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Towards a Reference Framework for MOOCs

Open Education and Learning Quality:
The Need for Changing Strategies
and Learning Experiences

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Contact:

Dr. Christian M. Stracke
ICDE Chair in OER
Associate Professor for Open Education and Innovation
Open University of the Netherlands
Adjunct Professor, Korean National Open University
Advisory Professor, East China Normal University
http://www.ou.nl/web/welten-institute
Christian.Stracke@OU.NL

http://www.opening-up.education
http://www.learning-innovations.eu
http://www.ICORE-online.org

The Quality of Open Online Education:
Towards a Reference Framework for MOOCs

C. M. Stracke
Open University of the Netherlands, NL

A. Kameas, B. Vassiliadis
Hellenic Open University, GR

C. Sgouropoulou
National Quality Infrastructure System, GR

A. Moreira Teixeira, M. do Carmo Pinto
Universidade Aberta, PT

G. Vidal
Ecole Normale Supérieur, FR

1. INTRODUCTION

The societies and their economies, working and living conditions are changing all over the world. That includes the educational systems that are challenged by moving objectives and development targets [6] [10]. 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, and many educational public authorities are understanding this shift and following this request [7]. Personality and competence building in public education should prepare for new economies and jobs that are emerging but not yet fully developed.

On the other hand the personal living conditions are also changing considerably, not only related working opportunities and pressure but also related individual communication, collaboration and learning. The raise of the world-wide internet and social media including online communities is affecting people's lives as well as personal learning. Many new opportunities for online learning and collaboration have been developed and are available for almost all interested people worldwide though technology and Internet access limits are still leading to unbalanced and non-equal situations mainly in developing countries [10]. Nevertheless we can call it a global movement due to the continuous increase of technology and Internet use all over the world [15].

As a consequence of the societal, educational and personal changes, Open (Online) Education has experienced a major development raising awareness amongst all actors [3] [12]. It has led to global grass-root movements, events, communities and associations as well as to 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) [14], it was driven by the European Commission through the communication on "Opening Up Education" [2] demanding a change and improvement in European education and society.

During the last years Massive Open Online Courses (MOOCs) became very popular: Since the year 2008, when the first MOOC was provided, the number of MOOCs is constantly increasing [4] [10]. The year 2012 was considered as the "Year of the MOOCs" leading to an increasing debate about their quality as an educational tool [1]. In particular, the high drop-out rates of MOOCs that are typically measured in traditional distance education courses as well as in all formal education settings are discussed causing requests for re-booting MOOCs and the research on them and their quality [5] [8]. Although this discussion results mostly from an improper use of formal learning concepts in what is basically a non-formal learning experience [8] [13], alternative measures have been proposed and discussed to focus better the learners and their individual goals [11] [13].

To address the quality issues, the MOOQ project was initiated as the European Alliance for the Quality of MOOCs. MOOQ is directly relevant to several key aspects of the 2011 EU Modernization Agenda [3] and the main objectives of the MOOQ alliance are:

- Europe is already taking steps in investing in flexible educational solutions as this is embraced by the EC in its OER agenda; "Digital learning and recent trends in (OER) are enabling fundamental changes in the education world, expanding the educational offer beyond its traditional formats and borders. […] Europe should exploit the potential of OER much more than is currently the case." [3] MOOQ shares and contributes to this objective by providing guidelines for designing more successful MOOCs from an educational and business model point of view.
- 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).
- 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?
- 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.

- The entire European university sector witnesses an increase of student numbers. Conventional learning methods are suboptimal solutions for these massive student numbers. MOOCs and OER are a solution as long as 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 [2].

The founding partners of MOOQ, the European Alliance for the Quality of MOOCs, are:

1. Open University of the Netherlands (OUNL, NL) as the MOOQ coordinator
2. Hellenic Open University (HOU, GR)
3. National Quality Infrastructure System (NQIS, GR)
4. Universidade Aberta (UAb, PT)
5. Ecole Normale Supérieur (ENS, FR)

2. AIMS, NEEDS AND OUTPUTS

The vision of MOOQ is to contribute to fostering quality in MOOCs thus leading to a new era of learning experiences.

MOOQ'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.

To enhance the unique digital market in Europe, MOOQ will lead to a new "Q-generation of MOOCs" that will be designed, organized and tested as "qMOOCs". This will be done in close collaboration with all interested partners and stakeholders in Europe and beyond. Therefore MOOQ commits to help providers to design and deliver better MOOCs in close collaboration with all interested stakeholders worldwide.

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

- Analysis on 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.
- Development of a Quality Reference Framework (QRF) for the design, evaluation and assurance of MOOCs.
- Design, deployment and assessment (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.
- Standardisation 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).
- Dissemination and awareness raising 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).

The particular needs addressed by MOOQ are:

- Massive offerings of MOOCs, stimulated by unprecedented publicity, will soon lead to ranking of courses and Universities offering the courses: Ranking will rely on the increased quality of offerings as perceived by both learners and educational professionals. Thus, there is a need for a QRF for MOOCs with a focus on sustainability by way continuous improvement.
- Learning effectiveness will be the ultimate test for the MOOC education model as it was for the classic distance learning approach. Alignment of learning objectives, measurement and assessment, educational materials, interaction and engagement of learners, and course technology to ensure achievement of desired learning outcomes is essential. Hence there is the need for the development, application and testing of criteria, indicators, methods and tools for measuring achievement in MOOC learning.
- The MOOC educational model is being shaped as courses are offered, and so far, most initiatives still use traditional pedagogical techniques, although emerging pedagogic models in Europe, as the iMOOC and the sMOOC approaches bear much promise [13]. There is a lack of really innovative practices particularly in crowd learning, personalization equity and inclusion in a massive context. Hence, the need for creative use of the new learning tools for flexible and responsive education and application of the principles, criteria and standards of quality.
- Educational professionals and HE institutions are lacking support for designing, deploying, managing and assessing high quality MOOCs. Dissemination of techniques on the appropriate use of learning outcomes when describing and defining qualifications, parts of qualifications and curricula in massive learning is vital. Consequently MOOQ will address the need for tools and courses on MOOC learning scenarios, content design, quality assessment and organizational development.

