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## **SUPPORTING VIRTUAL MOBILITY SKILLS IN A MOOC: PRELIMINARY RESULTS**

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### **Abstract**

In the last years, the concept of *Virtual Mobility* has receiving a growing attention from educational policy makers and institutions, because it has the potential to make more accessible and effective students and teachers mobility in Higher Education. Virtual Mobility could be defined as institutional ICT-supported activities that trigger or facilitate international collaborative experiences in the context of teaching and/or learning. Despite the interest, there is still a few empirical researches regarding actual effectiveness of Virtual Mobility implementation and which technological solutions could be adopted. The present paper describes a research project aimed at designing an Open and Accessible Virtual Mobility Massive Open Online Course, by involving students and teachers from six European countries and higher education institutions. 716 participants completed and assessed the Open Virtual Mobility MOOC. Participants expressed a positive evaluation of different MOOCs features: (a) Badges; (b) Technical features; (c) Gamification. Four out of eight MOOCs obtained the highest evaluation: (a) Collaborative learning; (b) Autonomy-drive learning; (c) Open-mindedness; (d) Intercultural skills. Future research trajectories would be described.

### **Introduction**

Many institutional mission statements and national higher education strategies aim to prepare students to live in a globalized world in which they are being challenged to become global citizens (Teichler, 2004). The strategies to achieve the internationalization goal in higher education have been changed their nature in recent years. Among these, virtual mobility experience and projects have been developed to complement or substitute for physical mobility (de Wit & Hunter, 2016). Virtual mobility initiatives were indicated as one of the cost-effective ways to increase the access to educational mobility by Maastricht message in 2009 (ICDE Executive Committee, EADTU Executive Committee, 2009). According to the European Commission, youth mobility and academic mobility can foster

a genuine European area of knowledge and contribute to the competitiveness of the European economy.

Despite the growing acknowledged of Virtual Mobility, only a few researches have investigated the impact of Virtual Mobility initiatives on participants, and most of them includes small scale studies (Hilliard, 2004; Frydenberg & Andone, 2010; Costa & Balula, 2014; Poce, Amenduni, Re, & De Medio, 2020). A large-scale study was conducted by Poulová, Černá, and Svobodová (2009) with a group of more than 2000 participants in a time-frame project of four years to assess the efficiency of a Virtual Mobility program that involved 8 European Universities. They found out that less than 50% of students who started the program passed their subject and gained the final credit. From the analysis of a survey, they identified different reasons of the students' drop-out, included a lack of self-regulated students' skills, especially in terms of time management and study-goal settings. Although more research is necessary to understand what are the most important variables of a successful Virtual Mobility experience, the results of the previous experience suggest the critical role of participants' transversal skills in Virtual Mobility Experience. Rajagopal and Firssova (2018) recently identified 8 transversal knowledge and skills necessary to be involved in a Virtual Mobility experience, by applying a group concept mapping methodology and involving 49 experts in the domains of virtual mobility: (a) Intercultural Skills; (b) Collaborative learning; (c) Autonomy-driven learning; (d) Networked Learning; (e) Media and digital literacy; (f) Active self-regulated learning; (g) Open mindedness; (h) Knowledge of Virtual Mobility and Open Education.

A Massive Open Online Course (MOOC) aimed at developing the eight transversal skills identified by Rajagopal and Firssova (2018) has been developed by the authors of the paper in the context of the Erasmus+ project "OpenVM: Opening Education for Developing, Assessing and Recognising Virtual Mobility Skills in Higher Education". The project is based on the idea that VM could be enhanced by adopting the principles of open education in the Open Virtual Mobility MOOC, a massive open online course aimed at developing Virtual Mobility Skills in higher education students (Buchem et al., 2018; Buchem, Tur, & Urbina, 2018). The need to adopt a non-formal approach to virtual mobility based on the principles of Open Education has been recognized by many authors (Tovar & Lesko, 2014; Wilson et al., 2011). Open education is understood as a mode of undertaking education using digital technologies and providing alternative, less restrictive access routes to formal and non-formal education. This broad perspective enables a comprehensive view, thus encompassing, for instance, Open Educational Resources (OERs), MOOCs, and recognition of open learning. MOOCs are now being considered and applied by many institutions around the world as a valid internationalization instrument (Knight, 2014). However, Amirault and Visser (2010) show that virtual program offerings do not

automatically cross borders, nor result in the same effects everywhere. The context of the partnership of the European Project allows to involve students from 6 European countries and institutions: Roma Tre University (Italy); Beuth University (Germany); Universitatea Politehnica Timisoara (Romania); Universitat de les Illes Balears (UIB), AUNEGE, Open Universiteit – Welten Instituut (Netherlands).

