THE DIALOGICAL AUTHENTIC NETLEARNING ACTIVITY (DIANA) MODEL FOR COLLABORATIVE KNOWLEDGE CONSTRUCTION IN MOOC

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Abstract: The ways in which we work and learn are changing rapidly. These changes require research and competencies that are not only new, but which also respond to the requirements of the digital age. The extensive social phenomena and pressures that are a result of digitalisation also call for more careful consideration. Digitalisation requires us to renew educational structures. Massive open online courses (MOOC) and their associated pedagogical decisions can promote the development of digitalisation. Open online courses necessitate a stricter pedagogical structure that enables authentic learning and dialogue based on collaborative knowledge creation. This article presents a case study showing how the DIANA (Dialogical Authentic Netlearning Activity) pedagogical model was used to support collaborative knowledge construction in a micro open online course titled "Making learning personal". A questionnaire and interviews were used to collect data from fourteen participants, and qualitative content analysis was used to analyse the data. Various phenomena of MOOCs are evident in the results, however, the results also reveal the challenges of dialogical, authentic learning and collaborative knowledge creation in an open online course. The results indicate that sufficient guidance is required to gain a thorough understanding of a pedagogical model, and that collaborative knowledge creation requires time, shared learning objectives, and a substantial knowledge of dialogical participation.

INTRODUCTION

In recent years, ongoing digitalisation has required us to renew our educational structures and learning environments. Many e-learning courses are designed in a linear format, with the assumption that the students begin and finish a course at certain pre-defined points (Herrington et al., 2010). The developments in digitalisation have caused us to change our understanding regarding learning environments. However, these changes also create new possibilities. Massive open online courses (MOOC) and their pedagogical decisions can promote the development of digitalisation on both national and international levels. Open online courses necessitate a stricter pedagogical structure that enables authentic learning and dialogue based on collaboration. Laurillard (2009) states that digital technologies create new opportunities for change and support new ways of working. Digital technologies open a wide range of possibilities for education, but also create a need for a pedagogical framework. Online learning environments need to include more student-centred activity and collaboration, yet there are too many open online courses that are excessively technology driven.

According to Wheeler (2015), when we consider the digital learning of the future, pedagogy ought to come first and technology only second. To foster development, we need digital wisdom. It is said that information has become more democratic, and for learning it has become more open and communal. Wheeler suggests that blogging is one of the most effective ways of informal learning, especially when it includes some form of dialogic knowledge creation. Sangran and Wheeler (2013) view that every college ought to offer MOOCs and that new technologies are the key to the development of informal learning models. However, the possibilities of digital Open Educational Resources (OER) have not been properly utilised, nor have the quality criteria of open online courses been recorded. In addition, the content of such courses has not been evaluated from the perspective of learning. Learning is becoming more informal, and this change is enabled by MOOCs. In the modern world, MOOCs form an important way of learning and of acknowledging learning, and also serve to challenge our pedagogical thinking. Means et al. (2014, p. 69) argue that many MOOC designers have neglected to use the basic knowledge acquired by learning science, that is, how people actually learn.

According to Scanlon et al. (2015), the impact of technology on pedagogy (the manner or structure of teaching) is complex. Only a small amount of direct research exists on the ways that technological possibilities and their

associated pedagogical responses operate to benefit learners. They further point out that the area of formal learning is undergoing a period of rapid change, and that due to these changes, needs for alternative modes of delivery arise.

The Häme University of Applied Sciences (HAMK UAS), School of Professional Teacher Education (Finland) in cooperation with Coleg Cambria (United Kingdom) has created and implemented a mOOC that is based on dialogical, authentic learning and collaborative knowledge creation. The course was titled "Making Learning Personal: How to develop individualised approaches in Vocational Education and Training", and its value was 2 ECTS. This pedagogical pilot was developed in a Mapping project (Leonardo Da Vinci, Transfer of Innovation), and the Canvas Learning Management System was chosen as the learning environment. The key element in the course was formed by study groups and also the sense of a learning community that they perceive. Learning and knowledge were created collaboratively by focusing on a certain theme. The learning process was structured following the principles of the DIANA (Dialogical Authentic Netlearning Activity) pedagogical model (Aarnio & Enqvist, 2001), and in this context, implementation of the model requires a genuine dialogical learning community, a commitment on the part of learners and the teacher, and a solid presence on the net (Aarnio & Enqvist, 2001; 2002).

