

**FACETS OF OPENNESS IN MOOCs –
A REVIEW**

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Abstract: Openness is an eponymous and hence essential feature of MOOCs, but the defining criteria with regard to what does and does not constitute openness are still subject of debate. Different definitions emphasize various aspects that extend beyond obvious characteristics such as open access to content and magnify issues like the licensing of resources, availability of digital technologies or devices as well as skills and competencies necessary for usage. The focus can be extended even further to include social and cultural factors as well. While MOOCs theoretically offer a higher level of openness when compared to traditional means of education, practice has shown that some groups are notoriously overrepresented. It has even been suggested that the growing body of OER may actually widen instead of bridge the gaps between different socioeconomic groups, because user statistics indicate that the typical well-educated MOOC participant already has good access to higher education, whereas those who lack formal education are also underrepresented in the use of OER.

This paper will review the insights on influences that compromise openness in MOOCs, and we will also present a case study from the Austrian MOOC platform iMooX (www.imoox.at) to illustrate the problem as well as discuss some strategies that might prove useful in alleviating the effects of social exclusion. We argue that there are several mitigating factors that warrant consideration in order to strengthen MOOC participation among educationally alienated groups and to encourage a more extensive understanding of openness.

Introduction

Openness or more specific *Open Education* are frequently used terms that are generally used to refer to licensed open educational content, sometimes also including open software. So-called *Open Educational Resources* (OER) are defined more precisely as learning and teaching content that is freely accessible and allows unlimited usage by others (COL and UNESCO 2011). OER not only guarantee free access, but they can also be republished without any additional costs (Geser 2007). One of the most prominent forms of openness in education nowadays are MOOCs (Massive Open Online Courses), which have been heralded as “remedies to educational disparities related to social class.” (Hansen and Reich 2015, 1245). Among other favorable attributes, OER in general and MOOCs in particular carry the label of democratizing education, providing open access to educational opportunities for everyone. However, evidence from various OER providers strongly suggests that they fall behind on these expectations (Falconer et al. 2013; Dillahunt, Wang and Teasley 2014).

In this paper, we would like to explore the “openness” in MOOCs and encourage a broader application of the term to address issues that prevent some groups from participating in the educational experiences available. We begin with an overview of various definitions of openness and how the concept is linked to

the phenomenon of the so-called digital divide. In the next section, the relationship between MOOCs and openness is explored further. We then present our case study, the “Dr. Internet” MOOC, and a few select statistical results that are relevant to some parameters of openness, especially the educational level of the participants. Finally, we explain the measures that were taken (and failed) to attract a more heterogeneous group of learners, and we conclude with a few remarks on the next steps to improve the openness in MOOCs.

1. On the Concept of Openness and the Digital Divide

Openness is a central component to various modern learning environments, and while the concept is widely used, there are several definitions of the term that each emphasize the importance of various aspects. These different definitions do not only influence the direction of debate, but also produce tensions when compared to the practicalities of fields like online learning, open universities and MOOCs, to name just a few. Lane (2009) provides an appealing definition of openness in the context of OER that focuses on four freedoms granted by openness: 1) the freedom from paying money to access and use the content, 2) the freedom to copy, 3) the freedom to re-use without asking permission and 4) the freedom to create derivative work (which does not include the freedom to make profits). This notion has some similarities compared to Wiley’s (2009) “4Rs” that define the central characteristics of openness: Reuse, Revise, Remix and Redistribute. It is interesting to note that Wiley has already left behind the most intuitive marker of openness, which is educational content without monetary cost, and focuses heavily on openness ideals that are often subject to licensing issues. Schaffert and Geser (2008) have created a fairly comprehensive concept of openness in relation to OER that easily lends itself to practical use, due to its hands-on approach: open access (content is free of charge), open licenses (licensed for re-use, modification and repurpose), open format (designed for easy re-use) and open (source) software.

Depending on the definition of openness used, many MOOC providers are compromising one or more aspects of openness, to a varying extent. However, it would seem like these infringements might not be the most pressing issue when it comes to openness in MOOCs. In theory, it would be logical to assume that constantly improving digital technology combined with more or less open access to educational content would remove more and more barriers to education for an increasingly larger group of people, yet there is also a widespread debate on how these developments are actually contributing to a widening educational gap in the general population. Just because something is freely available does not necessarily mean that everybody is equally likely to make use of it, because some groups might still be affected by barriers that lie beyond the categories in the various definitions of openness.

