



A PEER-MENTORING APPROACH FOR THE CONTINUOUS PROFESSIONAL DEVELOPMENT OF EDUCATORS IN A MOOC SETTING

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Introduction

The Massive Open Online Course (MOOC) called ‘Learning Design Studio for ICT-based learning activities’ was offered from May 19th to June 20th 2014 to teachers and teacher trainers as part of the second pilot of the European Lifelong Learning project HANDSON. The MOOC was aimed at promoting the inclusion of Information and Communication Technologies (ICT) in teaching and learning by empowering educators with digital competences. Following the Learning Design Studio approach (Mor & Mogilevsky, 2013), the MOOC was designed as a set of activities to walk educators in the design process of an ICT-based learning activity ready to be used in their classrooms.

The data presented in this paper explains how peer-mentoring was implemented for this second pilot of the HANDSON project and how it worked. Both the quantitative and qualitative data gathered show that feedback and comments from peers were positively valued. Also, the data show how peer mentoring generated a shift from the facilitators being at the centre of the conversations to the participants being the leaders of conversations.

Approaches to peer mentoring

Although ‘peer mentoring’ seems to be the winning term in the current literature, some authors use ‘peer assessment’ or ‘peer grading’ for similar purposes. In principle, peer mentoring does not involve evaluation necessarily, and this would be the main difference with peer assessment.

Topping (2005) defines peer mentoring as “the acquisition of knowledge and skill through active helping and supporting among[st] status equals or matched companions”. There is an essential contrast with classic mentoring, also recognized as ‘e-mentoring’ where the interaction is expert-novice. Akin and Hilbun (2007), found the “definition of e-mentoring” to be the following: the merger of mentoring with electronic communications to develop and sustain mentoring relationships linking a senior individual (mentor) and a lesser skilled or experienced individual (protégé) independent of geography or scheduling conflicts. In peer

mentoring the levels of the two participants in the interaction are similar, as it would happen with students in a classroom or virtual learning environment. Peer assessment is also defined by Topping (2005) “as an arrangement in which individuals consider the amount, level, value, worth, quality or success of the product or outcomes of learning of peers of similar status”. Peer assessment frameworks, methodologies and tools, though more focused on products, scores and outcomes, are mostly applicable to peer mentoring, and because of that it is also relevant to the present paper.

It is interesting to notice that peer mentoring effects go beyond the improvement of specific parts of the individual learning process. Mcloughlin et al. (2007) suggest that peer mentoring increases the sense of community by exchanging ideas and sharing experiences. Also, according to a study made by Towndrown in 2013 (Towndrow et al, 2013) engagement with the course is improved. Another important collateral factor of peer mentoring is its effect on the metacognitive processes of the individual. By evaluating others’ works and practices, students develop new criteria to improve their own learning activities (Akin & Hilbun, 2007). Some works have suggested that students should review their own evaluations after the evaluation process is finished in order to improve their skills as peer mentors (O’Toole, 2013).

In the realm of MOOCs, many of them are trying to involve peers through several strategies in order to increase students’ satisfaction. Currently, the most common way to deal with this issue is based in the use of forums, where course facilitators post messages and propose learning activities (usually with videos or Internet resources) and try to engage students to help each other. There are also other approaches to engage students with peer mentoring. An example is the “quad blogging” experience (Towndrow et al, 2013), in which students formed groups of 4 persons. Each week, one of them wrote a post about the week work, and the others commented about it and tried to involve the rest of the classmates. Other practices are based in the intensive use of social media (Purser, Towndrow & Aranguiz, 2013) where facilitators proposed students to introduce themselves in several social networks one week before the course started, creating a sense of community and getting students engaged to mentor other peers during the course.

Regarding the use of specific tools for peer mentoring, the list is quite long. Tardy and Moccozet (2013) have documented a comprehensive list of them, where wikis, blogs, ePortfolios, collaborative tools and other web 2.0 tools are proposed. More specifically, Mcloughlin et al. (2007) suggested web 2.0 tools as a way to address the needs of novice teachers and proved to be a catalyst for the development of an online community. Along with these tools, newer systems based on artificial intelligence and algorithms in general are supposed to make a difference in the near future, as recommendation systems and other intelligent components have demonstrated in other fields (Torres Diaz, Infante Moro & Valdiviezo Diaz, 2014).

The HANDSON project and its second pilot

The Hands-On ICT project (handsonict.eu) aims at facilitating the integration of ICT tools in teaching and learning by developing a learning-by-doing environment to be explored by themselves or with the guidance of a mentor. The project, following a user-centred design methodology, consists of three pilots involving educators from three sectors: Higher Education, Vocational Education and Training and Secondary Education.