This article reports a case study for designing and implementing dialogical, authentic and collaborative knowledge creation based on a MOOC format, and investigates how the DIANA model construes the learning process. In addition, the article focuses on the realisation of a practical pedagogical process, and shows how the DIANA model supports collaborative knowledge construction in the mOOC context. The data for this study was collected by using an online questionnaire and in-depth online interviews, and analysed using a qualitative content analysis approach. This article is structured as follows: First, the topic is reviewed through theoretical concepts. Second, the study case and content analysis are described. Finally, the results are presented and discussed. The respondents' answers are presented verbatim in their original form. In those cases where participants answered in Finnish, the quotation has been translated and marked separately.

THE OVERALL COCEPT OF MOOCS

MOOCs (massive open online course) originate from American universities where the first course was launched in 2008. The words describing this new form of online courses have specific meanings. *Massive* means that the number of participants is unlimited, and *open* means that there are no entry requirements or tuition fees. Haber (2014, p.83) gave a concise interpretation that open means a free of cost or entrance requirement and with no barriers to entry and everything else are variant on eLearning. The courses function entirely as online courses and are structured in the form of goal-directed teaching (McAulay et al., 2010).

Massive open online courses are defined by various prefixes whose purpose is to describe the realisation methods or pedagogical approach of a particular course. One of the MOOC pedagogy branches is the cMOOC, and is based on collaborative and community oriented learning where learning is viewed as a social and collaborative learning event enabled by technology (Haavind & Sistek-Chandler, 2015; O´Toole, 2013). Siemens (2005) notes that connectivism as a learning theory is driven by the understanding that decisions are based on rapidly altering foundations, and that new information is continually being acquired. This concept has adapted to the digital age, an according to Grünewald et al. (2013), it describes learning as the creation of connections between information, and Web 2.0 functionalities lend support for this process. Connectivist knowledge and connectivism (Downes, 2012; Siemens, 2005) include insight of the cycle of knowledge development. In practice this means that individuals provide the community with knowledge, and also gain knowledge from the community. This kind of collaborative knowledge creation is seen as one aspect of the Web 2.0 philosophy. Means et al. (2014, p. 55) describe cMOOCs as endeavoring to generate online discussion and collaboration, through which the networked community of learners will build their knowledge and understanding. For example, on such courses the lectures and exercises are traditionally presented in the form of videos or text, but the learners are expected to create communities, to engage in discussions, and to give each other feedback on the exercises.

In addition to MOOCs, there are so-called micro open online courses (mOOC) which are based on the same principles as massive open online courses, but where the number of participants is limited. Instead of tens of thousands of participants, for example only 500 participants can enrol on the course. Amongst other things, the reason for this may be that the methods of discussion, guidance and feedback used are simply not feasible for a massive course. Additionally, the percentage of participants who pass the course tends to be higher when the number of learners is limited (Hiidenmaa, 2013).

According to some researchers, the MOOC pedagogy is based on the principle of learner centricity. In this, the learners decide, for instance, what, when and where they study, and to what extent they commit themselves to the learning community (Grünewald et al., 2013; McAulay et al., 2010). However, our experience shows that online learning that is based on collaborative knowledge creation requires carefully planned structures and a guiding process, i.e. the facilitation of learning. Only when a learning community has learned to learn together, can processes such as helping other learners, giving them advice and interacting in an online environment take place naturally.

DIALOGICAL, AUTHENTIC LEARNING AND COLLABORATIVE KNOWLEDGE CONSTRUCTION ONLINE

Aarnio and Enqvist (2001; 2002) emphasise that the key concept in online learning is dialogue. They further specify that in everyday speech, the term dialogue is used to refer to a discussion or conversation. Isaacs (1999) also notes that dialogue involves thinking together, although as a phenomenon, dialogue is altogether more extensive and complex. Dialogue requires equal participation, which is based on thinking together and familiarising oneself with a particular topic, matter or activity. According to Enqvist and Aarnio's (2004) definition, dialogue is based on an equal co-construction of understanding. They further point out that dialogue is seen as a tool for the co-construction of knowledge. Their offer that: "Dialogue is based on equal co-construction of understanding. It is shared thinking and getting well acquainted with a certain subject and activity." Herrington et al. (2010, p. 27–28) state that the opportunity for learners to collaborate is an important design element, especially when it comes to distance learning. Collaboration and collaborative knowledge creation are important elements of authentic online learning and can be encouraged though various tasks. Aarnio and Enqvist (2001, 19) note that dialogical participation consists of active and equal participation, engagement and reciprocal reaction, and the letting go of egocentricity.