One of the first barriers to participation in openness that has been considered is the matter of a digital divide in terms of availability and usability of suitable digital devices that are necessary to partake in open

education. This concept of a digital divide has also seen various attempts of definition; the two most prominent aspects that are usually addressed are those of an economic divide that is mostly due to purchasing power and restricts ownership of digital devices for some groups, and the usability divide (or usage gap) that refers to a divide in technology skills and competencies that are required to operate said digital devices (Lane 2009). However, skills alone are not everything, and it stands to reason that some groups do not necessarily lack the competence but rather the confidence in the sufficiency of their own abilities: “they do not feel included even when people are trying to reach out to them because they lack confidence in their competence to succeed – they feel disempowered.” (Lane 2009, 4).

In fact, it can be argued that the main issues with open education are not about access to digital devices or the ability to use them, but really about far more complex social and cultural barriers to participation in any form of education (Cannell, Macintyre and Hewitt 2015). “In other words, it is the social and cultural factors that may be more important than the economic ones.” (Lane 2009, 9). It is important to remember that the current OER strategies were developed and implemented in a world with unequally distributed educational resources, combined with unprecedented advances in the field of ICT. When looking at the historical term of openness in education, there are several factors beyond those economic and technological aspects which are mostly shaping the OER debate today (Peter and Deimann 2013). An extensive list of all known aspects that influence the participation in education would go beyond the scope of this paper, but there are several authors that provide a somewhat comprehensive overview (Lane 2009; McGivney 2000). We would like to single out a few items that are particularly relevant when it comes to openness in education:

Prior educational achievement. Qualifications in education function as access requirements for certain other educational resources, for example consecutive degrees at universities.

Physical circumstances. This comprises of several aspects that all influence the ability to participate in education; like geographical location (educational opportunities in remote areas are usually scarce) and physical location (a place where educational activities can take place in a manner that does not impede the process of learning).

Social, cultural and individual norms. We are all surrounded by a complex web of norms, attitudes and values that shape our decisions and actions. Each person is influenced by different factors depending on their social surroundings. With regard to education, some groups for example are affected by social norms that do not hold educational attainments in high regard, and thus decrease the likelihood of engagement in such activities. Cultural norms might have an influence on the attitudes regarding who is eligible for what kind of education and at what age. Individual norms generally stem from personal experiences and are

related to beliefs about what educational goals are appropriate, achievable and useful for the person in question. This also includes attitudes about one's own capability, aspirations and the overall interest in education.

When looking at openness and particularly at openness in MOOCs, it can be seen that some of the above factors are definitely improved by educational methods that do not require proof of educational achievement in order to receive access to further education, or that do not place restrictions on the physical location of where the learning takes place. It is however equally visible that for the most part, social and cultural norms remain stubbornly untouched by technological developments and OER.

2. MOOCs and Openness

Compared to other means of distributing OER, MOOCs have received a tremendous amount of attention, from institutions of higher education as well as the general press. “[R]arely has higher education as a system responded as rapidly to a trend as it has responded to open online courses.” (Siemens 2012, 5). There is an indisputable link between MOOCs and higher education, manifesting in an academic interest in MOOCs as an innovative instrument of learning and the implementation of MOOC platforms by many universities. Interestingly, the last few years have shown over and over again that the typical participants in MOOCs are disproportionately well-educated: “MOOCs have tended to attract individuals who have already benefited from access to higher education.” (Cannell, Macintyre and Hewitt 2015, 65). It would seem that MOOCs in particular are not quite the helpful instruments of creating a world with more educational opportunities for everyone. In fact, there have been arguments that MOOCs are not actually widening access to education, but raising issues in terms of social exclusion: “the technological divide may be narrower but it is deeper – those not connected or not using these new technologies are being left behind at an alarming rate.” (Conole 2012, 131). The ideal behind the OER movement was not just to offer free educational resources just for the sake of their existence, but for an increased uptake by learners and teachers, who, thanks to digital technologies, are able to procure an educational advantage far beyond anything traditional OER had to offer. And while the gap is closing (or getting “narrower”) in terms of access to digital devices, the forces of social exclusion from education that have existed long before the internet came into existence are still well and just as effective.