The MOOC that we describe in this paper corresponds to the Pilot 2 of the HANDSON project. The main features of this MOOC were:

- An emphasis on a hands-on approach based on a design process and bringing together educators with wide and diverse backgrounds from around the world.
- A focus on the Learning Design Studio (LDS) approach to help educators design courses and learning activities.
- Facilitators with expertise in Online Learning, Creativity and the Learning Design Studio who work with participants to explore the potential of this learning method to introduce ICT in the teaching and learning processes.
- The opportunity to observe, practice and learn about methods for peer review and peer mentoring.
- The creation of practical artefacts that can be reused by the participants in their actual classrooms.

The Learning Design Studio for ICT-based Learning Activities MOOC (DS4ICTL, <http://riga.uoc.es/moodle/>) lasted 5 weeks and covered a design process starting with the educational challenge and the needs of end users, then designing, prototyping, evaluating and refining the learning activity. The course used two different environments in order to provide participants with guidance and communication tools as well as a set of pre-defined templates that facilitated the work and the comments from peers and facilitators.

Each week of the course corresponded to a concrete stage of the Learning Design Studio framework: Initiate, Investigate, Inspire and Ideate, Prototype, Evaluate and Reflect.

Moodle was used to manage the course and the ILDE (Integrated Learning Design Environment) tool was used for the development of the course activities specific to the Learning Design Studio approach. ILDE (Hernández-Leo et al., 2014) is a tool developed by the METIS project and allows organizing and supporting the learning process allowing to work with specific templates and to create the documentation required for each activity.

There were 743 participants in this course from 42 countries generating a total of 2,744 messages in the forum. There were three facilitators supported participants throughout the course.

Facilitators were responsible for the refinement of the activities, the collection and organization of the learning resources and the dynamization of the course. They also provided

personalized and group feedback, tracking students' performance as well as promoted peer mentoring throughout the MOOC.

Peer mentoring in the LDS4ICT MOOC

Peer mentoring is a key element of the HANDSON project and was chosen as a way to create communities of practice among educators and offer ongoing support in the introduction of ICT in the teaching and learning processes. The targeted learners of this MOOC were educators from different sectors and countries.

Several concrete actions and tools were set during the course to involve peers in the learning and feedback process:

1. Explicit mention in the course description and methodology about the use of peer mentoring. From the beginning of the course, we informed participants about the use we were going to make of mentoring methodology. Besides, in the description of activities we always encouraged students to publish their work and look at the other participants' contributions
2. Include specific peer mentoring activities. An important part of most MOOC activities was sharing the work in the forum to receive and also provide feedback. These are some examples:

Activity 2: Set up your Design Studio Journal

– Post your first entry in your design studio journal – what did you think about the introduction? What are your expectations for this MOOC? What are you puzzled about?

– Post a link to your design studio journal in the “Design studio journals” discussion forum, and visit other’s design studio journals and comment on their entries.

Activity 22: Do you value the feedback of your peers?

– As you have seen during all the course peer-review is a very good way of getting feedback and iterating your activity. Try to offer feedback to your peers using their own heuristics evaluation protocol.

– Go to the Moodle forum and review 2 other learning activities so that participants can improve their own. You can use their own heuristic evaluation protocol as a way of offering the feedback they need to improve their activities. You can send your comments using ILDE and the Forum

– Look at the reviews others have done to your activity and reflect your peers' comments.

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3. Comment participants contributions as part of the facilitators tasks.
 - This was done through the daily entries in the course journal, during the weekly convergence sessions and in the forums. In the “Daily journal” we mentioned participants names and activities highlighting weak and strong points that could be useful to all participants to evaluate their own activities and also others. Here again, the aim of this action was to help participants evaluate their own activity looking at the evaluation of their peers.
 - The “Convergence session” were Hangouts On Air sessions where we tried to highlight the work made by students and also provide individual feedback to the participants that joined the session.
 - Also, facilitators tried to quote always participants activities in their daily messages in the forum as a way of motivating and encouraging peer mentoring.
4. Provide appropriate interactive tools.

We provided ICT tools that allowed participants to use functionalities that promote peer mentoring such as add comments to others, sharing, editing, publishing, etc. The main tools were: Moodle forums, ILDE, Google Hangouts and the chat.

The peer mentoring during the second pilot of the HANDSON project has been analyzed using the following indicators: i) number of messages among participants in the Moodle forums, ii) number of comments in the activities developed in ILDE, iii) participants perception about peer mentoring and interaction during the MOOC. As a result, the data that follows has been gathered from the Moodle, the ILDE and the final survey that was sent to students. Besides, the qualitative comments from participants have also been taken into account.

The quantity of messages in the forums shows the considerable interaction among participants. Also as it is common in most of MOOCs the participation decreased meaningfully as the course advanced (Nawrot & Doucet, 2014). As the table shows in the 5th week there were half of the messages of the first week. The following table summarizes the participation in the forums of the course, especially those where the participants shared their activities.