According to Resnick (1987), personal authenticity arises when an activity is seen as meaningful (cf. Keskitalo et al., 2011) and when the learning target is defined and interpreted from the point of view of the students. The concept of authenticity is extensive and complicated, and the term is generally used to refer to something which is real, true or genuine, or something that is not fake or a forgery. A learner's commitment and the feeling that they own their learning is strongly linked to how the feeling of authenticity is born and maintained during a learning process.

The definition of authentic learning by Herrington et al. (2010, p. 1) is that learners are engaged in an inventive and realistic task which provides opportunities for complex collaborative activities. Additionally, designing and implementing authentic learning requires teachers to take risks, so an authentic approach requires more effort than standard academic lectures. Authentic learning and its approaches are often based on open-ended and learner-centred constructivist learning. Authentic learning becomes deeply meaningful, inspiring and energising when the learners ask the questions and when the learning process is shared. In their study, Kim and Bonk (2006) predict that when it comes to teaching, then elements of authentic learning will gain more significance in the future. According to Herrington et al. (2010, p. 18), the nine elements of authentic learning are 1) authentic context that reflects the way knowledge is used in real life; 2) authentic tasks; 3) access to expert performances and the modelling of processes; 4) multiple roles and perspectives; 5) collaborative knowledge construction; 6) reflection to enable abstractions to be formed; 7) articulation to enable tacit knowledge to be made explicit; 8) coaching and scaffolding by the teacher at critical times, and 9) authentic assessment of learning with tasks. These elements require skills in both dialogical learning and collaborative knowledge creation.

Authentic, dialogical online learning and collaboratively constructed professional expertise can be described in a model which clarifies the components of learning and also the dynamics of the model. The DIANA (Dialogical Authentic Netlearning Activity) model is comprised of four cornerstones that promote authentic, dialogical and collaborative learning (Enqvist & Aarnio, 2004.) Authentic dialogical learning on the net and community-based, constructive professional expertise can be segmented into an operational model that makes it easy to discern the components of learning, as well as the dynamics of the model. The cornerstones of the DIANA model support authentic, dialogical learning. (Aarnio & Enqvist, 2001; 2002.) The developers of the model (Aarnio & Enqvist, 2001; 2002) refer to net-based teaching, but the model is equally well-suited to modern, flexible and mobile learning environments. In the model, peer learning groups have an important role. Moreover, there was a desire to link the dialogical learning process to collaborative thinking and knowledge creation (cf. Downes, 2012; Siemens, 2005).

Fig. 1. The DIANA model for learning on the net (Aarnio & Enqvist, 2001, p. 67).

According to Aarnio and Enqvist (2001), operations compliant with the four cornerstones (Fig. 1) organise and structure the learning process. Cornerstone A creates the common ground for collaborative and dialogical learning. Cornerstone B deepens the process of finding and formulating authentic questions that are connected to the learning objectives of the study module. Cornerstone C offers deep-oriented learning through dialogical actions which take place in conjunction with other students' work and create knowledge about the subject being studied. Cornerstone D links theory to practice. The students weave a collaborative synthesis and search for missing pieces (new questions) pertaining to the learning goals of the study module. Dialogical evaluation is another part of the final cornerstone, and enables dialogical reflections and develops new contextual understanding.

STUDY BACKGROUND AND CONTEXT

The starting point of the mOOC discussed in this paper was the pedagogical applicability of the course to a dialogical and authentic learning process, and the building of a collaborative learning community. The course was a combination of a mOOC and a cMOOC. The course was designed for vocational education and further education teachers who wished to deepen their knowledge of individualization and individual study plans (ISP). HAMK UAS, School of Professional Teacher Education in cooperation with Coleg Cambria created and implemented the "Making learning personal" course. This 2 ECTS course proceeded from one module to the next according to the course topics.

The seven-week course was carried out in the Canvas learning environment. This environment was also used as the course platform, but the study groups were free to choose among various social media platforms that foster dialogical and collaborative knowledge creation (e.g. Facebook, Google Drive, Padlet, Hackpad). According to Daniels (2012), a distributed environment is an essential element of cMOOCs in supporting autonomy, connectivity and interaction. Throughout the process, the facilitators and expert teachers could be contacted via the learning environment and at a Facebook clinic, so enabling learners to deepen their knowledge of dialogical guidance and scaffolding. Active, dialogical and collaborative participation was expected from the students. A

total of 155 participants enrolled on the course and were divided into 14 study groups of 8–10 people. The course consisted of four modules.

