

The Future of Museum Professionals in the Digital Era

The Success Story of Mu.SA



Edited by
Prof. Dr. Achilles Kameas
Panagiota Polymeropoulou

This edition first published 2020

© 2020 Hellenic Open University Press

The authors of each chapter retain the right to be identified as the authors of that chapter.

The content of this work is made available under license



Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

NonCommercial — You may not use the material for commercial purposes.

ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original.

The Editors of this Book would like to express their sincere appreciation to the authors who contributed to this special issue and the reviewers who evaluated the contributions and provided helpful comments and suggestions.

Dr. Achilles Kameas, DAISSy research group,
Hellenic Open University, Greece

Panagiota Polymeropoulou, DAISSy research group,
Hellenic Open University, Greece

The Future of Museum Professionals in the Digital Era.
The Success Story of Mu.SA

Achilles Kameas and Panagiota Polymeropoulou (eds)

ISBN 978-618-84272-9-7

Production: Hellenic Open University Press

Key words:

1. Museums. 2. Culture. 3. Digital competences.

THE FUTURE OF MUSEUM PROFESSIONALS IN THE DIGITAL ERA

THE SUCCESS STORY OF MU.SA

Edited by

Prof. Dr. Achilles Kameas

DAISSy research group, Hellenic Open University, Greece

Panagiota Polymeropoulou

DAISSy research group, Hellenic Open University, Greece

Contents

Introduction.....ix

Chapter 1

Greek museums in the digital age: Training needs of museum professionals in the framework of the Mu.SA project.....1

Artemis Stamatelou, ICOM Hellenic National Committee, Greece

Chapter 2

The training needs of museum professionals in the digital field in Italy.....7

Antonia Silvaggi, Melting Pro Learning, Italy

Romina Surace, Symbola Foundation for Italian Quality, Italy

Federica Pesce, Melting Pro Learning, Italy

Margherita Sani, Istituto Beni Artistici Culturali Naturali Emilia-Romagna, Italy

Chapter 3

Digital Competences: Needs and Training in the Portuguese Museum Sector.....13

Ana Carvalho, Interdisciplinary Centre for History, Cultures and Societies (CIDEHUS) of University of Évora, Portugal

Alexandre Matos, Transdisciplinary Research Centre “Culture, Space and Memory” (CITCEM) of the University of Porto, Portugal

Chapter 4

Mu.SA: The Emerging VET curricula.....21

Spiros Ap. Borotis, DAISSy Research Group, Hellenic Open University, Greece

Panagiota Polymeropoulou, DAISSy Research Group, Hellenic Open University, Greece

Christos Pierrakeas, DAISSy Research Group, Hellenic Open University, Greece

Konstantinos Giannakopoulos, Hellenic Open University, Greece

Achilles Kameas, DAISSy Research Group, Hellenic Open University, Greece

Chapter 5

A Methodology for realizing VET curricula:

The Mu.SA case.....29

Christos Pierrakeas, DAISy Research Group, Hellenic Open University, Greece

Panagiota Polymeropoulou, DAISy Research Group, Hellenic Open University, Greece

Spiros Ap. Borotis, DAISy Research Group, Hellenic Open University, Greece

Achilles Kameas, DAISy Research Group, Hellenic Open University, Greece

Chapter 6

Insights from piloting a community builder MOOC to help

museum professionals facing 21st century challenges.....37

Paula Menino Homem, Department of Heritage Studies, FLUP CITCEM, University of Porto, Portugal

Chapter 7

Evaluation of the Mu.SA MOOC Course.....45

Massimiliano Dibitonto, DASIC, Link Campus University, Italy

Katarzyna Leszczynska, DASIC, Link Campus University, Italy

Elisa Cruciani, DASIC, Link Campus University, Italy

Chapter 8

Piloting the Specialisation Courses of the Mu.SA project:

Shifting towards the museum of the future.....51

Eleni Damianou, AKMI S.A., Greece

Giannis Panopoulos, AKMI S.A., Greece

Chapter 9

Evaluation of the Mu.SA Blended Course.....55

Massimiliano Dibitonto, DASIC, Link Campus University, Italy

Katarzyna Leszczynska, DASIC, Link Campus University, Italy

Elisa Cruciani, DASIC, Link Campus University, Italy

Chapter 10

An Agenda for Digital Culture.....63

Ivo Oosterbeek, Mapa das Ideias, Portugal

Maria João Nunes, Mapa das Ideias, Portugal

Ilídio Louro, Mapa das Ideias, Portugal

Ana Fernambuco, Mapa das Ideias, Portugal

Inês Câmara, Mapa das Ideias, Portugal

Chapter 11

Museums for social inclusion: Exploring current trends
in Greek museums.....69

Artemis Stamatelou, ICOM Hellenic National Committee, Greece

Chapter 12

The Future of Museums and Digital Transformation
Challenges.....73

*Ana Carvalho, Interdisciplinary Centre for History, Cultures and
Societies (CIDEHUS) of University of Évora, Portugal*

*Alexandre Matos, Transdisciplinary Research Centre “Culture,
Space and Memory” (CITCEM) of the University of Porto,
Portugal*

Conclusions.....81

Introduction

Don't go to a museum with a destination. Museums are wormholes to other worlds. They are ecstasy machines. Follow your eyes to wherever they lead you... and the world should begin to change for you.