## **The Open VM MOOC design and structure**

The aim of the Open VM MOOC is to help educators and students developing a defined set of VM skills and applying them to Virtual Mobility programs, actions and activities in various academic disciplines (Yuan & Powell, 2013). The MOOC Canvas (Alario-Hoyos, Pérez-Sanagustín, Delgado-Kloos, 2013) was adopted to support the design, and to promote discussions between the different project partners involved in the creation of a MOOC. In line with the features proposed by Bates (2015), the OpenVM MOOC was conceived in conformity with the xMOOC definition.

Eight areas have been identified (Rajagopal & Firssova, 2018) as main contents for the OpenVM MOOC: (a) Intercultural Skills; (b) Collaborative learning; (c) Autonomy-driven learning; (d) Networked Learning; (e) Media and digital literacy; (f) Active self-regulated learning; (g) Open mindedness; (h) Virtual Mobility Knowledge. For each area, a miniMOOC was created. Three levels are then proposed for each miniMOOCs: (a) foundation level: focused on knowledge acquisition; (b) intermediate level: focused on knowledge application in a collaborative learning environment; (c) advanced level: focused on self-reflection and meta-reflection. Each miniMOOC has a pre-assessment activity: participants are required to fill in a quiz and, according to the score they obtain, they will be directed to the foundation level, intermediate level or advanced level. Each combination between the level and the miniMOOC is defined a subMOOC. Thus, the OpenVM MOOC is composed by 24 subMOOC, 8 miniMOOCs for 3 levels (Figure 1). Each subMOOC has different forms of assessment and tasks. More specifically, in the foundation and in the intermediate levels there are mainly quizzes (e.g. multiple choices, true or false and drag and drop exercises), whilst in the advanced level there are also e-portfolio and peer-assessment activities. In the intermediate level, there are also collaborative learning activities, supported by the use of the Matching tool, an algorithmic solution for building learning groups (Konert, Burlak, & Steinmetz, 2014). At the end of each subMOOC, participants obtain a badge that certifies the skills acquired in that specific subMOOC.

## **The pilot-phase iterations**

The pilot-phase was realized in order to understand how OpenVM MOOCs participants assessed the quality of the MOOC main components. We tried to answer the following research questions:

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- To which extent students enjoyed the OpenVM MOOC design and its main components?
- Are there any differences in the assessment of the 8 miniMOOCs and subMOOCs?

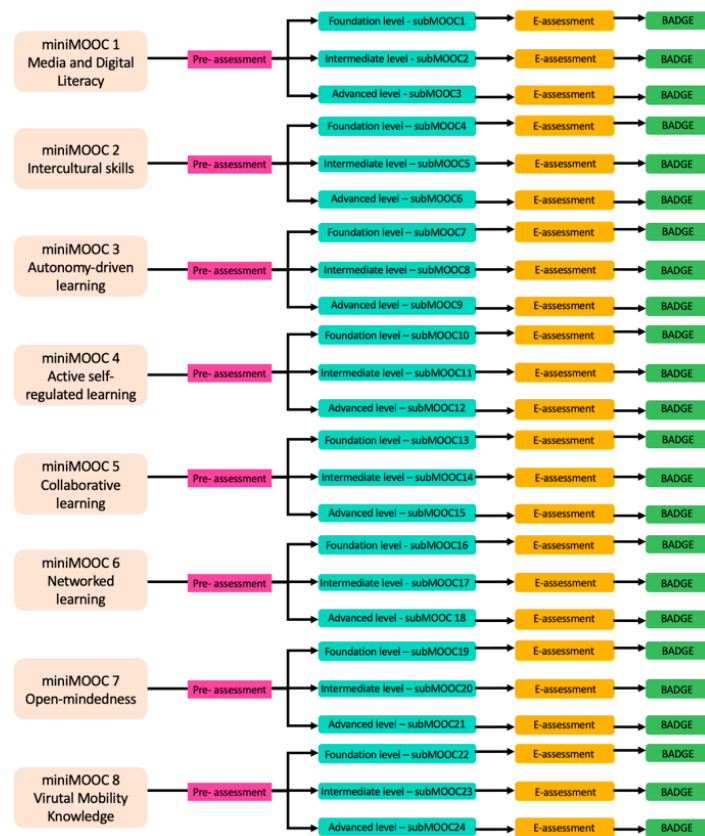


Figure 4. The OpenVM MOOC structure

At the end of the subMOOC, MOOC participants (N = 716) were invited to fill in an online questionnaire, designed by the authors and implemented by other involved partners. OpenVM Evaluation Questionnaire is organised in eight sections. In all eight sections participants were required to express their level of agreement with a set of statements related to specific MOOC design elements on a Likert scale from 1 – *strongly disagree* to 5 – *totally agree*. OpenVM Evaluation Questionnaire was created using a Google Module and encompasses eight sections:

