
THE GLOBAL MOOQ SURVEY: BUILDING A COMMON QUALITY REFERENCE FRAMEWORK FOR IMPROVING, ASSESSING AND COMPARING MOOC DESIGN

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Introduction

Societies and economies across the world are experiencing a time of transition and change. That includes the educational systems that are challenged by moving objectives and development targets (Nyberg, 1975; Stracke, 2017). Competing businesses and interests at national, regional and international scales are demanding for citizens to acquire and develop much different skills and competences, also new kinds of literacy. Numerous educational public authorities are understanding this shift and following this request (OECD, 2016). Personality and competence building in public education should prepare for new economies and jobs that are emerging but are not yet fully developed.

On the other hand, the personal living conditions are also changing considerably, in terms of working opportunities and pressure but also in terms of individual communication, collaboration and learning. The emergence of the world-wide internet and especially social media including online communities has accelerated the development of the network society, affecting the way each person lives and learns. Many new opportunities for online learning and collaboration were developed and are available for almost all interested people worldwide, albeit the limits by technology and Internet access lead to unbalanced and non-equal situations mainly in developing countries (Stracke, 2017).

As a consequence of the societal, educational and personal changes, Open (Online) Education has experienced a major development raising awareness amongst all actors (European Commission, 2011; UNESCO, 2012). This has led to global grass-root movements, events, communities and associations as well as international policies and implementations in national and regional educational systems. Next to the UNESCO declarations on Open Education and in particular on Open Educational Resources (OER) (World Bank, 2016), the European Commission through the communication on “Opening Up Education” (Brouns et al., 2014), has also taken the lead in demanding a change and improvement in European education and society.

During the last years Massive Open Online Courses (MOOCs) became a very popular expression of the development of open education. Since 2008, when the first MOOC was provided, the number of MOOCs, institutions involved and of registered users keeps constantly increasing (Gaskell & Mills, 2014; Stracke, 2017). More recently, this has been also followed by a discussion over their quality as an educational tool (Daniel, 2012). In particular, the high drop-out rates typical to traditional distance education courses, and not as common in formal education settings, are highlighted by critics, causing requests for re-booting MOOCs and the research on them and their quality (European Commission, 2013; Jansen et al., 2015). Although this discussion results mostly from an improper use of formal learning concepts in what is basically a non-formal learning experience (Onah et al., 2014; UNESCO, 2012), alternative measures have been proposed and discussed to focus better on the learners and on their individual goals (Stracke, 2017; UNESCO, 2012). Basically, as MOOCs become an important part of higher education institutions' provision and are increasingly used in formal learning contexts, the debate on how they meet quality standards gains relevance.

To address the quality issues involved, the Massive Online Open Education Quality (MOOQ) project was initiated as the European Alliance for the Quality of MOOCs. It is a 3-year project funded by the European Union under the ERASMUS+ call. The project started in September 2015 and is expected to complete in December 2018. The founding partners of MOOQ are the Open University of the Netherlands (OUNL, NL), which is the project coordinator, the Hellenic Open University (HOU, GR), the National Quality Infrastructure System (NQIS, GR), the Universidade Aberta (UAb, PT), and the École Normale Supérieure (ENS, FR).

MOOQ is directly relevant to several key aspects of the 2011 EU Modernization Agenda (European Commission, 2011)**Error! Reference source not found..** Firstly, Europe is taking steps in investing in flexible educational solutions trying to exploit the potential of OER much more than is currently the case (European Commission, 2011)**Error! Reference source not found..** MOOQ shares and contributes to this objective by providing guidelines for designing more successful MOOCs from an educational and business model point of view. In addition, one of the most significant challenges behind the 2011 EU Modernization Agenda is for education to respond to the characteristics of future students and to new needs in society. MOOQ contributes to the transferring of first class European expertise in Open Learning to the higher education system using formal channels (standardisation).

