MOOC – supporting continued vocational training

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Abstract
Researchers have been interested in Massive Open Online Courses (MOOCs) from different viewpoints - the engagement and motivations of students, course completion and retention rates as well as course designs. MOOCs attract a wide range of people from different backgrounds, all of whom have different aims. The main focus of the majority of research on MOOCs has concerned university or further education courses. However, researcher interest in the utilisation of MOOCs for continued vocational training has been low.
The aim of this paper is to discuss how MOOC learning can support the learning of working life skills and knowledge by a workforce. This research focuses on two MOOCs called "Nearly zero-energy buildings" and "Sustainable energy solutions," which are new EU level topics in the energy and building sector but not yet widely established as courses in education institutions. We are especially interested in students who are employed full-time or part-time and what motivates them, which learning methods, materials and assignments appeal to and benefit them the most. In addition, our aim is to find out what kind of continued vocational training method MOOC is. The data consist of Moodle analytics, student feedback, questionnaire data and interviews with both students and employers. Self-determination theory (SDT) is used as the theory for the study and identifies three innate human needs – competence, relatedness, autonomy – that have to be nurtured from within a learning environment in order to ensure the optimal functioning and growth of students.

Keywords: MOOC, motivation, engagement, continued vocational training, Self-Determination Theory (SDT)

1. Introduction

Over the past years, Massive Open Online Courses (MOOCs) have been the subject of several researches. At the European level, MOOCs have been defined as "courses designed for large numbers of participants that can be accessed by anyone, anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free" (OpenupEd, 2015).
MOOC studies have covered, for example the interest, engagement, motivations and autonomy of MOOC students, disengagement, course completion and retention rates as well as course designs (Hew, 2016; de Freitas, Morgan & Gibson, 2015; Macleod, Haywood, Woodgate, & Alkhatnai, 2015; Veletsians, Colleier, & Schneider, 2015; Bayne & Ross, 2014; Khalil & Ebner, 2014; Jordan, 2013). The majority of research on MOOCs has focused on university and further education courses. However, researcher interest in the utilisation of MOOCs for continued vocational training has been low. ,
The aim of our study is to find out how MOOC learning can support the learning of working life skills and knowledge by a workforce. We are especially interested in students who have full-time or part-time jobs and what motivates them, which learning methods, materials and assignment appeal to and benefit them the most. Furthermore, we aim to find out what kind of a continued vocational training method MOOC is. We use the student-teacher dialectic framework within the self-determination theory (SDT) as a background theory model for our analysis. The framework draws attention to the quality of student engagement in a learning situation in order to strengthen the students' inner learning motivation (Reeve 2009). SDT has been applied to researches in different educational sectors and education levels, including some MOOCs (see Zuan, 2016). However, we did not find any research where the Student-teacher dialectic framework within SDT has been used as such in MOOCs.

Our research focuses on two pilot MOOC courses: “Nearly zero-energy buildings” and “Sustainable energy solutions”. These courses are developed in an ongoing three-year (2015-2018), EU-funded project by expert teams, which consist of teachers, senior lecturers and online pedagogy and educational technology experts from 10 Finnish Universities of Applied Sciences. In addition, some energy sector experts from building and energy sector companies have been involved with the course content planning. Both the above-mentioned courses have different 1-3 ECTS sub-courses (MOOC modules), which can be studied separately. For this particular research project, we have chosen four modules that are ready and hence available for everybody free of charge on the moodle.amk.fi platform; Module 1: Energy efficiency of building, Module 2: Energy efficiency calculation, Module 3: Energy efficiency requirements and Module 4: Solar energy.
The course topics are new in the energy and building sectors, as the need for them has arisen due to the new EU directives. Building and energy experts such as building inspectors, designers and architects in all parts of Finland need continued vocational training. The MOOCs we research have been developed to fulfil this educational gap. Some of the MOOC participants are part-time or full-time employees from the building and energy sector, and they are the target group of our study.