1. Personal details: age, gender, affiliation and role. In this section participants are required to say which of the eight mini-MOOCs they are assessing;
2. Questions regarding the overall MOOC design: learning experience, quality of content instruction and support for learning;
3. Questions regarding digital credentials and meaningful gamification: quality of design, motivation, engagement and possibilities of choice;
4. Questions regarding technical aspects: use and usability;

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5. Questions regarding the foundation level of a mini-MOOC: duration, language, content, use of multimedia;
6. Questions regarding the intermediate level of a mini-MOOC: extending questions from the foundation level by questions related to the matching tool and group formation activity, which are specific design elements used at this level;
7. Questions regarding the advanced level of a mini-MOOC: extending questions from the foundation and intermediate levels by questions related to e-portfolio and peer-assessment activities, which are specific design elements at this level;
8. Questions related to the investigation about the extent to which MOOCs supported self-regulated learning. In this section participants are required to answer also to open-ended questions.

Descriptive statistics (average, standard deviation, frequencies) were calculated in order to answer to the abovementioned research questions

## Results

716 (F = 498; M = 215; Not specified = 3) participants took part in the pilot-phase. Most of the participants were university students and only 14 teachers participated in the survey. As shown in Figure 2, 27% of participants participated and assessed the MOOC “Active Self-regulated Learning”, followed by Media and Digital Literacy (22%), “Open-mindedness” (15%), “Intercultural Skills” (14%), “Networked Learning” (7%), “Autonomy-drive learning” (6%), “Collaborative Learning” (5%) and “Open Education and Virtual Mobility”.

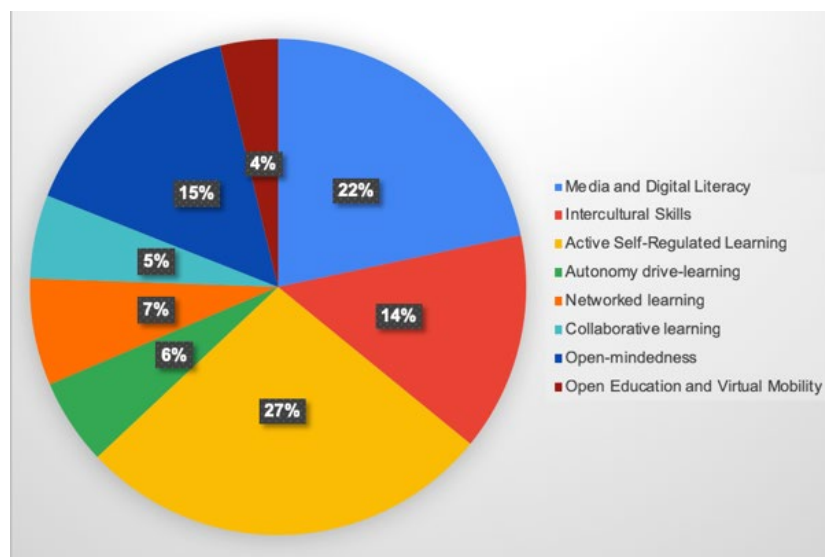


Figure 2. Percentage of participants who attended each miniMOOC

The results of the OpenVM MOOC evaluation and its main components are presented in Table 1. The general evaluation of the MOOCs quality was quite positive. The average score for each MOOC is always higher than 3.5 out of 5 points (we used a Likert Scale from 1 to 5, where the median is 3). Also, the general evaluation of the badges was quite positive. The average score for badge is always higher than 3.5 out of 5 points. The general evaluation of the gamification features was still satisfactory because the average score was more than 3. However, it was lower than the technical features evaluation of the MOOCs was quite positive. The average score for each MOOC is always higher than 3.5 out of 5 points and the total average was 3.79. skills. From a general overview we can conclude that four MOOCs at the moment were the best assessed: (a) Collaborative learning; (b) Autonomy-drive learning; (c) Open-mindedness; (d) Intercultural skills.

