plan for contingency (peer assistance, revision of personal goals and expectations, revision of personal planning and agenda). Do not forget to add criteria for assessment and avoid relying exclusively in multiple choice tests.
4. **Collaborative learning.** Design for collaborative learning including **teamwork** activities and discussion forums. Allow the addition of exchange spaces for and by students. Provide clear netiquettes for participation in discussion forums or any other collaborative activity. Establish rules and parameters about quality and extension of course production and interventions. Foster this collaborative approach by designing and promoting activities and tasks in which collaboration is a must or an added value.

5. **Social networking.** Social aspects should not be neglected. They are at the source of group forming and the establishment of durable peer cooperation. Set up a space to foster social interaction and frequent contact between the learners. To promote a “feed forward” attitude of sharing the work with other learners and facilitate exchange create a course hashtag for social applications like twitter, and social bookmarking like Diigo. Provide guidance on social and open tools and strategies that help learners to create their own a **personal learning environment** (PLE with content aggregators, mashups, personal blogs, learning communities) keeping a permanent connection with the network.
6. **Peer assistance.** The notion of “paragogy” relates to peer production environments (Corneli & Danoff, 2011) including the co-creation of ad-hoc spaces for dialogue and support. The MOOC design should make explicit mention on the value of peer assistance through commenting and **social appraisal**. It should provide guidance on “how much” the student should read others’ contributions and explain a strategy for **filtering** course-generated information both individually and automatically. Even hints on how to better present the generated information to others, using for example descriptive titles that help decide the other participants if they want to read it, are exemplified by learners as useful tips.
7. **Quality criteria for knowledge creation and generation.** The notion of Learner Generated Content (Perez-Mateo, Maina, Guitert, & Romero, 2011) is associated to learners’ productions in the Web 2.0 and networked environments. Establish MOOCs the value of informed but personal views on topics and how they contribute to knowledge construction. Show how original content is appreciated, providing quality criteria for content development and content selection. Differentiate “brainstorming” and “exploratory” tasks from final activities. Promote critical thinking giving value to make good questions and not only try to find answers.
8. **Interest groups.** Provide opportunities for small group discussion and exchange. Recommend small group focused discussions. Give hints on how to better organize groups and subgroups according to their interest. The MOOCs “crowd” participation enable the formation of sub-networks based on interests, culture, geography, language, or some other

attribute that draws individuals together (Siemens, 2013). Once a group or subgroup is formed, each member should be assigned a role. To assist group creation and cohesion set up a social learning environment and promote “extended” presentations. This could keep **motivation** alive and avoid losing interest and drop out

9. **Assessment and peer feedback.** Building trust on self and peer assessment can be addressed by elaborating objective and precise criteria and explanation. The design of rubrics, scales, and explanatory automatic answers are supportive tools for the learner. Furthermore, give clues on how to collect learning evidence and organize them to provide accountability of learning trajectories. Suggest the use of blog or ePortfolios applications for collecting, reflecting, annotating and sharing learning outcomes and reflections.
10. **Media-technology-enhanced learning.** Making appropriate use of media is the result of informed decisions on technology affordances (Laurillard, 2002). Offer learners a variety of rich-media for capturing their attention and retention. On the other direction, in order to improve learners’ quality productions and support engagement, provide guidance on how to determine best media choices according to each intention. Confront them to the abundance of applications and encourage the exploration of new available tools that support rich interactive and highly audiovisual content.

## 4. Conclusions

At present, most MOOC discourse reflects strategic, institutional, economical, social and technological concerns. A deep pedagogical debate is still missing.

In our paper we introduced a set of design principles drawn from the learners’ perspective.

MOOC participants put forward in their reflections and comments thoughtful accounts of their learning experience and useful recommendations for improvement which comprise strong pedagogical considerations as follows:

Empower learners with networked learning strategies that foster critical thinking and collaboration. This requires putting the learner at the centre of the process while providing adequate learning contexts, methods and tools that enable the development of targeted and self-traced competences. It includes scaffolding regulatory evidence on outcomes by well

developed assessment strategies comprised with criteria-based rubrics for self and peer evaluation.

Ensure teacher presence (Anderson, 2008) not only as a referent or expert in the field, but through the course design. Teacher mediated presence should be tangible through a detailed study guide, a set of meaningful learning activities, a collection of interactive resources and supplementary recommendations on how to organize the social interaction. The learning scenario should be deployed to include descriptive learning tactics on how to navigate, organize, and participate in a new global learning scenario.

The multiplying availability of MOOCs and the exponential growth of e-learners are showing a general and global acceptance of online learning. It is time to study the lessons we can learn from these experiences and feed back this education trend.

## MOOC Design Principles

*MOOC could and should be much more than a traditional course delivered online. Learning design innovation is needed for a real change.*

By Guàrdia, L. & Maine, M. & Sangrà, A.

### Pedagogical approach

The debate around Massive Open Online Courses (MOOCs) is much more focused in the social, institutional, technological and economical aspects than in the need for development of new pedagogical approaches that provide consistent guidance on how to design for this emergent educational scenario.

### Design Principles

### Reflections

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