HEURISTICS FOR ETHICAL DEVELOPMENT AND USE OF MOOCS

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Abstract

It is widely acknowledged that technology offers a chance to redefine, or at least change, learning and education for the better. Massive Open Online Courses (MOOCs) can be defined as learning events that are conducted via the Web, which can accommodate large numbers of people, typically ranging from a few hundreds of participants to over a hundred thousand. A classification of MOOCs suggests that there are two general types: xMOOCs and cMOOCs. Different types of MOOCS require different levels of participatory literacy skills, motivation and self-determination. Although it is recognised that MOOCs embody a potentially exciting opportunity to use technology to realize many benefits of universal higher education there are also significant ethical concerns that arise in their development and deployment.

In this paper we customize a theoretical framework developed by the US Content Subcommittee of the ImpactCS Steering Committee that specifies traditional moral and ethical concepts, which can be used to cater for the teaching and learning of the social, legal and ethical issues concerning MOOCs. An application of these conventional and generic ethical concepts can help flag issues, amongst others, such as: intellectual and pedagogical integrity; privacy, identity, and anonymity; intellectual property rights and plagiarism; and the digital divide. In the design and utilisation of MOOCs developers, content authors, tutors and participants must be aware of these ethical and moral concepts, as presented in this paper, in order to become more responsible professionals and citizens in general. We propose a set of heuristics for ethical development and deployment of MOOCs.

Keywords: MOOCs, ethics, quality of life, use of power, risks and reliability, privacy, property rights, equity and access

1 INTRODUCTION

The all-pervasive use of computers and the Internet in every facet of our personal lives and businesses has altered our lives at work and home. It has reshaped the landscape, and the functioning of the economy, health, industry, agriculture and many other spheres, including education. The phenomenon of Massive Online Open Courses (MOOCs) in education has led to a trend towards greater openness in higher education. A MOOC is an online course aimed at unlimited participation, self-regulated and open access via the web. The development and deployment of computers, has given rise to questions of right and wrong. Computer Ethics can be defined as [1]: ".... *The analysis of the nature and the social impact of computer technology and the corresponding formulation and justification of policies for the ethical use of such technology*".

The study of computer ethics can be viewed as [2]: "....*The study of the ethical questions that arise as a consequence of the development and deployment of computers and computing technologies. It involves two activities. One activity is identifying and bringing into focus the issues and problems that fall within its scope, thus raising awareness of the ethical dimension of a particular situation. The second activity is providing an approach to these issues, a means of advancing our understanding of, and suggesting ways of reaching wise solutions to these problems*".

1.1 MOOC Models

MOOCs have been broadly characterised as being cMOOCs (the *c* term meaning connectivist) or xMOOCs (the *x* term denoting transfer) [3]. Some developers, facilitators and researchers may argue that this is too simplistic a view and that MOOCs exist more in a spectrum as opposed to being categorised as one of two distinct types [4, 5]. The former, is based on principles from connectivist pedagogy; whereas the latter will typically centre on instructor-guided lesson(s).

1.1.1 xMOOCs

A learning management system will accommodate an xMOOC, which characteristically features recorded video lectures and machine-graded assessments. In addition, threaded discussion forums can possibly facilitate student interaction and the potential for peer graded assignments. Succinctly put learning activities in xMOOCs are mainly viewed as being *consumptive*. Content is prescribed by the developers, and participant mastery or understanding of the content is measured via tests, with almost no direct interaction between an individual participant and the instructor

accountable for the course. Although there are subtle, but in some cases stark, differences between instances of xMOOCs, they have typically a number of common design features [3, 6, 7]: Computer-marked assessments; Learning materials; Moderation; and Learning analytics.

1.1.2 cMOOCs

Connectivist MOOCs are based on principles from the learning theory that is connectivist pedagogy [6] [8]. They are characteristically decentralised, with an emphasis on the *production* of content as opposed to the consumption. In this approach the participants are encouraged to pursue their own goals and forge their own learning paths, so traditional assessments are rare [9]. Therefore, unlike xMOOCs, cMOOCs do not make use of a formal teacher-student relationship, either for delivery of content or for learner support. Learning is facilitated through open and connected social media because cMOOCs are characteristically not institutionally based or supported, thus do not make use of a shared platform(s). This permits autonomous learners to be networked with each other. This connection allows for a sharing of knowledge through participants' personal contributions. The crucial design practice is that all participants contribute to and share content. Although there are variations between instances of cMOOCs, they have typically a number of common design features [8, 9, 10]: The use of social media; Participant-driven content; Distributed communication; Students as assessors; and Use of key-words.

