# 6. Insights from piloting a community builder MOOC to help museum professionals facing 21st century challenges

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***Abstract - This chapter focuses on a Massive Open Online Course (MOOC), one of the courses of the educational and training programme developed and made available in a pilot version within the project Mu.SA - Museum Sector Alliance. It aims to briefly introduce the global context for its development, considering museums' needs to transform in order to ensure success in the Digital Era, with what purposes and to whom it was tailored, namely to the four emergent job role profiles in museums defined at the first phase of the project and considered as the most important ones in which museums should invest by up-skilling their professionals. Its implementation dynamics will be presented, pointing out some characteristics of the learning environment, and main features of the course, like its structure, type of contents, interaction and tutoring strategies, and some results, like participants' characteristics, feedback and the community of practice they have been building and is evolving stronger.***

***Keywords - Digital transformation and museum professionals, education needs, lifelong learning, digital and transversal competences (e-CF and DigComp, and 21st century), MOOC, community of practice (CoP).***

## I. INTRODUCTION

It is not new to state that, progressively, the different sectors of Society have had to adapt to the growing challenges of digital technologies, some more quickly and efficiently than others. Now, in the middle of the Digital Transformation, adaptation has to be structural, in the sense of increasing visibility and reach, improving performance and guaranteeing more and better results. Whoever does not adapt, also in a creative and sustainable way, risks non-survival or a latent and poor-quality maintenance. Museums are fully aware of such challenges and their implications.

Museum professionals most responsible for performing traditionally defined functions for a museum (collecting, conserving, researching, exhibiting and educating [1]) have, globally, a higher level of education and are even specialized through post-graduate programmes in the field of Museology. Nevertheless, the research carried out in the initial phase of the Mu.SA project [2] confirmed that they suffer from a professional shortage of competences in Information and Communications Technology (ICT) and a deficit in digital literacy, which is in line with the European Commission diagnosis [3].

Debating themselves for such process of adapting to and adopting a digital culture [4], museums created opportunities for new fields of work and employment, hence new job roles are emerging. This new reality requires the updating of museum professionals' competences not only in the area of ICT but also in transversal competences, assuming the concept of competence in accordance to the definition by CEDEFOP as the "ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development" [5], considering digital competence, as the "ability to use information and communication technology (ICT)" [5], and transversal competence as those "which have been learned in one context or to master a special situation/ problem and can be transferred to another context" [6].

Although lifelong learning is advocated and required by the International Council of Museums (ICOM), the world's professional organization of museums, more specifically by its International Committee for the Training of Personnel (ICTOP) [7] and it's a guideline that supports the principles of their Code of Ethics [8] for desirable professional practice, the problem is that the offer of continuous education and training programmes dedicated to the application of ICT in museum context proves to be residual, or non-existent in many geographies [2].

Confirmed the needs for lifelong professional learning and the lack of a corresponding offer, the Mu.SA project provides for a professional development programme with three stages: 1st, introductory, in a Massive Open Online Course (MOOC) format; 2nd, of specialization, in blended-learning format (combining online with face-to face sessions); and 3rd, of practical application and training, in work-based learning format. It's on the MOOC that this chapter is focused.

## II. THE MOOC "ESSENTIAL DIGITAL SKILLS FOR MUSEUM PROFESSIONALS". WHY THE FORMAT, FOR WHOM AND WHAT FOR?

As Instructional System Design (ISD) model, the consortium opted [9] to adopt the generic process traditionally used by instructional designers and training developers known as ADDIE Model which, although some weaknesses may be recognized [10], represents a dynamic, flexible guideline for building effective training and performance support tools, and considers five phases: Analysis, Design, Development, Implementation, and Evaluation [11]. Of all phases of the instructional process, it's the implementation that will be mainly addressed in this chapter.

### *A. Why a learning programme in a MOOC format?*

For a problem identified as massive, an attempt at a massive solution! MOOCs are designed for a large number of participants. But what is a massive number? Although there is no precise number to define it, Stephen Downes [12] proposed the use of the Dunbar's number, which is the (theoretical) cognitive limit of number of people a person can reasonably interact with, that is around 150. It is the number of participants that distinguishes MOOCs from other Open Online Courses.