The first week of the course was used for bonding within study groups (creating common ground, cornerstone A). The topics of the modules were 1) Basics of individualisation, 2) Dialogical guidance and scaffolding, 3) Synthesis of ISP practices, and 4) Sharing new ideas and ways to embed them into practice. The pedagogical script was structured into modules on the basis of the learning objectives and the guidelines of the DIANA model.

The first two modules progressed according to the DIANA model (Figure 1). The first step included individual assignments where authentic questions were generated. After this, the authentic questions were gathered on the collaborative platform of each study group and arranged thematically (cornerstone B). This was followed by collaborative knowledge creation that focused on these themes. Studying and data acquisition centred on the learning materials handed out to the students. In addition, the studying and data acquisition process required learners to actively examine things in practice (cornerstone C). The answers students offered were used to create a synthesis of the topic in question by combining theory and practice (cornerstone D).

After the course, the Mozilla Open Badge Factory was used to acknowledge the acquired competence. A learner was able to apply for a digital badge whenever he/she knew how to demonstrate his/her competence as required in the criteria of the MOOC. In the application form, students were asked to demonstrate their competence by including a synthesis of the ISP model that their study group had created. In addition, the students had to add an explanation for using the model in practice. They were also asked to briefly describe their own dialogic participation and knowledge creation in their study group (cornerstone D).

Following completion of the course, a study was conducted to all of those enrolled on the course (n=155) received a request to complete the research questionnaire, but only 10 % responded. The participants in the study (*n* = 14*)* were teachers from seven different countries. The participants represent teachers interested in developing their individualisation and personalisation knowledge in a world-wide learning community. Participation in the study was voluntary.

Research questions and methods

The main research question was: How does the Dialogical Authentic Netlearning Activity (DIANA) model support collaborative knowledge construction in a mOOC?

The research question was divided into the following sub-questions:

1) What is the significance of group formation for a learning community in a learning process?
2) How did the participants experience the formulation of authentic questions?
3) How does dialogical participation work in an open online course?
4) Which factors facilitate collaborative learning and knowledge creation?
5) How does a pedagogical model structure learning on a micro open online course?

The study represents a single case study (Yin 2009, p. 46–47). The method used for collecting data was a semi-structured questionnaire with open and closed questions. In addition, semi-structured in-depth interviews were used to deepen the meaning structures (Salmons 2015, p. 9–10). This article presents the results of the online questionnaire (*n* = 14) and the semi-structured in-depth online interviews (*n* = 4) provided by the voluntary participants of the study. The data was collected at the end of the course in June 2015 and the in-depth online interviews were carried out in early September 2015. The analysis of the qualitative data began immediately after the second phase of the data collection. In this paper, only the answers which pertain to the research questions (outlined above) will be analysed.

The questionnaire was based on the background theory that supports the research questions, and consisted of open-ended questions about building a learning community, learning outcomes and dialogical participation. In addition, the questionnaire featured closed-ended questions concerning the participants' background, motivation, number of hours used for course work, group formation, use of collaborative tools, formulating authentic questions, organising authentic questions thematically, creating syntheses, online meetings, the dialogical attitude of the study group, creating an individual study plan and learning from each others' models/plans. The questionnaire was created in collaboration with the course designers. It was sent to all participants via the Canvas LMS news forum. Sixteen of the 155 enrolled participants completed the course, and fourteen (response rate 9.03 %) responded to the questionnaire. Low completion rates seem to be a regular phenomenon on MOOCs. Of the respondents, ten were women and four were men. The majority of the teachers who completed the questionnaire (*n*= 6) were from vocational schools. There were teachers from universities of applied sciences (*n*= 4), from adult/further education sector (*n*= 2) and from university level (*n*= 2).

The online interviews were semi-structured in-depth interviews. According to Salmon (2015, p. 18), an in-depth interview is a qualitative research technique which involves questioning a participant in order to elicit information, perspectives, insights or behaviours that cannot be observed. Four participants volunteered to take part in-depth interviews, and were teachers from Brazil, Mexico, Slovenia and Finland. Interviewees were given the five main questions in advance. The Webex video meeting program was used to conduct the online interviews, and ach interview was recorded and later transcribed.

