

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

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Abstract: This paper aims to address the quality issues of open online education and learning with a focus on MOOCs. Specifically, our research goal is to develop a Quality Reference Framework (QRF) with quality indicators and tools in close collaboration with all interested stakeholders worldwide. Based on a rigorous literature review and analysis of existing quality approaches and quality indicators for MOOCs, the Global MOOC Quality Survey was designed targeting at three core interest groups: MOOC learners, MOOC designers and MOOC facilitators. A total of n=267 took part in the survey. The survey results were complemented with 45 semi-structured interviews with MOOC designers, facilitators and providers. This mixed method research was selected to provide a more coherent picture and analysis of the quality issues of MOOCs by investigating them from diverse and different perspectives. This paper presents first results from the survey and semi-structured interviews, the first QRF draft and the feedback gained from workshops at international conferences.

Introduction and theoretical discussion

Global challenges and changes in the educational and economic front have not only greatly shaped our working and living conditions, but also affected the way we teach and learn (OECD, 2016). Notwithstanding the individual process of learning has not completely changed, the contexts and channels of teaching and learning are becoming more diverse (Stracke, 2017a). In particular, educational systems are challenged by changing objectives and developmental goals to innovate and to open up education (Stracke, 2017b).

Within the Open Online Education, Massive Open Online Courses (MOOCs) has undeniably gained a strong foothold in the education arena, in particular, in higher education and lifelong learning (Conole, 2015; Stracke 2017b). The first MOOC came into being in the year 2008 and, since then, the number of MOOCs has been constantly rising (Gaskell & Mills, 2014). A first peak could be discovered in the year 2012 which was commonly coined, the "Year of the MOOCs" (Daniel, 2012). It gave rise to a growing discourse on the quality of MOOCs and their value as learning experience and educational tool. This also explains the multitude of research on the quality of MOOCs in the last five years. Reiterating the words of Macleod et al. (2015), "when one designs any course, one has to have some learner cohort in mind" (p. 9). Researchers on quality of MOOCs caution against discussing quality issues using a specific MOOC type, rather, the quality features of a good MOOC should take into account the general design principles and good pedagogical practices (Bali, 2014; Daradoumis, Bassi, Xhafa, & Caballe, 2013). Others advocate that research on quality of the learning experience with MOOCs should consider the given learning situation as well as the core stakeholders involved (Hayes, 2015; Macleod et al., 2015). Hence, this paper seeks to address this longstanding issue on the quality of MOOCs by investigating the quality indicators of a good MOOC from the perspectives of four core MOOC stakeholders: MOOC learners, MOOC designers, MOOC facilitators and MOOC providers. In this paper, the research activities with the interim results are presented to provide a first insight into the varying perspectives on the quality of MOOCs from the four core stakeholders.

Motivation and research background

The quality of MOOCs, and of online education and learning in general, is often questioned. The dropout rate is the typical measure in traditional distance education courses and in all formal education settings. The same mode of measurement is often applied to MOOCs to determine their quality. The MOOC completion rate is reportedly very low and often under 10 %. Therefore, it saw the first demands for re-booting the design of MOOCs and the related research for their quality improvement (Margaryan, Bianco, & Littlejohn, 2015; Reich, 2015). But this discussion is mainly based on an improper adoption and interpretation of dropout rates. Dropout rate is a formal evaluation concept from face-to-face education which is not the most appropriate evaluation method for MOOCs which engender mostly non-formal learning experiences (Onah, Sinclair, & Boyatt, 2014). Thus, alternative evaluation measures have been proposed and discussed to measure the quality of MOOCs by investigating learners' intentions and goals (Henderikx, Kreijns, & Kalz, 2017; Stracke, 2017b). On the same

note, to address these quality issues, the development of a Quality Reference Framework (QRF) for MOOCs was envisaged: An international alliance was established to connect and bring together the key experts and organizations to collaboratively address the quality of open online learning and education with a focus on MOOCs. Our expectation is that this alliance will demonstrate the potential significance and achieve its overarching goal to improve the quality of MOOCs and online education and learning in general.