Jerry Saltz

The Europe 2020 strategy establishes Information and Communication Technologies (ICTs) as a core element for five of the seven flagship initiatives to promote growth in the European Union: the European Platform Against Poverty and Social Exclusion, An Agenda for New Skills and Jobs, Youth on The Move, and the Digital Agenda for Europe, and the Innovation Union.

Europe 2020 Strategy and related Flagships promote the use of ICTs to tackle social inclusion, from young people using ICTs to improve life chances, through raising the skills and working conditions for workers in general and to build industry capable of delivering solutions for the challenges of health and demographic change. The digital literacy of the workforce remains one of the key challenges for the adoption of technology within museums and is becoming a greater integrated part of museums as role profiles develop to include digital activities.

Digital competence is one of the eight key competences for lifelong learning identified by the European Union and Mu.SA project develops modular online courses on digital competences and 21st century skills, up-skilling the museum professionals. The Mu.SA project (2016 - 2020) aimed to address the increasing disconnection between formal education and training and the world of work because of the emergence of new job roles and associated skill needs due to the quickening pace of the adoption of ICT in the museum sector.

Specific objectives were to:

1. Identify Europe-wide emerging job role profiles for museum professionals and map them to EQF and NQFs of the participating countries
2. Apply a learning outcome based methodology to the design of training modules, using ECVET to facilitate recognition of learning and mobility
3. Contribute to a European standard for learning outcomes, to occupational standards (i.e. ESCO) and frameworks (i.e. eCF)
4. Develop a modular European VET curriculum (composed of a MOOC, e-learning modules, in presence training and work based learning) that can be adapted to national needs
5. Promote quality assurance in the VET curriculum using EQAVET system
6. Develop an integrated online platform to deliver the VET curricula and to stimulate sharing, exchange and flow of knowledge, experiences and best practices
7. Pilot the VET curriculum in 3 project countries
8. Evaluate the outcomes and produce handbooks and guidelines
9. Promote, disseminate and exploit the results at national and European levels.

The project focused on the development of digital and transferrable competences so that (working and unemployed) museum professionals maximize the ROI of education, become more resilient, increase their creativity and efficiency and acquire career adaptive competences. It enabled museums to offer enhanced experiences, by up-skilling and re-skilling of museum professionals, thus raising the quality of life of the general public.

By collaborating with all stakeholders, it will deliver the right employability skills, thus increasing the efficiency and inclusiveness of VET institutions and the outreach and sustainability of museums.

The Mu.SA project aimed to improve the quality and composition of competences that qualified museum professionals currently have, changing the employability characteristics of the museum sector and affecting the overall quality of experience offered to museum communities. The project brought into light the 4 emerging job profiles in the museum sector and at the same time proved the efficiency of inclusive and versatile novel VET methodologies and tools.

More analytically, in the Mu.SA training educational programs developed, in the Massive Open Online Course (MOOC) as well as in the blended learning followed, in the 4 Specialization Courses, for designing and developing the content of the training material have been used for the first time both the European Frameworks of e-CF and of DigComp, adapting the digital competences to the needs and the skills needed in the museum sector.

In the Mu.SA MOOC entitled “Essential Skills for Museum Professionals” museum professionals were trained through an open course on 17 digital competences, 8 advanced competences from e-CF such as: Information Systems and business strategy alignment, Business plan development, Technology trend monitoring, Innovating, Needs identification, Forecasting, Relationship management, ICT quality management and 9 basic digital DigComp competences like: Browsing, searching and filtering data, information and digital content, Evaluating data, information and digital content, Managing data, information and digital content, Collaborating through digital technologies, Netiquette, Developing digital content, Protecting personal data and privacy, Identifying

needs and technological responses and Creatively using digital technologies.

In the Mu.SA 4 Specialization Courses, each course will specialize the participant in the following competences allocated to selected role profile, to 21 advanced competences from e-CF, like: Service Level Management, Product/Service Planning, Application Design, Sustainable Development, Application Development, Testing, Solution Deployment, Documentation Production, User Support, Change Support, Service Delivery, Problem Management, Information Security Strategy Development, ICT Quality Strategy Development, Education and Training Provision, Purchasing, Information and Knowledge Management, Digital Marketing, Risk Management, Process Improvement, Business Change Management. And to 6 basic DigComp competences: Copyright and licenses, Programming, Solving technical problems, Protecting personal data and privacy, Identifying digital competences gaps and Managing digital identity.