So when looking at the educational status of MOOC users, what possible explanations are available? What factors are responsible for the dramatic overrepresentation of already well-educated participants? Several ideas come to mind. First, on the level of the individual, it would seem plausible to assume that not everyone shares an equally strong desire for the pursuit of knowledge and education; thus, people on a high educational level might have attained it by being more inclined to devote time and effort into educational endeavors, which is also something that makes them more likely to participate in rather

informal learning settings, like MOOCs. Second, on the level of the MOOC, there are several things to consider: is the instructional design and the preparation of the content attractive to users from all educational backgrounds? Through which channels has the MOOC and its platform been promoted and in what ways? If the platform is associated with a university: could this association be a potential drawback for some people who would not place themselves in the educational sphere of such an institution? The last aspect is already overlapping with third, the social level: as has been mentioned before, there are considerable social and cultural barriers to traditional education that can be assumed to play a similar role in MOOCs and other open technology-based forms.

If somewhat equal participation in open education across the spectrum of sociodemographic characteristics is a desirable goal, then these aspects need to be considered and addressed, with more research and with active strategies to counter them. This focus on widening access to OER beyond the scope of the economic and the usability divide has found its way into the concept of OEP (Open Educational Practices), which bears witness to the fact that open education is more than just the provision of OER, with the intention of “changing from a narrow view of educational practice which centres on the production of content, to a broader definition that encompasses all activities that open up access to educational opportunity” (Falconer et al. 2013, 7). This does not only call for an integration of ideological, practical and social aspects of OER, but also for a more interdisciplinary approach to limitations of openness in education (Cannell, Macintyre and Hewitt 2015).

3. Case Study: The “Dr. Internet” MOOC

This MOOC was selected as a case study because it has several interesting characteristics with regard to issues of openness. The conception and design of the “Dr. Internet” MOOC was part of an interdisciplinary research project that included three Austrian universities (the Karl Franzens University, University of Technology, and the Medical University, all based in Graz). Since the MOOC was created not just for educational purposes, but also to contribute to the research agenda (Zimmermann, Kopp and Ebner 2016), there was a mandatory questionnaire which participants had to fill in when first entering the MOOC. Additionally, the project and particularly the MOOC received quite a bit of attention from the (local) press, with several articles in popular print newspapers as well as online.

Description of the project. The “Dr. Internet” research cooperation was based on the mutual interest in online search behavior for health-related information. In addition to the MOOC, there is a sociological arm of study, which mainly focuses on interviews with general practitioners and a survey using questionnaires for patients, and a philosophical one that is concerned with ethical developments in this regard. The main objective of the project is to investigate how the increasingly common use of the internet to find medical information affects the doctor-patient relationship, and what risks and potential are involved with this

practice. Recent experiences of general practitioners show that more and more patients visit their doctor's office with previously acquired medical knowledge, obtained from online sources like popular websites, patients' forums etc. The acquired information can be extensive, but has often been found to be inconsistent and difficult to evaluate (Benigeri and Pluye 2003). Similar to the many-faceted problem of openness in education, data from the US has already indicated that access to health information on the internet is also characterized by a considerable digital divide that has serious implications for public health outcomes and for the potential benefits of improved online health communications (Brodie et al. 2000).

Description of the MOOC. As the core component of the research project, the “Dr. Internet” MOOC was designed to raise awareness for a critical yet productive approach to online health information. The participants were invited to assess and diagnose six medical case studies over the course of six weeks, all of which were presented in short videos where a patient exhibits or complains about various symptoms. After watching the videos, it was advised to use the internet in order to find information on potential diagnoses. We used a special quiz format to collect the users' opinions on possible diagnoses, where they had a chance to rate the likelihood of eight suggested solutions on a four-part scale ranging from “unlikely” to “very likely”. While there are no right or wrong answers to this kind of quiz, the participants are able to compare their own choices with those of their fellow course users and with the results from a previously conducted survey among trained physicians. The conception of the MOOC thus encourages participants to question their search behavior on the Internet and to critically evaluate their skills in the context of diagnosing diseases.

