Designing Moocs and OERs in a Virtual Mobility experience

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Abstract: The present paper is part of the Erasmus + project "openVM: Opening Education for Developing, Assessing and Recognising Virtual Mobility Skills in Higher Education". The aim of this paper is sharing good practices related with the implementation of Virtual Mobility - VM that we have been developing through out the project. There will be presented guidelines for designing and choosing OERs for our VM MOOC and which design principles we have been following for the MOOC design and delivery. The guidelines are inspired by previous experiences of VM and literature analysis and they can be useful to design future VM experiences.

Key words: Open Virtual Mobility, OERs, MOOCs,

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1. Introduction

Virtual mobility (VM) stands for ICT supported activities, organized at an institutional level, that realise or facilitate international, collaborative experiences in a context of teaching and/or learning (Erasmus + programme guide). VM activities, supported by curricular, legal and institutional frameworks of participating universities of other higher educational institutes, provide students enrolled in one higher educational institute access to education elsewhere. As this is

institutionally supported, VM participants can receive instructional support and assessment and gain formal credits from thus "virtually" visited institution. To support this form of student mobility, the student, and both educational institutions involved make use of a Learning Agreement as an instrument, that stipulates the rights and duties of each party in the agreement (Ubachs & Henderikx, 2018).

Since online learning has been growing in recent years, VM seems to answer to many pedagogical needs, not only for traditional students but also for less advantaged and non-traditional students. Indeed, VM has a great potential to contribute to the internationalisation and opening up of Higher Education by creating international, collaborative experiences for educators and students as well as equal possibilities of participation in exchange programs, including those who are unable to travel for social, financial or other reasons (EuroPACE, 2010). VM emphasizes cross-border collaboration with people from different backgrounds and cultures working and studying together, aiming at the enhancement of intercultural understanding and ICT ensure to obtain the same benefits as one would have with physical mobility, but without the need to travel. However, despite the numerous projects and initiatives promoting VM in the last years, the uptake of the concept in Higher Education is still low and not well-known and, thus, HEIs, educators and students need more effective ways of achievement and recognition of VM Skills necessary to successfully engage in VM.

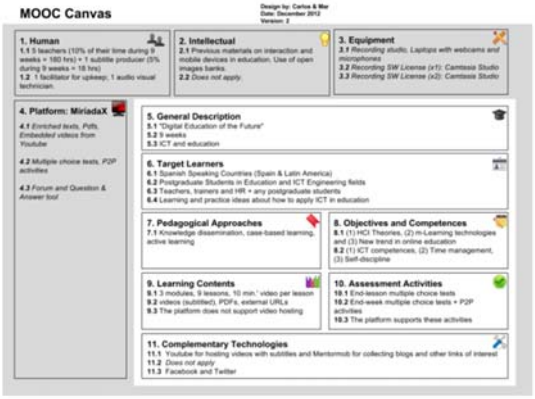
The present paper is part of the Erasmus + project "openVM: Opening Education for Developing, Assessing and Recognising Virtual Mobility Skills in Higher Education".
The aim of this paper is sharing good practices related with implementation of Virtual Mobility that we have been developing through out the project. This Erasmus + project aims at promoting VM in Higher Education of educators and students in HE in line with Bologna and Open Education principles (van Mourik Broekman, Hall, Byfield, Hides, & Worthington, 2015) by developing and disseminating tools for an online, open and flexible learning, assessment, and recognition of VM skills using Open Credentials.

