MOOCs and the Integration of Social Media and Curation Tools in e-Learning

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Abstract. MOOCs (Massive Open Online Courses) have gained popularity for e-learning purposes. Effectiveness depends on platform interface design and management, which should create student cohesiveness and optimize collaboration. A MOOC prototype was developed and e-learning applications were pilot-tested for one semester with a total of 160 students from graduate courses in a French business school. Students used a mobile supported e-learning environment and reported their experiences through the writing of a synthesis, the building of a CMS (Content Management System) and the elaboration of a content curation system.

Keywords: MOOC · Social media · Mobile learning · Knowledge management · Constructivist learning

1 Introduction

The "Learning For All" movement is currently stimulating active debates in the education space around the world. These debates combined with the emergence of new forms of blended learning as well as the arrival of Massive Open Online Courses (MOOCs) and other forms of open educational resources (OERs) have made e-learning front page news across all continents and societies.

Collaborative learning is one of the key instructional strategies that are being adopted worldwide. Collaborative learning has gained an increasing role in educational research and practices in recent years. Computer-supported collaborative learning (CSCL) is a pedagogical approach wherein learning takes place via social interaction using a computer or through the Internet [1]. This is possible thanks to the use of social media, enabling students to correspond, chat and comment on content related to a course. Many new technologies are emerging which offer new ways of teaching and learning, such as ubiquitous learning technologies, gesture-based computing, augmented reality technology, and learning analytics. Students who have grown up amidst new technologies are keen to use and adopt new devices, apps and various kinds of new ICT. Indeed,

L. Uden et al. (Eds.): LTEC 2015, CCIS 533, pp. 43–53, 2015.
DOI: 10.1007/978-3-319-22629-3_4

collaborative learning aims to promote students' individual cognition, group cognition and community cognition through the use of appealing, fun, easy-to-use and instantaneous tools. These tools enable students to communicate between each other, as well as sharing documents and ideas, as if they were in the same classroom or spaces. The new generation of students are experiential, interactive and social learners, multi-taskers, structured and relevant learners, and technology immersed learners [1].

The CSCL setting is characterized by the sharing and construction of knowledge among participants using technology as their primary means of communication or as a common resource [2]. The latter can be implemented online and in classroom learning environments, which can take place synchronously or asynchronously. The appropriate processes, assessment and interaction analysis methods can provide insight into effectiveness of collaborative learning in face-to-face and online contexts. Accompanying CSCL, ubiquitous e-learning is a notion that is becoming a pertinent factor in today's education [2] and [3]. Recent studies show increased rates of learning outcomes as a result of applying traditional and e-learning hybrid models [5]. Many universities are starting to experiment with hybrid educational models mixing digital technologies and social media with traditional teaching approaches. Universities are naturally migrating towards a more digitally coherent system of operation that is less expensive than the traditional model. Since the high cost of higher education is considered as one of the principal problems of today's educational system [5], a technological shift towards digital learning environments is a partial solution.

MOOCs may be a catalyst in the process of re-imagining higher education or re-enchanting e-learning, due to the powerful elements constituting the MOOC architecture. Whether MOOCs are part of a global open education initiative or a for-profit education model, today there is certainly growing R&D interest, as well as entrepreneurial attention to this form of learning. There is, however, substantial criticism and typical bystander skepticism about MOOCs. The negative appeal is largely a result of reports indicating low completion rates that many MOOCs encounter.

This article gives an overview of the development and application of MOOCs. It integrates social media and curation tools as a hot topic in e-learning and presents concrete ideas on how to enable and support learning in higher education with the use of electronic devices and free Internet tools. The paper focuses on learning as a collaborative process in which students developed their own functional knowledge management tools and actively participated in an expansive learning experience. Interaction between students and lecturers were formed by a self-regulated group of students, embracing one of the primary characteristics of MOOCs: collaborative development and constructivist learning situations.