2. Overview of MOOCs

Various types of MOOCs have been suggested depending on the learning approach in the course. These are e.g. xMOOCs, cMOOCs and sMOOCs. xMOOCs tend to have a more traditional teacher-centred learning approach with content presented through short video lectures and learning tested through quizzes. cMOOCs emphasise creation, creativity, autonomy, and social networked learning. (Siemens, 2012; Clow, 2013.) sMOOCs stress intercreativity to work towards collective intelligence (Acedo & Cano, 2016; Brouns et al., 2015). Clark (2013) has defined the following taxonomy for MOOCs from the pedagogical perspective: tranferMOOCs, madeMOOCs, synchMOOCs, asynchMOOCs, adaptiveMOOCs, groupMOOCs, connectivistMOOCs and miniMOOCs. According to this taxonomy, madeMOOCs tend to be of a more vocational nature, and Clark has therefore named them as VOOCs (Vocational Open Online Courses), some of which, according to Clark (2014), are already available in the UK. Also, large MOOC providers, such as Udacity, Coursera and EdX, seem to provide MOOC courses which target working professionals.
In this study, we use the general concept of MOOCs even though our MOOCs are very similar to xMOOCs. They include video lectures, reading materials, and the videos are available as pdf files. Evaluation consists of automatically evaluated multiple choice quizzes, short answer questions where participants are asked to answer in one or two words or numbers, written reports and some peer reviewing tasks. There is no starting date nor a deadline for submitting assignments. In each module there is a discussion forum where participants can ask questions.
Even though the enrolment rate into MOOCs is high, the average MOOC course completion rates are low. Multiple reasons for student drop-outs have been suggested as e.g. lack of time, starting late, unrealistic expectations, course difficulty and lack of support, feelings of isolation and the lack of interaction, insufficient background knowledge, lack of digital or learning skills, and earlier bad experiences. (Khalil & Ebner, 2014; Onah, Sinclair, & Boyatt, 2014.) However, it should be realised that the completion rate is not a relevant metric to measure student engagement in MOOCs (Hew, 2016). Nor does it mean that MOOCs are ineffective (Rai & Chunrao, 2016). Students may e.g. only be interested in particular topics or materials (Wang & Baker, 2015).
Gamage, Perera, and Fernando (2014) identified the following 10 factors that lead to effective learning in MOOCs: interaction, collaboration, motivation, network community, pedagogy, assessment, content/material, technology, support for learners, and usability. According to Rai and Chunrao (2016), personal factors have a more significant effect on students' success and failure in online learning than the external environment.

3. Motivation and Engagement

Motivation to participate in MOOCs is one of the most important factors that may prevent students from completing a MOOC (Khalil & Ebner , 2014). In addition, student engagement can influence student retention (Hew, 2016; Xiong et al, 2015). Motivation is significantly predictive of student course engagement. In turn, engagement is a strong predictor of retention. If students are not engaged, motivated and committed

enough, they might drop out even before the first assignment is due (de Freitas et al, 2015). Motivation is a force that energizes and directs behaviour (Reeve, 2009). Motivation concerns aspects of activation and intention, like energy, direction, persistence and equifinality (Ryan & Deci, 2000). Factors like future economic benefit, development of personal and professional identity, challenge and achievement as well as enjoyment and fun might influence students' motivation to learn (Yuan & Powell, 2013).

According to self-determination theory, motivation is either intrinsic or extrinsic. Intrinsically motivated people inherently seek out new challenges, are keen to learn and exercise their capacities and explore different matters. People who have extrinsic motivation perform an activity in order to obtain some outcome separated from the activity itself (Ryan & Deci, 2000). Extrinsic motivation can vary greatly in the degree to which it is autonomous.

In virtual environments, motivational factors, such as interest, enjoyment and clear goals, are important influences on students' motivation (Ainley & Armatas, 2006). Belanger and Thornton (2013) identified the following factors that affect students` motivation in MOOCs:

- To support lifelong learning
- To gain an understanding of the subject matter, with no particular expectation for completion or achievement
- For fun, entertainment, social experience and intellectual stimulation
- Convenience, often in conjunction with barriers to traditional education options
- To experience or explore online education

Engagement is a complex phenomenon that involves both observable and unobservable psychological events and positive emotions (Appleton, Christenson, & Furlong, 2008). In a learning situation, a student can be engaged in a particular learning activity or in a particular course (Reeve, 2012). Cassidy, Breakwell, and Bailey (2013) identified workload, task design, level and nature of facilitation as the main factors that have an impact on student engagement in MOOC. Anderson, Huttenlocher, Kleinberg, and Leskovec (2014) conceptualised five styles of student engagement in MOOCs: viewers, solvers, all-rounders, collectors and bystanders.

Motivation and engagement are inherently linked, influencing one another. Those researchers who have interest in motivation most often pay attention to engagement as an outcome of motivational processes. In turn, those who study engagement investigate motivation more like a source of engagement. Motivation is more subjectively experienced when engagement is more objectively observed. (Reeve, 2009.)

4. Student-Teacher Dialectic Framework Within Self-Determination Theory

As a background theory model for our research data analysis, we used the student-teacher dialectic framework within self-determination theory (SDT). We are interested in our target group's motivation in MOOCs, and SDT focuses on the relationship between the students' motivation and the learning environment that in our case is an MOOC. Even though the framework uses the viewpoint of classroom affordances, we wish to find what similar and different features the framework can offer in the MOOC environment. SDT should anyhow apply across learning contexts at all levels of education and across diverse cultures (Niemiec & Ryan, 2009).

Figure 1 describes a dialectical relationship between a student's motivation and the learning environment within a SDT perspective. The high quality of students' motivation and engagement arises both from inherent and acquired sources of motivation. Students' inherent sources of motivation include intrinsic motivation and three psychological needs of autonomy, competence and relatedness. Competence refers to a person's effectiveness to perform a skill or task. Autonomy is the feeling as though they have power over their behaviour like control over their learning activities. Relatedness refers to the need to both feel like a part of a group as well as feeling connected with others within the same group. (Ryan & Deci, 2000.) Students' acquired sources of motivation include self-endorsed values, intrinsic goals and personal aspirations that are internalised through cultural experience and self-reflections, and vary from student to student. In addition, they include students' different individual orientations and their cause and effect relationship. (Reeve, 2012.)

