

Open Virtual Mobility

O6 - A2 MOOC Delivery & Integration into VM Learning HUB

- Final draft -

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This paper is to discuss and describe the concept of Open VM MOOC. This document is produced as part of Outcome 6 “OER, MOOC and Pilots ”and aims at designing VM OER and the VM MOOC with a series of different themes and activities both for higher education students and teachers, by means of innovative design methods such as the “MOOC Design Canvas”, the “Crowd Creation” and “Open Learning through Design”.

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Executive summary

This paper describes the process through which MOOCs were co-designed by partner institutions and implemented into the VM Learning HUB. The process was managed by Roma Tre University with the supportive collaboration of all the partner institutions involved in the project. Each partner participated both in the design and assessment phase. In this way, the OpenVM MOOC was produced through a co-construction and collaborative process.

What are the objectives of this paper?

The objectives of this paper are to describe a method to build, by exploiting the value of the European partnership, a MOOC aimed at developing skills necessary to be involved in Virtual Mobillites. This methodology could be applied also in other similar contexts.

Who is this paper for?

1. Technicians interested in using MOOCs in Open Virtual Mobility
2. Pedagogues and didacticians interested in designing MOOCs for their own Open Virtual Mobility experience
3. Researchers interested in discussing and presenting currently existing challenges in the field of MOOCs in Open Education and Open Virtual Mobility

What topics are addressed in this paper?

MOOCs, Virtual Mobility,, MOOC quality, Open MOOC.

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1. Aims and Scope

The main aims of this document are: 1. describing the process through which the OpenVM MOOC was designed, realised and implemented into the OpenVM MOOC; 2. sharing good practices related to the implementation of Virtual Mobility (VM) that partners have been developing throughout the project. Guidelines for designing and choosing OERs for our VM MOOC, whose design principles we followed for the MOOC design and delivery. The guidelines are based on previous experiences of VM and literature analysis and they can be useful for designing future VM experiences.

2. Background and rationale (State of the Art)

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). Like any successful course, the MOOC requires careful planning and continuous revision (Daradoumis, Bassi, Xhafa, & Caballé, 2013). This is the reason why it was necessary to define strategies to provide an Open VM experience. 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. The equipment, platform, human and intellectual resources were defined before the beginning of the project whilst part of the design decisions (especially in terms of objective and competences, learning contents and assessment activities) have been negotiated in progress among the output leader and the partners.

In line with the features proposed by Bates (2015), the OpenVM MOOC was conceived in conformity with the xMOOC definition, since we decided to include the following features:

1. a large number of participants, facilities for the storing and on demand streaming of digital materials, automated assessment procedures and student performance tracking;
2. computer-marked assignments after which students receive immediate computerised feedback. These tests are used both for formative assessment and to provide a badge or certificate after the MOOC successful outcome. Most of the assignments are based on multiple-choice and computer-marked questions. In addition, peer-assessment tasks were adopted for competences' assessment. Students were randomly organised into small groups in order to peer assess e-portfolios contents;
3. supporting materials, such as slide shows, supplementary audio files, URLs to other resources, online articles and video lectures can be downloaded by participants and they will have Creative CC License;
4. moderation is directed to all the participants rather than to individuals. Participants are expected to moderate each other's comments or questions;

5. badges or certificates are used to acknowledge the successful completion of a course, based on a final computer-marked assessment.

Eight areas have been identified (Output 1) as main contents for the OpenVM MOOC: 1. Intercultural Skills; 2. Collaborative learning; 3. Autonomy-driven learning; 4. Networked Learning; 5. Media and digital literacy; 6. Active self-regulated learning; 7. Open mindedness; 8. Virtual Mobility Knowledge.

For each area, a miniMOOC was created.

Three levels are then proposed for each miniMOOCs:

- **foundation level:** focused on knowledge acquisition;
- **intermediate level:** focused on knowledge application in a collaborative learning environment;
- **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 requires 80 minutes to be completed. Each subMOOC has different forms of assessment (Output 4) and tasks. In the foundation level and in the intermediate level 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, based on the Tune Models of Peer Assessment described by Piech and others (2013). 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 (Output 3).