The MOOC is hosted on the first and only Austrian MOOC platform called iMooX” (www.imoox.at), founded by the Karl Franzens University and the Graz University of Technology (Neuböck, Kopp and Ebner 2015). All course materials on “iMooX” easily qualify as OER, meaning that all the MOOC videos are licensed under a Creative Commons License, so they may be accessed and used by anybody (as long as this is not done for commercial purposes). The MOOC has a set duration of six weeks (first run: 27th October – 6th December 2015, second run: 2nd May – 12th June 2016) during which the forum is open and moderated, all materials stay available after the initial MOOC and the research project have finished, so that future participants may still benefit from the course experience. The intention was to purposefully create a truly open MOOC that would attract a heterogeneous audience from all educational levels and engage them in an interesting learning experience.

4. Results

During the first run of the “Dr. Internet” MOOC, we had 370 registered participants, and 206 of those (56%) actually entered the course and filled in the compulsory questionnaire. The statistical results show that 62% of our participants were female; the average age was 39 years (minimum 15, maximum 75 years).

About 58% of MOOC users were single, 32% married, 8% divorced, 2% widowed. The educational level of the participants was askew in the all too familiar way: 56% had completed university education, 33% a high school leaving examination, 4% middle school, 5% had completed vocational education (“Lehrabschluss”), and 2% had undergone compulsory schooling. The data collected throughout the duration of the course also follow some of the patterns commonly seen in MOOCs (Colman 2013). Out of those 206 participants that completed the questionnaire in the beginning, only 28 people (14%) received a certificate for completing the course. When calculating the completion rate based on the 370 registrations, the result is 8%, which constitutes a quite satisfying result for MOOC standards (Khalil and Ebner 2014).

When comparing the initial group (n=206) with the small group of participants who officially completed the course (n=28), we can see that most sociodemographic characteristics barely change over the course of the MOOC. The gender ratio essentially stays the same with 63% women, the same holds true for age where the mean was 40 years. There is a smaller fraction of single (42%) and a larger one of married users (50%), which now makes it the dominating civil status. The percentage of divorced users does not change much (8%), but there are no more widowed participants. Regarding education, we get some small changes as well (see chart 1). The percentage of university-educated participants goes down to 46%, while those who completed high school increased their proportion to 46%, creating two equally strong groups. There were no more users with middle school education; the group with vocational education remained the same (4%), and those with compulsory schooling increased their percentage to 4%.

→ CHART 1

The insights gained from these numbers are limited by the very small sample size of the remaining MOOC users who completed the course, but we would like to point out a few tentative conclusions. Regarding educational levels, the big picture stays the same: when the two highest categories (university and high school) are combined, they make up 90% of MOOC users, both at the beginning and at the end of the “Dr. Internet” course. There is only a small fraction of participants with lower educational levels, but they drop out at about the same rate as those with higher education.

5. Measures Taken and Lessons Learned

The design and the implementation of the “Dr. Internet” MOOC was set to accommodate several aspects that were perceived as potential issues for the openness of the course. First, the chosen topic of diagnosing diseases with the help of the internet did not require any prior education on the subject, so that people from all educational levels have the same starting ground from which to approach the content. Second, the tasks of diagnosing patients were focused on media literacy rather than knowledge gain, so the quizzes were designed in a way that they had no right or wrong answers and felt less like a test. Third, the

topic itself appears to be fairly attractive in general and affects pretty much everybody who has ever wondered about the medical causes of physical symptoms, no matter what their educational level or social status. Preliminary results from the sociological arm of the (still ongoing) “Dr. Internet” research project indicate that over 80% of the patients surveyed in general practitioners’ offices have used the internet for medical research at least once, so we are dealing with quite a widespread behavior. Fourth, the course and all materials were created in German language. While this obviously limits international course participation, it should help to increase participation among educationally alienated groups that do not possess sufficient English language skills. Fifth, since the topic generated enough interest from the press, the MOOC was promoted by several articles in print and online newspapers, among them a double-sided feature in the second most-read newspaper in Styria, Austria (called “Kleine Zeitung”, 7th November 2015). Sixth, together with the course we developed an innovative concept for the moderation of the forum, which was monitored for 20 hours each day. This concept did not only include specific guidelines on how to handle potentially precarious questions on health and treatment, but also stimuli for debates so as to keep them open for everyone, and to generate an atmosphere that would allow the participants to ask any questions and discuss any problems they might have, without fear of being classified as undereducated or ill-informed.

