Students as Teachers in MOOCs? The Double Gain of MOOCs as an in-Class Teaching Method Experiences from a Student-Made MOOC "Online Data Privacy"

Joachim Griesbaum

***Abstract*—MOOCs are an opportunity to think of learning as an interaction of different people and groups in totally new ways. This paper proposes a didactic setting in which students act as teachers in a MOOC and asks the question, if there is a double gain of MOOCs when employed as an in-class teaching method and as a worldwide learning environment. The analysis of a case study, a student made MOOC "Online data privacy", delivers first insights into the feasibility and didactic value of such a novel approach.**

***Index Terms*—Case study, MOOC, teaching method.**

I. Introduction

MOOCs (Massive Open Online Courses) originated as open learning scenarios and environments that correspond to and realize connectivist ideas of learning, cp. [1]. Connectivism stresses the importance of networks and connections of and to learning resources and states that "learning and knowledge rests in diversity of opinions" [2]. The postulates of connectivism can be easily related to socio-cultural [3] and socio-genetic [4] approaches to cooperative learning, cp. [5]. Seen from this perspective, connectivist MOOCs (cMOOCs) have the potential to realize Knowledge Building Communities, as argued by [6] and lifting them to a higher social level, thus enhancing learning quantitatively as well as qualitatively.

In contrast to that, the rising popularity and media presence of MOOCs, cp. [7], are the result of the success and large audiences of courses on Edx, Udacity and Coursera, which predominately follow a docent-centric knowledge distribution metaphor [8]. On the one hand, one can state that the central value of the current MOOC trend can be seen in the fact that such xMOOCs open up new educational possibilities for everyone. On the other hand, one may argue that this "massification of learning" [9] comes with a price: a rather low level didactic quality, and learning scenarios which can often barely claim to address the higher levels of learning goals as described by different taxonomies, e. g. synthesis, evaluation, or metacognitive knowledge, cp. [10]. Hence, at present, learning experiences in MOOCs are often far-flung from the quality of discourse and interaction based learning processes as argued by theoretical approaches that aim beyond a knowledge acquisition metaphor, e. g. situated/constructivist [11] and social/cooperative perspectives (cp. above) on learning.

Manuscript received June 24, 2013; revised September 11, 2013.

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It is far too early for any final assessments or judgments on the current MOOC trend in e-learning. However, one can easily see that there is a need to enhance xMOOC-based learning experiences. The high uptake rates of MOOCs can also be seen as an opportunity to explore completely new learning environments and social designs. The connectivist roots of cMOOCs illustrate that the separation between teachers and learners, prominently visible in current xMOOCs, is rather untypical in connected learning.

This is the starting point of this work. The goal is to explore the concept of MOOCs as an in-class teaching method in which students are given the task to draft, implement, execute and evaluate a MOOC. Such a didactic setting can be seen as a complex and authentic task to initiate and foster self-initiated and autonomous learning on part of the students following a constructivist learning paradigm. The paper gives an overview of the first employment of this concept in a knowledge management and e-learning course at the University of Hildesheim and tries to get insights into following research questions: a) Feasibility of the approach: Acceptance and capability on part of the students to design and execute a MOOC. b) Didactic values: Motivational and cognitive effects of the MOOC scenario on the project course participants. c) Surplus values of the MOOC as a knowledge base and community: Quality of MOOC content, reception of the MOOC (audience-reach, learning processes and outcomes of the MOOC participants).

The paper starts with theoretical considerations that argue learning-related added values of such a scenario. Then, the course of events, that means the MOOC building process in-class, the MOOC itself, and its execution are delineated. Following that, outcomes, both course related and also in regard to MOOC reception, are analyzed. The paper closes with an estimation of the added values and the limitations of the concept of MOOCs as an in-class teaching method.

II. Theoretical Considerations: Why to Employ MOOC Building as an in-Class Teaching Method?

To reach a common ground with regard to the following argumentation, Fig. 1 illustrates the structure and role of the participant groups of the described MOOC as a teaching method scenario.

