MOOCS AND TEACHER PROFESSIONAL DEVELOPMENT: A CASE STUDY ON TEACHERS' VIEWS AND PERCEPTIONS

Nikolaos Koukis and Athanassios Jimoyiannis
Department of Social and Educational Policy, University of Peloponnese, Greece

ABSTRACT

This paper reports on a study concerning a MOOC designed to support Greek language teachers in secondary education schools towards designing and using collaborative writing activities with Google Docs in their classroom. The principles that determined the particular MOOC design framework were directed by three dimensions of teacher participation: a) engagement b) peer interaction and mutual support and c) collaborative creation of educational artefacts. A total of 566 language teachers from secondary education schools were enrolled in this MOOC, which achieved a completion rate of 57.6%. We used a mixed method that combines the analysis of teachers' engagement through platform records and their responses to a specific questionnaire. The results provided supportive evidence that the design framework was effective towards promoting teachers' active engagement, peer interaction and support, and development of learning design abilities to integrate collaborative writing with Google Docs in their classroom. In addition, the analysis showed that the majority of participants conceptualized this MOOC as an efficient environment for their professional development.

KEYWORDS

e-Learning, MOOCs, Teacher Professional Development, Collaborative Writing

1. INTRODUCTION

In recent years, a shift in e-learning from conventional on-line programs to more open, participatory and collaborative approaches has become quite apparent. Universities and higher education institutes face great challenges for educational reforms by harnessing the emerging on-line technologies and Open Educational Resources in order to respond to the growing demands of flexible and inclusive education for great numbers of students coming from diverse backgrounds (Conole, 2014; de Freitas, 2013). The adoption of open courses and open educational practices is considered a priority for the European Union in order to achieve the objectives of an education and professional development for all that will promote competitiveness and growth (European Commission, 2013, p.2).

In this perspective, *Massive Open Online Courses (MOOCs)* have been rapidly evolved and they currently constitute a worldwide phenomenon that attracted attention from a variety of educational, research, practice and policy institutions. MOOCs are on-line courses structured, usually on a weekly basis, and include specific learning activities and learning material that learners need to use as well as an evaluation process. In addition, they are free courses, open to anyone through the Internet, and massive in terms of the great number of participants as compared to regular classes (sometimes they reach thousands or even tens of thousands of people). With regards to educational policy perspectives, many universities around the world have realised the disruptive potential of MOOCs to scale high levels of education from a distance by adopting MOOCs as an essential part of the educational programs offered to their students and to a wider range of learners around the globe (Yuan & Powell, 2013). In 2017, more than 800 universities offered around 9400 open courses while around 81 million individuals were enrolled in, at least, one MOOC (Class Central 2017).

MOOCs have also gained intense research interest as a new form of e-learning in higher education and professional development programs (Conole, 2014; Milligan & Littlejohn, 2017). The main challenge for educational research is determined by their features of openness, massiveness, diversity and the new ways of

engagement used by the learners. Researchers, from the initial stages, were addressed not only to the technological aspects and the structure of MOOCs, but also to their pedagogical aspects. Existing research has shown that most of the MOOCs offered use similar platforms and course templates or models. On the other hand, literature reviews have revealed a wide range of issues and directions that are open to research and further analysis (Bonk et al., 2015; Castaño, Maiz & Garay, 2015; Eriksson, Adawi & Stohr, 2017; Gašević et al., 2014; Hew, 2016; Liyanagunawardena, Adams & Williams, 2013; Littlejohn et al., 2016; Veletsianos & Shepherdson, 2016): (a) *learner related factors*, for example motivation to participate, values and expectations, personal, cognitive or psychological barriers, the large and varied body of participants, and the problem of high dropout rates in MOOCs etc., (b) *pedagogical and learning design* issues related to MOOC pedagogy, content and discipline, course resources and material, technologies used, learning activities, learner guidance and support, tutor and facilitator roles etc., (c) patterns of *learners' engagement and self-regulation* in MOOC learning activities, and (d) *learning outcomes and achievements* of the participants.