Yet as we have seen from the participant statistics of the “Dr. Internet” MOOC, it would appear that all these measures did not really make a difference in truly “opening” the MOOC up to traditionally underrepresented groups. Instead of attracting a large and diverse crowd of users, we recruited a rather small and quite homogeneous group, which is very similar in its characteristics to those we have observed with other MOOCs on the iMooX platform (Neuböck, Kopp and Ebner 2015; Khalil, Kastl and Ebner 2016). The (academically) low-threshold but relevant topic, the accordance in language, and the publicity for the course failed to attract some of the targeted groups. The data does however suggest that there was at least no further unproportional loss of less-educated participants once they had entered the course; in fact, it could be argued that the relatively high dropout among university-educated users attests to the fact that the course was constructed in a way that was not too challenging on an intellectual level (Colman 2013). Combined with a somewhat acceptable completion rate of 14% (or 8% depending on the mode of calculation), it could be stated that the design and content of the course was well-received.

Conclusion

Even though a few proactive steps to encourage participation across the whole educational spectrum were integrated in the design, development and implementation of the “Dr. Internet” MOOC, it was by no means enough to counteract the dynamics of social exclusion that MOOCs seem to be particularly prone to. Our findings confirm the results of other studies (Dillahunt, Wang and Teasley 2014; Hansen and Reich

2015): even though MOOCs have been credited with the potential to democratize education, they are not an effective instrument against educational disparities. To the contrary, they seem to deepen rather than bridge the gap, because those groups who already have a higher socioeconomic status, good access to higher education and employment are also able to gain additional educational benefits from MOOCs and Open Education.

Why is this happening? While we tried to summarize the most important hindrances of openness, from the digital divide to social and cultural barriers, there are bound to be other aspects not yet brought to light. Interdisciplinary research into more traditional barriers to educational opportunities is a good starting point to look for answers. It seems likely that any strategies to counterbalance these dividing tendencies will need to address complex matters far beyond mere design and licensing issues. Quite a few ideas have already been proposed: Dillahunt, Wang and Teasley (2014) recommend more research into the motivation that drives learners to participate in MOOCs, and to use these insights to create more incentives for those of underrepresented groups. Falconer et al. (2013) provide a long list of suggestions, among them the appeal to view OER as more than content, to promote digital literacy, and to conduct research into the OER practices of learners. Cannell, Macintyre and Hewitt (2015) would like to see a shift of focus to OEP that build on partnerships and social networks in order to promote educational opportunities. Bull (2012) reports on the beneficial outcomes of targeted OER initiatives that are characterized by specifically adapted content presentation and instructional settings in order to appeal to groups who have a hard time accessing higher education.

All of these suggestions involve a tremendous amount of work and cooperation and are not guaranteed to provide solutions. However, if we want MOOCs to realize their educational potential and to be truly “open”, the effort is not only necessary but worthwhile.

References

- Benigeri, M., Pluye, P., 2003. “Shortcomings of health information on the internet”, *Health Promotion International*, 18 (4), pp. 381-368.
- Brodie, M., Flournoy, R.E., Altman, D.E., Blendon, R.J., Benson, J.M., Rosenbaum, M.D., 2000. “Health information, the Internet, and the digital divide”, *Health Affairs*, 19 (6), pp. 255-265.
- Bull, D., 2013. “Widening participation in higher education through online pedagogy and open educational practices (OEP)”, *Ako Aotearoa – The National Centre for Tertiary Teaching excellence*, pp. 124-135.
- Cannell, P., Macintyre, R., Hewitt, L., 2015. “Widening access and OER: developing new practice”, *Widening Participation and Lifelong Learning*, 17 (1), pp. 64-72.