## **Discussion and conclusive remarks**

In the context of the Erasmus + Open Virtual Mobility, a Massive Open Online Course (MOOC) aimed at developing the eight transversal skills identified by Firssova and Rajagopal (2018) has been developed. The present study describes the assessment results collected by 716 participants who participated in a pilot phase from September to December 2019. Participants expressed a positive evaluation of different MOOCs features: (a) Badges; (b) Technical features; (c) Gamification. Four out of eight MOOCs obtained the highest evaluation: (a) Collaborative learning; (b) Autonomy-drive learning; (c) Open-mindedness; (d) Intercultural skills. Future research would be necessary to understand the reasons why these four MOOCs are preferred compared to the other. One possible explanation is that the other MOOCs, specifically the Media and Digital Literacy MOOC, the Networked MOOC and the Open Education and Virtual Mobility are based not only on transversal skills but also on digital and technological skills and they could be considered more difficult. In addition, the MOOCs “Collaborative learning, Autonomy-drive learning” and “Open-mindedness” were not formally introduced by University teachers partner but they were chosen spontaneously by the participants. This could indicate that they were more motivated and interested in the topic of the MOOCs compared to the participants who were formally invited to follow a specific MOOC chosen a priori by the teacher. In order to better understand the impact of the MOOC on the student’s experience, it would be necessary triangulate different sources of information. In future research, we are going to integrate the survey results with analytics collected by the platform.

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Table 1: The results of the OpenVM MOOC evaluation and its main components

General evaluation of the MOOCs			
	Average	N	SD
Networked learning	3.5945	50	1.02593
Media and Digital Literacy	3.6938	155	0.65947
Collaborative learning	3.7203	39	0.72619
Active Self-Regulated Learning	3.7381	194	0.6769
Open-Education and Virtual Mobility	3.7542	27	0.61802
<b>Average</b>	<b>3.7689</b>	<b>716</b>	<b>0.72937</b>
Open-mindedness	3.8182	109	0.769
Autonomy drive-learning	3.8477	40	0.72797
Intercultural Skills	3.9661	102	0.71558
Badge evaluation			
Active Self-Regulated Learning	3.5351	194	0.78093
Networked learning	3.56	50	1.06904
Media and Digital Literacy	3.591	155	0.84741
Intercultural Skills	3.6922	102	0.76853
Open-mindedness	3.7193	109	0.84989
Collaborative learning	3.7385	39	0.83874
Autonomy drive-learning	3.93	40	0.72402
Gamification features evaluation			
Networked learning	3.18	50	0.94868
Collaborative learning	3.2487	39	0.69995
Media and Digital Literacy	3.2613	155	0.66189
Active Self-Regulated Learning	3.2964	194	0.62216
Open Education and Virtual Mobility	3.3148	27	0.6125
<b>Average</b>	<b>3.3226</b>	<b>716</b>	<b>0.68037</b>
Open-mindedness	3.3917	109	0.69949
Autonomy drive-learning	3.41	40	0.68605
Intercultural Skills	3.4578	102	0.63315
Technical features evaluation			
Open Education and Virtual Mobility	3.5704	27	0.66957
Networked learning	3.6449	49	1.09412
Media and Digital Literacy	3.6768	151	0.8339
Active Self-Regulated Learning	3.7403	191	0.71642
<b>Average</b>	<b>3.7946</b>	<b>704</b>	<b>0.8078</b>
Collaborative learning	3.8378	37	0.78717
Autonomy drive-learning	3.88	40	0.77499
Open-mindedness	3.9	108	0.83184
Intercultural Skills	4.0436	101	0.74222

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## About the Authors

A. Poce coordinated the research presented in this paper. Research group is composed by the authors of the contribution that was edited in the following order: A. Poce (Introduction, Discussion and Conclusive Remarks) F. Amenduni (The OpenVM design structure), M.R. Re (The pilot phase iterations), C. De Medio (Results).

## Acknowledgements and Disclaimer

This paper is based on the joint work and research conducted by partner organizations in the Erasmus+ Project Open Virtual Mobility, Cooperation for Innovation and the

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Exchange of Good Practices, Strategic Partnerships for Higher Education, Project Number 2017-1-DE01-KA203-003494 (<https://www.openvirtualmobility.eu>). The creation of these resources has been (partially) funded by the ERASMUS+ grant program of the European Union under grant no. 2017-1-DE01-KA203-003494. Neither the European Commission nor the project's national funding agency DAAD are responsible for the content or liable for any losses or damage resulting from the use of these resources.

The project is coordinated by Beuth University which contributed to the assessment pilot phase, presented here, drafting the questionnaire administered with the first group of MOOC users. Data collected are described below.