Apart from the digital competences needed for the digital literacy of professionals in culture and museums, transferable or so-called 21st century competences also were selected for the MOOC and the Specialization courses. The 21st century learning is typically used to describe the types of competencies needed to thrive in today's complex and interconnected global landscape.

In the MOOC the training included skills such as: communication skills, team working, creative thinking, leadership and change facilitator, time management. In the Specialization courses, the participants will be specialized in: Mentoring/ coaching skills, Analyze and synthesize information, Negotiation skills, Networking skills, Sense of initiative and entrepreneurship, Resilience, Decision making, Management skills, Interpersonal skills, Mediation skills, Influence/ persuasion skills, Active listening skills, Storytelling, Fact-driven, Integrity/ ethical skills.

Mu.SA has been included in the DigComp User Guide (2018) as one of the 38 existing inspiring practices of DigComp implementations and selected as one of the 9 best cases that use DigComp for employment. Also, the project has been proposed as Good Practice under the Initiative 8 – Heritage-related skills – Component 3: Opportunities for cultural heritage professionals by European Commission.

This book summarizes the scope, the methodology and the findings of the work activities of Mu.SA in the partner countries. The Mu.SA training programme developed benefitted directly the museum professionals (working staff and unemployed) in the sector, as well as the museums themselves. Indirectly, the project contributed to raising the quality of life of the general public, by enabling museums to offer enhanced digital cultural experiences.

The first chapter entitled “Greek museums in the digital age. Training needs of museum professionals in the framework of the Mu.SA project” presents the key findings of the research that was conducted by the Hellenic National Committee of ICOM, in the framework of the Mu.SA project, focusing on the training needs for digital competences and soft skills of the museum workforce in Greece.

The second chapter entitled “The training needs of museum professionals in the digital field in Italy” describes the results of the research carried out in Italy updated with some of the most recent desk research.

The third chapter entitled “Digital Competences: Needs and Training in the Portuguese Museum Sector” is analyzed the situation regarding the needs and training offer in the Portuguese context based on the Mu.SA project research findings and complemented with desk-based research.

The fourth chapter entitled “Mu.SA: The Emerging VET curricula” presents in detail the Job Role profiles, the VET curricula developed and the competences included, how they were implemented, and various details related to the quality, the validation of prior knowledge, etc.

The fifth chapter entitled “A Methodology for realizing VET curricula: The Mu.SA case” presents the two level methodology that the Mu.SA consortium applied for the design, development and implementation of the Mu.SA VET programmes (for both the MOOC and the four Specialisation courses). The chapter details the procedure of methodology which includes the concept of learning outcomes based on the Bloom Taxonomy at its heart. The specific methodology enabled the design and implementation of the Mu.SA VET curricula following the principles of EQAVET.

The sixth chapter entitled “Insights from piloting a community builder MOOC to help museum professionals facing 21st century challenges” focuses on a Massive Open Online Course (MOOC), one of the online courses of the educational and training programme developed and made available in a pilot version within the project Mu.SA - Museum Sector Alliance. 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.

The seventh chapter entitled “Evaluation of the Mu.SA MOOC Course” presents the results of the Mu.SA Massive Open Online Course "Essential digital skills for museum professionals". The chapter analyses the functionality, usability and accessibility of the course, the learning activities and content delivery, and quality of contents and subject coverage. The analysis is based on quantitative data on the progress of activities, on qualitative -quantitative surveys collected during the course and qualitative data from the interviews conducted with a representative sample of learners. Based on this data, the emerged results show an overall good level of satisfaction for all the evaluated aspects.

The eighth chapter entitled “Piloting the Specialisation Courses of the Mu.SA project: Shifting towards the museum of the future” presents in details the activities of the Specialisation Courses designed, developed and provided by the partnership within Mu.SA - Museum Sector Alliance.

The ninth chapter entitled “Evaluation of the Mu.SA Blended Course” analyses some relevant data about the

evaluation of Mu.SA Blended Course, which represent the second phase of the Mu.SA project. The logs of the platform were analyzed to evaluate the completion rate of the learning objects, the assignments and the assessments, revealing the behavior of the students, the general trends and the dropouts. Interviews have been conducted to add a qualitative dimension of analysis. Taking into account that each job profile has a different set of learning paths, the chapter presents the results for each of them, showing also the students' performance.

The tenth chapter entitled "An Agenda for Digital Culture" is highlighted the importance of the digital in the agenda for culture has been present in European policy since the early years of the 21st century and currently extends to new approaches and challenges. The Mu.SA project is an example of how the trials implicated by the digital shift in the cultural sector can be tackled through cross-sectoral cooperation and addressing the up-skilling of professionals, one of the essential factors to guarantee the sustainability of the digital adoption by institutions.