The project is expected to achieve 7 intellectual outputs related to different aspects of the Open Virtual Mobility ideation and implementation:
- O1 Conceptual Framework and Guidelines: a detailed look at the concept of VM, by defining which skills are necessary for engagement in VM and the skills gained by teachers and students participating in VM actions.
- O2 Virtual Mobility Learning Hub: the VM Learning Hub will be developed as a Personal Learning Environment which will include a responsive interoperable interface, a social software, tools for mobile learning, a common working/collaboration space, a semantic features and learning analytics, self-assessment and validation of open digital credentials.
- O3 Competency Directory and Matching Tool: The semantic competency directory will include a number of semantic description of VM skills and the matching tool will be a tool for building learning groups by an algorithmic solution.
- O4 E-assessment concept and tool: A concept for assessing virtual mobility is developed and practical tools will be tested and validated.
- O5 Open credentials and Gamification: a set of open credentials to recognize VM skills and visual design of Gamification for learning.
- O6 OER, Mooc and Pilots: VM OER and the VM MOOC will be designed and integrated with the VM Learning Hub and a piloting phase will be conducted to

validate and ensuring the sustainability of the project outcomes.
- O7 Quality and Sustainability: a quality assurance framework for the entire project it is developed with the dissemination, implementation and monitoring plan.

Despite each output is strongly interrelated with each other, the present paper will focus on the activities related to the output 6. More specifically, it will describe how the project has defined the guidelines for designing and choosing OERs for our VM MOOC and which design principles we have been following for the MOOC design and delivery.

Fig.1 Mooc Canvas to design OVM Moocs



2. Problem Formulation

Output 6 is part of the operational phase of the project, in which developed concept and tools will be tested in pilots at all participating organizations.
Like any successful course, the MOOC requires careful planning and continuous revision. This is the reason why it was necessary to define successful strategies to provide an Open VM experience.
The first phase was to design the concept of an Open Virtual Mobility MOOC and its related OERs. For this purpose, it was necessary to identify which features guarantee the quality of MOOCs and OERs. Thus, a literature analysis was conducted to define general features of MOOCs and OERs. In addition, we needed to define best practices of VM experiences. For this reason, we conducted an analysis of the Virtual Mobility experiences already realised. By comparing general features collected from the literature and best practices of the previous experiences, we defined guidelines useful to design the course content using existing and producing new OERs. These results could be helpful for who is interested in designing VM courses.

2.1 General background on MOOCs

In the present project, The MOOC is thought to offer educators and students an opportunity to reflect on and expand their teaching and learning approaches to Virtual Mobility and document effective practices in form of ePortfolios enhanced with Open Badges. The aim of the MOOC is to help educators and students developing a defined set of Virtual Mobility skills and applying them to Virtual and Blended Mobility programs, actions and activities in various academic disciplines (Yuan & Powell, 2013).

Before describing how we implement the Open Virtual Mobility features in the MOOC, it is necessary to see more general aspects about what MOOCs are and their general feature.
According to Downes (2012) Moocs can be classified in two ways:

- xMOOCs are the majority of MOOCs, They are offered through the mentioned providers and they are based mainly on video lectures and computer assisted tests.
- cMOOCs are the MOOCs based on a connectivist approach (Brown, 2016) providing them a particular design based on openness, networking and in particular on heavy content contributions from the participants themselves.

Since xMOOCs and cMOOCs has different pros and cons, some researchers propose hybrid pedagogical model that incorporates cooperation to create knowledge sharing among participants, by combining characteristics of xMOOCs and cMOOCs (Fidalgo-Blanco, Sein-Echaluce & García-Peñalvo, 2016).

Having said that, xMOOCs are by far the most common MOOC provided. Although teachers can personalize xMOOC according to their pedagogical requirements, Bates (2015) highlights some common design features:

1. specially designed platform software that allows for the registration of very large numbers of participants, provides facilities for the storing and streaming on demand of digital materials, and automates assessment procedures and student performance tracking;
2. video lectures are standard lecture mode, delivered online by participants who download on demand recorded video lectures. Often lessons are divided in more video segments because each videos lasts about 15 minutes. xMOOC courses, as well as the videos, are becoming shorter in length and most now lasting five weeks. Various video production methods have been used, including lecture capture (recording face-to-face on-campus lectures, then storing them and streaming them on demand), full studio production, or desktop recording by the instructor on their own.
3. computer-marked assignments are online tests after which students receive immediate computerised feedback. These tests can be used for participant feedback, for determining the award of a certificate or to assign an end-of-course grade based on an online final test. Most xMOOC assignments are based on multiple-choice and computer-marked questions but, in some cases, MOOCs have also used text or formula boxes for participants to enter answers, such as coding in a computer science course, or mathematical formulae, and in one or two cases, short text answers. In all cases these are computer-marked.
4. peer assessment has been experimented in some xMoocs, by assigning students randomly to small groups for peer assessment, especially for more open-ended or more evaluative assignment questions.
5. supporting materials such as slides, supplementary audio files, urls to other resources, and online articles may be included to be downloaded by participants.
6. a shared comment/discussion space where participants can post questions, ask for help, or comment on the content of the course.
7. no or very light discussion moderation. The extent to which the discussion or comments are moderated varies probably more than any other feature in xMOOCs, but at its most, moderation is directed at all participants rather than to individuals. Because of the very large numbers participating and commenting, moderation of individual comments by the instructor(s) offering the MOOC is impossible. Some instructors 'sample' comments and questions, and post comments in response to these. Some instructors use teaching assistants to comb for or identify common areas of concern shared by a number of participants then the instructor or teaching assistants will respond. In most cases, participants moderate each other's comments or questions.
8. badges or certificates are used to recognize successful completion of a course, based on a final computer-marked assessment. However, at the time of writing, MOOC badges or certificates have not been recognised for credit or admission purposes even by the institutions offering a MOOC, or even when the lectures are the same as for on-campus students. No evidence exists to

date about employer acceptance of MOOC qualifications.

9. learning analytics can be detected in the xMOOC platforms because they have the capacity to collect and analyse 'big data' about participants and their performance, enabling, at least in theory, for immediate feedback to instructors about areas where the content or design needs improving and possibly directing automated cues or hints for individuals." (Bates, 2015 p. 153 / CC BY-NC 4.0).

In line with these features, The OpenVM MOOC will be close to the xMOOC definition.

2.2 General background on OERs

An OER is "digitised materials offered freely and openly for educators, students, and self-learners to use and reuse for teaching, learning, and research" (OECD, 2017). OER includes learning content, software tools to develop, use, and distribute content, and implementation resources such as open licence could include images, applets, lessons, units, assessments and more.

Three main indicators has been identified for the **OERs Evaluation** (Poce, Agrusti & Re 2015), to assess OER to include in the VM MOOC:

1. Quality
2. Appropriateness
3. Technical aspects

Each main indicator has been divided into different sub-indicators:

Quality

a. Creator knowledgeable (Who is the creator and what kind of expertise and experience do they have?)
b. Creator authenticity (Are you reasonably certain that it is actually the work of the person claiming to be the author?)
c. Creator bias (What is the intended purpose? (Think educate/inform, sell something, entertain, change minds/behavior, even propaganda/hate speech)
d. Organization affiliation (What is the "hosting" organization and what kind of reputation do they have?)
e. Organization quality control (Does the hosting organization conduct any sort of quality control?)
f. Peer reviewed (Has it been through peer review?)
g. Material(s) currency (How recent or up-to-date is its content?)
h. Type of assessment (T/F; multiple choices; filling in the blanks; matching; open ended)

Appropriateness

a. Clearness of structure and content
b. Difficulty level (from 1 to 3)

Technical aspects

a. Licensing status (What is its copyright and licensing status and how does that impact what you can do with it?)
b. Accessibility (Human - Is it accessible to people with disabilities?)
c. Remix or Edit (If you want to remix it, is the source file available, and in a format that you can edit?)
d. Accessibility (Is it accessible to people using computer or mobile?)
e. Technical Quality (in terms of graphis, sound, text layout)
f. Numbers of questions

2.3 A review of Virtual Mobility Experience

In order to conduct a review of the Virtual Mobility Experience, a template for describing good practice examples was created by the project partners. This template was also used to create a google form in order to invite experts / people who have been involved in VM projects to submit information about their current and/or past project/s on virtual mobility. Thus, each partner has invited external experts to submit Good Practice Examples via the Google Form.