For Chiappe-Laverde, Hine and Martínez-Silva [13], the adoption of the Montoya and Aguilar [14] principles of the Open Educational Movement constitutes one of the emerging international trends in the context of Technology Enhanced Learning (TEL). In turn, that movement was built on Ehlers [14] principles that assume that knowledge belongs to the whole Humanity, as a common good, and can be disseminated through ICT, which gave rise to a myriad of initiatives concerned with openness in education worldwide, most of them based on promoting access to Open Educational Resources (OER). Nevertheless, Ehlers [15] considers that producing OER is not sufficient to generate educational innovation and a possible alternative solution would be to move from OER production to Open Educational Practices (OEP). From this perspective, one particular and very interesting OEP may be identified [13]: Open Teaching, which finds a contemporary implementation in the form of MOOCs.

The European Commission (EC) [16] and the European Association of Distance Teaching Universities (EADTU) [17] have a clear perception that MOOCs were one of the most discussed trends in Open Education during the last years and that their continuous growth has offered new learning opportunities not only to young and university students but also to lifelong professionals learners, something that had already been recognized and considered important also in the USA by the President of the American Association for Adult and Continuing Education (AAACE) [18].

There are many definitions of what a MOOC is. Thus, in 2014, two project consortia (HOME project - Higher education Online: MOOCs the European way, and the ECO project - Elearning, Communication and Open-data: Massive Mobile, Ubiquitous and Open Learning) together with OpenupEd developed a definition of MOOC shared by many European partners: "MOOCs are 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" [19]. However, in 2015, given the diversity of MOOCs developed in the meantime, they changed the definition into a course that "can be accessed by (almost) anyone anywhere as long as they have an internet connection" [19].

### *B. A MOOC tailored to whom?*

The MOOC was "especially designed for the museum community, both for professionals as well as students, volunteers or unemployed" [20] who wanted to pursue their future career in the museum sector.

Although focused and selective in the sector, the course was free and open to all who, in the sector, expressed their interest in participating. There was no selection process. However, there was a simple registration process, through Google Forms and ensuring data protection, in which interested people had to give details regarding their identification (first and last name), contact (e-mail), location (country and city), occupation, education level (upper secondary, post-secondary non-tertiary, bachelor or equivalent, masters or equivalent, and doctoral or equivalent), level of knowledge of the English language (none, basic, independent, or proficient), and digital competences level (from 1, basic, to 5, proficient).

### *C. What was expected from the MOOC?*

The course offered [20] 8 weeks of modules to allow the development of basic digital and transversal competences important for the museum sector, requiring learner's engagement for a maximum of 10 hours per week. As a common language, English was assumed, but videos were promised with subtitles in Greek, Italian and Portuguese, the consortium main national languages.

To those learners who completed the MOOC with success in at least 80% of graded activities, it was offered a certificate and the eligibility to continue their learning journey by applying for an advanced, six-month, specialization course and a work-based learning opportunity in a museum context.

## III. DELIVERY AND RESULTS OF MOOC'S PILOT VERSION

The pilot version of the MOOC Essential Digital Skills for Museum Professionals initially had an expected duration of 8 weeks, but benefited from an extension of time for learners to recover from some delay and keep up. Thus, the course ended up with 12 weeks of total study

effort, having elapsed from January 7th to March 31st, 2019.

### *A. Learning structure and environment*

Based on the results obtained in the first research phase of the project [21], the course was structured considering, in general terms, the four emerging job role profiles identified:

- Digital Strategy Manager;
- Digital Collections Curator,
- Digital Interactive Experience Developer;
- Online Community Manager.

In total, a set of 22 modules was produced, in OER format, considering the basic competences [21] identified as of common interest and need to the four job role profiles mentioned [22]:

- 17 digital: 8 identified from the European e-Competence Framework 3.0 (e-CF) [23]; 9 identified from the Digital Competence Framework for Citizens (DigComp) [24];
- 5 transversal, identified from the group considered important for 21st century [25].