Why could it be worthwhile to employ the task of building up and executing a MOOC as an in-class teaching method? To answer this question, the course scenario is described to clarify the specific context of this investigation. Following that, learning-related advantages of the MOOC scenario are

reasoned along the following perspectives: a) authentic and complex learning task, b) recognition and feedback from the community, and c) building up online identity and reputation.

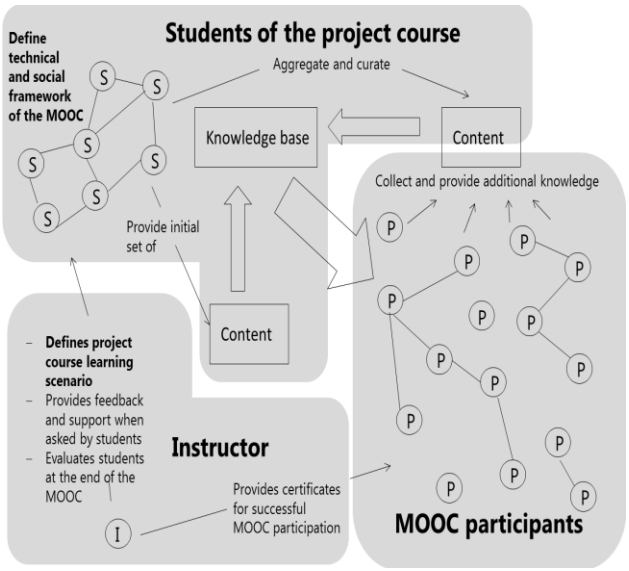

Fig. 1. MOOC structure.

The course described in this paper is a project course and part of the module "e-learning", in which advanced students of the master programs "International Information Management" and "Information Management and Information Technology" collectively acquire practical skills and knowledge with regard to a specific project task within the wider topical area of the modules' syllabus. In addition to content-related expertise, the students should also develop project management related competencies. In short, such a project course corresponds to a constructivist learning paradigm that emphasizes learning through active and social interaction in authentic scenarios, thus deepening the basic knowledge which has already been acquired in more knowledge transfer oriented courses.

A. Authentic and Complex Learning Task

Building up and executing a MOOC is a real life learning scenario. It provides first hand conceptual and practical e-learning experience. As a complex task with no predefined solution, the MOOC assignment can be described as a natural group task [12] in which students can only succeed when they coordinate and collaborate with each other. As [13] state: "Positive interdependence is linking students together so one cannot succeed unless all group members succeed. Group members have to know that they sink or swim together." As a first result, it is to state that the task of building up a MOOC as an in-class teaching method realizes the central affordances of socio-constructivist learning.

Additionally, with regard to the topic and content of the prospective MOOC, the students of the project course are the initial and primary content providers. This is a setting in which students act as teachers. On the one hand, this can be connected to perspectives of cognitive elaboration. By creating and collecting MOOC content related learning resources, course participants act as topical experts acquiring deepened topic-related knowledge by themselves. On the other hand, a problem could arise if the topic and contents of the MOOC are too complex or difficult. Then, the course participants could be overstrained and unable to handle the MOOC scenario. Thus, employing MOOC building as a learning method is probably not apt for cognitively very demanding high level learning scenarios.

B. Recognition and Feedback from the Community

As mentioned above, the project course corresponds to a cooperative learning scenario. Therefore one could expect the positive effects of small group learning, as argued by socio-cultural, socio-genetic, and motivational perspectives of cooperative learning.

Additionally, the MOOC scenario opens up further opportunities for discourse and feedback from the MOOC community itself. The corrective perspective and input from the course instructor is extended and probably enhanced with the recognition and acknowledgment from the community, once it is built up and active. Thus, the open teaching scenario could and should result in a win-win-situation for both the web community and the project course students. The web community gets an additional opportunity for learning and the students who make the MOOC get feedback from a potentially global audience. Furthermore the MOOC creates and provides an open access knowledge base of the course contents which then can be permanently used.