But, how can we anticipate increasing student numbers combined with the likelihood of lower funding? How should we combine online and traditional formats to enhance quality and at the same time devise university business-models sustainable? In fact, one target of the Europe 2020 agenda is that 40% of young people should complete higher education studies by 2020. MOOQ contributes to this objective albeit, the design of MOOCs to achieve this end without quality guidelines or standards will result in the phenomenon of increased dropout rates and/or failed attempts to deploy MOOCs by HE institutions. Thus, the goal to increase the number of graduates is served.

MOOCs and OER are a solution only if they retain a certain level of quality. MOOQ contributes to this end, beyond the experimentation phase being used by many HE institutions, by offering a systemic approach to massive student-centred online learning. By counter-parting the mere digitalisation of content or the use of simple process-oriented standards, the proposed project contributes towards the formation the appropriate pedagogical, organisational and business models for open and flexible education.

MOOQ will research and formalise the design of multi-stage, mixed model MOOCs that may be offered during anyone's lifetime, including non-formal and informal learning. These MOOC modes strive to serve new target groups such as combination of study and work, practitioners in professional networks in sectors of innovation and learning in the context of regional development (smart specialisation). This is a contribution to the implementation of the 2013 Communication by the EC on Opening up Education (European Commission, 2013).

Aims, Needs and Outputs of the MOOQ Alliance

The vision of MOOQ is to contribute to foster quality in MOOCs thus leading to a new era of learning experiences. As such, the project's mission is to develop a quality reference framework for the adoption, the design, the delivery and the evaluation of MOOCs in order to empower MOOC providers for the benefit of the learners. The main goal of MOOQ is therefore the development and the integration of quality approaches, new pedagogies and organisational mechanisms into MOOCs with a strong focus on the learning processes, methodologies and assessments.

The MOOQ project addresses the open issue of integration of quality approaches and mechanisms into the design of MOOCs by pursuing the following objectives:

- To analyse existing practices for integrating quality approaches on emerging open online courses, including active discourse on open issues and concerns arising from the massive, large-scale implementations, showcasing paradigms of key players in the field.
- To develop a Quality Reference Framework (QRF) for the design, evaluation and assurance of MOOCs.
- To design, deploy and assess (pilot testing) of 2 multilingual, collaborative MOOC pilots: "Introductions to Embedded Systems" and "Introduction to Software Technology", applying in practice and showcasing how to apply and manage the QRF.
- To standardise activities that shall allow the integration of the project's outcomes into specifications and standards both at European level (CEN-European Committee for Standardisation) and internationally (ISO).
- To disseminate and raise awareness on the basis of well-targeted communication aiming at the introduction and promotion of the QRF to all stakeholders including the establishment and pilot operation of an Observatory for the Quality of MOOCs, the European Quality Observatory for Massive Open Education (EQOM).

Target groups of MOOQ include MOOC designers, HE policy makers and strategists, students (graduate/post-graduate) and other learners in general, as well as teaching staff (teachers, facilitators. Furthermore, National Government and EU policy bodies, regional/national and international Associations in the Sectors of Education and Quality Assurance are targeted. MOOCs are increasingly seen as a specific form of transnational education. Collaboration leads to richer content and processes, based on the diversity and complementarity of research areas and methodologies in European universities. Many rising MOOC types and modes of provision are also based on new formats of partnerships and transnational education across European countries and beyond. A transnational effort is needed to formalise their design principles.

Identifying MOOC Design Patterns and Best Practices

The first output of the MOOQ project is a survey on existing practices and design patterns for integrating quality approaches on emerging open online courses, including active discourse on open issues and concerns arising from the massive, large-scale implementations, showcasing paradigms of key players in the field.

The goal is to reveal design patterns, both current and evolving beyond the classic theories of distance education. The needs analysis will quantify, explore, categorise and discuss educational, technological, organizational, legal, business and economic parameters involved in the design, adoption and enactment of MOOCs for Higher Education Institutions and to derive best practises that are both stand-alone tools for MOOC adoption as well as appropriate input for the design of a quality reference framework.