2 Review of Literature

2.1 MOOCs

MOOCs can be defined as aggregate classes from multiple organizations, universities and schools, offered on a single digital platform. They are designed in a way enabling

the delivery of specific courses to thousands of recipients simultaneously. There are many courses on a wide array of themes and topics available on MOOCs, most of them for free or at a very low cost. Gaebel [14] defined MOOCs as free, credit-less online courses where people can participate without limits on the amount of classes they can enroll in. A small proportion of MOOCs are financed by examination and diploma activities and new business models emerge regularly. De Waard [15] reinforced this definition by describing them as "time and cost efficient". There are free tools available for building these courses, languages can be chosen and changed freely, tools can be tailored to the preferences of the participants and courses can be set up quickly. MOOCs can be beneficial to students as an informal means of supplementing their knowledge base and enhancing their productivity. Finally, they are cross-disciplinary and promote exchanges between the different fields of expertise [16].

The MOOC term connotes Open Access, which means that learners don't need to be registered at any particular college, university or campus as a prerequisite to enrollment. One teacher can be responsible for hundreds or thousands of students. The large number of enrollees and courses allows MOOCs to offer two approaches to instructional design: (1) peer-review, group collaborations through "crowd sourcing" or (2) Automated feedback and self-assessments [17]. Often, MOOC students watch short videos (blended learning) which are graded either by computers or by other students. One of the problems encountered by students is the rather limited possibility of interacting with other students [18]. Additionally, [19] explain that learners may receive inferior educational experiences when receiving their education through MOOCs due to the lack of a teacher-student relationship. On the other hand, MOOCs make higher education more affordable and could benefit the global economy by helping students and workers become lifelong learners.

According to [20], the motivating factors fueling support for MOOCs include:

1. An altruistic initiative to increase access to higher education worldwide,
2. The desire to stay up-to-date with new pedagogical approaches without being forced into using online techniques, regardless if the emergent techniques takes a different form than MOOCs over time,
3. A desire to broadly increase their personal visibility in Academia.

Also, learners can make use of the wide range of technology-based multimedia activities in order to:

- Manage and reflect their learning process
- Create content for collaborating and communicating with others
- Grade their peers and receive peer evaluation
- Read and curate content and share it with their peers

2.2 e-Learning and Mobile Learning (m-Learning)

The design of an e-learning platform is of paramount importance for influencing learner interaction and behavior as well as the overall success of the learning experience.

Learners can benefit from the socialization of their platform which fosters the multiplication of social links, facilitating the curation of content to read, learn and share [21]. As pointed out by [22], with increased popular access to information and knowledge anywhere, anytime, the role of education is challenged and the relationships between education, society, and technology are now more dynamic than ever.

One of the most interesting aspects of m-learning is that users have the capacity to make documentations while they are in the field; thus bridging the gap between theoretical and practical knowledge [23, 24]. When we speak of m-learning, we refer to wireless hand-held devices such as personal digital assistants (PDAs), smartphones and tablets. Often these systems operate with wireless access protocols (WAPs) and wireless markup language (WML). The lightweight architecture of these protocols makes accessibility possible with a wide range of affordable devices. Although learning on mobile devices may never completely replace traditional in class teaching, it is widely accepted that if used correctly, this technology offers a significant complement to the learning environment [25]. Wireless handheld devices can be individualized to meet the needs and desires of its user, enhancing the collaborative process with automated information such as real-time course updates, deadlines and notifications. The learning sphere has become ubiquitous, centralized around the learner and increasingly oriented towards creating flexibility and optimizing content delivery [26]. Students enjoy using wireless handheld devices and appreciate the new age interactive and ubiquitous learning environment. These types of interactive social tools have broken the barrier between the academic and private spheres, and foster a sense of pleasure in taking part in the online *learning game* [4]. Learners are more successful and have higher retention rates when they enjoy the learning process. As wireless handheld devices become more affordable, the potential for integrating this technology into learning environments becomes more considerable [27].