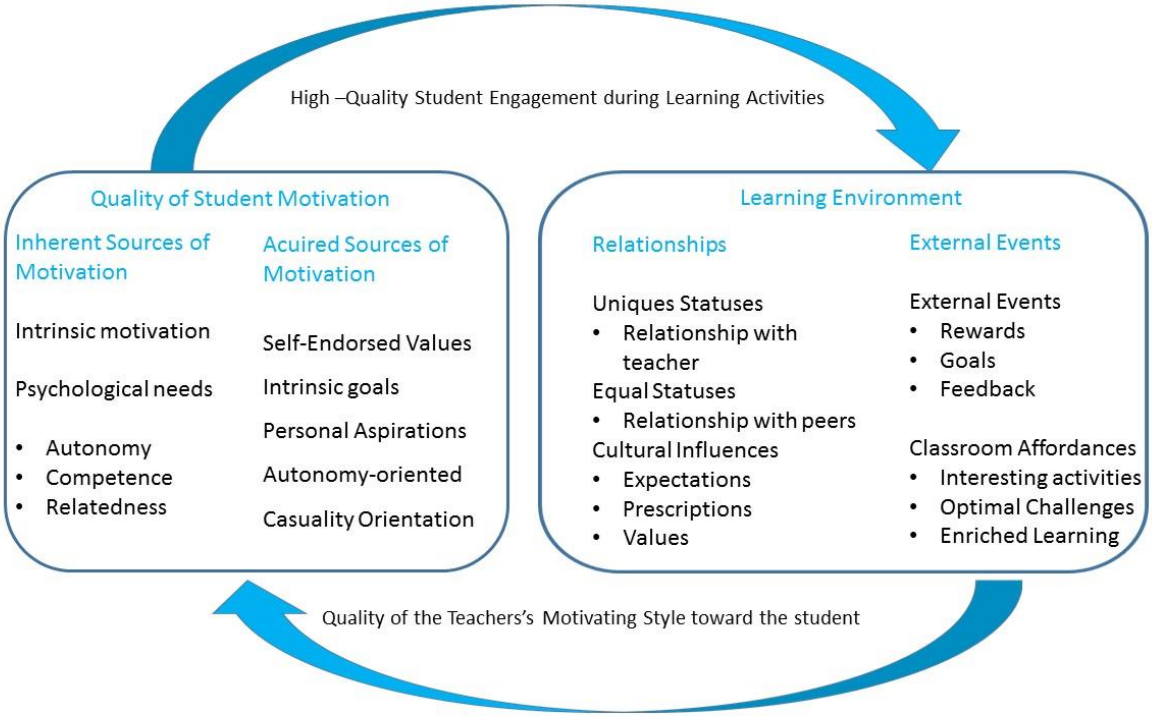

Figure 1 Student-teacher dialectical framework within self-determination theory.

Every learning environment has specific external features, such as learning goals and structures, different types of materials and assignments, rewards and feedback systems (Reeve, 2012). Educational practices that support a student's satisfaction of autonomy, competence and relatedness are associated with greater intrinsic motivation and autonomous types of extrinsic motivation. Both the teacher's orientation and specific aspects of learning tasks are perceived as autonomy supportive, and are therefore conducive to a student's intrinsic motivation. Students tend to learn better and are more creative when intrinsically motivated, particularly on tasks requiring conceptual understanding. The way in which learning tasks are introduced affects the student's satisfaction of autonomy and competence, and therefore has an influence on the student's learning. The student's competence can be supported by introducing learning activities that are optimally challenging and allow students to test and to expand their capabilities. Students will only engage and personally value activities they can understand and master. It is also important that students are provided with the appropriate tools and feedback to promote success and feelings of efficacy, thus providing relevant information on how to master the tasks at hand. (Niemiec & Ryan, 2009.)

Other classroom influences are interpersonal relationships, including e.g. those with teachers, peers and study-related groups, like workplaces and communities as well as social and cultural forces, such as values and learning climate. External events and interpersonal relationships provide students with opportunities, hindrances and an overall climate in which their self-motivation grows. The important factor in the learning environment is the quality of the teacher's motivating style, whether it is autonomy supportive or controlling. (Reeve, 2012.)

5. Research data and questions

Our research data consists of Moodle analytics from all four MOOC course module participants (157 altogether), including each module's performance measures (percentage of watched materials and submitted assignments). In each course module, there was a section for the course feedback, which 38 out of 157 total number of students answered. We also conducted a questionnaire to all 157 course modules participants. Only 17 students answered it. Finally, we interviewed 12 full-time or part-time employees and 7 employer representatives from energy and building sector companies, whose employees are participating in one of the four MOOC modules. For the interview, we chose participants among those employee participants who had a company email address. We recorded the interviews and transcribed them afterwards.