This also includes a collection of *best practises* (that can be used independently by stakeholders) which summarizes the amount of experience gathered, a categorized collection of well-established and documented techniques, methods and activities that are the most effective at delivering quality MOOCs. Best practises will be organized and ranked in terms of not only effectiveness (best results) but also as the most efficient (best ratio effort/results).

The phenomena of MOOCs is a rather complex one as it results from different kind of approaches. The literature establishes two basic, almost opposite pedagogical approaches, known as cMOOCs, for connectivist oriented, and xMOOCs, for the traditional learning approach (Roscorla, 2012; Siemens, 2012). Although the international impact of the MOOC phenomena came mostly from the initiatives led by the leading United States' universities, MOOCs started as a demonstration of the new connectivist educational theory principles. The connectivist-inspired approach highlighted the disruptive and networked nature of the learning experience (Bates, 2015). Differently, the x initiatives focused on the potential of open online courses for massive scale distribution of high quality scientific content. This fact had important consequences in the diversity of formats used and also its features as well as the true nature and purpose of the educational experience they provide.

Yet, even if the cMOOC and xMOOC opposition is still dominant, several other alternative formats have emerged. Recently in Europe many collaborative, social pedagogic models have been developed (Schuwer et al., 2015). The first one was the iMOOC model (Teixeira & Mota, 2013), which later inspired the sMOOC model developed in the framework of the EU-funded project ECO (Brouns et al., 2014). Researchers, designers, institutions and political decision-makers have focused on developing alternative, more collaborative approaches to MOOC design that embed important values as multilinguism and multiculturalism, richer pedagogical experiences and flexible transition of credits to formal learning settings. In fact, comparing the results of surveys conducted in the United States (US), with European surveys, Jansen et al. conclude that, in contrast to the US, a large majority of European high education institutions agree that “MOOCs are important to learn about online pedagogy” (Lane, 2012). They also conclude that in Europe using MOOCs for student recruitment is not considered as important as in US, but rather to reach new students and creating flexible learning opportunities (for those new students). In addition to variations in the pedagogical design, other include the adaptation of the MOOC concept to special contexts in which some of its typical elements do not verify, as for instance scalability and openness.

Being an innovative field of online education practice, MOOCs are still the subject of much experimentation and discussion. As a result, there’s still not a consensus amongst the designers and practitioners on the basic concepts involved, starting by the very definition of what constitutes this learning experience. As this affects any consideration on the quality criteria which can apply to the analysis of the MOOC provision, the MOOQ research framework has to start by addressing this issue.

According to Selwyn, Bulfin and Pangrazio, we can define MOOCs simply as “courses available to masses of online learners for little or no cost” (Selwyn, Bulfin, & Pangrazio, 2015). However, this definition is clearly limited. A more comprehensive definition can be found in the framework of the OpenupEd initiative. In fact, it describes a MOOC as “an online course designed for large number of participants that can be accessed by anyone anywhere, as long as they have an internet connection, is open to everyone without entry qualifications and offers a full/complete course experience online for free” (Brouns et al., 2014). This definition which was developed as a collaboration with different EU-funded MOOC projects, attempts to integrate a perspective more akin to the traditional conceptual elements used in open education, as ubiquity of access and social inclusion. In its more comprehensive description it defines a MOOC as a full/complete course which should not only include educational content but also facilitate interaction among peers (including some but limited interaction with academic staff), provide authentic activities and tests, including feedback (with well-designed rubrics for peer-assessment and AI engines for the integration of massive qualitative assessment), have some kind of (non-formal) recognition options and provide a study guide or syllabus (Brouns et al., 2014).

However, according to the different educational approaches used, also the pedagogical design selects different focuses (Daniel, 2012). While connectivist-inspired MOOCs use the openness

element in a broader way, similarly to how is commonly understood in the open education community, xMOOCs which apply a more traditional learning approach identify “open” mostly as “access free of charge”, independently of including costs for additional services. In short, the connectivist approach to MOOCs emphasizes creation, creativity, autonomy, and social networked learning. On the other hand, the xMOOC approach focus basically on a scalable content distribution system using mostly video presentations and reading materials with short quizzes and testing. While the first model focus on knowledge creation and generation, the second emphasizes knowledge duplications (Siemens, 2012).