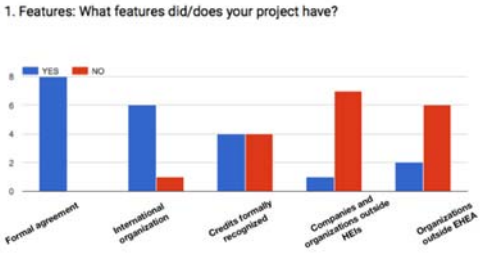
Table 1. Template for describing Virtual Mobility Projects

Description	
Website	
Main contact	
Main target	
Technologies used	
Resources used	
Main features Discuss here some feature of the VM activity (may include synchronous/asynchronous; location (in)dependent delivery; virtual or blended, etc.)	
Specific experiences Experiences regarding language, culture, equipment, access, assessment and ECTS	

Informations about 8 Virtual Mobility projects have been collected named respectively 1. TeaCamp (http://www.teacamp.eu), 2. OUVM (http://openstudies.eu), 3. Mevel - Fostering the Virtual Mobility within the Metal Sector (http://mevel-eu.net/index.php?lang=en), 4. Ubicamp (http://www.ubicamp.eu/) and 5. VMcolab (http://www.teacamp.eu/moodle2/course/index.php?categoryid=1) 6. HEI PLADI https://dibt.unimol.it/HEI-PLADI/home/index.html 7.Anatamoie 3D http://anatomie3d.univ-lyon1.fr 8. Human Rights (UNISI)

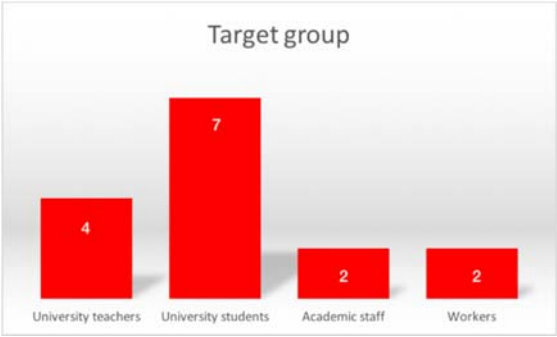
All these projects included formal agreement and 6 projects had international organizations among the participants. In 4 projects, credits (eg. ECTS) were formally recognized and in only one VM experience companies and organizations external to the HEI were involved. Two VM projects included organizations outside the European Higher Education Area among the participants.

Fig. 3 Projects features



In 7 out of 8 projects, the target was formed by university students. In 4 projects also university teachers are included. Academic staff is included as target group in 2 project as well as workers.

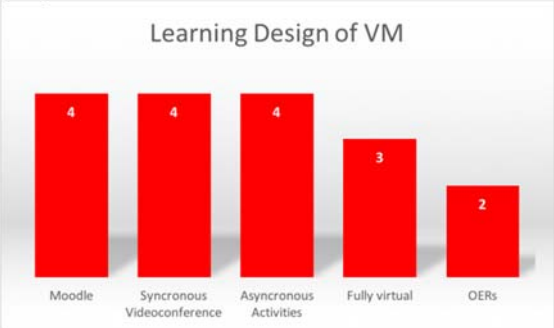
Fig. 4 Target group of the Virtual mobility projects



Moving on the Learning Design, in 4 projects synchronous and asynchronous activities such as video-conferences, discussion forums, collaboration and communication were combined. 3 out 5 VM projects were fully virtual, in 4 projects Moodle was used as repository

and in 2 projects OERs were created and/or included.

Fig. 5 Learning Design of Virtual Mobility projects



In the VM projects, technologies were used for different purposes: course creation, VM implementation, video-conferences, research and marketing strategies.