In line with MOOCs' spirit, the course provided a platform for interactive forums, one general and one per module, to facilitate active participation, peer-learning and open discussion among the learners, in addition to the conventional modes of teaching, like a combination of videos, interviews, slideshows, texts, images, animations, WebQuests, and of assessing, by means of quizzes with multiple choice, true or false and matching questions.

Online tutors, one general and one per module, monitored, assisted and facilitated learners' training process, besides doing a little of mentoring.

The online, open source, educational platform chosen to provide the learning environment was Moodle (Modular Object-Oriented Dynamic Learning Environment), a collaborative Learning Management System (LMS) [26].

The structure of the course considered, in a generic way, three modules per week, with the exception of two weeks in which only 2 modules were made available, as presented in Table I.

**Table 1: MOOC'S Structure, and modules per week in platform**

| | | | |
|---|---|---|---|
| **Week** | W1 | | |
| **Competence** |  IS and business strategy alignment |  Browsing, searching and filtering data, information and digital content |  Managing data, information and digital content |
| **Type** | e-CF | DigComp | DigComp |
| **Module** | W1.1 | W1.2 | W1.3 |
| **Week** | W2 | | |
| **Competence** |  Business Plan Development |  Evaluating data, information and digital content |  Identifying needs and technological responses |
| **Type** | e-CF | DigComp | DigComp |
| **Module** | W2.1 | W2.2 | W2.3 |
| **Week** | W3 | | |
| **Competence** |  Technology trend monitoring |  Netiquette |  Leadership and change facilitator |
| **Type** | e-CF | DigComp | 21st Cent. |
| **Module** | W3.1 | W3.2 | W3.3 |
| **Week** | W4 | | |
| **Competence** |  Innovating |  Creatively using technologies |  Creative thinking skills |
| **Type** | e-CF | DigComp | 21st Cent. |
| **Module** | W4.1 | W4.2 | W4.3 |
| **Week** | W5 | | |
| **Competence** |  Needs Identification of audiences |  Developing digital content |  Collaborating through digital technologies |
| **Type** | e-CF | DigComp | DigComp |
| **Module** | W5.1 | W5.2 | W5.3 |
| **Week** | W6 | | |
| **Competence** |  Forecast development in the museum sector |  Team working | |
| **Module** | e-CF | 21st Cent. | |
| **Type** | W6.1 | W6.2 | |
| **Week** | W7 | | |
| **Competence** |  Relationship management |  Protecting personal data and privacy | |
| **Type** | e-CF | DigComp | |
| **Module** | W7.1 | W7.2 | |

| Week W8 | | | |
|---|---|---|---|
| Competence |  ICT quality management |   Communication skills |  Time management |
| Type | e-CF | 21st Cent. | 21st Cent. |
| Module | W8.1 | W8.2 | W8.3 |

The distribution of competences per week sought a balance between the three categories and each module was structured in different units, according to the level of the corresponding competence.

Interactive images were opening the description of the corresponding module, in terms of knowledge domain, learning objectives, units and respective assessment.

In turn, the weeks were also opened by means of corresponding interactive images, on the course main page (Course Overview).

On that page, different communication and interaction resources were assumed: a forum for tutors to post announcements and learners to see (Announcements); a forum (Introduce yourself to the Forum) for learners to get to know each other and interact; and a forum (Discussions on the MuSA MOOC...) for learners to discuss topics of their professional interest, current and future.

## *B. People in numbers*

*1) Interested in the MOOC and their geographies:* When the course was made available, its subject attracted significant interest in Europe and worldwide, namely 5291 people from 90 identified countries (Table II).

Despite the fact that the course has aroused interest all over the world, the territories assigned to the countries of the Mu.SA consortium added the majority of those interested, in a total of 69%, as follows: 34% in Italy; 22% in Greece; 11% in Portugal; and 2% in Belgium.