1.2 Lane's Classification of MOOCs

An alternative classification of MOOCs suggests three general types [11]: Firstly, N**etwork based MOOCs**, where the "*goal is socially constructed knowledge developed through conversation and exploration*". Secondly, **Task based MOOCs**, which "*emphasise skill development through the completion of tasks*". Finally, C**ontent based MOOCs**, where the focus is on "*transmitting content, usually automated assessment, not having to be participatory"*. This classification seeks to focus on the instructor/teacher who has designed the MOOC.

1.3 Clarke's Classification of MOOCs

Looking at MOOCs from a pedagogical, and not an institutional perspective, suggests taxonomy of eight types of MOOC [12]: 1) Transfer MOOCs; 2) Made MOOCs; 3) Synch MOOCs; 4) Asynch MOOCs; 5) Adaptive MOOCs; 6) Group MOOCs; 7) Connectivist MOOCs; and 8) Mini

MOOCs. New MOOCs may initially developed largely based on one of the categories outlined above. However, in practice a combination of elements from each category is implemented and extended, customised, reshaped in the course of implementation based on feedback, insights gained and in-depth analysis.

2 THEORETICAL FRAMEWORK AND ETHICAL CONCEPTS

2.1 The US Content Subcommittee of the ImpactCS Steering Committee

In the development and deployment of computing technology a number of social, legal and ethical issues can be invoked. Legal issues can be resolved via the use of legal doctrine, which is a framework presenting a set of rules, procedural steps, or test, through which rulings can be determined in a given legal case. In the same vein the most important ethical issues surrounding the deployment and development of computer technology can be resolved by making a rational appeal to traditional ethical principles and theories and so extend them to the use of new technologies. The US Content Subcommittee of the ImpactCS Steering Committee [13] advocated a framework presenting a set of traditional moral and ethical concepts that could be used to flag potential ethical issues in a given case. In terms of personal and professional responsibility, the committee recommended the following six traditional moral and ethical concepts: 1) Quality of life; 2) Use of Power; 3) Risks and reliability; 4) Property Rights; 5) Privacy and 6) Equity and Access.

In order to become a responsible computer professional, the ImpactCS Steering Committee argued that one must be able to examine the standards for the rightness and wrongness of actions. For a particular issue, for example, privacy in corporate records or risks in medical technology, it will cover many levels of social analysis (individual: race, class, gender and culture; communities and groups; organisational; institutional; and national and global). In addition, it will cover several different ethical issues and will be spread across differing implementations of the technology.

2.2 A theoretical framework for the teaching and learning of ethical issues concerning MOOCs

The theoretical framework developed by the US Content Subcommittee of the ImpactCS Steering Committee has been customised. It specifies the six moral and ethical concepts, listed above, that can help identify the social, legal and ethical issues invoked by the development and deployment of MOOCs. We added commentaries, below, which lead to a set of heuristics for ethical development and use of MOOCs, in Section 4.0.

3 THE ETHICAL ISSUES INVOKED BY THE DEVELOPMENT AND DEPLOYMENT OF MOOCS

In order to become more responsible developers, facilitators and students in general it is imperative that all are aware of the moral and ethical concepts specified in the framework. It is only through comprehending the issues raised by the framework that developers, trainers and students can achieve a better understanding of the social, legal and ethical issues concerning the delivery of education via MOOCs.

3.1 The Quality of Life

A traditional classroom environment is held as a relatively private space where students can safely explore and investigate many topics without having to bare their experiences to public inspection. Exposure to an unlimited number of participants in a learning community may well unsettle some students consequently leading to their disengagement from the MOOC [14]. MOOCs endorse the notion of openness to learners. More often than not this is realised through aspects such as open entry (where no formal admission requirements are required for registration on a MOOC). In contrast to the enrollment process at a conventional campus college/university, where typically the registration will require formal admissions requirements to be met, in the case of MOOCs eligibility may not solely depend on academic qualification prerequisites being met but may also be contingent on an assortment of personal circumstances that may determine the suitability of an applicant. In direct financial terms access and use of MOOCs is often free to students. However, there must be an acknowledgement of sundry costs whilst engaged with MOOCs, for example time spent on a MOOC "is taken from other alternative activities such as employment, family responsibilities, or alternative forms of education [15]. Engaging in MOOCs studies requires self-motivation and commitment even if the purpose of the learner may be curiosity for learning at the one end or opportunity for professional updating and career progression. Whichever end of the spectrum the underpinning motivation is improvement of the quality of life. In Northern Sweden MOOCs were piloted for addressing the needs of off-campus students at community learning centers by forming "blended" or "glonacal" courses [16]. Learning center staff identified learning needs in the regional development context and a suitable MOOC course was found and marketed locally as a study circle function with 3 or 4 participants meeting weekly or bi-weekly at the learning center. Students registered for the MOOC and a study circle leader was appointed among the learners. Local content was added to the course, such as visits to workplaces relevant for the course or an expert visiting the group for discussions in person. A course certificate can be obtained from the MOOC platform. Cooperation with a Swedish university

arranging a local examination is an alternative option. The results showed that the learning centers found a new tool for addressing local learning needs without being dependent on education offerings from regional or national universities. It gave the asynchronous MOOC course a social face-to-face support environment and a widened social network, since students had two layers of peers – internationally through the MOOC course forum and locally in the study circle.