Table 2. Technologies used in the Virtual Mobility projects

Course creation	ELGC
Virtual Mobility Implementation	Moodle
Videoconference	Adobe connect; Google Hangouts; Tandberg;
Research	Limesurvey
Marketing strategies	Facebook

Contents such as OERs, videos, reading and templates were created during the projects. In 3 out of 5 cases the Licence was CC-BY-NC-SA.

The VM leaders were required to provide some recommendations for designing VM learning paths based on their previous experience. The recommendations regards three main areas: 1. learning design, 2. administrative challenges and 3 technologies to use.
1. it's good to start virtual mobility activities from smaller units than an entire course. Thoroughly select a topic and partners for virtual mobility course.
2. one VM implementation requires involvement and online collaboration of different university departments – such as not only international relations office, but also study department at home and host university, e-learning centre at course hosting university, the department that student is studying at home university, and department that is offering a course at host university. It also requires internal university agreements on responsibilities at student home university and course hosting university. It also brings challenges of opening up and changing administrative procedure for traditional universities, who are used to receive only physically present students (either national or international). It also bring challenge for online universities to suggest courses requiring synchronous meeting for online students, if the later are used to have only asynchronous learning courses. Any form of recognition is valued by learners.

3. Problem solution: The Open VM MOOC design

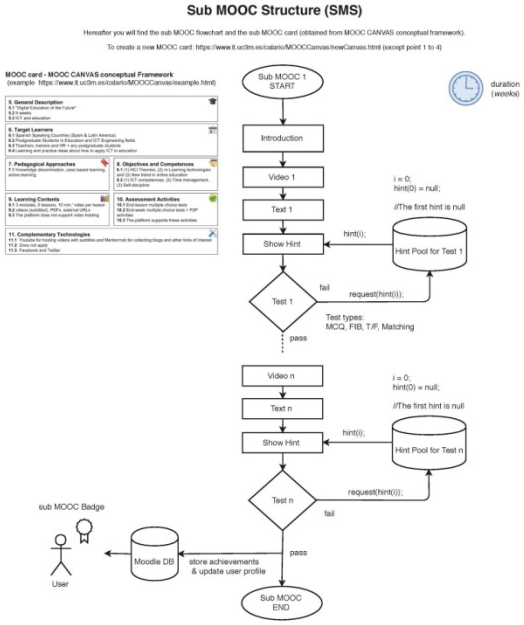
According to Bates design features of the xMOOC, it was chosen to incorporate in the MOOC a Matching Tool (O3), different forms of e-Assessment (O4) and Open Credentials (O5) as well as all the necessary descriptions, explanations of the topics, bibliographical references, introductions to sessions and supplemental material. The Matching Tool (O3) will be used for group formation, i. e. connecting users for joint learning activities including the "Open Learning by Design" process in which user will create OER and MOOC sessions together. The E-Assessment (O4) will be used to assess students and teachers' VM Skills, and Open Credentials (O5) will be used to provide a formal recognition of VM Skills acquired not only through the MOOC but also elsewhere, following the principles of distributed assessment.

Four areas have been identified as main content for the OpenVM MOOC (OVMOOC):

1. Intercultural Competences
2. Digital Skills
3. Open Virtual Mobility Knowledge
4. Self Regulated Learning

Three levels are then identified for each area: beginner, intermediate, advanced. Defining the four areas with the three levels gives the following table.