2.3 Social Media and e-Learning

In 2013, 89 % of European Internet users ages 16 to 24 years old, participated in some form of social networking [7]. As a part of modernizing the traditional approach to education, many higher education institutions (and educators) find themselves in a situation where they must adapt to the heightened use of social media and create a link to educational engagement [28]. The majority of university students have mobile technology and use social media regularly; all the more reason why these elements should be integrated into tertiary level education [29]. As the technological framework is already in place, it is just a question of creating structured learning environments with the integration of these tools. Social networks such as Facebook have potentially positive benefits to teaching and learning, particularly with the development of educational micro-communities [30]. These micro-communities can be complemented with the use of other Web 2.0 applications that permit blogging, collaborative content sharing, podcasting and multimedia sharing. Structured learning environments can be created with simple collaborative features such as "Facebook groups" which can act as collaborative discussion boards in synchronous

and asynchronous settings. Once the micro-community is established through the development of a group, other social media applications such as collaborative WIKIs can be integrated in order to add structural consistency.

Students are more likely to be connected simultaneously on their Facebook network than on any formal University Web portal and this enhances the potential for collaborative development between learning community members. Some universities have integrated micro-blogging on Twitter into the context of lecture hall discussions as students communicate synchronously with each other and the professor during the course. Certain studies show that the integration of micro-blogging into the educative experience successfully promoted active and continual feedback from the students [4]. Social media supports various innovations including: content creation, enhanced learner connectedness and collaboration [31]. Social media applications provide capacities which face-to-face instructions do not such as individualized tools permitting knowledge exchange and consultation without temporal or spatial barriers. In terms of education, social media is predominantly used by youth as a means of informal learning [32]. However, the gap between informal and formal learning can be filled with the implementation of structured learning spaces such as micro-communities and interactive videos that contain integrated quizzes.

3 Methodology

During an e-marketing course, 4 lectures were given to masters students in a Business School (BS) between September 2013 and January 2014. These 4 lectures included:

- Web 2.0 Strategy
- Fundamentals of e-business and e-marketing
- Communitarian and sensorial marketing
- New Marketing

Approximately 160 students from the BS used a main website (www.kmcms.net - Knowledge & Management System/Content Management System) to follow the course and prepare for their exam. This platform provided students with up-to-date lectures and theoretical content (books and articles). The platform also included roughly 1,700 posts ranging from one to several pages of content depending on the source. The platform was accessible to students, after registering and choosing the course they wanted to attend. Four "image links" were positioned on the homepage of www.kmcms.net redirecting students to 4 CMS (Content Management Systems). Websites on *e-business and e-marketing fundamentals* were available to the students. These 2 CMS used responsive templates enabling students to read, comment, grade, and write. They provided:

- Lectures on the two evoked topics
- Explanations regarding the content and revisions for the exam
- Explanations about their assessment during the course.

Two other curation platforms were available for the purpose of concatenating and curating content from the Web, such as blogs, organizational/business websites and

management websites.[1] These curating sites were used in order to prepare topics on New Marketing as well as Communitarian and sensorial marketing.

Students are assuming an evolving role as the principal players in their educational endeavors. Within the course students were assigned a role as autonomous researchers and had the responsibility of curating content with a unique knowledge management tool, that they themselves created. Content curators are individuals who continually find, organize and share the best and most pertinent content related to specific issues on the Web. Although this was a strictly academic endeavor, students agreed that this newly acquired capacity for effectively managing massive amounts of information would benefit their professional futures. There are a few aspects about the term "content curator" that are worth being highlighted, such as the fact that content curators are people and not robots. Effective content curation cannot be performed solely with the use of an algorithm. In order to obtain high-quality information, its best to have a domain expert administering the curation in order to ensure finely tuned selectivity. This knowledge management process should be implemented continually and administrators should be consistently up-to-date with the domain that they are focusing on. Third, a curator is not simply regurgitating any content that they come across as they must be very discerning, discriminative, and selective in only sharing the "best and most relevant" content. Lastly, a curator focuses on "specific issues". They do not curate on all of the topics available. Instead, they specialize on specific topics and over time they may have the opportunity to become an authority and perhaps even a thought leader on those topics.