C. Building up Online Identity and Reputation

Apart from the above-mentioned arguments, which focus on the advantages of this learning scenario from a cognitive perspective, one could also argue that there are positive motivational effects. Next to positive motivational factors like chaining individual and group success or perspectives of group cohesion [14], one may also postulate positive motivational effects occurring in community settings or Web 2.0 contexts. The openness of MOOCs means that there is no theoretical audience and participation limit. With the MOOC, students of the project course expose themselves and their work to the whole web community. Thus, the MOOC and its reception are a part of the project course participants' online identity. Therefore, such a MOOC can be seen as an opportunity to work up one's own online reputation. Furthermore, according to [15] "People participate online to help each other and be a part of a community". In sum, at least seen from a theoretical viewpoint, being involved in aMOOC development and execution creates opportunities for motivational factors usually not present in other settings.

As a first result, the arguments made here indicate that the task of building up a MOOC could be indeed a very worthwhile teaching method. First, as argued by socio-constructivist perspectives, the MOOC scenario can be estimated as an authentic and complex learning task. Furthermore, one can assume positive effects of the openness of the MOOC and the resulting recognition, feedback, and additional input from the web community, both on a cognitive and motivational level. Surely, the theoretical considerations argued here are just a first plunge into discourse and not the end of the discussion. Nevertheless, one can easily see that MOOCs could not only be employed as a learning tool for "big masses" but also as a teaching method

in small group contexts.

III. The MOOC "Privacy on Facebook and Co"

The project course called "Collaborative Knowledge Management" was held during the winter term of 2012/2013. Fig. 2 gives an overview of the course of events of the project course and the produced MOOC.

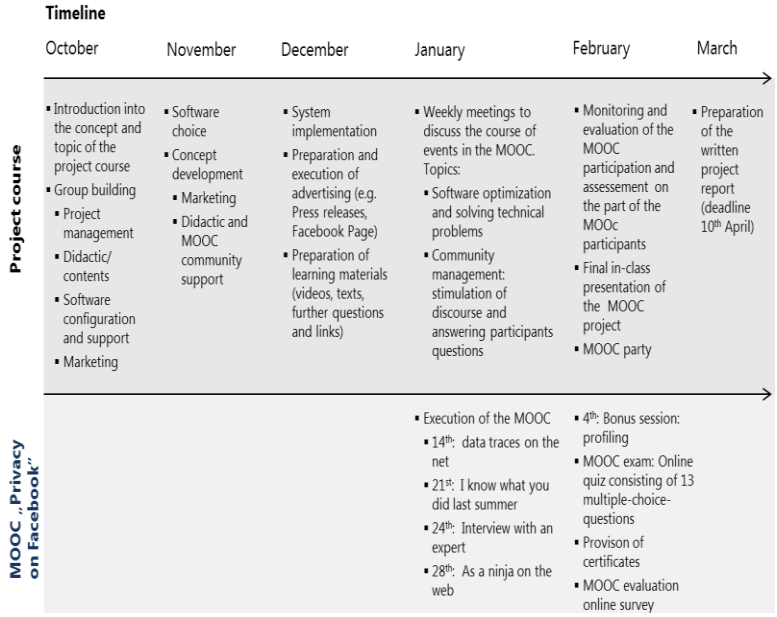

Fig. 2. Course of events of the project course and the produced MOOC.

15 participants (master students) took part in the course. Two of them dropped out during the first weeks. Hence, the MOOC team consisted of 13 students. At the start of the course, the instructor introduced the students into the concept of the course and provided some basic suggestions with regard to self-organization, group coordination, and work packages. He also suggested the subject area "privacy" and "data protection" as a possible topic for the MOOC, which could be of interest for a large audience. One student expressed some doubts with regard of the feasibility of the task at hand, fearing that it would be a task too comprehensive and complex to handle. In the following discussion, all students decided to meet the challenge. During the following week, the students decided about the topic (privacy and data protection in the Social Web with a focus on social online networks) and target groups ("everyone interested" ranging from pupils to senior citizens). Group formation took place and resulted in different groups: project management, didactic and content, software configuration and support, and marketing. At that time, the project management team took over the management of the course. The instructor took on kind of a guest role, giving feedback when explicitly asked for and providing infrastructure services, e.g. web hosting or the organizational authority to prepare and hand out certificates to MOOC participants. From that date on, the students realized a truly self-controlled constructivist learning scenario.