But, as stated above, alongside the cMOOC and xMOOC approaches a new generation of alternative models have been emerging. As such, Conole highlighted a dozen dimensions on which a course could vary (Conole, 2013). These include the degree of openness, the scale of participation (massification), the amount of use of multimedia, the amount of communication, the extent to which collaboration is included, the type of learner pathway (from learner-centred to teacher-centred and highly structured), the level of quality assurance, the extent to which reflection is encouraged, the level of assessment, how informal or formal it is, autonomy, and diversity.

The diversity of current trends in the MOOC field resulting from much different approaches being followed in what concerns the concept, the pedagogical design, the learning environment design and the business model, has made this a much complex subject for research. In order to tackle with this challenge, the project team compared different typologies suggested by literature and conducted a preliminary exercise of categorizing using a sample of 30 different MOOCs. As a result, it developed an integrated model of analysis building on Lisa M. Lane’s proposal (Lane, 2012), which suggests a distinction between three different types, as follows: (a) network-based, (b) content-based and (c) task-based MOOC models. Although it is advantageous to use an integrated approach, our research also indicates that for each MOOC type there should be specific design patterns and best practices selected.

An important criterion for evaluating MOOC design patterns is therefore if they identify their pedagogical design approach and if they comply with the quality criteria specific to each type. In fact, all of the previously identified types include elements which are interesting and useful, but may not fit exactly either with the learning approach or with each institution/provider’s pedagogical culture.

There are also some general concerns which should be taken into consideration when identifying MOOC best practices. For instance, the focus on the learner and on the quality of his/her learning experience. This process must be understood as a whole and not just as awarding free access to scientific-validated content. However, according to different learning approaches, this can be understood differently as well. In fact, in xMOOCs the focus is usually on the learner’s individual acquisition of knowledge. In a cMOOC approach, on the other hand, the focus is on the learner’s engagement in the network of knowledge production. As for the emerging new combined or blended approaches, learners are expected to take an active

role in and be responsible for their own learning, but also to actively engage in helping build a supporting learning community.

Other important design elements, especially in the non xMOOCs, are the openness, flexibility and personalization which the MOOC provides, allowing for different learners to be able to build their own learning paths and to match them to their personal expectations and conditions. Participants in MOOCs are all there for different reasons and have different motivations. Also relevant is how inclusive a course is, allowing for the widening of participation in education. This means, for instance, to provide opportunities for the learners to prepare and train for the learning environment and the methodology used. The iMOOC model was the first to introduce a *bootcamp* module, usually lasting one week, designed precisely for allowing participants to get acquainted with the spaces, tools and services, as well as with the processes of work and communication that will be used in the course (Teixeira & Mota, 2013). Finally, a very important aspect is scalability. As such, a good MOOC design is the one which allows the replication of the services provided to an increasingly higher number of users for just a marginal cost.

The Global MOOQ Survey

The development of the survey started with the establishment of a quality reference matrix comprising the basic categories of a typical MOOC design process. The research used as reference the process model of EN ISO/IEC 19796-1 (ISO, 2005). This is based on the generic process model that is divided into seven process categories containing in total 38 processes. However, for the MOOQ objectives the first two categories were merged, giving way to only six process categories. The MOOQ quality reference process model consists therefore of three pillars which represent the main aspects involved in the production and delivery of MOOCs, each subdivided in 34 dimensions and respective descriptors. The model is described in Table 1, as follows.