The eleventh chapter entitled "Museums for social inclusion. Exploring current trends in Greek museums" draws on examples of museums in Greece, to explore the potential of museums, as trusted institutions in the service of society, to provide access to cultural life for all, to promote equality and become vehicles for social change.

The twelfth chapter entitled "The Future of Museums and Digital Transformation Challenges" analyses some critical points and interconnected challenges in addressing museums digital transformation shaped by the Mu.SA project research findings and using literature review. Furthermore, some of the ethical challenges related to

digital transformation are discussed with the aim to contribute to the debate and provide some ideas for future reflection.

According to the International Council of Museums (ICOM) the 95% of the estimated 60,000 museums worldwide were closed due to the COVID-19 pandemic. The lockdown measures led to an abrupt withdrawal of museums from local development projects as well as the cancellation of cultural, social inclusion, well-being and educational programmes, only partially replaced by new digital offers. The closure of museums poses great challenges in terms of access to culture. Many museums had to adapt through online solutions and their staff had also to deploy their digital skills and competences.

The Mu.SA project designed and developed OERs (Open Educational Resources) over essential digital and transferable competences for the museum sector. The popularity of the online training programme (MOOC) attracted more than 5.000 professionals worldwide and around 120 people from Greece, Italy and Portugal were specialized in one of the 4 emerging role profiles (Digital strategy manager, Digital Collections Curator, Digital Interactive Experience Developer, Online Community Manager).

The pandemic demonstrated the importance of digital engagement and the increase of the digital literacy of museum professionals, underlining the necessity for developing digital competences. As a result, the Mu.SA - Museum Sector Alliance (2016-2020) project proved to be more relevant and important than ever, supporting the museum professionals so to face the digital challenges, raised during the pandemic.

Prof. Dr. Achilles Kameas

*DAISSy research group,
Hellenic Open University, Greece*

Panagiota Polymeropoulou

*DAISSy research group,
Hellenic Open University, Greece*

1. Greek museums in the digital age: Training needs of museum professionals in the framework of the Mu.SA project

Artemis Stamatelou
ICOM Hellenic National Committee
Athens, Greece
artemis.stamatelou@gmail.com

Abstract— Museums today are directly affected by the ever-changing technological environment. Regardless of the resources available, they not only adopt Information and Communication Technologies (ICT) in their daily operation, but they become a source of inspiration and, more and more often, a suitable field for developing innovative applications that offer the public new ways to access and enjoy collections. Today's museum, wishing to participate and sometimes to co-shape digital and social developments, recognises the need for continuous training of museum professionals in competences and skills. The Mu.SA–Museum Sector Alliance project addresses this particular need by providing museum professionals with a comprehensive training program to develop a range of skills that will help them meet the demands of the digital age. This chapter presents the key findings of the research that was conducted by the Hellenic National Committee of ICOM, in the framework of the Mu.SA project, focusing on the training needs for digital competences and soft skills of the museum workforce in Greece.

Keywords— digital transformation, museum professionals in Greece, digital competences, soft skills, professional development

I. INTRODUCTION

Digital transformation is already a reality that cannot be ignored by museum community, even by the most hesitant of its members. The impact of ICT in museum work, and in particular in research, administration and communication with the audience, is evident, even in the case of museums that possess only basic infrastructures and competences. The museum sector in Greece has already experienced positive changes in collection management and day-to-day operation: a large number of collections and archives have been digitised, documented and integrated in several Collection Management Systems. Greek museums managed to refine the documentation of the objects, to secure the preservation of the collections, and to facilitate better access to information. Digitisation of collections has

significantly enhanced the museum's communication with the public, as well as it strengthened the development of the museum's audience and supporters' base, especially during the long-running economic crisis of 2008 that left its mark also on the museum sector.

Following these developments, digital literacy and skills acquisition of museum professionals have become one of the key issues facing the sector, in order to meet the challenges of managing and communicating the growing digital cultural capital.

In this context, the Hellenic National Committee ICOM (ICOM-Greece), in accordance with its goal for the lifelong development of museum professionals, participates in the Mu.SA project, which aims to bridge the gap between formal education and the labor market in the museum sector. According to the agreed methodology of the Mu.SA project¹, ICOM-Greece conducted primary research by collecting and analysing qualitative data from a representative sample of Greek museum professionals and experts, via interviews and a focus group, in order to:

- Outline how the digital transformation has influenced the Greek museum sector.
- Identify and map the needs in digital competences and transferable skills of the museum professionals in Greece.
- Analyse the emerging job profiles that are discussed within the project.