We analysed all of the above-mentioned data using the student-teacher dialectic framework within SDT as an analysing matrix. We specifically looked for factors that represented different aspects of students' motivation i.e. autonomy, competence, relatedness, learning goals and orientations as well as learning environment features. Only six full-time or part-time course module participants answered our questionnaire. As the answers to the questionnaire, as well as comments given as part of the course feedback, were very similar to what we learned from the interviews, we have therefore chosen to combine these results for reporting purposes.

Our research questions are:

RQ 1 What motivates full-time and part-time employees to participate in MOOCs? In Figure 1, this question is related to the quality of the student's motivation.

RQ2 What learning methods and materials appeal most to full-time and part-time employed MOOC students? In Figure 1, this question is related to learning environment.

RQ3 What kind of a continued training method is a MOOC?

6. Results

In Table 1, we present each course module's participant percentages of performance measures taken from Moodle. The numbers in each section represent the number of students. The total number of students mentioned in Table 1 is the number of registered participants in a module by the time of our Moodle analytics (15.8.2017). The total number of registered participants to all four modules was 157 by that time. Participants could choose what modules they study, and therefore the amount of all registered students and the number of participants in each course module differs, as not all participants have chosen all the modules. Modules 1 and 4 have so far had the most participants.

As shown in Table 1, the course completion rate of each module is somehow low. Only one student in module 2 and seven in module 4 have completed the whole course. The number of those who have not yet even opened the first page is high: 58 % (64 out of 110 participants) in module 1 (Energy efficiency of building), 45 % (21 out of 46 participants) in module 2 (Energy efficiency calculation), 65 % (13 out of 20 participants) in module 3 (Energy efficiency requirements) and 56 % (76 out of 134 participants) in module 4 (Solar energy). The conclusion is that the motivation to complete the course differs. There are two extremities: students either study the whole course or drop out without ever opening the course. Some students are just browsing the material and bouncing from one site and assignment to another without any intent on completing the course.

Table 1 Performance measure of MOOC modules, number of students

Module	0 %	1-20 %	21-40 %	41-60%	61-80%	81-99 %	100%	Total
1	64	14	2	6	21	2	0	110
2	21	12	5	3	3	1	1	46
3	13	1	5	1	0	0	0	20
4	76	39	6	2	4	0	7	134

Our first research question was: RQ 1 What motivates full-time and part-time employees to participate in MOOCs?

All of our interviewees registered into the courses by their own choice. Our interviewees' (employees) motivation to participate in MOOCs arises from the desire to learn. We asked them about the reason for their participation in MOOCs, and all of them mentioned that the course contents are relevant to their present or future work. Therefore, they want to deepen their knowledge and skills. Some have a general interest in the energy field. Some interviewees also showed personal interest in the course topics. They need the information at home or during their leisure time. Some mentioned that they want to share the knowledge with their customers.

> *HS2M I enrolled to gain new information, because the world is changing rapidly and therefore I need to stay "on top of the waves" in order to know what is new and up-and-coming.*
> *HS4M This interests both me and the citizens who make inquiries, and therefore I need to be up to date.*
> *HS7M It gives me background information and know-how in my research, priority to research purposes, but I also have general interests in the topic.*
> *HS5F: I have always been interested in developing myself and this course seemed to handle actual matters, so I decided to participate.*

Some interviewees (employees) mentioned that they were already familiar with the course content and would therefore like to have had more profound information. That may be considered as a competence factor, but it also relates to classroom affordances, as the content did not challenge them enough.

> *HS6F I browsed some of the course content and did some assignments. Nevertheless, as there was nothing new for me, I was not motivated to continue.*

Independent learning is a very important factor to full-time and part-time employees. Online learning requires self-directed learning competence. Nearly all interviewees (employees) had previous experience in online learning, and they felt competent enough to study by themselves. We identified several components supporting the autonomy such as free timetables, studying at their own pace, the power to decide what materials to study and what not to study, and the possibility to do the assignments, watch videos and read the material as many times as they wanted.

> *HS1M I really liked this way of studying, because I was able to study whenever I had time to do it.*
> *HS2M In my opinion, it is good that the timetable is flexible so that it is not compulsory to study certain materials at a given time. I appreciate that I can choose my study pace.*
> *HS11F I would not suppose that in a free course there is somebody guiding you all the time. At the workplace, you must be self-directed, if you cannot perform independently, things do not work. Therefore, it is good that it is a self-directed course.*

The data shows that students with strong autonomy want to set the learning outcome on their own, and the learning outcomes are related to their intrinsic goals like a new job. We asked, "How will you benefit from the knowledge and skills you gained from the course?" Most of them answered, "In my present work.", "I want to search for new working possibilities. I hope I can use the knowledge to my benefit in my future workplace."

In the original student-teacher dialectic framework within SDT, the learning environment has specific external features, such as learning goals and structure. It seems that in a MOOC environment, the students set these features themselves, and they arise from the students' intrinsic goals.

The interviewees (employees) also mentioned some aspects that narrowed their autonomy, and because of that, their studying slowed down. These aspects were e.g. lack of instructions or insufficient instructions, unclear structure of the course, nobody from whom to ask, no technical help, inadequate skills to use the learning platform, and the fact that the course material was not always available when students would have had time to study. All mentioned that the lack of time slowed down the progress of studying or blocked it completely.