At the end of each subMOOC, participants obtain a badge that certifies the skills acquired in that specific subMOOC (Output 5).

All the miniMOOCs contain approximately 9 Open Educational Resources (3 for the foundation level, 3 for the intermediate level and 3 for the advanced level). In the OpenVM MOOC, the study material that participants could read, listen to, download and re-use for their personal purposes are considered OERs. OERs include slide shows, supplementary audio files, URLs to other resources, online articles and video lectures. Three main macro-indicators have been identified for the OERs Evaluation (Poce, Agrusti & Re 2015), to assess the inclusion of the OERs in the Open VM MOOC: 1. Quality 2. Appropriateness and 3. Technical aspects. After creating an OERs assessment grid based on the three main macro-indicators, the project partners were required to provide OERs in different formats and languages, based on the skills content defined in the Intellectual Output 1.

The pedagogical approaches that guide the OpenVM MOOC design are collaborative and social learning (Andriessen, Baker, & Suthers, 2013), reflective practices (Schön, 2017) and self-regulated learning (Zimmerman, 2013).

The OpenVM MOOC is integrated into a Virtual Mobility Learning HUB (Output 2) that provides a Personal Learning Environment.

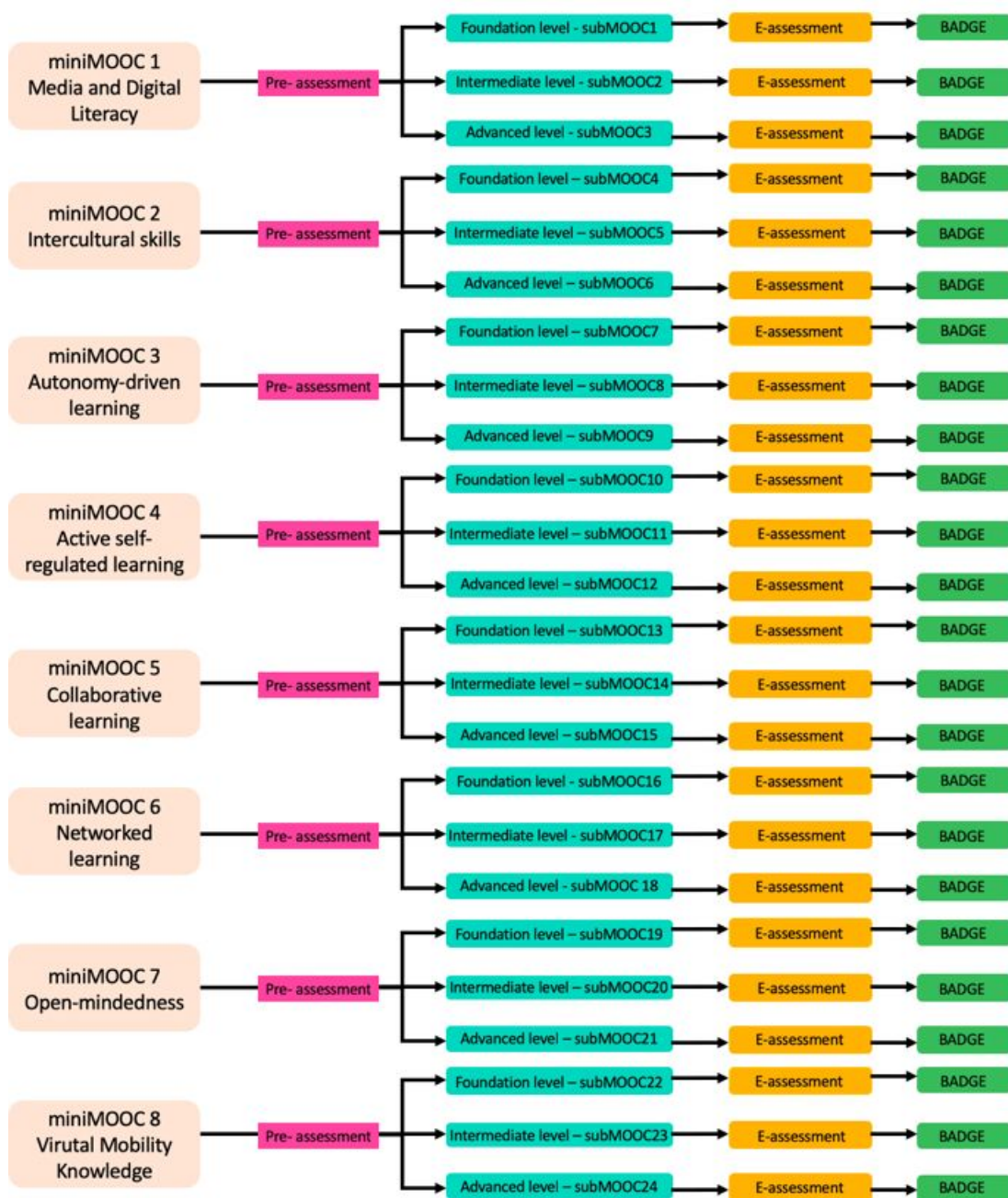


Figure 1 The OpenVM MOOC structure

3. Methodology

Roma Tre University is responsible for the Intellectual Output 6 of the OpenVM project, that includes organizing the process of OERs and MOOC design and assessment.

Phase 1. Finding and assessing materials (OERs) to be included in the MOOC

Phase 1 lasted from the Timisoara partner meeting in October 2018 until the Heerlen partner meeting in February 2019.

Project partners were required to provide OERs in different formats (mainly texts and videos) and their languages, following the quality guidelines of the OERs assessment rubric. OERs contents had to be connected to the eight skills necessary to be engaged effectively in virtual mobility. Each skill was assigned according to every partners' specific background and