**Table 2: Interested in the MOOC per Identified Countries**

| Countries identified | Number of interested/ Country |
|---|---|
| Italy | 1796 |
| Greece | 1148 |
| Portugal | 582 |
| Spain | 178 |
| UK | 146 |
| Brazil | 135 |
| Germany | 123 |
| Belgium | 91 |
| France | 70 |
| Turkey | 66 |
| India; Latvia | 51 |
| USA | 48 |
| Ireland | 47 |
| Netherlands | 46 |
| Lithuania | 38 |
| Poland; Romania | 33 |
| Estonia | 33 |
| Croatia; Finland | 30 |
| Hungary | 26 |
| Philippines; Ukraine | 24 |
| Russia | 22 |
| Sweden | 17 |
| Bulgaria; Switzerland | 16 |
| Austria | 15 |
| Cyprus | 14 |
| Argentina | 13 |
| Egypt; FYROM; Norway | 12 |
| Canada; Peru | 10 |
| Slovenia | 9 |
| Australia; Mexico; Serbia | 8 |
| Bosnia and Herzegovina; Taiwan | 7 |
| Albania; Denmark; Kosovo; Lebanon; Malaysia; Pakistan | 6 |
| Cape Verde; Chile; Georgia; Singapore | 5 |
| Thailand | 4 |
| Bangladesh; China; Ecuador; Jordan; Morocco; San Marino; Vietnam | 3 |
| Botswana; Colombia; Kenya; Luxembourg; New Zealand; Palestine; Qatar; South Africa; United Arab Emirates | 2 |
| Angola; Azerbaijan; Belarus; Central African Republic; Congo; Djibouti; Ghana; Hong Kong; Malawi; Malta; Mongolia; Mozambique; Nigeria; Republic of Korea; Senegal; Slovakia; Tunisia; Uganda; Uruguay; Venezuela; Zimbabwe | 1 |
| Obs. Participants that did not consent to having their information used for reporting purposes | 106 |

*2) From interest to certified success:* Of the 5291 who expressed interest, 3803 registered on the platform and enrolled, 2607 attended the course and 1371 managed to achieve success (Fig.1), that is 80% of all activities

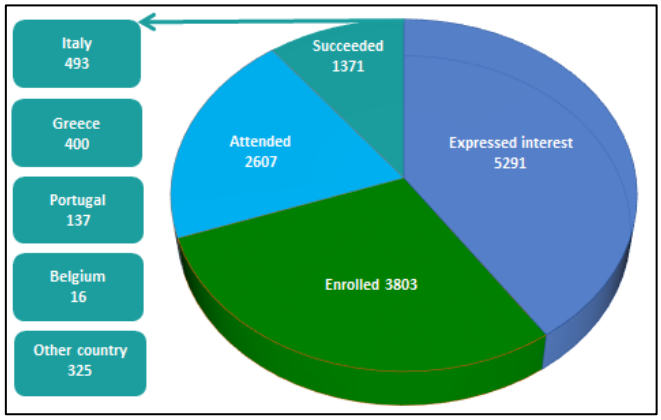



**Figure 1:** Involved in the MOOC according to the different stages of the process and geographical context of those who have been successful.

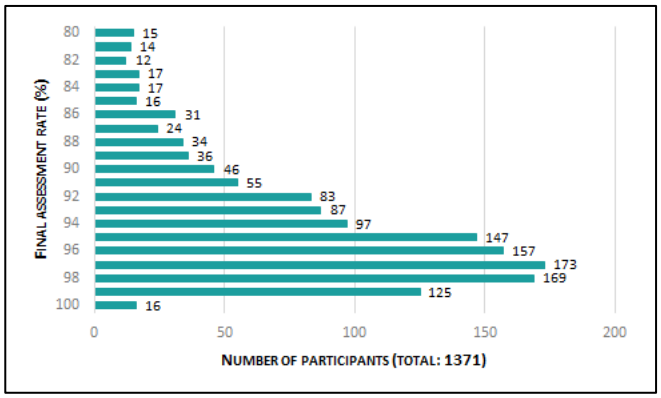



**Figure 2:** Number of successful MOOC participants by final assessment rate.

completed and 80% of assessment rate, and were able to download their certificate from the platform.