> *HS11F It was frustrating because there were unclear instructions on how long the assignments are, and you had to click many times to get the necessary material for the assignment.*

HS3F My employer said that there is an interesting course, please take a look at it. Well, I just wanted to have the learning material and use it as a handbook. But I don't have time to even open it.

HS10M: From my point of view, it would have been easier if all the materials and assignments had been available when the course started, as I would have had time to study back then. Now, the situation at work and during my leisure time is such that I cannot invest time in studying.

All students had sufficient competencies and skills to complete the courses. Not all had the same level of technical competence, but they assured us that while studying the content, they also learned how to use the learning platform. Regarding relatedness, it seems that the MOOCs are suitable for those who have strong autonomy. A majority of the students mentioned that they had no need to be connected with other students. Some interviewees (employees) claimed that interaction was not needed between the other students, but interaction with the teacher would have been desirable in some cases, e.g. live online video sessions.

HS2M For a strong-minded person like me, it is better to study on my own. I do not need the presence of a teacher nor other students.

HS4M I did not need any interaction and was not interested in participating in the discussions. It depends probably on the character of the person.

HS10M I did not miss interaction with the other students but more with the educators. HS10M: Maybe a discussion forum to ask questions, to get answers and instructions. HS7M: I would have expected more online video sessions.

On the other hand, some interviewees said it would have been nice to have had interaction with the other students.

HS7M I would have liked to have had interaction. It would have clarified the studies and it would have been easier to follow the pace of the other students.

There were a couple of participants from the same company, but they did not have time during the work to discuss course-related issues.

HS8M: A colleague is in the same course, but we are overbooked at this moment, so I have to study at home late in the evening. So, my colleague isn't around anymore.

Our second research question was: RQ2 What learning methods and materials appeal most to full-time and part-time employed MOOC students?

The attitude towards using video as learning material was contradictional: interviewees (employees) either liked them or considered them monotonous. Those who liked them said it was an easy way to get information, that videos make learning more alive and were easy to use. Some interviewees said that it is useful to have the videos in text-format as a PDF file as well, as it made reviewing the video easier. Some mainly watched the videos only. The interviewees said that the right length for a video to be watched in one sitting during the workday is approximately 10 – 20 minutes. Few participants would have liked to have more links to energy and building sector-related extra materials that could have been studied independently.

HS9F Video material is practically the same as the lecture. Remotely, it is good that you can watch them whenever it is convenient to me. That kind of material suits me very well. HS3M The strength of the video lectures is that you can stop it and rewind backwards if you need to check something.

HS4M First I watched the video then read the text, as it is easier that way to recall the content.

HS6F I found the video material difficult to watch. I prefer text. At work, when the phone rings, it is difficult to watch videos intensively.

HS7M: I have not thoroughly studied the text-format material. I have only browsed them and checked things. Videos have been functional.

HS5F: I like reading more. Concentration may be disturbed when listening, but it depends on the person of course and how the subject/matter is presented.

Two interviewees (employees) said that it would have been nice to have some podcasts as learning material. It would have then been possible to listen to the podcasts anywhere, i.e. on the way to work. Opinions towards the assignments also varied: some interviewees (employees) liked multiple-choice quizzes, as they were easy to fill out, a good way to rehearse the content and test understanding. One would have liked to have the correct answers after the quiz in order to learn. Some found them useless and preferred assignments where more independent information retrieval is necessary. Short answer questions were good, in one interviewee's opinion, given that the expected answer format was made clear. Some interviewees preferred multiple small assignments instead of one or two larger ones, as they are easier to finish when time is limited. One interviewee stressed that in working life, they do not write essays – they write reports and abstracts, and therefore the same terminology should be used in the courses. Some mentioned that the assignments did not serve their needs, hence they did not complete them.

> *HS9F I learn better when I have to find the information by myself. On the other hand, I do not prefer very large assignments; I prefer smaller ones even though I have to make several of them.*
>
> *HS10M: Sometimes, the assignment did not serve my interest or needs in the best possible way.*

Nearly all interviewees (employees) liked that there was no timetable for returning assignments. One said that when studying among other things such as work timetables would have helped to complete the course sooner. Timetables would have been useful, for example, in that if students complete the assignment by a specific date, they can then participate in a particular session as a "reward". Nonetheless, if such timetables existed, they should not be used as a condition to participate in the course.

A majority of the interviewees (employees) said they did not need any certification from the studies. One mentioned that when having a permanent job, there is no need for a certificate. Interviewees' only motivation is to learn and gain the information needed. That is a kind of sign of a participant's intrinsic goals and motivation. One hoped that courses are credited so that it would be possible to gain a degree out of them.