Data analysis

The questionnaire answers were collected by two first authors, and the online interviews were carried out by first authors. Content analysis was used to analyse the data. According to Schreier (2012, p. 7), qualitative content analysis based on theory. The analysis process began by reading through the data to gain an overview of participant responses. In the second phase, the data was read through a second time and important sentences in the responses were underlined and roughly codified in relation to the research questions. After this, the data was interpreted and then compared to the cornerstones of the DIANA model (Aarnio & Enqvist, 2001; 2002).

When evaluating the reliability of a study, attention must be paid to the relationship that the researches have to their research topic (Yin, 2009). The first authors of this study were involved in designing and implementing the course, as well as in interpreting the data. Therefore, the researchers' assumptions and actions may have influenced the research process. However, the researchers have endeavoured to adopt a scientific research approach and to overlook their initial assumptions. Due to the small number of participants, the findings of this study are somewhat limited.

RESULTS

When the responses were analysed, the aim was to understand the point of view of the participants. It must be mentioned that all participants participated voluntary in this open in this mOOC as part of their professional development.

Group formation in a learning community

The first research question looked to pinpoint the participants' perspective on the significance of group formation for a learning community, during a learning process. The purpose of cornerstone A of the DIANA model (Figure 1) is to create a solid foundation for collaborative and dialogical learning. According to their responses, the respondents perceived the purpose of group formation as getting to know the other participants and making collaborative learning more interesting. "*It was very important at the beginning, helped us make much progress, and made everyone commit to working together"* (Teacher 3, translated). When asked to evaluate their success in group formation, none of the respondents rated their group formation as excellent. Those participants who rated their success as average or poor thought that the reason for this was unsuccessful timing that failed to support collaborative knowledge creation with unfamiliar participants: "*I had bad luck and ended up in an inactive group, and it took a couple of weeks before I was transferred into an active group"* (Teacher 4). Few of the participants encountered problems with understanding the learning environment and tools, although some expressed a wish that the students could have formed their study groups more freely: "*It would have been useful to form groups with teachers with a similar background*" (Teacher 2).

Therefore, according to the results of this study, group formation is seen as an important phase for the learning process. However, technical barriers, timing and the lack of active enrolled participants created challenges in many study groups.

Authentic learning

The second research question evaluated how participants experienced the formulation of authentic questions. Phase B of the learning process focussed on enabling authentic learning (Figure 1, cornerstone B). During this phase, each participant individually formulated authentic learning questions based on the module's learning objectives. According to the analysis, formulating authentic questions is not regarded as a clear and easy way to enable authenticity in learning: "*It took time to realize what an authentic question is and how I have to do this* [sic]*"* (Teacher 2). In a learning process based on the DIANA model, once authentic learning questions have been formulated, the learning community (study groups) then organises the questions thematically, thus creating themes to be studied. According to six participants, the authentic questions formulated in the first module were organised into themes by one member of the group. Almost half of the participants mentioned that the group had engaged in a dialogue concerning how the questions ought to be thematically arranged. Challenges for authentic activity sprang from the innovative nature of the model, the strict schedule, and the difficulties that online studies created for achieving an understanding of the concept of authenticity. It must be noted however that students

may experience difficulties with authentic online learning, especially at the beginning of the learning process. Formulating authentic learning questions was not experienced as being easy. Therefore, there is a need to enhance the pedagogical approach, and the learner-centred scaffolding and guidance.

Dialogical actions

The third question of this study evaluated how dialogical participation works in an open online course. Dialogical participation as a part of a learning process requires learners to become competent in collaborative knowledge creation and to adopt a dialogical approach (Figure 1, cornerstone C). Open-ended questions were used to identify how dialogical participation works in an open online course. The participants were asked to reflect on their dialogical activity and participation in their learning community during modules one and two of the course. Regarding the first module, three participants considered dialogical participation to be difficult because of the online environment and long distances. Almost half of the participants stated that they found the dialogical model inspiring, that the approach had opened their eyes, and they were consequently encouraged to work in a more dialogical manner in the future. When the same open-ended question was asked regarding the second module, the participants reflected less on their own actions and dialogical approach, and they concentrated more on explaining how their group had performed in their tasks. This was also apparent in the in-depth interviews: the participants had difficulties perceiving dialogical activity as a part of their community learning. *"Well, using Skype it was kind of difficult. I couldn't hear one person very well and everyone speaks English differently and I was wondering how dialogical it really was [...] and then, what with the time constrains of the conversation, well I mean to really proceed and to be heard [...]"* (Teacher 3, translated).