In Fig. 1, it may be observed that, of the universe of those who were successful, a majority of 76% represented the group of countries in the consortium, more specifically: Italians (36%), Greeks (29%), Portuguese (10%) and Belgians (1%). The remaining percentage gathered a group of 46 countries, identified in Table III.

**Table 3: Successful participants outside MU.SA's consortium geography and respective countries**

| Countries identified | Participants (total 325) | Countries identified | Participants (total 325) |
|---|---|---|---|
| Germany | 39 | Poland; Hungary; Lithuania | 8 |
| Spain | 37 | Croatia | 7 |
| UK | 31 | France | 6 |
| Brazil | 30 | Turkey; Philippines; Cyprus; Estonia | 5 |
| USA | 16 | FYROM; Switzerland; Sweden; India | 4 |
| Netherlands | 14 | Ukraine; San Marino; Norway; Austria; Australia; Egypt; Argentina | 3 |
| Ireland | 12 | Russia; Bulgaria; Canada; Bosnia & Herzegovina | 2 |
| Finland | 10 | Malaysia; China; Lebanon; Republic of Korea; Chile; Peru; Qatar; Albania; Luxembourg; Mexico; Uganda; Zimbabwe; Mongolia | 1 |
| Romania | 9 | | |

*3) Assessment results:* Bearing in mind that those who were successful in the course had to reach a minimum percentage of 80% in the assessment of the modules, the observation of Fig. 2 allows to verify that the majority (56%) achieved a rate between 95% and 99% and 1% reached the maximum score of 100%, which can be considered very good, even more considering all the inherent work effort.

*4) Gender representativeness:* From the registration process, it is possible to verify that the number of women involved in the course is always much higher than that of men, which leads to infer, and confirm, that the context of museum professionals is mostly female.

As shown in Fig. 3, the number of women enrolled in the course corresponds to 83% of the total enrolled (3803), with the number of men being only 17%. However, in terms of progress and successful completion (1371 in total), it appears that, although it remains higher than that of men (21%), the percentage of the number of women drops slightly to 79%, which, according to the informal and desolated feedback from many women for having to dropout, indicts difficulties dealing with overload of work and the need for reflection and for development of solutions that allow a more harmonious conciliation between the different spheres of their lives: personal, family and professional.

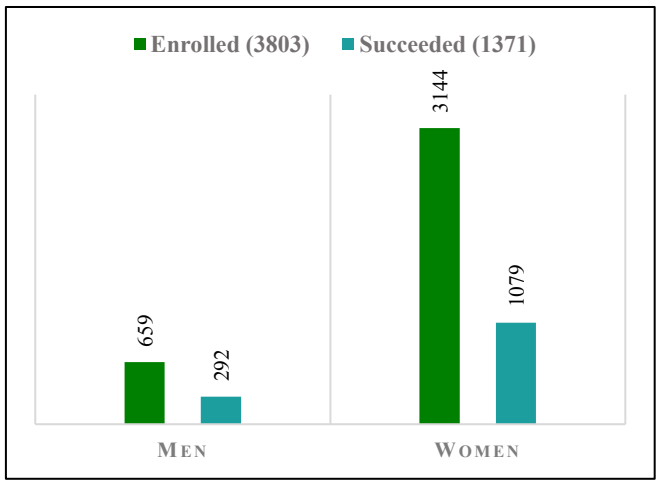



**Figure 3:** MOOC participants, enrolled and successful, by gender.

### C. *People in critical reflection*

At the end of the MOOC, a questionnaire was launched to learners to assess their satisfaction concerning different parameters. Of their total, 703 responded, corresponding to a percentage of 51%, expressing the following satisfaction rates in terms of:

*1) Learning environment:* Although Moodle is an LMS well known to learners, as it is widely used in secondary and higher education, enrolled learners had at their disposal, on the MOOC platform and since the beginning, a user guide for navigation on the platform [27], in order to familiarize themselves with its basic functionalities, interactivity, and the structure of the course. Of respondents, expressed satisfaction:

a) *626 (89%):* regarding ease of use;
b) *598 (85%):* regarding the interaction with the learning content;
c) *436 (62%):* regarding support provided for interaction with others.