Table 1: Quality Reference Matrix

Pillars	Dimensions
Pedagogical	Learning opportunities and course planning
	Pedagogical design
	Learning pace and progress
	Equity / Inclusion
	Openness of content data and software, flexibility and personalization
	Learning resources and support
	Learning assessment and certification
	Evaluation planning
	Evaluation realization
	Evaluation analysis
	Involvement of all stakeholders
	Learning design optimization
	Evaluation optimization
Technological	Learning environment approach
	Requirements
	Learning environment design
	Infrastructure and resources, data and metadata management
	Evaluation planning
	Evaluation realization
	Evaluation analysis
	Involvement of all stakeholders
	Learning environment optimization
	Evaluation optimization
Business Model	Social demand / Market analysis
	Return On Investment
	Scalability
	Budget
	Human and technological resources
	Evaluation planning
	Evaluation realization
	Evaluation analysis
	Involvement of all stakeholders
	Vision and mission optimization
	Analysis optimization

As a consequence, a number of critical elements were identified and incorporated in the design of the surveys in order to allow for appropriate categorization of the design patterns. Three different surveys were prepared, adjusting the fifteen constructs to each of the target groups previously selected (learners, designers and facilitators), as shown in Table 2.

Table 2: Overview of MOOQ Survey Constructs and Target Groups

Constructs	Target Groups
Demographic profile	Learners / Designers / Facilitators
Experiences with MOOCs	Learners / Designers / Facilitators
Pedagogical Decisions	Designers
Learning Objectives	Learners / Designers
Duration and Structure	Learners / Designers / Facilitators
Online Facilitation	Facilitators
Learning Resources	Learners / Designers / Facilitators
Learning Support	Learners / Designers / Facilitators
Flexibility and Inclusion	Learners / Designers
Learning Pace and Progress	Learners
Learning Environment Design	Designers / Facilitators
Learning Assessment	Learners / Designers / Facilitators
Learning Certification	Learners / Designers
Context of Design Process	Designers
Evaluation of MOOC experience	Learners / Designers / Facilitators

The surveys included a mix of various types of items (open-end questions, five-level Likert questions, multiple-choice questions and yes/no questions). The total number of items ranged from 64 items (facilitators survey) to 73 items (learners survey) and 95 items (designers survey). The surveys were launched online (www.survey.MOOC-quality.eu) in January, 2017 and are available in three different languages (English, French and Portuguese). The support of the leading international associations and institutions including four United Nations' organizations has allowed for a very high level of response. 625 questionnaires (443 partially and 182 fully completed) had been received by May, 3rd 2017. The very large amount of data retrieved is being analysed and interpreted. In addition, 36 semi-structured interviews with MOOC designers, facilitators and providers have been conducted by all project partners in order to complement the research. These interviews address two of the target groups already included in the online survey (designers and facilitators), allowing for triangulation of results, and include one new additional target group (providers). In order to facilitate the interviewing process and assure a common standard for data analysis and interpretation, a set of three questionnaires was developed as well as the respective coding schemes.

Conclusions and future work

MOOCs are now becoming a major part of higher education institution's provision across the world. This has led to an increasing debate over the quality of the learning experience they provide. The MOOQ project is the first research initiative which addresses specifically this debate by focusing on the development of a quality reference framework for the adoption, the design, the delivery and the evaluation of MOOCs.

As an initial part of this effort, a global survey on existing practices and design patterns was developed and launched targeting at learners, designers and facilitators. In order to categorize design practices, preliminary research demonstrated to be more appropriate to apply the

typology suggested by Lisa Lane (2012), which is based on a simple but effective distinction between three basic categories: network-based, content-based and task-based MOOC models. The resulting questionnaires followed a quality reference matrix specifically designed for open education courses, based on the process model of EN ISO/IEC 19796-1 (ISO, 2005). The innovative matrix is organised around 3 pillars (pedagogical, technological and business model) and 34 dimensions.

Currently the results of the first global survey on the quality of MOOCs, drawn from over 625 respondents are being analysed and a preliminary report is due in June, 2017. An additional 36 semi-structured interviews with MOOC designers, facilitators and providers has been also carried out, allowing for complementarity of target groups addressed by each tool. The results of the survey will inform the design of a common MOOQ quality reference framework for improving, assessing and comparing MOOC design which will lead to the development of a proposal for an international standard for MOOC design and delivery. At the EDEN conference, preliminary results of the surveys and semi-structured interviews conducted will be presented in detail.

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