expertise. In order to support OERs identification, Roma Tre team proposed different types of OERs repositories on the web. Not only repositories created by formal educational institutions, such as universities, but also other informal and no formal institutions databases (e.g. TedX video repository) were suggested to be used on purpose.

Each partner had to identify at least 9 OERs (3 for the foundation level, 3 for the intermediate level, 3 for the advanced level) related to one of the eight skills of the OpenVM MOOC. Each partner was responsible of identifying OERs within a certain area in order to cover all the contents of the MOOCs. Partners had to download the OERs in a spreadsheet created on Google Sheets. The use of Google Sheets allowed partners to comment, insert feedback, and propose alternative contents. The OERs selected were peer-assessed by another partner of the project. Peer-assessors could add comments, feedback, and propose alternative OERs. This way, partners had the opportunity to discuss suitability or non-suitability of the OERs selected to be included in the OpenVM MOOC. The results of the phase 1 are presented in the latest document of the O6.1.

Phase 2. A design thinking workshop carried out in Heerlen

During a face to face workshop organised in February 2019 by the Roma Tre team in Heerlen, partners worked in small groups of two or three people from different institution. Each group was invited to organize the OERs selected and assessed during phase 1, into a template for a miniMOOC design provided by the Roma Tre team (Appendix).

The template requires partners to indicate:

1. **Learning objectives:** which kind of knowledge, skills, ability the course should develop in MOOC's participants at the three levels):
2. **Learning outcomes assessment methods:** which way participants can prove their knowledge, awareness and reflection ability, for example quizzes, e-portfolios posts, self reflections at the three levels
3. Selected OERs titles, kinds of OERs (text, video, presentation), text of the learning instruction, url and target (teacher or students).

The partners worked in the following groups (Table 1).