Table 1: Data collected from the interaction generated in the weekly forum in MOODLE

	Discussions created	Participants	Total messages or comments	Average message/participant
1 st week forum	40	218	663	3.04
2 nd week forum	11	152	656	4.31
3 rd week forum	19	114	466	4.08
4 th week forum	8	75	377	5.02
5 th week forum	24	67	359	5.35
Total	102	626	2521	4.02

In the following table we can see the participation of the three more active users in the weekly forums. This table shows the evolution of their participation in forums, being the facilitators the most active users at the beginning, and how this trend evolves to peers becoming more active than facilitators.

Table 2: Data collected from the interaction generated in the weekly forum in MOODLE

	User 1 (messages)	User 2 (messages)	User 3 (messages)
1 st week forum	id 321 (26)	id 366 (18)	id 604 (17) facilitator
2 nd week forum	id 604 (22) facilitator	id 67 (19) facilitator	id 1033 (13)
3 rd week forum	id 959 (12)	id 1033 (12)	id 354 (11)
4 th week forum	id 1033 (30)	id 238 (17)	id 447 (16)
5 th week forum	id 776 (34)	id 1033 (28)	id 327 (12)

The ILDE environment was used for participants to develop the course activities. The following table summarizes the activity within this tool.

Table 3: Data collected from the activity generated in ILDE environment

	Users	Designs created	Comments	Average users/designs	Average users/messages
ILDE	305	1400	603	4.5	0.5

The LDS4ICT MOOC shift: From facilitators to participants

In order to analyze the data from the Moodle forums, we have used a plug-in. This Moodle plug-in gave us the data from the interactions happened in the forums, being able to know who answers to who. The plug-in creates a Json document with all the data needed to generate the graphs using a D3 script. The focus of this analysis was to see the interaction among participants and facilitators and how this evolved during the 5 weeks of the course.

The following graphs show this evolution and differentiate between the messages from participants (orange dots) and the messages from facilitators (blue dots). These graphs visually show how the facilitators played a key role during the first weeks and how as the course advanced the participants took a more central role in the communication and interaction in the forums. We conclude, then, that the peer mentoring actions were successful in promoting a sense of community, and empowerment of the role of the participants in the MOOC and a key role of peers as active learners.

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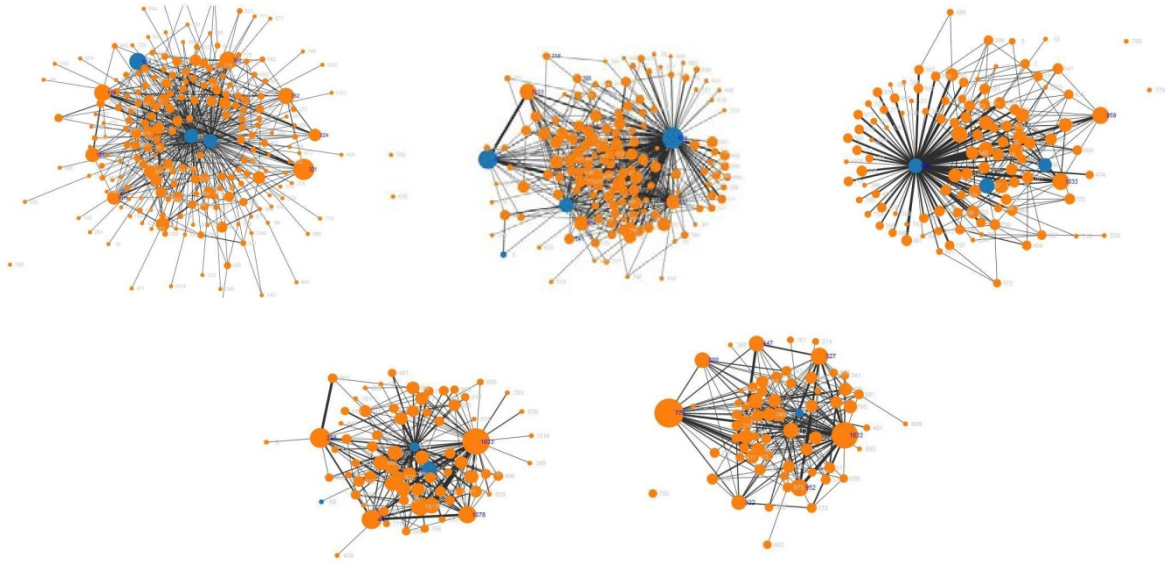


Figure 1. Interactions in the weekly forums. Ordered from week 1 to 5.