3.2 The Use of Power

Academics/providers need to "avoid any exploitation, harassment, or discriminatory treatment of students" [18]. A key question in considering the ethics of a MOOC is to probe whether the creation of the course, its design, curriculum, and the experiences provided for students are being done "primarily to educate students and not principally for some other personal or institutional goal likely to compromise the educational outcomes" [18]. It has been noted that higher education institutions have transformed into commercial enterprises thus affecting the original intentions behind the launching of MOOCs. Thus two main commercial actions are invoked: "*on the one hand, free MOOCs have started to be employed as marketing tools in order to drive university recruitment at an international scale. Meanwhile, on the other hand, new fee-based models of MOOCs for accreditation via formal assessment have been born. These steps are gradually changing the initial ethical agenda set for MOOCs*" [18]. In education and its wider context there exist "*cultures of silence*". What is required are to find ways of breaking that silence, and giving voice to the marginalised and to oppressed groups. "*This raises a paradox insofar as it confirms the negativity of a culture of silence. In some circumstances, the use of silence is in itself an exercise of power, and this is applicable to the classroom as well as to the wider community*" [18]. MOOCs, connectivist cMOOCs in particular, possibly offer a means for disrupting the power relationships generally present in higher education, via the use of technology to enable a more democratic and collective engagement. Whereas it is recognised that "*while xMOOCs are at risk of perpetuating pre-existing disparities in power, the group culture of a cMOOC can also be disempowering if the academics responsible are not alert to the issue and responsive to the needs of the majority of their students*" [15].

3.3 Risks and Reliability

The quality of learning materials is a very important issue concerning the development of MOOCs. Co-creation of solutions to problems and feedback/assessment by peers may jeopardise the correctness and quality. Many MOOCs though have little or no qualified tutoring or guidance, just online areas for student communication and learning materials resulting in learning engagement being out of the control of the organisers [19]. The credibility and the value placed on MOOC assessments can be comprised by the threats of impersonation and exam cheating. It is imperative that

assessors ensure that the registered candidate is indeed taking the assessment and not an impersonator [20]. One possibility, akin to distance mode courses run in the past at Middlesex University London, is to set specific dates for particular assessments, which could be invigilated by independent third parties, such as the British Council. Review and improvement based on analytics is vital to ensure the efficacy of a MOOC for delivering effective education. However, it must be noted that as students engage with a MOOC it is likely that the data garnered on them, by a MOOC provider, will grow in scope. The collection of personal data on students may well be useful for validating achievement but could, concurrently, potentially subject them to the risk of identity theft or other unintended breaches of confidentiality [21].

3.4 Property Rights

With regards to MOOC course production, the use of copyright-protected third-party content needs to be used with care. The different course materials used e.g. audible, viewable, and downloadable third-party content, in lecture videos and in all supporting materials, will be subject to copyright law. MOOC platform providers must handle the institution as a publisher. A majority of contracts will state that the university/provider is responsible for reviewing and obtaining any necessary licenses, waivers, or permissions for use of third-party content. Plagiarism can be succinctly defined as representing someone else's words or thoughts as one's own. MOOCs attract students from around the world, and different cultures have different perspectives and tolerances on plagiarism and ownership in education.

3.5 Privacy

When entering into a MOOC, most students recognise that they will become identified to other students and to their teachers. By necessity, students are rarely able to remain anonymous in this context. Experience has shown that anonymity is not conducive to effective social engagement in a learning context and as MOOCs increasingly become associated with certification and qualification systems, the need to accurately identify individuals will only grow. What students do not expect is that their use of the MOOC will translate into other, completely unrelated, uses such as marketing services offered by commercial partners especially when that might imply a personal endorsement taken without explicit permission.