Table 1: partners' group for the miniMOOC design

miniMOOC Area	Small work groups	
Intercultural skills	OUNL	UNIT
Open-mindedness	BEUTH	Cineca
Self Regulated Learning	KUL	
Collaborative Learning	EADTU	UIB
Autonomy Driven Learning	UNIT	Roma 3
Networked skills	Roma Tre	EADTU
Open education and Virtual Mobility knowledge and skills	UPT	BEUTH

The process was thought to guarantee each partner participation in the selection and assessment of the OERs and, possibly, in the OpenVM MOOC design.

Phase 3. Finalising the miniMOOCs, badges and e-assessment design

After the workshop, partners were invited to work at distance, finalising:

1. the MOOC template (Appendix);
2. the e-assessment template provided by UNIT (O4)
3. the badges template provided by Cineca and Beuth (O5).

The order for the miniMOOC preparation, described in Table 2, was defined according to the instructions collected in the Output 1, which describes the skills necessary to be successfully involved in Virtual Mobility.

When partners completed filling in the three templates for MOOCs, e-assessment and badges, the Roma Tre Team uploaded the OERs, the activities (e.g. group formation), the e-assessment (quizzes, e-portfolio and peer-assessment), learning goals and learning instructions into the Learning Hub, organizing the learning materials in order to support users' engagement.

Then, partners involved in each miniMOOC design were invited to provide feedback regarding the final version of the MOOC (e.g. the layout, spelling checking, the contents' organization). When the miniMOOC is ready, the Roma Tre Team contacted the Cineca and Timisoara Team in order to implement and integrate the three badges in each subMOOC. When badges were implemented, the miniMOOC was ready to be launched and promoted through Social Media and the OpenVM website. Phase 3 lasted approximately four months from March 2019 to June 2019.

Table 2: miniMOOCs preparation

Name of the miniMOOC	Badges		E-assessment		OERs		Motivational messages	
	Assigned to	Deadline	Assigned to	Deadline	Assigned to	Deadline	Assigned to	Deadline
Intercultural skills	Cineca and Beuth	07/03/19	UNIT + OUNL	07/03/19	Roma Tre + OUNL	07/03/19	Roma Tre	07/03/19
Active SRL		15/03/19	UNIT + KUL	11/03/19	Roma Tre + KUL	11/03/2019	Roma Tre	11/03/19
Autonomy Driven learning		22/03/2019	UNIT	18/03/19	Roma Tre + UNIT	18/03/19	Roma Tre	18/03/19
Networked Learning		05/04/2019	UNIT + Roma Tre	01/04/19	Roma Tre + KUL	01/04/2019	Roma Tre	01/04/19
Interactive and collaborative learning		12/04/19	UNIT + UIB	08/04/19	Roma Tre + UIB	08/04/19	Roma Tre	08/04/19
Open mindedness		19/04/19	UNIT + Cineca + Beuth	15/04/19	Roma Tre + Cineca + Beuth	15/04/29	Roma Tre	15/04/19
Open education and Virtual Mobility knowledge and skills		26/04/19	UNIT + Timisoara	22/04/19	Roma Tre + Timisoara	22/04/19	Roma Tre	22/04/19

Phase 4. the MOOC improvement working group

With the supervision of the project coordinator (Beuth University), approximately four months were devoted to collect internal assessment for the MOOC implementation (June 2019 - September 2019). The project coordinator created a shared spreadsheet to collect all the feedback necessary to improve the MOOC. The template included the following indicators:

1. WHAT HAS TO BE IMPROVED? (describe briefly your change request below);
2. REQUEST AUTHOR (choose from drop down list)
3. WHO IS RESPONSIBLE? (choose from drop down list)
4. IMPLEMENTATION TIME (when can it be done?)
5. CURRENT STATUS (100% - ready, 0% not started)
6. PROBLEMS (any problems with the request);

In this template 50 improvements requests were collected by all the partners and 20 requests regarded the responsibilities of Output 6 responsibilities. From June to July 2019 the MOOC

improvement working group organized online meetings to discuss about the state of the art of problem resolutions.