Methodological framework

A Quality Reference Framework (QRF) for MOOCs is the main long-term objective of this empirical work. This will be achieved by means of both quantitative and qualitative research. To address the quality issues and to facilitate the QRF development, several research surveys and instruments with different methodological approaches were developed and combined. They serve to analyse the current status and to explore the needs from different perspectives. First, an in-depth literature review and analysis of existing quality approaches, evaluation instruments and quality indicators for MOOCs were conducted and the findings are currently under publication. Based on findings from the literature review and analysis of existing quality approaches, the Global MOOC Quality Survey was designed and developed in two phases: in phase one, a small pre-survey focusing on learners' intentions and personal goals was implemented. There was a total of 45 participants. Findings showed that most MOOC learners and MOOC designers do not share similar intentions and goals. In phase two, the Global MOOC Quality Survey was developed for three target groups: learners, designers and facilitators of MOOCs. It was conducted with the support of leading international associations and institutions over a period of four months. Table 1 below introduces the constructs that were developed for and used in the Global MOOC Quality Survey and Table 2 presents an overview of all participants from the three target groups and of the subsets of the participants that responded to the open questions.

Table 1: Overview of the constructs developed for and used in the Global MOOC Quality Survey

| Constructs | MOOC learners | MOOC designers | MOOC facilitators |
|---------------------------|---------------|----------------|-------------------|
| Pedagogical Decisions | | X | |
| Learning Objectives | X | X | X |
| Duration and Structure | X | X | |
| Duration and Interaction | | | X |
| Learning Resources | X | X | X |
| Learning Support | X | X | X |
| Flexibility and Inclusion | X | X | |
| Learning Progress | X | | |
| Learning Environment | | X | X |
| Learning Assessment | X | X | X |
| Learning Certification | X | X | |
| Design Process | | X | |
| Online Facilitation | | | X |

Table 2: Overview of all participants of the Global MOOC Quality Survey and of the subsets for open questions

| | MOOC learners | MOOC designers | MOOC facilitators | TOTAL |
|------------------|---------------|----------------|-------------------|-------|
| All participants | 166 | 68 | 33 | 267 |
| Open questions | 117 | 41 | 27 | 185 |

Semi-structured interviews with MOOC designers, facilitators and providers were also conducted to obtain more in-depth details and insights. Each interview contains different key questions for the three target groups and the interview questions are in line with the constructs of the Global MOOC Quality Survey (see Table 3).

Table 3: Overview of the interviews with MOOC designers, facilitators and providers

| | MOOC designers | MOOC facilitators | MOOC providers | TOTAL |
|-------------------|----------------|-------------------|----------------|-------------|
| Key questions | 15 | 10 | 13 | 38 |
| No. of Interviews | 15 x 1 hour | 15 x 1 hour | 15 x 1 hour | 45 x 1 hour |
| Summaries | 15 | 15 | 15 | 45 |

In parallel, several interactive workshops were also organized to obtain more feedback and to initiate in-depth discussions at international conferences (see Table 4 below) with the aim to facilitate close collaboration with all interested stakeholders worldwide for the development of the QRF with quality indicators and tools. Table 4 provides the overview of the workshop with selected key quality indicators for the MOOC design phase that gained most attention and discussions in average by the workshop participants.

Table 4: Overview of the workshop on the needs and phases for a QRF and related quality indicators

| | OE Global 2017 | EDUCON 2017 | EARLI 2017 | EC-TEL 2017 |
|--|---|---|--|-------------------|
| Participants | 24 | 20 | 16 | 4 |
| All questions | - | Yes | - | - |
| Key questions | - | Yes | Yes | Yes |
| QRF phases | Yes | Yes | Yes | Yes |
| Key QRF indicators (selected for design phase) | Learning design & theory, Definition of success factors, Re-usage of former courses | Pedagogy, Templates & story boards, Language, User experiences, Interactivity | Usability and accessibility, Learning paths, Defined goals, tasks, content & added value | - (not addressed) |

Interim results

The first interim results from the Global MOOC Quality Survey, the interviews and the workshops are presented below.