The landing page on our platform was linked to a Wordpress CMS platform. Landing pages are an essential element in online marketing. The first goal of the landing page is to convince the user to act. The same happens in an e-learning context. Students must be convinced and involved when studying, especially on a MOOC where nobody is there to instruct their actions. The landing page was made using a responsive web design. Responsive web design enhances accessibility by creating websites constructed to adapt to all screen sizes. In such cases, learners benefit with access to content on any device.

The Wordpress CMS platform is easy to manage once it is created. It also provides users with lots of widgets enabling curation, use of RSS, Search Engine Optimization tools and so on. The latter can be designed to mimic or resemble the landing page, in order to keep learners in a homogeneous online atmosphere. The landing page and the CMS represent an interesting combination for creating efficient online lectures and MOOCs adapted to ubiquitous learners.

Students were evaluated after the completion of 2 exercises:

- Creation of a website (Web 2.0 Strategy and Fundamentals of e-business and e-marketing)
- Preparation of a platform aimed at collecting RSS feeds and curating information on the Web (i.e. lectures on New Marketing as well as Communitarian and sensorial marketing)

[1] For an extensive review of curation platforms, compared according to their particular functions, please visit: http://socialcompare.com/fr/comparison/curation-platforms-amplify-knowledge-plaza-storify.

Students were also required to write a synthesis on the 4 lecture topics, using a Tumblr platform. This part of the course included peer-review and assessment and also counted as a part of the students participation grade. Students were also asked to complete a short online questionnaire in order to get feedback with regards to the methods used in teaching the course.

The main learning objectives of the course was to provide students with an experiential learning process using social media embedded on mobile devices. This process was designed to develop student proficiency with creating a landing page linked to a CMS and search engine optimization, as well as effective team interaction skills.

4 Results

The act of building a website proved to be very beneficial to students as they engaged in a hands-on approach to learning by doing which is one of the success factors of this pedagogy. The ability students have to write content on the Internet, whether on social media, UGC (User Generated Content) such as TripAdvisor, to give an opinion, mark a service or product, or comment another comment, seems to represent THE facilitator. This enabled students to express their opinion very easily and participate in the whole process of the course more instinctively, without the fear to be judged by peers. We present a synthesis of the most common responses given by the students:

- Students appreciated the facility of accessing information in a ubiquitous form. The websites had a very responsive character and offered an easy-to-read interface and facilitated mobile consultation.
- Students stated that the user interface facilitated the memorization of content, and the finding of information. Due to an ergonomic layout with good color contrast ratio, user-friendly graphical fonts, good font spacing and width of paragraphs also facilitated reading. These factors also facilitated the sharing of the information and knowledge management, particularly on mobile devices.
- The use of quick loading photography enhanced the quality of the information and facilitated understanding of the course content by reducing cognitive workload and providing graphic representations of information.

The ability of accessing content (e.g. websites, lectures, PowerPoint presentations, etc.) while students where constructing their own websites and RSS curating platforms, offered a form of ubiquitous mobile support. The term RSS is an abbreviation for Really Simple Syndication or Rich Site Summary as it provides a rich summary of a websites new content without the need to manually check the website. The fact that our CMSs were supported by mobile devices was a pertinent factor in the success of this educational initiative. It enabled students to ask questions and get responses easily, without temporal-spatial barriers.

Our post-course survey provided results on student's satisfaction and overall experience using the MOOC interface and its social media components. As shown in Table 1, students overall provided positive feedback to the course. The highest satisfaction was related to ease-of-use and learning compared to other courses. Results indicated that 58 % of the students who participated in this digital educational setting agreed or strongly agreed

that it was an accessible form of pedagogy. Additionally, 58 % of the students who participated in these mobile e-learning courses agreed or strongly agreed that it was a satisfactory experience. Student productivity was also enhanced due to the flexible nature of the courses. Ease-of-use, flexibility and adequation to professional practices seem necessary when learning on this new form of support (mobile + social media).