The results revealed that dialogical actions and dialogical participation were regarded as a difficult approach on this online course. However, the DIANA model was considered to be a motivating feature.

Collaborative knowledge creation

The fourth research question focused on the factors that facilitate collaborative learning and knowledge creation. Active participants understood that co-construction of knowledge is a key element of dialogical and authentic learning. According to six participants, every member of their study group participated in collaborative knowledge creation and weaving a synthesis, while two participants stated that one or two members of their group had created the syntheses on behalf of the entire group. The difficulties of collaborative knowledge creation were expressed along the following lines: *"I was not just being there - we have to learn and the facilitator had to guide us toward the right track and we have to take the right direction* [sic]*"* (Teacher 1). The entire group was needed in order to create shared knowledge about a given topic and the strict schedule made this process difficult: *"If you consider the DIANA model where you're supposed to create [knowledge] together, a terribly rushed schedule did not do much to foster collaborative knowledge creation*" (Teacher 4). Thus, among the respondents, the online environment, long distances and language barriers were considered to hinder collaborative knowledge creation.

The key factors for facilitating collaborative learning and knowledge creation are the engagement of each member of the study group, shared responsibilities and learning goals, time for shared thinking and knowledge building, as well as participants from similar backgrounds and time zones.

Pedagogical model in structuring learning

The fifth question of this study considered how participants felt the pedagogical model to structure the deep learning process of collaborative knowledge creation: *"The aspect of the model is quite helpful and promising to change ways of learning* [sic]*"* (Teacher 2). However, the DIANA model was also considered challenging to use on an open online course. A model such as this requires a learning environment that is coherent and comprehensible, functions well, and fosters collaborative learning. *"Teachers have to provide scaffolding and help students. DIANA is the key element to make effective learning* [sic]*"* (Teacher 1). It must be noted that nearly half of the participants stated that the pedagogical model of the course had opened their eyes and inspired them to act in a more dialogical manner in the future. The findings further suggest that a clear representation of a pedagogical model at the beginning of the learning process is important, for if the process remains unclear, it is difficult for course participants to understand the path of learning and collaborative knowledge creation. In addition, the model requires more active facilitation processes and should further support learning by using various channels of online tutoring.

The timing of the course was criticised and the Canvas learning environment was considered to be complex and confusing. Several participants mentioned that the course took place at a hectic time, and that teachers were busy as their semester was just about to end. Participants also stated that the topics covered in the course were too numerous considering the time that was available.

Nearly all of the participants mentioned that the online environment chosen for the course was neither easy to use nor very well organised. Thus, a platform suited to dialogical and collaborative learning ought to be used to provide an appropriate learning environment. Familiarising oneself with the featured work environment was time-consuming, and therefore the remaining time was insufficient for collaboration and collaborative learning. The fact that participants lived in different time zones also presented a challenge, for example when arranging online meetings: *"It would be better to have national groups to help each other and communication would be more easier, the time zone was the problem"* (Teacher 3, translated). In addition, the participants wished for more facilitation, online tutoring and weekly online clinic meetings to support their study. McAulay et al. (2010) note that time zones can be concerns in MOOCs, if regular live sessions are planned. The number of topics covered in the course must be in proportion to the available time, and therefore the possibilities of synchronised studies across various time zones must be taken into account.

DISCUSSIONS AND IMPLICATIONS

The aim of this study was to investigate how the Dialogical Authentic Netlearning Activity (DIANA) model supports collaborative knowledge construction in an open online course. The results revealed that a clear representation of a pedagogical model at the beginning of the learning process is important to aid understanding of the path of dialogical and authentic learning, along with promoting collaborative knowledge creation. The results of this study correspond with the results of previous studies by Aarnio and Enqvist (2002) and Aarnio (2006), which indicate that particular skills and finesse are needed to create and understand collaborative, learner-centred learning processes. This study suggests that before a pedagogical model can be implemented, skilful pedagogical work and a sufficient command of technical online environments are required (cf. Grunwald et al., 2013). MOOCs are open, and voluntary, and participants engage in them selectively, for example by paying closer attention to topics that correspond to their needs. In this context, participants may not find the level of scaffolding and support they require in order to orient themselves because support structures are not formalized (McAulay et al., 2010).