Despite that MOOCs are widely recognized as a new form for on-line learning, only recently they were suggested for professional development in various occupation fields (Vivian et al., 2014) as well as an alternative for teacher professional development (Koutsodimou & Jimoyiannis 2015; Laurillard, 2016). In response to the issues above, this paper reports upon a new framework for teacher professional development MOOCs and the consequent implementation of a MOOC designed to support Greek language teachers' towards acquiring the knowledge and the skills needed to integrate collaborative writing practices in their classroom. The assumption that addressed the present study was that the participants, who were experienced educators themselves, have developed a coherent base of pedagogical knowledge that could help to reveal critical factors of MOOC pedagogy. Two research questions were explored: a) What factors did teachers consider important in terms of MOOCs design and ability to support teacher professional development? b) How did the participant teachers perceive the impact of this MOOC in relation to their professional development needs?

2. MOOCS AND TEACHER PROFESSIONAL DEVELOPMENT

In relation to their pedagogical design, the most general distinction of MOOCs proposed by Siemens (2013) who identified two main formats:

a) Connectivist or *cMOOCs*, which are expected to put emphasis on connected and collaborative learning. They are based on the theory of connectivism according to which knowledge is a social construct and is distributed over networks of connections through participants' engagement, self-direction, creativity, collaboration and social networking.

b) *xMOOCs*, which are considered as an extension of the traditional on-line courses; they are based on the model of knowledge transfer, through the provision of learning content and educational material to the learners, while emphasising individual learning rather than learning within groups of peers.

Research into innovative course designs, based on more creative and empowering forms of online learning, is beginning to show promising results regarding learning outcomes and completion rates in MOOCs (Fidalgo-Blanco, Sein-Echaluce & García-Penalvo, 2016; Koutsodimou & Jimoyiannis 2015; Toven-Lindsey et al., 2015). Personal interests and motivation are critical and determine whether and how the participants engage in course activities and materials. A recent study has used survey data to explore students' self-regulated learning behaviors in the context of MOOCs (Hood, Littlejohn, & Milligan, 2015). Similarly, Cochrane et al. (2015), argued that embedding cMOOC design within an educational design research methodology can enable the design of authentic professional development model that can indeed demonstrate transformation in pedagogical practice.

2.1 Design Principles

This particular MOOC was designed with the aim to support Greek language teachers towards developing and enhancing a) their technical skills and pedagogical abilities to use Google Docs (GDs) as a collaborative writing tool in Greek language instruction; b) their pedagogical knowledge and learning design skills.Rather than creating a formal xMOOC course, with the focus upon preparing and delivering the appropriate learning

material to transfer knowledge regarding collaborative writing to the participants, we were interested in modeling cMOOC processes around a community of language teachers who share common interest and concerns as far as introducing collaborative writing in their classroom practices is concerned.

Therefore, this teacher professional development MOOC blended various features and pedagogical ideas, directed towards three dimensions of learner participation: a) it was a structured MOOC, in terms of how the units were organized and presented; b) it was built around teachers' collaborative work and mutual support in groups of 4-5 individuals who were relatively free from course constraints; and c) for the assessment of the teachers, individual engagement, peer interaction, exchanging instructional ideas and experiences, and contribution to the collaborative content creations were used.

The tasks were assigned on a weekly basis and the completion requirements for each teacher where: a) to interact with others and contribute to the main discussion topics in the course; b) to be an active member in his/her group and contribute in an open and self-directed way to both, the process and the content of the collaborative artefact creations through Google Docs. Thus, learning was expected to result not from the transmission of information, but from active participant engagement and self-regulation in specific collaborative writing practices. The MOOC units and the teachers' learning activities were structured on a weekly basis, as shown in Table 1. Individual and collaborative coursework were properly interwoven towards achieving the objectives of the course.