*2) Tutoring:* Of respondents, expressed satisfaction:

a) *506 (72%):* regarding the general tutoring provided;
b) *520 (74%):* regarding the proficiency of tutors.

*3) Learning resources and workload:* Of respondents, expressed satisfaction:

a) *612 (87%):* regarding carefully elaborated learning content;
*b) 513 (73%):* regarding time available;
c) *647 (92%):* regarding personal performance.

*4) Training needs:* Of respondents, expressed satisfaction 590 (84%). In fact, comparing learners' prior knowledge and satisfaction after the MOOC, on average, it may be concluded that:

a) Regarding e-CF competences:
   - Previous knowledge: 51%
   - Satisfaction: 84%
   - Difference: + 33%
b) Regarding DigComp competences:
   - Previous knowledge: 61%
   - Satisfaction: 86%
   - Difference: + 24%
c) Regarding 21st Century competences:
   - Previous knowledge: 68%
   - Satisfaction: 86%
   - Difference: + 18%

### D. *People in community of practice*

"Communities of practice are online groups where people with similar interests from the adult learning sector can get together" [28].

In fact, from the interactions initiated on Moodle, participants started an informal community of practice (CoP), a group where they develop relationships, know each other better, invite their peers, regularly express their problems and attempt joint resolutions, in an alliance, share initiatives from their institutions and exchange professional information.

It started with a small private group on Facebook of members of the Mu.SA MOOC (Fig. 4), which gets stronger and tends to overflow the initial context, being described as a "Group for cultural networking between MOOC students and beyond".




**Figure 4:** Mu.SA MOOC Network. Private Group in Facebook.

## IV. FINAL CONSIDERATIONS

The pilot version of the Mu.SA MOOC, as a form of Technology Enhanced Learning, shared the vision of MOOCs, which has three elements: "(1) meeting global society's need for education, (2) opening up education, and (3) benefiting from education at scale" [29]. It sought the progression of museum professionals, today and the future, towards the development of knowledge, skills and attitudes, that is, competences, in order to better face and embrace the challenges of Digital Transformation. In addition to encouraging the creation of an international collaboration network, it sought to increase participation in the lifelong learning and collaborative practices needed by digital citizens, for their empowerment and, through them, for the empowerment of the museums to which they dedicate themselves professionally, for benefit and happiness of Society. It's all about people!

The relationship between MOOCs, museums and universities is not new, it is desired and is enhanced in order to offer opportunities for professional development [30, 31]. The innovative character of Mu.SA's MOOC resides in the training area and in the alliance established between sectors for its implementation. An alliance that implied sharing and adjustments in terms of conceptual, terminological, scientific and methodological universes. A strong and enriching alliance, but equally challenging as to the time required for maturation. And time is one of the most precious assets of our day.

The time factor was one of the ones that most influenced the process: time for the analysis, design and development phases; time for professionals to be able to dedicate themselves to lifelong learning; time that professionals have to know how to self-manage when dedicated to training; time that training has to adjust to

learning objectives and outcomes and their monitoring; time for the pleasure of knowledge, sharing and collaboration among peers. In fact and in short, learners benefited from a course of recognised high utility, of high quality, but also of high need for time of dedication.

Learners who successfully completed the course were fortunate to have had the opportunity to do so. They also demonstrated a high level of resilience to acquire some basic competences to survive and thrive in the current and future digital context. Through them, museums will more easily be able to flourish and enhance their role in digital Society, most striking in times of crisis [32], according to the tools of competences with which professionals equip themselves throughout their professional lives.

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