During the month of November, the students decided on the basic aspects of the MOOC. Wordpress including some plugins (Buddy Press, Buddy Press Courseware and WP Polls), was chosen as the software infrastructure for the MOOC. The marketing team decided on a broad range of advertising measures, including the use of new media (Facebook, Youtube) and online channels (e.g. mailing lists, press release), as well as classic marketing channels (newspapers). The didactic and content group discussed the learning process related structure and form of the MOOC. The group decided to structure the MOOC by first giving an overall introduction, before providing more detailed information on selected aspects. The group also determined to provide illustrative examples of different privacy behaviors on the basis of self-created personas. Furthermore, the MOOC was scheduled to offer practical information on tools and behaviors to secure one's own privacy in the closing stage of the MOOC.

Starting by the month of December, the students operationalized their plans and implemented the software, executed the marketing campaigns, and prepared the learning material. The core of the latter consisted of short illustrative videos (with a length of a few minutes). Example topics were "wifi", "data in the cloud", and "Facebook". Video production was costly and time consuming. Therefore, the videos were usually finished shortly before the corresponding MOOC sessions, scheduled on Mondays and Wednesdays between January 14th and 28th. All videos can be found online at http://www.youtube.com/user/OnlinekursUniHi.

The MOOC started on January 14th with about 500 registered users. Overall, the execution of the MOOC went smoothly. During the start, there were some technical problems with regard to content access and usability that were timely resolved by the software team. User Feedback was predominantly positive. Due to the students' positive estimation of the MOOC reception by the users, it was decided to provide a bonus session about the topic "profiling". In the beginning of February, a final exam, which offered the

possibility to receive a participation certificate, was activated and successfully solved by about 50 MOOC participants. Moreover, at the end of the MOOC there was an online survey in which participants were given the opportunity to provide their evaluation of the MOOC.

IV. Analysis of Outcomes

With regard to the project course, the analysis is founded on the assessment of the participants' learning process and outcome on part of the instructor (who is also the author of this paper) and on the students' self-estimation captured by a survey at the end of the project course. According to the estimation of the instructor, the course of events of the project course, as described in chapter III, strongly indicates that the MOOC scenario successfully evoked a widely self-directed and self-controlled learning process on part of the students. They did not only acquire knowledge with regard to the MOOC topic "privacy and data protection", but were also able to gain competencies related to self-directed learning and project management, as well as in designing a MOOC based learning scenario. As the provided technological infrastructure, learning material, community management, and marketing were successfully and clearly presented in the final in-class presentation and elaborately described and argued in the project report, the group work was rated with the best grade, which can be seen as a direct measurement of learning success.

This corresponds with the students' self-estimation of their learning success. All 13 students took part in the final course evaluation. Table I shows the results.

TABLE I: Results of the Final Project Course Evaluation[1]

Question	Mean value	SD
k.2 Workload	1.46	0.63
k.3 Learning success with regard to the content related aspects of the course	1.15	0.66
k.4 Learning success with regard to the project management related aspects of the course	1.31	0.82
t.1 Characteristic of team work	0.92	1.00
t.6 Motivational effect of team work	1.23	0.7