Table 1. MOOC units and teachers' workflow

Week	Course topics and learning activities
1	Familiarisation with the MOOC platform-Introduction to collaborative writing 1st assignment: Discussion forum (ICT in education and contemporary pedagogy)
2	Sequential writing mode 2nd Group assignment: Collaborative writing with Google Docs using sequential writing mode
3	Horizontal-division writing (parallel writing) mode 3rd Group assignment: Collaborative writing with Google Docs using horizontal-division writing mode
4	Stratified-division writing (parallel writing) mode 4th Group assignment: Collaborative writing with Google Docs using stratified-division writing mode
5	Reactive writing mode 5th Group assignment: Collaborative writing with Google Docs using reactive writing mode Design of an educational scenario about collaborative writing
6-7	Teachers applied the educational scenario in their classroom practice Discussion, feedback and conclusions
8	Critical reflection-Discussion about MOOCs and teacher professional development

2.2 Context and Participants

The course was designed and offered on March 2018 by the eLearning Research Group of the Department of Social and Educational Policy, University of Peloponnese, in Greece. After an open call, a total of 566 Greek language teachers in secondary education schools were enrolled from various geographical regions of the country. Finally, 326 teachers completed the course successfully, since they were active participants and they did effectively respond to the obligatory assignments. One tutor and one assistant were the moderators-facilitators of teachers' e-tivities. The course was hosted and delivered through the Open eClass learning management system. Short tutorials in the form of video-lessons were also produced by the authors and were available in the on-line platform. The teachers were encouraged to acquire both knowledge and skills through using the educational material available in the course units, active engagement in the learning tasks, harnessing peer support and discussions, and reflecting on their achievements.

3. RESEARCH METHOD

In line with the MOOC design framework, our analysis was directed along three main axes s: a) teachers' engagement, b) peer interaction and collaboration, and c) impact of MOOCs to teacher professional development. Two main data sources were used in the present study: a) log data gathered from the platform showing individual participation and engagement (postings to the main forum topics of the course and

postings related to the collaborative activities within teacher groups) and b) quantitative and qualitative data received from 326 participants, who completed the course, using an on-line anonymous questionnaire during the week following the completion of the course.

The scale included 83 items of 5-point Likert-type statements (strongly disagree-strongly agree) presenting teachers' perceptions and beliefs towards MOOC design issues, individual achievements, and the impact of the particular MOOC to teachers' professional development. In addition, 8 open questions were included in the questionnaire with the aim to authentically record teachers' views of the MOOC design features, the knowledge and skills they acquired and the possible advantages or drawbacks of MOOCs. Due to extend restrictions, in this paper we present the results of 22 items that concern teachers' achievements.

4. RESULTS

4.1 Teachers' Active Engagement

Participants were encouraged to communicate and interact with each other, discuss technical problems, provide mutual guidance and support to other community members. Discussion forums spontaneously and dynamically emerged with regards to organizational, technical and course content related issues or teachers' difficulties. Table 2 shows the results of teachers' participation in the weekly course discussions. Overall, 153 discussion topics were raised and 3224 posts were uploaded by the participants. The main topics were related to general themes concerning collaborative writing and ICT in language learning. In addition, the teachers exchanged ideas and offered support to their peers in order to solve technical and organizational problems. The tutors acted as course moderators and their intervention was necessary in only few cases; the vast majority of teachers' difficulties and concerns were solved by peer assistance and support offered through the specific forum thread in the course platform.

Table 2. Teachers' contributions to the general discussion forums of the course

Week	Discussion topics	Posts
1	31	753
2	26	263
3	12	201
4	6	139
5	9	139
6-7	41	460
8	28	1269
Total	153	3224

4.2 Teachers' Collaboration in Group Activities

In addition, a separate forum for each group was created in the course platform with the aim to support teachers' group-work, discussion and collaboration. The majority of the teachers were active participants in the group discussion forums. A total of 671 discussion topics and 11647 posts were uploaded, which correspond to a mean value of 35.6 posts per teacher. It is quite reasonable that the participants chose to interact mainly with peers in their own group rather than with other colleagues in the MOOC. 57.6% of the enrolled teachers completed this MOOC, since they responded effectively to the course requirements, on both individual and collaborative levels.

The high completion rate achieved in this MOOC, compared to existing research findings that show low numbers of the enrolled participants (Vivian, Falkner & Falkner, 2014), is a strong indicator that peer interaction and support is a critical design factor for MOOCs. It appears that the open, creative and supportive forms of learning in this MOOC promoted learners' engagement and helped them towards adopting self-regulated modes of learning (Diver & Martinez, 2015; Toven-Lindsey et al., 2015). Confirming previous results in the context of a pdMOOC, this study revealed that teachers' active participation in discussion forums, peer interaction and support towards achieving common goals, were the key design components of a successful MOOC for teacher professional development (Koukis & Jimoyiannis, 2017).