Peer mentoring and interactions, the participants perceptions

At the end of the MOOC a final survey was sent to all participants. The questionnaire included several questions regarding peer mentoring and the facilitators' role. The results regarding these questions confirm the positive opinions shown in the forum about the feedback received of their peers for their learning.

- From the 154 answers, 103 participants (53%) agree or strongly agree on the statement that “the course promoted interaction with my peers and this has been very valuable”. 20% of participants selected “indifferent” to the statement.
- 153 participants responded the question “The feedback I received from peers was useful to understand my performance in the learning activities”. 84 participants (50.2%) agree or strongly agree with this questions. 23.56% of participants selected “indifferent” to the statement.
- To the question “Peer mentoring is a good way to get feedback and enhance my learning”. 146 participants answer this question being 97 (49%) agree or strongly agree with the statement. 28 (14.1%) selected “indifferent” to this item.
- To the question “I did not enjoy reviewing and commenting on my peers' contributors”. 146 answer this question. 73 participants (36.8%) disagree or strongly disagree. 38 participants (19.1%) are indifferent for this item. 35 participants (17.6%) agree or strongly agree.

Here we highlight some of the comments collected:

“I was very excited to participate in this online learning course and I was so looking forward to seeing what the other participants share and comment so I can amplify my knowledge and perception. I was also happy to share my

experiences with everybody and hoped for interesting and educational five weeks together.”

“Through this whole journey I learnt something: It is very important to share thoughts and learn from the colleagues: I believe that if we let our students interact with each other- instead of face to face teaching-learning outcomes will be greater.”

“I’m truly humbled by your kind words and insightful feedback! :) Thanks for taking the time to browse through my narratable on “Martin” and the padlet, too.”

In sum, both the qualitative and quantitative feedback gathered during the course regarding the peer mentoring element was very positive and encouraging. However, more specific actions and activities need to be implemented in order to take full advantage of it. Despite all the positive feedback regarding peer mentoring, most participants’ comments were encouragements without providing ways of improving the work.

Discussion and further work

The implementation of peer mentoring actions and strategies during the second pilot of the HANDSON project were successful in raising awareness of the value of feedback from peers and in the engagement of participants as active learners during the MOOC. However, more work needs to be done to make the contributions of peers enriching for the learning processes of participants and to maintain the community alive after the end of the MOOC.

Participants asked for clear indications and guidance regarding the activities of the MOOC. This was mostly provided for the individual activities but a framework also needs to be provided regarding the peer mentoring. Several works have suggested the need to develop clear guidelines that explain students how to perform peer mentoring, such as Mcloughlin et al. (2007). Cooper and Sahami (2013) point out that, some learners in peer assessment grade without reading the work to be reviewed or do not follow a clear grading scheme, which negatively impacts the quality of the given feedback.

Roles of students are especially important to be defined, as stated by Level and Mach (2005) and Tardy and Mocozet (2013), which remarks the importance on how peer mentoring is introduced to students. As suggested by Guardia et al. (2013) building trust on self and peer assessment can be addressed by elaborating objective and precise criteria and explanation. The design of rubrics, scales, and explanatory automatic answers are supportive tools for the learner. Furthermore, provide clues on how to collect learning evidence and organize them to provide accountability of learning trajectories.

The experience with the HANDSON MOOC also points towards this direction. A clear framework needs to be provided to participants if we want peer mentoring to be truly useful for the learning processes.

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Along with the need to be more clear with the process about peer mentoring, as MOOC designers, we faced other difficulties already existing in the MOOC literature: how to guarantee that students are skilled enough to validate the work of peers? As suggested by some experts, many students do not rely on their peers' comments. O'Toole (2013) says that as the need for interpretation grows, the necessary level of understanding required of the student assessor also grows. As we move up degrees of sophistication, from simple knowledge testing to assessing competencies in applying knowledge in complex situations, and up to the creation of new knowledge, the problem only gets worse. Group assessment, considering groups as the 'peer evaluators' could be a way to improve the quality of the assessment. Other strategies suggested by the same authors are creating ePortfolios in order to collect students' performance as peer evaluators and even providing badges for that. Similarly, CPR (Calibrated Peer Review), a system for coordinating and evaluating peer reviews of students work (Suen, Russell & Schimpf, 2013) is suggested as a way to select a group of peer mentors that are well qualified to evaluate. The method consists of comparing the scores given by students to those given by teachers/facilitators to the same exam or test. Students who give a score similar to those of teachers could be considered as fair evaluators.

To promote peer mentoring by using challenges as earning badges or recognition in the course, is, in our opinion, a good way of motivating participants to improve their own activities and learning but also a way of engage users during all the course.

The third pilot of the HANDSON project will be another opportunity to define and try out peer mentoring strategies and activities. The lessons learned during pilot 2 will be used to tweak the learning activities and the MOOC design and evaluate the refined approach.

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