Learning success and motivation are assessed as high with a mean value higher than 1, the second best rating scale level. Workload is also assessed as very high, indicating that students were highly involved. The characteristics of group work can be estimated as very positive because the group process was judged as rather collaborative. Seen from socio-genetic and socio-cultural perspectives, real collaboration (and not cooperation, which is rather connected with the division of labor) has to be seen as a prerequisite for the occurrence of processes like cognitive conflicts, externalization of knowledge, and consensus building. Such processes in turn are causative for enhanced learning success in group learning. The high motivation and immersion into the learning scenario can be further illustrated by some anecdotal reports. Firstly, the students decided to finish the course with a festive celebration. Secondly, during a voluntary presentation of the MOOC course in front of a group of invited pupils and teachers by two of the project course participants, one presenter described the project work as follows: "The workload was very high, but it didn't feel like work". Finally, at the end of the course, the students discussed the question of the sustainability of the MOOC website (to be found online at http://onlinekurs-datenschutz.de). They strongly recommended to keep the domain of the MOOC website functional and online for at least half a year succeeding the end of the project course.

With regard to MOOC-related values for the target group of the MOOC or the web community, one can argue added values as well. It is to state that there was a high demand for the MOOC, as 500 users registered prior to the start of the project course. At the time of writing this text (some months later), there were nearly 900 registered users. This indicates that, even after the MOOC is finished, its contents can be seen as a valuable public knowledge base. Data from Google Analytics delivers a detailed picture of the actual site usage. Between January 14th and February 5th, the active phase of the MOOC, the MOOC website reached 1,500 unique visitors. On average, the visit duration was of 9 minutes and visitors viewed 9 pages. The bounce rate equates to 33%. These values undermine the high audience reach and suggest an intensive usage behavior. Usage reached its peak at the start of the MOOC with 343 unique visitors on January 14th and declined to significantly lower levels during the following weeks. This indicates that many users dropped out during the course of events. Nevertheless, on February 4th, a total of 73 unique visitors "attended" the bonus session. After the active MOOC period, between February 6th and June 12th, the website attracted 748 unique visitors who viewed roughly 3.5 pages on average. This means that the number of visitors and the intensity of site usage lowered substantially. Nevertheless, there still is a steady demand for the contents of the MOOC, although on a rather low level of approximately up to 12 unique visitors per day.

Beyond content reception, learning and active participation, as well as the MOOC's value as a Knowledge Building Community need to be argued. Here, we get a less enthusiastic picture. In fact, the MOOC resembles many of the shortcomings of xMOOCs. As described, roughly 50 participants successfully took part in the MOOC exam, which consisted of multiple-choice questions. One could discuss that the MOOC helped to generate and foster the awareness of privacy and data protection aspects of online behavior. However, if one takes into account the rather simple learning assessment, one needs to be conscious that the MOOC exam explicitly verified knowing and comprehension or factual knowledge only, thus addressing the lower levels of learning goal taxonomies [10].

Active participation with regard to user generated content was rather sparse. Although students tried to initiate a discussion, e.g. with regard to the topics and videos on ""data traces on the net", participation was rather low. The students' initiation of five discussion topics resulted in 30 postings. For

[1] *n*=13, measured on a 5-stage scale ranging from -2 (*k*.2, *k*.3, *k*.4 and *t*.6="very low", *t*.1="cooperative") to +2 (*k*.2, *k*.3, *k*.4 and *t*.6="very high", *t*.1="collaborative")

two cases, a MOOC participant (in both cases the same user) opened new topics covering content related aspects of the MOOC. The resulting discussion however was rather short. The rest of the forum topics and postings covered organizational questions, e.g. the question if the course contents will be available after the end of the MOOC or technical problems and usability aspects, e.g. login problems.

In conclusion, the MOOC itself could be rather assessed as an xMOOC. A knowledge building community could not be raised. Hence, there is still room for improvement of MOOC configuration and community management, which should be acknowledged in further applications of likewise courses.

V. Results and Discussion

Finally, what are the results of this double-sided learning scenario? Is it feasible, does it generate didactic values as an in-class teaching method, and what are the surplus values for the web community of the MOOC itself?