> *HS10M: I do not need the certificate at the moment. I participate only to get the knowledge.*
>
> *HS11F: Not necessarily. If someone asks what I have learned, I can say that I now know these and these matters. If you have a certificate, and you later forget most of what you have learned, what use is the certificate then?*
>
> *HS8M: These kinds of courses should be credited so that you could do them in your own order along with work and little by little gain a degree out of them. So that you do not always have to be a student at an institution in order to get a degree. However, it was not my intention to participate in this course because of credits. To get information was the main reason.*

Finally, our third research question: RQ3 What kind of a continued training method is a MOOC?

Interviewees (employers) had a positive attitude towards employees' continued vocational training. Some of them had external educational partners, like universities, consulting companies or vocational training institutions. Companies are investing more and more in online training. It is an easy way to train employees, especially in situations where employee work is decentralised. However, interviewees (employers) said that MOOC, as a word or study method, is not familiar to them. One of the interviewees (employers) mentioned looking for training possibilities from Coursera, but was not aware of MOOCs. The interviewee (employer) suggested that it would be useful to have one web page where information is collected, e.g. several continued vocational training courses offered by different training institutions, organised by theme or sector area.

> *HE6F In some cases, I have looked for training possibilities from Coursera, if there would be something for one of our employees.*
>
> *HE4M If there is a special need to train individual employees; we search for information on national and international seminars and online courses.*

One interviewee (employer) who had participated in the planning of MOOC course modules said that it is important to involve employer representatives in course content planning, as they know what is needed. Still, the challenge is whether employers have time and resources for that. When asked how employers can

support their employees' continued vocational training, one interviewee answered that encouraging participation and giving information regarding these kinds of courses would be a good way. Nevertheless, the interviewee did stress the fact that individuals have different needs.

> *HE8F: It is of vital importance that employers are involved in the course planning, as they know the needs. But the question is whether they have time for that kind of work. Participation in course planning took me several hours but even more might have been needed. Anyhow, it is good to keep the link between the working life and educational institutions active so that the content is what is needed and just right. It would be good to have different experts from different places and sectors involved.*

In addition, to nearly all course participants, the meaning of the word MOOC was unclear. However, their opinions towards MOOCs as a method of continued vocational training were positive. One interviewee (employee) emphasized that one advantage of online learning is that it can be done anywhere, hence there is no need to travel to the training events, e.g. from northern Finland to the southern part of Finland. Another brought up that MOOCs are a good way to advance in one's career. Only one felt that the traditional face-to-face method is better.

> *HS8M: This is a great idea. Whatever the subject, if you want to learn and to gain knowledge, it is a great idea. It is possible to do everything at your own pace and in whichever way you want. This gives many people good possibilities to advance in their careers.*
>
> *HS10M: Maybe, for some type of training, it would be appropriate. But I personally think that a traditional training method is better, as it provides the possibility to interact and network.*

7. Conclusions

We realised that, in our study, the employed students' motivation to participate in MOOCs is rather intrinsic and based on personal aspirations. Students have the desire to develop themselves, learn new interesting things to help them cope better in their daily work or even get a better job. These results are similar to Yan and Bowel (2013) who discovered that future economic benefits and development of personal and professional identity might influence students' motivation to learn. Belander and Thornton (2013) identified gaining an understanding of the subject matter with no particular expectation for completion as one of the factors affecting students' motivation in MOOCs. Belanger and Thornton (2013) also distinguished that fun and entertainment might affect students' motivation in MOOCs. According to the student-teacher dialectic framework within SDT, these can be considered as interesting activities in a classroom. However, in this study, students did not mention these factors at all.

Students registered in the course modules by their own choice, wanted to set the learning goals by themselves and learn just what was necessary for them and what they thought their customers need to know. Students also wanted to share the information, knowledge and skills they learned with their colleagues and customers. Hence, the students' goals were intrinsic and their values more self-endorsed. Ainley and Armatas (2006) claimed that clear goals are important influences on students' motivation. If the students' motivation was extrinsic, for example the course was recommended by the employer, the engagement and motivation to complete the course was not as intensive as if the motivation was intrinsic. So, it seems that in this study, the autonomy of the psychological needs, intrinsic motivation and goals, as well as personal aspirations in the student-teacher dialectic framework within SDT, are the strongest driving forces for the students.

Competence is seen as a significant motivator in a framework. All our interviewees' jobs were somehow related to the course modules' content matter. They had competence enough to start studying. Some felt, however, that the content was too basic. They expected to gain deeper information about the subject. Because the intrinsic goals and personal aspirations were not met, these students did not have enough interest to continue their studies. In MOOCs that are targeted to students who are working and are supposed to have diverse prior knowledge on the course content, the materials and assignments should be versatile and multi-level in order for the course to meet the needs of various participants. Otherwise, these students' psychological need for competence might suffer.

In student-teacher dialectical framework, the relationship with the teacher and the peers is relevant. In this study, we discovered that in a MOOC environment, the psychological need of relatedness did not play a very

significant role. The reason could be that the students were more autonomy-oriented in their studying. In our study case, we found the relationship with other workers in the company and other work-related groups, e.g. the students' customers, to be more important. Therefore, we suggest that these relationships are supported more in a MOOC learning context in continued vocational training.