The interviews with 11 museum professionals took place in February-March 2017, while, on 4/3/2017, the focus group was conducted in the ICOM-Greece premises with 9 participants. The sample of the interviewees was diverse, composed of museum experts of different scientific backgrounds and job roles, who shared their experience from various types of museums in terms of legal status, size and collections. Among the interviewees were also members from related academic fields, as well as from the creative industries. The participants offered their

¹The research conducted by ICOM Greece was part of the WP2 "Identification of emerging roles of museum professionals" of the project Mu.SA. The interviews and focus group organisation and facilitation were implemented by the author under the supervision of Prof. Alexandra

Bounia, Museologist, University of the Aegean, Department of Cultural Technology and Communication / President of ICOM-Greece Board of Trustees (2016-2017).

insights on how Greek museums respond to the digital transformation, on the training needs of museum professionals and discussed the job profiles that emerge in museums due to the impact of the constantly changing technological environment.

This chapter briefly presents the findings of the primary research complemented with desk-based research, which had included the review of current legislation and of the relevant literature [1] [2], starting from the guidelines and publications by the ICOM-International Committee for the Training of Personnel (ICOM-ICTOP) [3] [4] as well as the examination of the museology post-graduate courses of the Greek universities [5][6][7][8]. It focuses on the training needs for digital competences and soft skills of the museum professionals in Greece.

II. INTRODUCTION TO THE GREEK MUSEUM LANDSCAPE

A brief description of the Greek museum landscape, presenting the legal framework regarding museum operation and professions, as well as the various factors that influence the acquisition and demand of skills by people who join or wish to join museum workforce is necessary to better understand the skills' gaps and training needs, which were highlighted during the primary research.

A. Governance and key legislation

There are more than 600 museums in Greece that fall into two main groups in terms of their ownership status: (a) 230 state museums and collections run by the Hellenic Ministry of Culture and Sports. These museums, with few exceptions, are mainly archaeological, possessing rich collections that date from prehistoric times to the early 19th century [9] and (b) around 400 museums of various types “established by or belonging to other legal persons” [10] a significant number of which receive some kind of state funding (by the Ministries of Culture and Sports, of Education and Religious Affairs, of National Defense, the Greek Orthodox Church, and the municipalities to name but a few).

The Greek Law of 2002 on the Protection of Antiquities and Cultural Heritage² provides for the first time in Greek legislation a definition of the museum that resonates with the current ICOM museum definition, according to which: “a museum is a service or an organization of non-profit character, with or without legal personality, which acquires, accepts, safeguards, conserves, records, documents, researches, interprets and primarily exhibits and promotes to the public collections of archaeological, artistic, ethnological or other material evidence of people and their environment, for purposes of study, education and enjoyment”.

The Hellenic Ministry of Culture and Sports, the main cultural policy-making body, encompasses five General

Directorates that share responsibility for the management of the state archaeological and contemporary art museums: (a) of Antiquities and Cultural Heritage; (b) for the Restoration, Museums and Technical Works; (c) of Contemporary Culture; (d) of Financial Services, and (e) of Administrative Support and e-Governance. Issues relevant to the work of the archaeological museums are within the responsibilities of the General Directorate of Antiquities and Cultural Heritage, which is comprised of Central, Regional, and the Special Regional Services that include 10 public museums. Apart from the 10 Public Museums that operate as distinctive administrative units in Athens, Thessaloniki, Herakleion Crete and Corfu, all other state archaeological museums have been established across Greece and are interconnected with an archaeological site managed by the 53 Regional Services, namely the Ephorates of Antiquities [11].

The majority of Greek museums have entered the digital transformation since 2000. They digitised a significant amount of collections, went online through web sites and social media platforms, while a few integrated digital applications in their temporary and permanent exhibitions. These initiatives, which were made possible with the support of the Operational Programmes, “Information Society 2000-2006” and “Digital Convergence 2007- 2013” of the National Strategic Reference Framework of the European Union, were implemented by interdisciplinary teams composed mostly of museum curators, conservators and museologists in collaboration with information and communications technology (ICT) experts contractors.

One of the main outputs of the extensive digitisation work carried out in the last 20 years is that more than 526.587 digital assets of tangible and intangible cultural heritage, history, and art, contributed by 65 organisations, are currently accessible via SearchCulture.gr, which is the Greek Aggregator for Cultural Heritage Content and National Provider for Europeana run by the National Documentation Centre³.

Moreover, the Hellenic Ministry of Culture and Sports, initiated in 2012, a large scale project co-funded by the European Union with the aim to develop a unified information system for the digitisation of registered and unregistered items of movable cultural heritage nationwide, which has already resulted to a rich collection of digital data for more than 560.000 objects [12].

B. The museum professionals

According to current legislation, in order for museums to receive accreditation, they must -among other preconditions- employ sufficient and suitable personnel to fulfill their purposes [2].

Although in 2018 people working in the cultural field represent 3.3% of total employment in Greece [13] and a recent study estimates a drop of 43.6 per cent in employment in museums and libraries during the period

² Law 3028/2002 “For the Protection of Antiquities and Cultural Heritage in general” (Official Gazette153/A/28-6-2002)

³ Retrieved from: <https://www.searchculture.gr/>

2008-2014, mostly due to the financial crisis [14], concise data on museum professionals is neither available nor easy to extract [9].