The answer to the research question a) Feasibility of the approach, is a clear Yes. The scenario was, probably with the exception of the two drop outs, accepted by the students. In addition, the scenario was not too difficult, neither in regard to the MOOC content, nor with respect to technical, marketing, e-learning skills, or knowledge. That is not to say that employing such a "students teach people" scenario comes without preconditions. As described, the students participating in the project course were master students of two courses of studies in which they already learned the basic skills needed to execute a MOOC. This means, applying student-made MOOCs as an in-class teaching method is a teaching scenario specifically adequate for advanced students who already possess the necessary basic skills and expertise in the mentioned fields. This in turn leads to the conclusion that the approach taken here is probably less apt for courses where the content or methods are totally unknown and cognitively very difficult and demanding for the participating students.

With regard to research question b) Didactic values of the learning scenario, the presentation of the outcomes in chapter IV strongly indicates the occurrence of positive learning effects, both on a cognitive and motivational level, as argued in chapter II in this learning scenario. Firstly, the instructor rated the learning outcome as very good. Secondly, the students estimated their learning success and motivation as very high. With regard to the experienced workload and the described anecdotal evidence, the students became highly involved and immersed in the learning scenario. Their identification with the project was so strong that they decided to hold a celebration at the end of the lecture. The success of the MOOC, e.g. measurable by the number of registrations, made it a very authentic and complex task. Especially at the start of the MOOC, the students got manifold feedback from the community, e.g. hints on how to improve the usability of the MOOC website, or direct support with regard to how to undertake such a project. Multiple participants posted or mailed their appreciation of the project. This aspect is also connected with the building up of and online reputation.

In sum, despite the project course being only a first case study, one comes to a very positive estimation of the didactic and motivational values of this student-made MOOC learning scenario. This positive grading, however, should not be too enthusiastic. One has to keep in mind the probable influence of a significant novelty effect. This kind of learning scenario was totally new, never done, and never seen before by the students. Reaching a wider audience and getting feedback from the MOOC community was in all likelihood very rewarding. Furthermore, the current hype about MOOCs may invoke a feeling of being very current and state-of-the-art. Moreover, it is well known that, especially in group-based settings, learning processes and outcomes cannot be fully predetermined. In addition to the topic, didactic, and technology, which can be widely predefined, individual attributes and interests of learners, as well as group dynamics with regard to cognition and motivation are very important input and process variables which affect the learning outcomes [16]. In the case here, the group functioned very well. It is quite possible that a different composition of participants however would result in a varied process and thus diverse outcome.

The final research interest is on the question in how far the MOOC itself created surplus values as a knowledge base and community. Here, we get a mixed picture. On the one hand, as described above, the provided content could be assessed as being of high quality. On the other hand, the community building aspect can be seen as rather limited. In that sense the "Online data privacy" MOOC can be rather categorized as an xMOOC, with all its shortcomings. However, beyond this epistemological assessment, one can clearly state that the students created an accessible knowledge base for everyone. It is not an alternative or substitute for existing courses. It is an additional open knowledge base, directed at self-motivated learners. The relatively large number of registrations and ongoing use of the MOOC website indicate that it is indeed a relevant knowledge base. It is originated in a higher education context, in which an instructor supervised the design process and rated the content's quality. Therefore, users can expect a certain quality level, which is often unknown with regard to other open user generated content in the web.

As an overall estimation, the conclusion here is that employing a MOOC as an in-class teaching method in the sense of a "students teach people" approach can be seen as worthwhile. It is a teaching method, which deserves further exploration. The case study shows the limits of this concept but also indicates positive learning effects on part of the students and surplus values for the web community at the same time. The paper here describes one idea how to employ and use the MOOC concept to enhance existing learning scenarios. From this perspective, the current debate on MOOCs should not be restricted to a rather dichotomic discourse, which may be copped on "new" vs. "old" structures in and access to higher education (xMOOCs) or "antiquated" and "up-to-date" views on learning (cMOOCs). The concept and diffusion of MOOCs is directly connected with the idea and adaption of socially unlimited communication. Seen from this point of view, MOOCs are an opportunity and playground to think of learning as an interaction of different people and groups in totally new ways and therefore to experiment with and develop new learning scenarios.

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