4.3 Teachers' Perceptions of MOOC Design

Figure 1 presents the main findings regarding the participants' perceptions of the MOOC design features. It is quite clear that the vast majority (8-9 teachers out of 10) were positive about and identified the following factors of this MOOC as very important, i.e. concrete course objectives, collaborative modes of learning and the development of a learning community among language teachers. The teachers believe that the features of collaboration, co-creating writing artefacts and sharing ideas helped them to enhance their learning design abilities, their self-confidence and professional work in general.
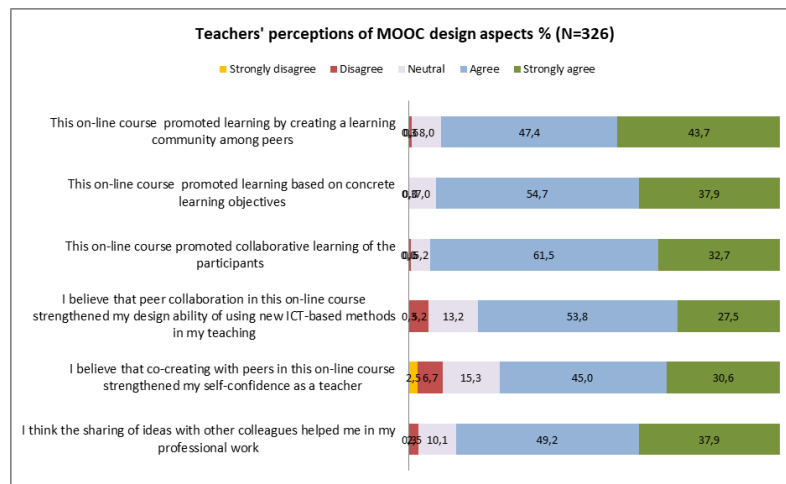

Figure 1. Teachers' perceptions of MOOC design factors

4.4 Teachers' Beliefs of their Professional Development Achievements

The vast majority (8 out of 10) of the teachers attending this MOOC were positive about their achievements in terms of knowledge, skills and attitudes of collaborative writing with GDs in the language classroom (Figure 2). They reported enhanced interest and confidence to use collaborative writing activities in their instruction. In addition, t the majority of the teachers considered that this particular MOOC helped them to deepen their pedagogical knowledge about using ICT in their lessons and to change their pedagogical views regarding the instruction of Greek language. In addition, the participants' overall estimation of the MOOC outcomes were also positive (Figure 3). They were satisfied with the course, which covered their expectations and objectives for professional development. The teachers appeared willing to attend a MOOC in the future and to suggest MOOCs to their peers as a means for professional development.

4.5 Teachers' Views about the Impact of the MOOC

From the point of view of the designers and facilitators of this particular MOOC we were also interested in authentically gathering and revealing a more detailed picture of the participants' views, as well as their overall estimation, of both the strong and the weak aspects of MOOC design. Table 3 presents indicative transcripts, based on teachers' extended comments in the open questions of the survey questionnaire regarding positive and negative points, and the impact (influence) of this MOOC on their instruction, in terms of introducing collaborative writing and GDs to the Greek language lessons.
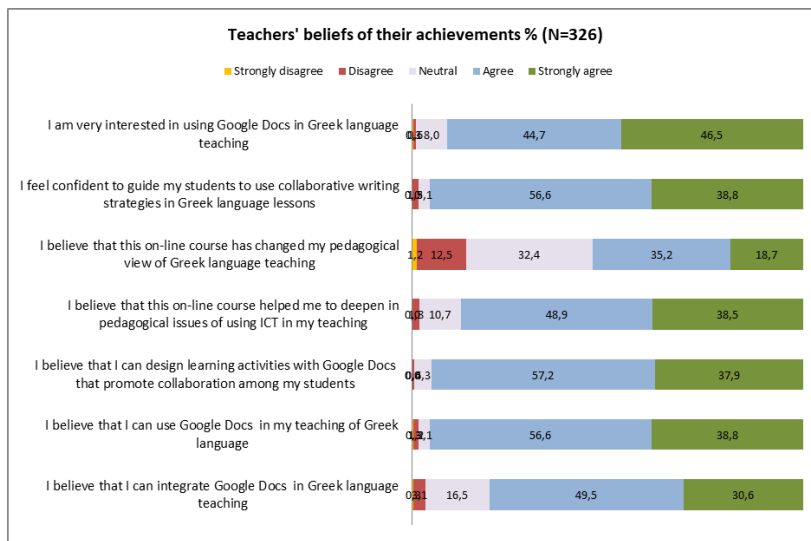
Teachers' beliefs of their achievements % (N=326)