Recruitment policies for state and state-supervised museums depend on central government decisions implemented via the Supreme Council for Civil Personnel Selection. The organisational chart of the Hellenic Ministry of Culture and Sports foresees 8,959 permanent positions of various specialisations that are considered essential for the effective function of the Ministry's overall cultural division [11]. The majority of state museums' staff holds a subject-focused degree, mainly in archaeology, art history, conservation, architecture etc. Archaeologists outnumber all other specialisations and undertake a wide range of tasks: excavation, research, collection management, museum education, communication, as well as museum managerial positions, as heads of the General Directorate of Antiquities and Cultural Heritage, of Regional Services and of Public Museums. In current legislation for Greek state museums, the need for operation on an interdisciplinary basis is echoed in the integration of posts for museologists, cultural managers and cultural information technology experts and could be explained in part by the international, and national since 2002, establishment and impact of the University courses in museology and in cultural management studies.

A research conducted by the British Council in 2016 to identify learning needs and skills gaps of Greek museum sector confirmed the fact that overall museum staff "holds qualifications more closely related to the collections, rather than the museum itself" [15]. The respondents of this research also claimed that young graduates are "under-qualified for business support roles and technical roles compared to more academic roles, such as curatorial or archive related roles" [15], lacking competences mostly in areas such as marketing, project management, entrepreneurship, finance, and audience development [15].

Given the fact that, half of all the people in cultural employment, in 24 of the EU Member States, have a tertiary level of educational attainment [13], addressing the gaps between formal education and training and the world of work was the main objective of the "eCult Skills" project that preceded the Mu.SA project in 2013-2015⁴, as well as of the running research project "Cultural Heritage; Bridging the gap between studies and profession", which specifically focuses on the comparative analysis of the labor market and academic education in the field of cultural heritage management in Greece and Cyprus [16]. The acquisition and up-skilling of digital competences and the promotion of life-long learning are also main objectives for the implementation of the National Digital Strategy 2016-2021 [17].

The above-mentioned introductory notes aim to provide the necessary framework for the presentation of the main research findings of the Mu.SA project, regarding the impact of the digital transformation on the Greek museum context.

C. Digital convergence and skills gaps

The research participants agreed that even in the museums having minimum ICT infrastructures and competences, functions such as collection management, administration and communication have been visibly improved. They highlighted the new possibilities that have opened up in the documentation, research and accessibility of the collections. Acknowledging the lack of a national policy that would foster a strategic approach for the integration of technologies in the museum sector, they agreed that Greek museums reacted to digital shift in a fragmentary and inconsistent way as it is revealed from the differences in digital competences among museums and often among the professionals within the same museum.

Digital efficiency regarding day-to-day management and communication depends on what the museum has already accomplished towards digital convergence, since 2000, and on what priorities and goals it sets for the future. The existence of ICT competences is also related to the size, the location and the establishment or the renovation date of the museum. Shortages of specialized staff, sporadic opportunities for continuous training, heavy workload, multitasking, low budgets and digital divide are among the reasons provided to explain the gaps in digital competences in Greek museums.

To develop the museum's digital strategy, the participants indicated that the digitisation and digital management of the collections and archives is a precondition to investing in other areas. Running an attractive, user friendly website along with the interpretation and creative presentation of the digitised content via the social media is also considered an essential investment.

D. Training for digital and soft skills

On identifying digital skills gaps, the research participants agreed that it is necessary to acquire both basic and advanced skills, as well as a broader knowledge of the rapidly changing technological landscape. They acknowledged that all museum professionals should demonstrate basic computer and Internet skills, which, although they are already considered obligatory in current legislation when hiring new staff in specific posts in the state museums, they need to be expanded and upgraded for all generations in the workplace. Moreover, the existence of staff that is competent to locate, assess and communicate what is trending in the ICT market and inform strategic planning, to ensure safe migration of digital data from older systems to newer ones, to support users, solve problems, and fully exploit social media platforms, so as to strengthen the museum's public image, encourage community engagement, and attract visitors in the physical space, were considered fundamental fields for further development within the sector.

While adopting an optimistic approach that the arts and humanities background of the majority of museum

⁴ About the eCult Skills Project: <http://daissy.eap.gr/new/en/ecultskills/>

professionals could foster smooth transfer of their know-how in the digital environment, life-long training so as to gain digital literacy was considered necessary for all professionals, regardless of their position in the museum hierarchy. They particularly mentioned learning through practice and peer learning as their most preferred approach. Good knowledge of international best practices and standards is also considered to be of significant learning value. Overall, they prioritized the development of layered training content and scenarios, adapted to the needs of different groups of learners, in regard with their prior knowledge and job role, but also according to the museum type, size and collections. They pointed out that such training should go hand in hand with the development of a culture of cross-sectional and interdisciplinary collaboration and communication that would benefit the Greek museum community as a whole.