For some specific problems partners showed different perspectives regarding the best way to solve them. To solve these cases, a questionnaire for external users was created by the Roma Tre Team <https://forms.gle/SVAg7b6YzRSHMJgU7>. We collected answers from 7 external users (5 students, 1 teacher and 1 researcher). The questionnaire contained the assessment questions regarding:

- E-Assessment: in-between OERs or at the end of the subMOOC? Please, describe briefly your preference for the e-assessment method;
- Which of these options facilitate best your navigation into the course? Please, describe briefly your preference;
- Do you prefer reading "the learning objectives" into the color tab or in the top-right? Please, describe briefly your preference;
- Is the information about previous and next levels clear for you?
- Do you have any suggestions to improve the instruction regarding how to achieve previous and next level?
- Do you have any relevant suggestions to improve the learning experience?

All the issues were solved by Roma Tre Team before the end of September 2019, applying the solutions defined collaboratively during the *MOOC improvement group partner meetings*.

In the results section, problems highlighted by partners and solutions applied were described in detail.

4. Results

Here are presented the main categories of problems highlighted by the partners during phase 4 previously described and the solutions implemented by the Roma Tre Team.

Problem 1: The path in the MOOC itself should be clarified and the learners' position should be highlighted at any moment to support Self Regulated Strategies. In addition, to help students managing their time and planning their learning strategies, it could be very useful to add information about the numbers and kinds of OERs for each level

Solution 1

Different features have been implemented into the MOOC in order to clarify the path in the MOOC and support Self Regulated Strategies. Firstly, diagrams have been introduced in the Welcome Page of each miniMOOC (Figure 2).

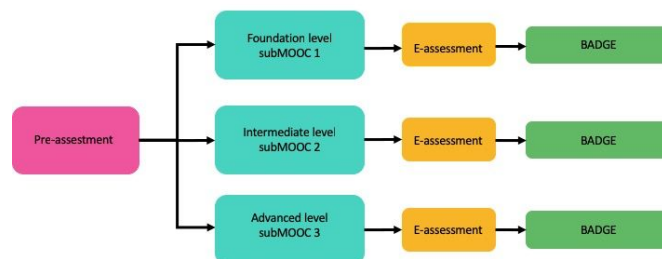


Figure 2 Diagrams that show the learning path in each miniMOOC

Secondly a course completion bar named “My course status” has been implemented in each subMOOC to support students time management within each level (Figure 3). Thirdly, color tabs have been adopted to highlight both learning objectives and the number and kinds of OERs materials that users find within each level (Figure 3).

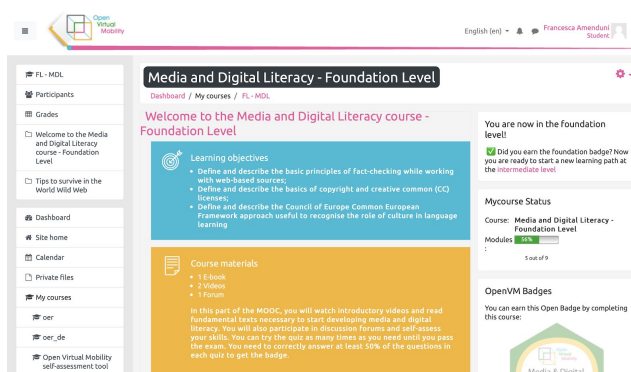


Figure 3 the home page of the foundation level Media and Digital Literacy which includes “My course status” bar and colour tabs for learning objectives and course materials

A preliminary test (described in the previous paragraph) was carried out to test if the color tabs can properly work. 6 out of 7 participants approved the decision. They stated that “*they like visualization*”, that learning objectives are “*easy to find*” so we decided to maintain color tabs and to further test this solution with a larger sample in the first pilot phase cycle.

Problem 2: Users need to know the quiz length

Solution 2

The number of questions and the maximum score was inserted in the description of each quiz.