Interim results from the Global MOOC Quality Survey

More than 250 participants shared their experiences and expertise (n=267) and most of them reported positive experiences with MOOCs. However, the experiences with MOOCs vary across the three target groups MOOC learners (n=166), MOOC designers (n=68) and MOOC facilitators (n=33) as shown in the following figures:

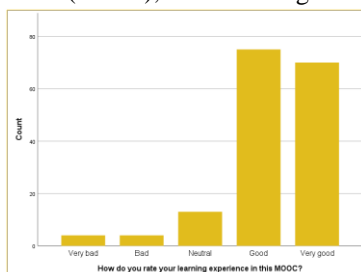


Figure 1. Learners' experiences.

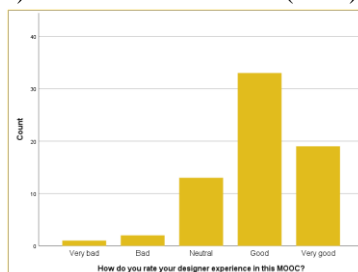


Figure 2. Designers' experiences.

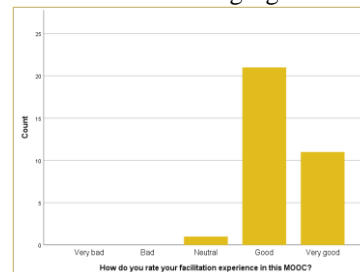


Figure 3. Facilitators' experiences.

Learners ($\mu=4.22$, $\sigma=.876$) rates their MOOC experiences higher than designers ($\mu=3.99$, $\sigma=.855$) but a little bit lower than the facilitators ($\mu=4.30$, $\sigma=.529$). Our first interpretation is that the designers underestimate their instructional design and the MOOC quality whereas the facilitators seem to slightly overestimate the effectiveness of their facilitation in the MOOC as they may feel responsible for the MOOC facilitation and therefore tend to indicate a more positive rating. Our in-depth analysis on the other data and correlations (still in progress) explore all relationships in greater detail.

Interim results from semi-structured interviews

Two main areas addressed by all interviewed target groups (MOOC designers, facilitators and providers) were: The pedagogical design and the learning activities. For the pedagogical design, three critical determinants of the didactical approaches were highlighted and commonly repeated: Content, learning objectives and learners' profile. For the learning activities within the MOOC, three conditions to support the learning process were highlighted and commonly repeated: Interaction, feedback and assessment. That is in line with our expectations; however we need more in-depth data analysis. Currently the quantitative and qualitative analysis of the interviews has just begun started and further results will be available soon.

Interim results from the four workshops

Almost all workshop participants (61 out of 62) were positive on the selected five processes for the QRF (Analysis, Design, Implementation, Learning process and Evaluation; as presented in figure 4) and agreed or fully agreed with them. The feedback on the QRF target groups and proposed instruments and tools to support the introduction and usage of the QRF were diverse and the analysis of the data is underway. Also, the workshop results will be analysed and evaluated to allow a better understanding of the feedback from different learning communities attending the international educational conferences and participating in our workshops.

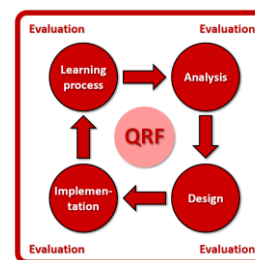


Figure 4. QRF processes.

It can be summarized that the mixed method research combining different data sets and perspectives has led to a multi-dimensional needs and preferences for the QRF development.

Conclusions and implications

This paper presents the major findings and interim results from the first activities towards the development and design of a Quality Reference Framework (QRF) for the improvement of MOOCs and online learning and education. The data analysis has just started but the first insights are promising. In particular, the combination of different methodologies seems to provide a multi-dimensional overview of the needs and preferences of the different target groups.

Our vision is to improve and to foster quality in Open Online Education and Learning with a focus on MOOCs which will lead us to a new era of learning experiences. We are developing a QRF for the adoption, design, delivery and evaluation of MOOCs in order to empower MOOC designers and providers for the benefit of MOOC learners. The main goal is the development and the integration of quality approaches, new pedagogical designs and organisational mechanisms into MOOCs with a strong focus on the learning processes, methodologies and assessments. This paper is a first small step towards this ambitious objective to facilitate and support better design and delivery of MOOCs in close collaboration with all interested stakeholders worldwide.

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