Classroom affordances can be seen as MOOC learning environment affordances as diverse and sufficiently challenging learning activities can enable the students to achieve their learning outcomes without the presence of teachers. In addition, good instructions for studying and a forum to ask questions will help the students to study by themselves. Videos and podcasts enrich learning and make it more interesting. That is also what the student-teacher dialectic framework within SDT requires. When it comes to the external events by the framework, the rewards of the students come from the self-set learning outcomes and the feedback from the employer and the customers.

Neither the employers nor the employees were very familiar with the MOOC as a word and a form of study before our interview. Employers stressed that the need to train employees varies between different companies: smaller ones have different needs than bigger ones. They said that MOOCs could probably solve some continued vocational training needs but at the same time, they stressed the presence of individual needs. Therefore, they would like to some extent participate in the planning of MOOC contents. That is why we suggest that when researching the usage of MOOCs in the context of continued vocational training, researchers should somehow recognise the needs of companies and regard workplaces as learning environments. Lack of time was one reason why our interviewed employees had not had the possibility to study sufficiently. If MOOCs are used in continued vocational training, it would be expedient if some time could be allocated for employees to study, even during the workday. In a workplace, the SDT's psychological need of relatedness could have more meaning if interaction between colleagues could be somehow enabled during a learning process.

Based on our study with relatively small target group, MOOCs seem to be a good model for some working individuals for continued vocational training, especially for those who do not need so much relatedness. So, VOOCs are welcome. In the future, more data is needed from the companies and organisations as well as full-time and part-time employees studying in MOOCs to gain a better understanding of this matter. Even though our data-analysing model, the student-teacher dialectic framework within SDT, is originally developed in a traditional classroom context, we could identify in it some relevant factors that fit the MOOC learning context as well. However, if this framework will be used in future researches, where the focus is on the learning of full-time and part-time employees, the working environment should then be taken into account as well. In general, for those researching MOOCs in the future, we recommend that they incorporate an understanding of the high level of different ways in which students motivate and engage. We believe this aspect to be much more insightful than a raw report of the number of students who enrolled in the courses or the number of students who obtained a certificate.

8. References

Acedo, S.O., & Cano, L. C. (2016). The ECO European Project: A New MOOC Dimension Based on an Intercreativity Environment. *The Turkish Online Journal of Educational Technology*, 15, 117-125. Retrieved from http://files.eric.ed.gov/fulltext/EJ1086187.pdf

Ainley, M., & Armatas. C. (2006). Motivational Perspectives on Students' Responses to Learning in Virtual Learning Environments. In J. Weiss, J. Nolan, J. Hunsinger & P. Trifonas (Eds.), *The International Handbook of Virtual Learning Environments*, Volume I, 365–394. The Netherlands: Springer. Retrieved from https://pdfs.semanticscholar.org/f9bc/a101763769a22df0733bc3388bc2fa3df30c.pdf#page=392

Anderson, A., Huttenlocher, D., Kleinberg, J., & Leskovec, J. (2014). Engaging with Massive Online Courses. Retrieved from https://www.cs.cornell.edu/home/kleinber/www14-courses.pdf

Appleton, J., Christenson, S., & Furlong, M. (2008). Student engagement with school. Critical conceptual and methodological issues of the construct. *Psychology in the Schools*, 45, 369-386. doi: 10.1002/pits.20303

Bayne, S., & Ross J. (2014). The pedagogy of massive online open course. The UK view. York: The Higher Education Academy.
Retrieved from https://www.heacademy.ac.uk/system/files/hea_edinburgh_mooc_web_240314_1.pdf

Belanger, Y., & Thornton, J. (2013). Bioelectricity: A Quantitative Approach. Duke University's First MOOC. Duke Center for Instructional Technology. Retrieved from https://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/6216/Duke_Bioelectricity_MOOC_Fall2012.pdf?utm_campaign=elearningindustry.com&utm_source=/good-bad-ugly-side-of-corporate-mooc&utm_medium=link

Brouns, F., Teixera, A., Morgado, L., Fano, S., Fueyo, A., & Jansen, D. (2015). Designing Massive Open Online Learning processes. The importance of the social element. Retrieved from http://dspace.ou.nl/bitstream/1820/7033/1/20151113_brouns_designingmassive.pdf

Camage, D., Perera, I., & Fernando, S. (2014). Factors affecting to effective eLearning: Learners Perspective. Retrieved from
http://www.dilrukshigamage.com/uploads/2/4/4/0/24405507/factors_affecting_to_effective_elearning-dilrukshi_gamage.pdf

Cassidy, D., Breakwell, N., & Bailey, J. (2013). Keeping Them Clicking. Promoting Student Engagement in MOOC Design. Retrieved from http://icep.ie/wp-content/uploads/2013/12/CassidyBreakwellBailey.pdf

Clark, D. (2013). MOOCs: taxonomy of 8 types of MOOC. Retrieved from http://donaldclarkplanb.blogspot.co.uk/2013/04/moocs-taxonomy-of-8-types-of-mooc.html