Problem 3) The badge should be issued automatically. The courses which allow students to self-check their progress easily offer fake badges to students.

Solution 3

In the pre-pilot phase, students manually checked whether they completed each activity in the

MOOC. Thus, for 21 subMOOCs, the Roma Tre team set features that ensure users to get a badge only if they effectively compete all the required activities. A few minutes after they complete all the activities, they receive an email from Bestr with a link to get the badge.

Problem 4) Should quizzes be put between OERs or at the end of each subMOOC?

Solution 4

Partners have different perspectives regarding the best place to put quizzes in the subMOOC. According to some partners, quizzes should have been put at the end of each subMOOC. On the other hand, other partners thought the quizzes should have been collocated among OERs. We asked the 7 external users to express their preference. 6 out of 7 participants prefer to fill shorter quizzes in between contents and only one participant did not express any preference.

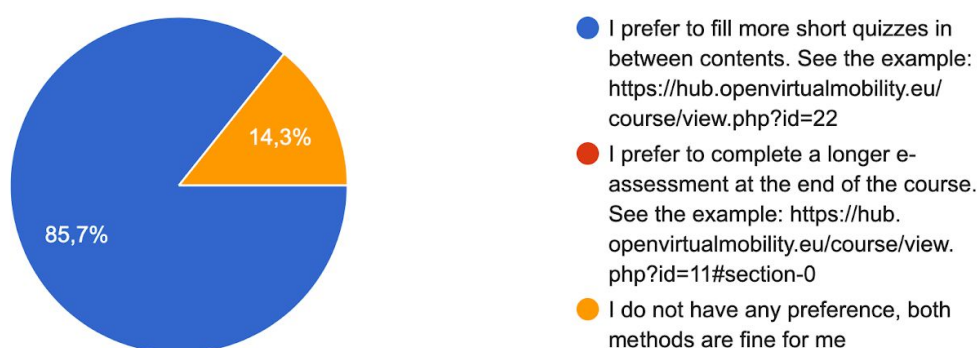


Figure 4 Answers to the question E-Assessment: in-between OERs or at the end of the subMOOC?

External users explained that they “*prefer several short quizzes in between, because this provides more variety. It also makes it easier to work on sections of the course at different times.*” So we decided to split quizzes and we will test this solution with a larger sample in the first pilot phase cycle.

Problem 5) Users need clear instructions and information about how to get previous and next level. They do not easily find them in the main page.

Solution 5

It was decided to insert a block above the badge block with instructions regarding how to get previous and next level (Figure 5). The instructions say, for example: “*Before starting the intermediate level, you can choose to attend the foundation level*” and “*After you have completed the intermediate level, you will be ready to join the advanced and the last level of the active self-regulated learning MOOC.*” This block was put in the top right of the subMOOC home page.

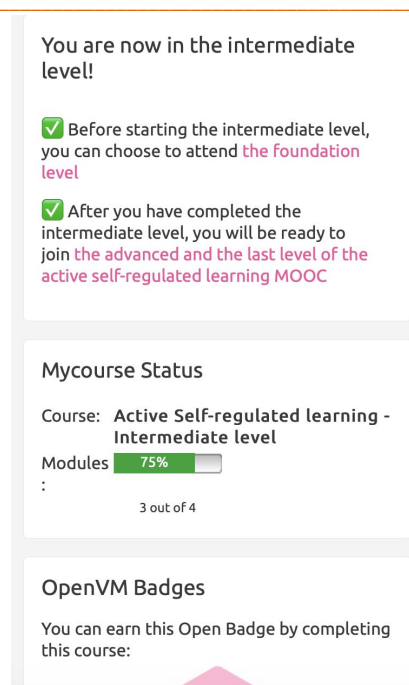


Figure 5 Block which contains information about how to get previous and next level

Problem 6) Provide a definition of the target group for each MOOC

Solution 6


All the 8 miniMOOCs of the OpenVM MOOC are targeted both for teachers and students. However, each of them was more oriented to improve teaching or learning practices and strategies. For this reason, the homepage of each miniMOOC specified whether the MOOC was more teacher or student oriented.