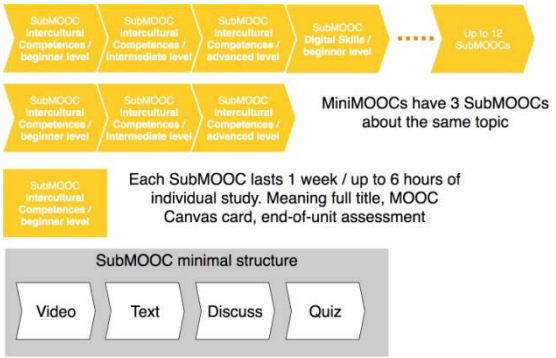
Fig. 6 SubMOOC Flowchart



Each combination between content and level has been called SubMOOC. A SubMOOC is a section of the OVMOOC and it has the following characteristics:

1. Its characteristics are described following the steps 5 to 11 of MOOC CANVAS conceptual Framework.
2. It has an entrance test to verify the level of the participant. If the participant has already obtained the Open Badge from the previous level, this test will be omitted.
3. It is referring only to a complexity level (beginner, intermediate, advanced).
4. It is referring only to a content (Intercultural Competences, Digital Skills, Open Virtual Mobility Knowledge, Self Regulated Learning).
5. It contains 1 or 2 videos (maximum length 9 mins, minimum length 5 min).
6. It contains at least 1 presentation and 1 hypertext document.
7. The intermediate and advanced SubMOOCs have also online literature references (online -book or online articles).
8. Once the participant completed it, an Open Badge will be issued.
9. It lasts 1 week.
10. It contains at least 1 formative assessment quiz composed by closed items (MCQ, FIB, T/F, Matching) with included feedback.
11. It contains at least 1 summative assessment quiz composed by MCQ items with included feedback.
12. The intermediate and advanced SubMOOCs have a peer assessment based on the Tune Models of Peer Assessment described by Piech and others (2013).

Fig. 7 Example of Open VMMOOC structure



4. Conclusion

Virtual Mobility represents a great opportunity to contribute to the students and educators internationalisation. ICT are supposed to guarantee the same benefits as one would have with physical mobility, but without the need to travel. Thus, it is required that technologies employed are carefully planned and continuous revised. This paper provides guidelines useful to design a Virtual Mobility experience based on the use of MOOCs and OERs. The

guidelines are inspired by previous experiences of Virtual Mobility and literature analysis.

Bibliography

Bates, T. (2015). What do we mean by 'open' in education? Retrieved from: http://www.tonybates.ca/2015/02/16/what-do-we-mean-by-open-in-education/#sthash.7wk8lvjE.dpuf

Brown, M. (2016). MOOCs as social practice: a kaleidoscope of perspectives. *Emerging models of learning and teaching in higher education: From books to MOOCs.*

Downes, S. (2012). The rise of MOOCs. *Recuperado el*, *1*.

EuroPACE . (2010). Retrieved November 15, 2010, from Interests – Virtual mobility: http://www.europace.org/interest3.php
Fidalgo-Blanco, Á., Sein-Echaluce, M. L., & García-Peñalvo, F. J. (2016). From massive access to cooperation: lessons learned and proven results of a hybrid xMOOC/cMOOC pedagogical approach to MOOCs. *International Journal of Educational Technology in Higher Education*, *13*(1), 24.

OECD (2017). Giving Knowledge for Free: The Emergence of Open Educational Resources. ISBN-978-92-64-03174-6 © OECD 2007

Poce, A., Agrusti, F., Re, M. R. (2015). Sviluppo di uno strumento di valutazione delle risorse aperte (OERs) – Analisi dei dati raccolti: abitudini nell'uso della tecnologia e di scrittura. CADMO, Giornale Italiano di Pedagogia sperimentale. An International Journal of Educational Research, XXIII, 2, Milano, FrancoAngeli, 2015, pp. 86-92.

MOOC Canvas https://www.it.uc3m.es/calario/MOOCCanvas/documents/MOOCCanvas-Report_EN.pdf

van Mourik Broekman, P., Hall, G., Byfield, T., Hides, S., & Worthington, S. (2015). *Open education: A study in disruption*. London: Rowman & Littlefield International.

Yuan, L., & Powell, S. (2013). MOOCs and Open Education: Implications for Higher Education. A white paper. Retrieved March (p. 21). Bolton, UK. Retrieved from http://publications.cetis.ac.uk/2013/667