3.6 Equity and Access

Studies investigating the demographic profiles of characteristic MOOC participants indicate that they typically have good prior educational attainment, thus a high level of information handling skills, in order to successfully participate in a MOOC [4]. MOOC participants require a certain level of digital and information literacy in order to make use of the

online materials. Can MOOCs allow for a future of equal educational opportunities for all, or is a digital divide being widened? An internet connection is required in order to access a MOOC course. If their hardware is outdated, their internet connection poor or they cannot afford to pay for a flat rate, then their opportunities for accessing content are more limited than those of more materially well-off users with the latest technical equipment [22]. Proponents of MOOCs point to the equity provided these online courses but it must be noted that MOOC providers need to deal with potentially vulnerable groups; the issue of the digital divide in terms of access to technology and also with respect to the level of digital literacy needs to be addressed. The development of MOOCs is entrenched within the principles of openness in education [17]. This value demands that knowledge should be shared freely, and the desire to learn should *"be met without demographic, economic, and geographical constraints"* [23]. There are eight ethical considerations concerning e-learning [26], one of which is cultural bias that also apply to the ethics of MOOCs. Several studies have been reported and cited that suggest consistent differences between Western and Eastern education [24, 25]. The latter is often viewed as a pedagogical culture that emphasises: group-based, teacher-dictated, centrally organised learning with examinations as the primary tool for assessment in order to demarcate performance. In addition, the teacher is viewed as a '*sage on stage'*, whose authority and knowledge is to be left unchallenged and deference to be shown. The former typically transforms the role of the teacher, shifting from lecturing to be one of coaching and guiding thus enabling a self-development process as dialogue and interaction are urged in the learning process. Eastern students, in online learning environments, tend to have a tendency of collectivism, uncertainty avoidance and an acceptance of higher degree of unequally distributed power (high power distance). In contrast, Western students typically desire more interactions among the student cohort and are comfortable with the nonlinear nature of their online courses. Poor language competencies tend to amplify other cultural problems when trying to complete a web-based course thus non-native speakers tend to withdraw from equal participation [25].

4   HEURISTICS FOR ETHICAL DEVELOPMENT AND USE OF MOOCS

A set of heuristics for individuals and institutions are provided as a starting point for developing ethical MOOCs and associated activities.

1. The efficacy of MOOCs, as a means of delivering effective education, the development process for MOOCs must encompass information literacy instruction. MOOC developers and facilitators should be ready to develop practices to support and encourage learner participation, and to identify the importance of **learning,**

literacy and digital skills at work within the MOOC environment [9].

2. A **MOOC code of ethics** must be fastened onto an online course in order to guide learners and facilitators about being and behaving morally responsible in specific virtual environments. The code of ethics must explicitly state what acceptable and intolerable actions are with regards to issues such as: harassment, privacy, intellectual property (plagiarism and ownership), etc.

3. Examinations can be invigilated at regional test centers, partially **addressing issues of impersonation**. The use of technologies, for example, webcams, or monitoring keystroke recognition [mouse clicks and typing styles] can facilitate the completion of assessments at home, allowing those with mobility issues to study from home thus **widening participation**.

4. The design of MOOCs should consider a blend of teaching pedagogies and learning styles in order to **address the spectrum of diversity** in the MOOC cohort. This would permit ethical consideration of *cultural bias*, which applies to the ethics of MOOCs, to be addressed. For example, language barriers can be alleviated by translating teaching materials and incorporating in the design of a MOOC, elements of asynchronous online learning. Locally relevant case studies and examples can enhance understanding and aid participation and learning. These steps could be achieved, for example, with the use of written communication as the alternative form of communication.

5. With regards to **acknowledging and respecting property rights**, course components have an open license and are correctly attributed. Reuse of material is supported by the appropriate choice of formats and standards [26].

6. All material presented on a MOOC must **meet accessibility standards**. For example, the design should include image description for alt text screen readers, video captioning and transcripts for video and audio content. Another example is the use of alt text, where all images contain a corresponding description that expresses the context of the image, thus permitting it to be read aloud by a screen reader or displayed as text if the user's device cannot display the image.

7. Institutions need to explicitly state the strategic goal to developing and running the MOOC. If the aim is to primarily educate students then fine, else if it is for other personal or institutional goals then these should be clearly declared in order to **avoid conflicts of interest and student exploitation**. If MOOC participants are being used as subjects in a research experience, then **consent** must be sought.

8. Ensure the protection of the data used from MOOCs. For example, clearly state to learners how the data garnered on them is in accordance with **data protection principles**, for example, as stated in the UK Data Protection Act, 1998.

5   CONCLUSIONS

The rationale of adopting and applying the theoretical framework developed by the US Content Subcommittee of the ImpactCS Steering Committee was to identify the ethical issues that can be invoked in the development and deployment of MOOCs. In doing so the authors conclude that the importance of ethical considerations in the processes of design and implementation can be bought to the attention of the MOOC community. Thus help raise the visibility of ethical design. The paper contributes to the current pedagogic discourse relating to the relatively sudden growth of MOOCs. In particular, set of heuristics for the development and deployment of MOOCs has been proposed which will raise awareness of the issues and help guide developers and consumers (students) of MOOCs. Future work will seek to apply *legal principles* to the development and deployment of MOOCs. A comparison between the ethical and legal considerations may permit bad laws to be flagged, i.e. those legal regulations that provide no moral guidance.

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