The more student oriented miniMOOCs are 1. Intercultural skills 2. Autonomy driven-learning 3. Active self-regulated learning 4. Open-mindedness and 5. Media and Digital Literacy. On the other hand 6. Collaborative learning 7. Networked learning and 8. Open Education and Virtual Mobility are more oriented to the teachers.

The MOOC - Intercultural skills is specifically targeted for *university students* 🎓 interested to improve their Intercultural skills both in learning and learning contexts.

However, *teachers* 👩🏫 could also find useful sources for themselves and for their educational practices.

Collaborative learning is a situation in which two or more people learn or attempt to learn something together.

The MOOC - Collaborative Learning is specifically targeted for *teachers*  interested to adopt collaborative learning techniques in their classrooms.


However, *students*  could also find useful sources to manage their group and collaborative activities in educational settings.

Figure 6 Descriptions for more university students and teachers oriented MOOCs

Problem 7) The students need to better understand what the role of the pre-assessment test is and what they need to do in order to receive it.

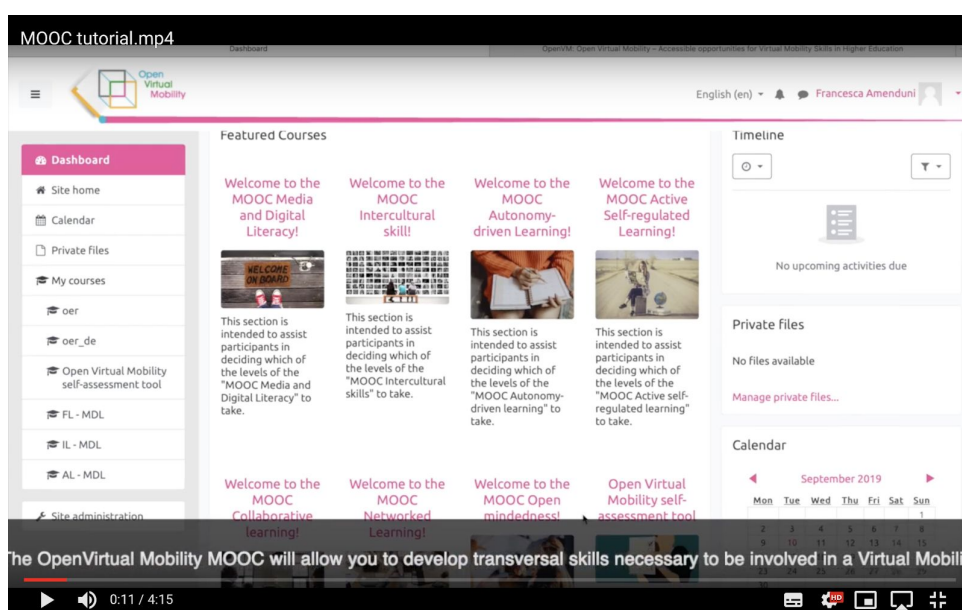
Solution 7

In the homepage of each miniMOOC, the following description was added.

“Before starting the MOOC, you are required to take a quiz, that you consider as a way to pre-assess your skills. According to the score obtained, you will be suggested to start from the foundation level, intermediate level or advanced level. In each level, you will read texts, e-books or PDFs, watch videos and forums. Once all the tasks are completed, you will complete an e-assessment in order to obtain a badge that certifies your skills. You will receive your badge by email in approximately 24 hours.”