The collected data made it clear that soft skills under the general title “communication / collaboration”, both internally and externally, ranked high for all job roles. The skills that are related to “creativity and content” (i.e. analysing, synthesizing, storytelling) are also quite popular. The respondents pointed out that although the kind of soft skills they should develop depend on the nature of their tasks (collection management, visitor services etc.) all job roles need to become familiar with the museum internal procedures, hierarchy and administrative framework. They concluded that communication and collaboration skills combined with knowledge of the collections and interdisciplinary flexibility should compose the job profile of an effective museum professional.

E. Emerging job roles

The research participants agreed that the fast changing technology would eventually create the need for new job profiles like the ones under discussion within the MuSA project [18]. They ranked highly the profile of the “Digital Strategy Manager” stressing his/her crucial role in supporting the museum director in the decision-making about ICT issues for the benefit of the museum. Given that the majority of Greek museums during the last 20 years have developed digital collections and are strongly concerned with their sustainability and accessibility, the roles of the “Digital Collections Curator” and the “Online Community Manager” were considered essential for the management, preservation, dissemination and creation of added value of the digital assets.

The majority of the interviewees acknowledged the relevance of the emerging job profiles, but they also pointed out that such a clear-cut distinction and allocation of tasks is not feasible in today’s Greek museum landscape. Reasons related to current recruitment practices, to the emphasis given to academic qualifications related to the collections rather than on technical or managerial skills, as well as to the lack of financial resources and the consequent multitasking by the existing personnel do not encourage the recruitment of new expert staff

III. CONCLUSION

The research findings supported the main premise of the project that digital literacy is of critical importance for Greek museum professionals if they wish both to advance their research and to keep up with the expectations of an international audience. Most of the interviewees claimed that, nowadays, a competent museum professional would resemble a “Renaissance man”, a person who navigates easily across a number of different subject areas. In that context, continuous training in digital and soft skills targeted to the actual needs is considered crucial not only for keeping up with fast-changing technology but mostly for fulfilling the multifaceted social role of today’s museum.

ACKNOWLEDGMENT

The author would like to express her acknowledgments to all colleagues of the Mu.SA-Museum Sector Alliance Project consortium, especially to the ICOM-Hellenic National Committee Board of Trustees and team members. Special thanks are due to all Greek participants in the research phase of Mu.SA project. The research conducted was funded under the auspices of Mu.SA project – Museum Sector Alliance (575907-EFP-1-2016-1-EL-EPPKA2-SSA) with support from the European Commission through Erasmus + (Sector Skills Alliance).

REFERENCES IN ENGLISH AND IN GREEK (WITH ENGLISH TRANSLATION)

- [1] A. Bounia, “Cultural Policy in Greece, the Case of the National Museums (1990-2010): an Overview”, in *Museum Policies in Europe 1990–2010: Negotiating Professional and Political Utopia*, L. Eilertsen, A. B. Amundsen, Eds. EuNaMus Report No. 3, Linköping University Interdisciplinary Studies, No. 15, Linköping University Electronic Press, Linköping, Sweden, 2012, pp. 127-154. [Online]. Available: <https://bit.ly/39ZaqMa>. [Accessed: 14 April 2020].
- [2] A. Gazi, “National museums in Greece: History, Ideology, Narratives”, in *Proc. of the 2011 Int. Conf. on Building National Museums in Europe 1750-2010 of the EuNaMus Project: European National Museums: Identity Politics, the Uses of the Past and the European Citizen*, April 28-30, 2011, Bologna, P. Aronsson, G. Elgenius, Eds. Linköping University Electronic Press, Linköping, Sweden. 2011. pp. 363-399 [Online]. Available: <https://bit.ly/3m3TaaO>. [Accessed: 14 April 2020].
- [3] J. Legget, Ed., *Staff and Training in Regional Museums*, ICOM-ICR, ICOM-ICTOP, Paris, 2011.
- [4] A. Ruge, Ed., *Museum Professions. A European Frame of Reference*, ICOM-ICTOP, 2008.
- [5] Ο. Γκράτζιου, “Η ανανέωση των μουσείων, οι ανακατατάξεις στην ανώτατη εκπαίδευση και οι μουσειακές σπουδές στην Ελλάδα” [“The renovation of museums, rearrangements in higher education and museum studies in Greece”] *Ιλίσσια Περιοδική έκδοση για θέματα μουσείων, ΥΠΠΟ/Βυζαντινό και Χριστιανικό Μουσείο*, 5-6, σ. 30-35, Φθινόπωρο 2008.
- [6] Μ. Δερμιτζάκης, “Μουσειακές Σπουδές στο Πανεπιστήμιο Αθηνών” [“Museum Studies at the University of Athens”], *Ιλίσσια Περιοδική έκδοση για θέματα μουσείων*,