The study groups needed a considerable amount of support and advice before they were able to start studying (cf. Aarnio & Enqvist, 2002, p. 255). The results of this study indicate that the group formation processes might have been more successful had the participants been given more freedom when forming the groups, and if the tutoring in online environments been timed more efficiently (cf. Keskitalo et al.2011). Based on the results of this study, it must be noted that students may experience difficulties with authentic online learning, especially at the beginning of the learning process (cf. Aarnio, 2006).This strongly suggests a need to enhance both the pedagogical approach and learner-centred scaffolding. Teräs and Myllylä (2011) stress that the principles of authentic learning have offered a useful framework for designing social online learning. One of the principles of authentic learning is formulating open questions pertaining to the learning objectives of the module. On the basis of the results of this study, it is recommended that the key factors in learning authenticity ought to be made more transparent in order for the students to understand the significance of authenticity at the very beginning of the learning process. As Aarnio (2006) states, the principles of dialogical and authentic learning require more efficient guidance at the beginning of the learning process. According to Teräs and Herrington´s (2014) study, authentic online learning differs in many ways from traditional educational approaches. Learners' authentic questions form a basis for dialogical knowledge creation (Aarnio & Enqvist, 2002), and at this point, a tutor has a significant role in ensuring that the learning process is based on authenticity (Herrington et al. 2010). In our study, challenges for authentic activity sprang from the innovative nature of the model, the strict schedule of the course, and the difficulties that online studies created for understanding the concept of authenticity.

It is a well-known fact that the pedagogical approach applied in MOOCs requires more extensive and deep oriented research by way of scientific discussion. Redefining MOOC pedagogy is a challenging task. Every online teacher has their own opinion, which is usually based on their own experience and the knowledge they have gained during their teaching careers, and the same applies to the new generation of online teachers. Even though a pedagogy based on collaborative learning was chosen, it did not motivate and encourage all of the students to study during the course. Collaborative knowledge creation entails problem solving and addressing meaningful issues, and the entire learning community must be involved. Scanlon et al. (2015, p. 7) point out that the greatest benefits of learning design, learning analytics and open education resources can be attained through an integrated approach where design, technology and pedagogy are combined. In our study, one of the first challenges was the discrepancy between the number of those who had enrolled on the course, and those who actually started their studies. Even though it was believed that a sufficient number of participants had been assigned to each study group, only two thirds of the study groups started their studies according to the syllabus. The course completion rate was about ten percent (10, 3%). When offering MOOCs in the future, the demand for such courses ought to be taken into account, and according to Onah et al. (2014), it is important to pay closer attention to the completion rates of MOOCs. Although thousands of participants enrol on MOOCs, the completion rate for most courses is below 13 %, and this was the case in the course examined in this study.

Amongst the reasons for these considerable drop-out percentages, Onah et al. (2014) list a lack of motivation or time, difficult course topics, lack of support, lack of (online) learning skills, unpleasant experiences, expectations that differ from reality, starting the course late, and also peer evaluation.

Since the number of participants in our featured study was rather small, no wider or general conclusions can be drawn on the basis of the study results. The data remained rather scant due to the significant number of drop-outs, and the course in question was a micro open online course, not a massive open online course. Therefore, the results of this study should be deciphered and applied with care. Although a need for continuing pedagogical development, piloting and research can be seen in this area, our extensive experience as online teachers has revealed one indisputable fact: the learning results and the degree to which the studies are considered as meaningful are connected to the issues of collaborative work and knowledge creation.

CONCLUSION

The results of this study show that dialogical, authentic learning and collaborative knowledge creation require more practical scaffolding, guidance and tutoring. Structuring a learning process based on the DIANA model is challenging, because it is precisely the authentic, dialogical and collaborative knowledge creation that is in danger of being lost in the process if the required activities and support structures remain insufficient. The results of this study clearly revealed these critical issues. The pedagogical model itself provided no solutions to the main problem typical of MOOCs, namely the substantial drop-out percentage. The key question is one of the underlying pedagogy, which will inevitably affect the learning experience and the learning itself. In the future, a stronger pedagogic approach is needed to develop MOOCs and to ensure their quality of teaching. When choosing a pedagogical model, one must take into account the learning objectives, the number of participants, the learning environment, and also the way the course is implemented. As promising as they are, MOOCs are only as strong as their design. Therefore MOOC designers need to consider the balance between course completion and deep-oriented learning.

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