In addition to the all described solution, a tutorial was prepared by the Roma Tre Team:

https://drive.google.com/open?id=156S_DW3zjoLgluk-8QPrE_ROgVMINMII



6. Conclusion

Like any successful course, the MOOC requires careful planning and continuous revision (Daradoumis, Bassi, Xhafa, & Caballé, 2013). This is the reason why it was necessary to define strategies to provide an Open VM experience. In the first part of this project we defined the MOOC design, as summarised in figure 1 of this paper. After that, we organized the collaborative work around the MOOC building through four main phases: 1. Finding and assessing materials (OERs) to be included in the MOOC; 2. A design thinking workshop carried out in Heerlen; 3. Finalising the miniMOOCs, badges and e-assessment design 4. the MOOC improvement working group. From the last phase, 7 main problems were identified regarding the MOOC and the Roma Tre team implemented a solution for each of them. In addition, a tutorial was produced in order to support orientation within the MOOC. Further evaluation of the MOOC and its features will be carried out during the pilot phase of the project.

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Appendix

Template for a miniMOOC design provided by the Roma Tre team

MOOC Structure

Mini MOOC 1 Intercultural skills <ul style="list-style-type: none"> - Sub Mooc. 1.1 Beginner - Sub Mooc 1.2 Intermediate - Sub Mooc 1.3 Advanced 	Mini MOOC 5 Media and digital learning <ul style="list-style-type: none"> - Sub Mooc. 5.1 Beginner - Sub Mooc 5.2 Intermediate - Sub Mooc 5.3 Advanced
Mini MOOC 2 Collaborative learning <ul style="list-style-type: none"> - Sub Mooc. 2.1 Beginner - Sub Mooc 2.2 Intermediate - Sub Mooc 2.3 Advanced 	Mini MOOC 6 Active Self-regulated learning <ul style="list-style-type: none"> - Sub Mooc. 6.1 Beginner - Sub Mooc 6.2 Intermediate - Sub Mooc 6.3 Advanced
Mini MOOC 3 Autonomy-driven learning, <ul style="list-style-type: none"> - Sub Mooc. 3.1 Beginner - Sub Mooc 3.2 Intermediate - Sub Mooc 3.3 Advanced 	Mini MOOC 7 Open mindedness <ul style="list-style-type: none"> - Sub Mooc. 7.1 Beginner - Sub Mooc 7.2 Intermediate - Sub Mooc 7.3 Advanced
Mini MOOC 4 Networked learning <ul style="list-style-type: none"> - Sub Mooc. 4.1 Beginner - Sub Mooc 4.2 Intermediate - Sub Mooc 4.3 Advanced 	Mini MOOC 8 VM knowledge <ul style="list-style-type: none"> - Sub Mooc. 8.1 Beginner - Sub Mooc 8.2 Intermediate - Sub Mooc 8.3 Advanced

8 Mini Moocs * 3 Levels = 24 Sub Moocs

Each SubMooc contains 1 or 2 videos, assessment and 6 hours of individual study.

Learning objectives (Which kind of knowledge, skills, ability the course should develop in MOOC's participants at the different level):

Foundation level (e.g. basic knowledge):

1.
2.
3.

Intermediate level (e.g. knowledge applied in real contexts and reflections ability):

1.
2..
3.

Advanced level (e.g. complex/scientific knowledge, reflection and meta-reflection ability) :

1..
2.
3.

Learning outcomes assessment methods (in which way participants can demonstrate their knowledge, awareness and reflection ability, for example quizzes, e-portfolios posts, self reflections):

Basic	
Intermediate	
Advanced	

FOUNDATION LEVEL

Fill the table putting the OERs in a logical order (minimum 3 maximum 5 OERs for each level). Try to balance text OERs with videos

OER Title	OER Type	Text of the learning instruction	URL	Target (Student, Teacher or both)

INTERMEDIATE LEVEL

Fill the table putting the OERs in a logical order (minimum 3 maximum 5 OERs for each level). Try to balance text OERs with videos

OER Title	OER Type	Text of the learning instruction	URL	Target (Student, Teacher or both)

ADVANCED LEVEL

Fill the table putting the OERs in a logical order (minimum 3 maximum 5 OERs for each level). Try to balance text OERs with videos

OER Title	OER Type	Text of the learning instruction	URL	Target (Student, Teacher or both)