■ Strongly disagree ■ Disagree □ Neutral ■ Agree ■ Strongly agree

Statement				
I am very interested in using Google Docs in Greek language teaching	0,6	8,0	44,7	46,5
I feel confident to guide my students to use collaborative writing strategies in Greek language lessons	0,6	5,1	56,6	38,8
I believe that this on-line course has changed my pedagogical view of Greek language teaching	1,2	12,5	32,4	35,2	18,7
I believe that this on-line course helped me to deepen in pedagogical issues of using ICT in my teaching	0,3	10,7	48,9	38,5
I believe that I can design learning activities with Google Docs that promote collaboration among my students	0,6	4,3	57,2	37,9
I believe that I can use Google Docs in my teaching of Greek language	0,3	4,1	56,6	38,8
I believe that I can integrate Google Docs in Greek language teaching	0,3	3,1	16,5	49,5	30,6

Figure 2. Teachers' beliefs of their achievements in the MOOC

Teachers' overall views of the MOOC outcomes % (N=326)

■ Strongly disagree ■ Disagree □ Neutral ■ Agree ■ Strongly agree

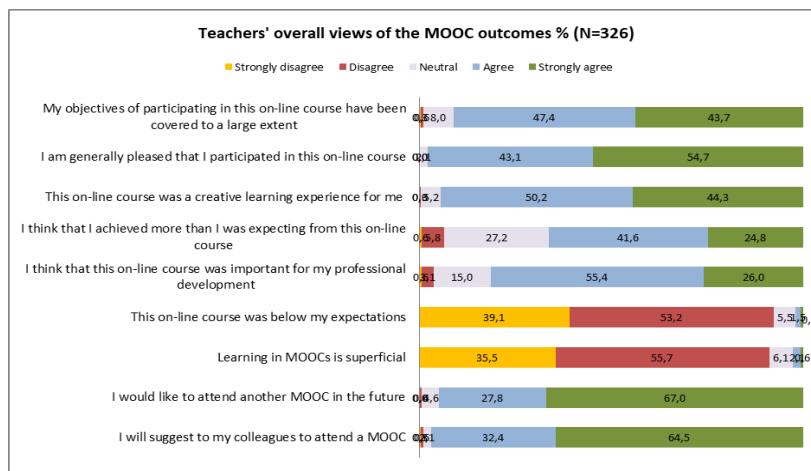| Statement				
My objectives of participating in this on-line course have been covered to a large extent	0,6	8,0	47,4	43,7
I am generally pleased that I participated in this on-line course	0,1	43,1	54,7
This on-line course was a creative learning experience for me	0,3	5,2	50,2	44,3
I think that I achieved more than I was expecting from this on-line course	0,6	5,8	27,2	41,6	24,8
I think that this on-line course was important for my professional development	0,3	3,1	15,0	55,4	26,0
This on-line course was below my expectations	39,1	53,2	5,5	1,7	0,6
Learning in MOOCs is superficial	35,5	55,7	6,1	2,1	0,6
I would like to attend another MOOC in the future	0,6	4,6	27,8	67,0
I will suggest to my colleagues to attend a MOOC	0,6	3,1	32,4	64,5