Target groups of MOOQ include MOOC designers, HE policy makers and strategists, students (graduate/post-graduate) and teaching staff (teachers, facilitators), national and international students, alumni and lifelong learners. 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, contributing to excellent teaching and learning and to the European area of higher 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.

The planned MOOQ work is structured into four Intellectual Outputs (IOs) as follows:

2.1 Massive Online Open Education Design Patterns and Best Practices

This output (IO1) 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 quality reference, envisaged in IO2.

IO1 will include a collection of 'Best Practises' (that can be used independently by stakeholders) that 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).

2.2 Quality Reference Framework

The main intellectual output (IO2) is a Quality Reference Framework (QRF) for the design, comparison, evaluation and improvement of MOOCs.

The QRF will provide an organisation-wide system to help Higher Education Institutions and external stakeholders to design, develop, monitor, evaluate and improve the effectiveness of MOOCs along with the quality management practices. The QRF will define the requirements for the formation and enactment of internal and external evaluation mechanisms of processes and content. Based on flexible, configurable quality criteria and indicative descriptors, monitoring and reporting is adapted to organisational needs.

The QRF will be practical to encompass a wide range of approaches to quality assurance emphasizing that it is the quality of the outcomes (in terms of internal and external stakeholder satisfaction) that matters most in the design of MOOCs. Therefore, it will use a multi-facet approach with quality indicators and tools for the design of future MOOCs to achieve fitness of purpose and improve them for better learning experiences by MOOC learners. To this end, MOOQ will use and apply the first international ISO quality standard for e-Learning ISO/IEC 19796-1 approved and published in the year 2005. The QRF will cover the five phases adapted from the quality standard: analysis, design, implementation, learning process plus evaluation that embraces all other four phases for their continuous improvement.

2.3 Massive Online Open Course multilingual Pilots

This output is comprised of two multilingual MOOC courses, namely the cMOOC "Introduction to Embedded Systems" and the xMOOC "Introduction to Software Engineering".

The first MOOC targets formal, post-graduate students and it is based on the Masters Programme "Embedded Systems" of HOU. This MOOC is targeted to both internal students (as a blended teaching) and to graduate students of other institutions (purely on-line teaching mode). The second MOOC is a mixed formal/non-formal MOOC targeted as an introductory course to graduate students, professionals, entrepreneurs and the general public (attendance with no prerequisites). The course is partially based on similar programmes of the partner institutions.

The two pilots will apply in practice and showcase how to apply and manage the QRF provisions in the creation of open online courses. The assessment of the two pilots will address various facets of the QRF. Quality factors will be employed, i. e. stakeholder-perceived aspects of QRF components which determine whether the framework meets requirements. In order to evaluate the QRF, experts in charge of MOOC policy, HE institutions, educational providers and HE associations will be involved and their feedback will be analysed by MOOQ for the QRF improvement.

2.4 Pre-standard "European Massive Online Open Course Quality Framework"

This output (IO4) will build upon the QRF (IO2) and the assessment of results in IO3 for drafting a pre-standard proposal. This proposal will be submitted to CEN and ISO for further processing in order to become a European or international standard. It will specify requirements for the effective functioning of MOOCs in the educational operation of a HE organization. The pre-standard will also include a terminology part concerned with terms accompanied by their definitions, for conformity (use of a common and clearly understood language).

IO4 will be prepared through the formation of a Working Group, a team of technical experts, stakeholders, users and representatives of National Standardisation bodies that will serve as advisors to the design of the pre-standard proposal. Any interested party will also be able to take part in the standardization process through appropriate technical bodies. The Working Group will be however composed in a balanced way by representatives of educators, policy makers, researchers and learners.

IO4 includes a collaboration platform that will be configured (based on open-source software) in order to facilitate consultation over the pre-standard. By integrating existing social networking applications, this platform will enable the effective participation of not only the members of the WG but reach a wider audience of European Stakeholders. The goal is to receive feedback from as many stakeholders as possible and to gain a wider acceptance of the pre-standard that is to be designed.

3. CURRENT STATUS OF MOOQ

MOOQ is a 3-year project initiated and funded by the European Union under the ERASMUS+ call. The project started on September 2015 and is expected to complete on December 2018. Currently the first Global Survey on the Quality of MOOCs is launched for the three target groups MOOC learners, designers and facilitators supported by the leading international associations and institutions including four United Nations' organizations (www.survey.MOOC-quality.eu). In addition semi-structured interviews with MOOQ designers, facilitators and providers are starting and the first draft of the QRF is being developed and discussed in several interactive workshops at European and international conferences. Next to the two planned MOOCs, the MOOQ alliance is considering a MOOC on the quality of Open Education in close cooperation with all interested stakeholders worldwide to join forces for facilitating and increasing high quality Open Education worldwide.

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