COL, UNESCO, 2011. Guidelines for Open Educational Resources (OER) in Higher Education, http://oasis.col.org/bitstream/handle/11599/60/pub_Guidelines_OER_HE.pdf?sequence=1&isAllowed=y, accessed on 12th May 2016.

Colman, D., 2013. “MOOC Interrupted: Top 10 Reasons Our Readers Didn’t Finish a Massive Open Online Course”, Open Culture, http://www.openculture.com/2013/04/10_reasons_you_didnt_complete_a_mooc.html, accessed on 13th May 2016.

Conole, G., 2012. “Fostering social inclusion through open educational resources (OER)”, *Distance Education*, 33 (2), pp. 131-134.

Dillahunt, T., Wang, T., Teasley, S.D., 2014. “Democratizing Higher Education: Exploring MOOC Use Among Those Who Cannot Afford a Higher Education”, *International Review of Research in Open and Distance Learning*, 15 (5), pp. 177-196.

Falconer, I., McGill, L., Littlejohn, A., Boursinou, E., 2013. Overview and Analyses of Practices with Open Educational Resources in Europe, Luxembourg, European Commission. ’

Geser, G., 2007. Open Educational Practices and Resources. OLCOS Roadmap 2012, Salzburg, Salzburg Research.

Hansen, J.D., Reich, J., 2015. “Democratizing education? Examining access and usage patterns in massive open online courses”, *Science*, 350 (6265), pp. 1245-1248.

Khalil, H., Ebner, M., 2014. “MOOCs Completion Rates and Possible Methods to Improve Retention - A Literature Review”, in: Viteli, J., Leikomaa, M., (Eds.) *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2014*, pp. 1305-1313.

Khalil, M., Kastl, C., Ebner, M., 2016. “Portraying MOOCs Learners: a Clustering Experience Using Learning Analytics”, in: Khalil, M., Ebner, M., Kopp, M., Lorenz, A., Kalz, M. (Eds.) *Proceedings of the EUROPEAN STAKEHOLDER SUMMIT on experiences and best practices in and around MOOCs (EMOOCs 2016)*, pp. 265-278.

Lane, A., 2009. “The Impact of Openness on Bridging Educational Digital Divides”, *International Review of Research in Open and Distance Learning*, 10 (5), pp. 1-12.

McGivney, V., 2000. Working with excluded groups. Guidelines on Good Practice for Providers and Policy-makers in Working with Groups Under-represented in Adult Learning, Leicester, NIACE.

Neuböck, K., Kopp, M., Ebner, M., 2015. “What do we know about typical MOOC participants? First insights from the field”, in: Lebrun, M., de Waard, I., Ebner, M., Gaebel, M., (Eds.) *Proceedings Papers*.

EUROPEAN STAKEHOLDER SUMMIT on experiences and best practices in and around MOOCs, pp. 183-190.

Peter, S., Deimann, M., 2013. “On the role of openness in education: A historical reconstruction”, *Open Praxis*, 5 (1), pp. 7-14.

Schaffert, S., Geser, G., 2008. “Open educational resources and practices”, *eLearning Papers*, No. 7, ISSN 1887-1542.

Siemens, G., 2012. “Massive Open Online Courses: Innovation in Education?”, in: McGreal, R., Kinuthia, W., Marshall, S., (Eds.) *Open Educational Resources: Innovation, Research and Practice*, Vancouver, Commonwealth of Learning, pp. 5-16.

Wiley, D., 2009. Defining “Open”, “Iterating toward openness - Blog”, <http://opencontent.org/blog/archives/1123>, accessed on 11th May 2016.

Zimmermann, C., Kopp, M., Ebner, M., 2016. “How MOOCs can be used as an instrument of scientific research”, in: Khalil, M., Ebner, M., Kopp, M., Lorenz, A., Kalz, M. (Eds.) *Proceedings of the EUROPEAN STAKEHOLDER SUMMIT on experiences and best practices in and around MOOCs (EMOOCs 2016)*, pp. 393-400.

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CHART 1. EDUCATIONAL LEVEL OF „DR. INTERNET” MOOC USERS AT START AND END OF THE COURSE