Figure 3. Teachers' overall views of MOOC outcomes

5. CONCLUSIONS

This paper reported on a teacher professional development MOOC designed for Greek language teachers with the aim to enhance their knowledge, skills and attitudes to integrate collaborative writing in their instruction. The results presented provided supportive evidence that the blended and collaborative features of the MOOC design framework were effective towards supporting teachers' ability to complete this course and enhancing their achievements through individual engagement, peer interaction and mutual support, and collaborative creation of writing artefacts using Google Docs. Compared to the existing literature, this investigation showed very high rates of course completion (57.6%). The analysis showed that the majority of participants conceptualized this MOOC as an efficient environment for their professional development. In addition, it revealed important information with regards to the design factors above, since the vast majority of the participant teachers were positive about and considered that these features influenced active participation, peer interaction and collaborative work in the assigned tasks.

Table 3. Teacher views of the impact of the MOOC

Item	Quote
How this MOOC influenced the participants	E6: "For me it was very important to exchange views with colleagues and work together. This interaction has enhanced my professional identity." E138: "It has strengthened me with regard to co-operation, which is a ... thorn in school. I saw in practice how important can be the contribution of someone other, even when you would not do agree. If you accept it, then a common work takes its course and is made worthwhile in less time and with less effort." E122: "It has greatly influenced my participation and interaction with my group. I understand better how collaborative writing will work for my students." E80: "It affected me a lot because I went into the process of working with other colleagues (different perceptions, ideas, etc.) and I realized the difficulties that students may face." E212: "It did not affect me significantly. I gave my views and opinions on the language course I had already set up."
MOOC added value in terms of teacher professional development	E171: "I think it is more in the dynamics of the community (common interests and goals) and in the targeted process of cooperation ... Respect for others' opinion, good mood and efficiency outweighed individual effort. Besides, the exchange of ideas/practices has been valuable and enhances cooperation…" E16: "Contacting colleagues who deal with the same subject with whom we could never have an opportunity to collaborate." E38: "It was a demanding course. The main difference is that it was much more practical than theoretical. This enabled me to deal with matters concerning my subject in practice." E146: "The previous courses and seminars I attended based on theoretical issues have little to do with the educational reality. This course has a practical orientation and can be applied in practice: It is the teaching of the future."

The findings also revealed enhanced teacher awareness and willingness to adopt MOOCs as an effective alternative for teacher professional development and they were very positive about integrating collaborative writing modes in their design and implementation of Greek language lessons. The adoption of an open design philosophy helped the teachers to be involved in new topics of collaborative writing, to familiarise themselves with the various strategies of collaborative writing through peer collaboration and undertaking students' roles, to apply their achievements directly to their classroom and following to share their experiences with peers. Rather than formal course requirements, the teachers preferred a MOOC design framework that enables each learner to be more autonomous and self-directed in determining his learning trajectories as well as involving them in learning activities that are similar to those they will use with their students. In their responses to the open questions, many teachers put emphasis on their collaboration with colleagues and, in some cases, they perceived a sense of belonging to a learning community.

The discussion forum appeared to be a very effective tool in this MOOC and the majority of teachers were very active contributors to the forum. This finding is totally different to the results of Tseng et al. (2016), who recorded that only 8% of the students participated in the forum of the MOOC. It seems that the teachers harnessed the affordances offered by the discussion forum since it promoted communication, interaction and mutual support among the participants. Teachers' motivation to participate is related to factors like course openness and flexibility, teachers' personal development needs, course content directly related to the teachers' workplace context (i.e. classroom reality), new tools and practices, as well as the teachers' professional roles.

Despite the fact that this study could be limited by the specific sample and the context of implementation, the findings are of value for MOOC designers, educators, and researchers internationally. The new idea that this study could contribute to the existing literature is that a balance between structure (xMOOC mode) and openness (cMOOC mode) is required to constructively influence and enhance the outcomes of a MOOC for teacher professional development. Our future research will be directed to the comparative analysis of quantitative data extracted from teachers' discourse in the discussion forums of the MOOC and their responses to the on-line questionnaire. We expect, therefore, to shed light on learners' knowledge construction patterns as well as the different modes of teachers' engagement, interaction and self-regulation in MOOCs designed to support teacher professional development.

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