Table 1. Questions/answers related to the student's satisfaction and overall experience using the MOOC interface and its social media components

Student feedback	N	Mean*	Std. Dev	Min	Max
Did this form of teaching appear accessible for you	19	3.7	0.7	3	5
Documents submitted and teaching materials were satisfactory	19	3.1	1.1	2	5
The number of exercises and illustrative examples supporting the course was sufficient	19	2.7	1.1	1	5
Do you feel that the workload was reasonable	19	3.7	0.9	2	5
According to you, your level of involvement in this course (homework, participation…) was enough	19	3.9	1.0	2	5
Do you consider that your prerequisites were sufficient	19	2.9	1.0	2	5
Ease-of-use and learning compared to other courses	19	4.0	0.9	2	5
Was the course adequate in relation to professional practice	19	3.9	0.6	3	5
Was this form of learning accessible for you	19	3.7	0.7	3	5
In general, did you find this form of education satisfactory	19	3.7	0.9	2	5

*1 = strongly disagree to 5 = strongly agree

5 Discussion and Conclusion

This paper presented an exploratory analysis around the use of a MOOC and m-learning with strong implementation of social media content creation tools in the context of university business school courses. The analysis allowed us to gain a better understanding of student perceptions on using MOOCs in m-learning situations, as well as their capacity to adapt to new learning environments strongly anchored in collaborative and constructivist learning. As social media usage increases, we find that it is in the best interests of students to integrate m-learning situations into traditional higher education. Our study shows that the use of a mobile supported MOOC facilitated mobile knowledge management, and created a flexible and effective learning environment.

Although the students rarely met with the professor, there was constant community support provided by other students as well as the content provided through the CMS. The digital learning setting provoked the active participation of students in a collaborative working architecture that one could easily refer to as "social learning". Students who were more fluent in the operation of the various development mechanisms provided support to the others as "technological stewards". The term "technology stewards" refers

to technology savvy members of the learning community with excellent comprehension of the digital atmosphere. Although the teacher primarily assumes this role, learners who are highly fluent in the use of mobile and Internet ICT also acted as technology stewards. This type of leader oriented behavior is typical in the digital learning environment; it empowered students with a sense of gratification and motivation while fostering a sense of a united academic micro-community. Paradoxically, students developed autonomous working habits, as well as community oriented collaborative working skills. They successfully developed their own websites based on the themes provided by the instructor as well as a unique knowledge management tool with the function of curating RSS feeds on topics specified by the instructor. The RSS feeds, also called web feeds, are a type of content delivery vehicle used for syndicating news or other web content. The tools that the students created contributes to their individual lifelong learning processes and granted them new capacities as seen in the theory of expansive learning.

A new relationship between students and professors is developing characterized by collaboration and attributing new value to communication amongst students and with administrators. Social media and mobile Internet technologies reinforce the potential for effective communication between all of the participating parties. Computer supported constructivist learning is a hands-on approach that equips learners with fine tuned research skills and nurtures educational development in the lifelong learning continuum. The computer mediated setting facilitates the creation of visual representations of information, which reduces cognitive workload require by learners to understand knowledge in a more expedient manner. The implementation of digitized learning is reciprocally beneficial to teachers as evaluation processes become increasingly automated. Course administrators have detailed analytics that provide graphic representations of information which are much easier to understand than traditional grading methods. Having access to graphic visualization of student results also contributes to the individualization of learning in the digital environment as students and teachers alike are able to identify strengths and shortcomings much more easily than in a face-to-face educational setting. It's a win-win situation!

6 Future Research

MOOCs are still in their infancy and many uncertainties exist about their future role in traditional higher learning. Future research will help to shed light on the uncertainties surrounding MOOCs and embrace their potential to be a transformative educational innovation of the 21st century. Results from this exploratory study demonstrates that success can be achieved with the use of MOOCs in combination with social media constructivist tools (i.e. website development and content curation applications) in a mobile supported format. Additional research is to be conducted with the objective of identifying motivating factors behind student commitments and overall success in e-learning and m-learning environments. Future research will also strengthen the external validity of our preliminary results, which indicate a successful outcome with the use of social media constructivist tools for the purpose of knowledge management in a mobile supported MOOC scenario.

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