Clark, D. (2014). MOOCs have burst out of higher education into vocational learning. VOOCs have arrived. TES Opinion. Retrieved from https://www.tes.com/news/further-education/breaking-views/moocs-have-burst-out-higher-education-vocational-learning

Clow, D. (2013). MOOCs and the funnel of participation. In: Third Conference on Learning Analytics and Knowledge (LAK 2013), 8-12 April 2013, Leuven, Belgium, pp. 185–189. Retrieved from http://oro.open.ac.uk/36657/1/dougclow-lak13-revised-submitted.pdf

de Freitas, S. I., Morgan, J., & Gibson, D. (2015). Will MOOCs transform learning and teaching in higher education? Engagement and course retention in online learning provision. *British Journal of Educational Technology,* 46, 455–471. doi:10.1111/bjet.12268

Hew, K. (2016). Promoting engagement in online courses: What strategies can we learn from three highly rated MOOCS. *British Journal of Educational Technology,* 47, 320-341. doi:10.1111/bjet.12235

Jordan, K. (2013). MOOC completion rates: The Data. Retrieved 15.3.2017. Available at: http://www.katyjordan.com/MOOCproject.html

Kahil, H., & Ebner, M. (2014). MOOC Completion Rates and Possible methods to Improve Retention – A Literature Review. *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* 2014 pp. 1236-1244. Chesapeake. VA: AACE. Retrieved from https://www.scribd.com/document/231118971/MOOCs-Completion-Rates-and-Possible-Methods-to-Improve-Retention-A-Literature-Review
https://www.researchgate.net/profile/Martin_Ebner2/publication/306127713_MOOCs_completion_rates_and_possible_methods_to_improve_retention-A_literature_review/links/57bb349c08aefea8f0f44ce9.pdf

Macleod, H., Haywood, J. Woodgate, A., & Alkhatnai, M. (2015). Emerging patterns in MOOCs: Learners, course designs and directions. *TechTrends*, 59, 56-63. doi: 10.1007/s11528-014-0821-y

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination to educational practice. *Theory and Research in Education, 7*, 133–144. doi: 10.1177/1477878509104318

Onah, D. F. O., Sinclair, J., & Boyatt, R. (2014). Dropout rates of Massive Open Online Courses: Behavioural Patterns. In: 6th International Conference on Education and New Learning Technologies, Barcelona, Spain, 7-9 Jul 2014. Published in: EDULEARN14 Proceedings pp. 5825-5834. Retrieved from http://wrap.warwick.ac.uk/65543/1/WRAP_9770711-cs-070115-edulearn2014.pdf

OpenupEd. (2015). Definition Massive Open Online Courses (MOOCs) https://openuped.eu/images/docs/Definition_Massive_Open_Online_Courses.pdf

Rai, L., & Chunrao, D. (2016). Influencing Factors of Success and Failure in MOOC and General Analysis of Learner Behavior. *International Journal of Information and Education Technology*, 6, 262-268. doi: 10.7763/IJIET.2016.V6.697

Reeve, J. (2009). Understanding Motivation and emotion. 6th Edition. Wiley.

Reeve, J. (2012). A Self-determination Theory. Perspective on Student Engagement. In S.L. Christenson et al. (Eds.), *Handbook of Research on Student Engagement*, 149-172. doi: 10.1007/978-1-4614-2018-7_7

Ryan, R., & Deci, E. 2000. Self-determination theory and the facilitation of intrinsic motivations, social development, and well-being. *American Psychologist,* 55, 68-78. doi: 10.1037110003-066X.55.1.68

Siemens, G. (2012). MOOCs are really a platform. Retrieved from http://www.elearnspace.org/blog/2012/07/25/moocs-are-really-a-platform/

Xiong, Y., Li, H., Kornhaber, M.L., Suen, H.K., Pursel, B., & Goins, D.D. (2015). Examining the Relations among Student Motivation, Engagement, and Retention in a MOOC: A Structural Equation Modeling Approach. *Global Education Review*, 2, 23-33. Retrieved from http://files.eric.ed.gov/fulltext/EJ1074099.pdf

Yuan, B. L., & Powell, S. (2013). MOOCs and Open Education: Implications for Higher Education. A white paper. Publications from the Centre for Educational Technology, Interoperability and Standard. Retrieved from http://publications.cetis.org.uk/wp-content/uploads/2013/03/MOOCs-and-Open-Education.pdf

Zuan, M. (2016). Chinese university students' acceptance of MOOCs: A self-determination perspective. *Computers and Education,* 92-93, 194-203. doi: 10.1016/j.compedu.2015.10.012

Veletsians, G., Colleier, A., & Schneider, E. (2015). Digging Deeper into Learners' Experiences in MOOCs: Participation in social networks outside of MOOCs, Notetaking, and contexts surrounding content consumption. *British Journal of Educational Technology,* 46, 570-587. doi: 10.1111/bjet.12297/abstract

Wang, Y., & Baker, R. (2015). Content or platform: Why do students complete MOOCs? *MERLOT Journal of Online Learning and Teaching,* 11, 17-30. Retrieved from http://jolt.merlot.org/vol11no1/Wang_0315.pdf