- ΥΠΠΟ/Βυζαντινό και Χριστιανικό Μουσείο, 5-6, σ. 16-23 Φθινόπωρο 2008.
- [7] Δ. Κωνσταντίος, “Μουσειακές Σπουδές: εν τω πράγματι” [“Museum Studies: in practice”] *Ιλίσσια Περιοδική έκδοση για θέματα μουσείων, ΥΠΠΟ/Βυζαντινό και Χριστιανικό Μουσείο*, 5-6, σ. 32-37 Φθινόπωρο 2008.
- [8] Α. Μπούνια, Σ. Δασκαλοπούλου, “Μουσεία και νέες τεχνολογίες. Σπουδές Πολιτισμικής Πληροφορικής στο Πανεπιστήμιο Αιγαίου” [“Museums and new technologies. Studies in Cultural Informatics at the University of the Aegean”] *Ιλίσσια Περιοδική έκδοση για θέματα μουσείων, ΥΠΠΟ/Βυζαντινό και Χριστιανικό Μουσείο*, 5-6, σ. 8-15 Φθινόπωρο 2008.
- [9] M.X. Garezou, S. Keramidas, “Greek Museums at a Crossroads: Continuity and Change,” *Museum International*, 69:3-4, pp. 12-25, 2017.
- [10] Law 2385/2011 “On the Establishment and Recognition of Museums, according to Law 3028/2002” (*Official Gazette* 2385/26-1-2011).
- [11] Presidential Decree 4/2018 (*Official Gazette* 7/A/22-1-2018) on the Organisation of the Hellenic Ministry of Culture and Sports.
- [12] Ε. Γερούση, Σ. Πατρόνος, Κ. Σ.-Δ. Ανανάδης, Χ. Βασιλοπούλου, “Προγράμματα Ψηφιοποίησης. Εμπλουτισμός των Ψηφιακών Συλλογών των Κινητών Μνημείων του ΥΠΠΟΑ και Ανάπτυξη Πληροφοριακού Συστήματος του Εθνικού Αρχείου Μνημείων” [“Digitisation Programs. Enrichment of the Digital Collections of the Movable Monuments of the Ministry of Culture and Information System Development of the National Archive of Monuments”] *ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο*, No. 15, σ. 83, Δεκέμβριος 2018
- [13] Eurostat, *Culture Statistics – 2019 Edition*, European Union, 2019
- [14] V. Avdikos, G.-M. Klimis, A. Mimis, L. Gaitanidis, and E. Kostopoulou, *Mapping of the Cultural and Creative Industry in Greece. Executive Summary*. Hellenic Ministry of Culture and Sports / Regional Development Institute – Panteion University. Athens: 2016. Available at: http://ep.culture.gr/Lists/Custom_Announcements/Attachments/198/Xartografisi.Short.ENG.pdf [accessed 20 April 2020].
- [15] British Council, “Cultural Skills Unit Research. Preliminary research for the museum sector in Greece”, British Council, Athens: 2016.
- [16] Δ. Ανδριοπούλου, Π. Νικολάου, Δ. Καταπότη, “Πολιτιστική Κληρονομιά: Γεφυρώνοντας το κενό μεταξύ σπουδών και επαγγέλματος σε Ελλάδα και Κύπρο” [“Cultural Heritage: Bridging the gap between studies and profession in Greece and Cyprus”] *ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο*, No. 16, σ. 66-67, Δεκέμβριος 2019.
- [17] Εθνική Ψηφιακή Στρατηγική 2016-2021 [National Digital Strategy 2016-2021], Υπουργείο Ψηφιακής Πολιτικής, Τηλεπικοινωνιών και Ενημέρωσης, Γενική Γραμματεία Ψηφιακής Πολιτικής, Νοέμβριος 2016.
- [18] Silvaggi, A. (Ed.). *Museum Professionals in the Digital Era: Agents of Change and Innovation (Full Version Report)*. [Rome]: Mu.SA - Museum Sector Alliance, 2017.

2. The training needs of museum professionals in the digital field in Italy

Antonia Silvaggi
Melting Pro Learning
Rome, Italy
a.silvaggi@meltingpro.org

Federica Pesce
Melting Pro Learning
Rome, Italy
f.pesce@meltingpro.org

Romina Surace
Symbola Foundation for Italian Quality
Rome, Italy
romina.surace@symbola.net

Margherita Sani
Istituto Beni Artistici Culturali Naturali Emilia-Romagna
Bologna, Italy
Margherita.Sani@regione.emilia-romagna.it

Abstract— *Technology has an enormous potential and any organisation, including museums, must gauge and calibrate its use concerning its own mission. In this sense digital technology is also a tool for social participation. The value of a museum is no longer considered only for the collections it hosts, but as the value of the relationships that it can establish within society, with other institutions and with all kinds of stakeholders. The research developed in Italy within the framework of the Mu.SA project opened new insights on the importance of digital profiles and soft skills for museum professionals, as a result of the potentiality of new digital technologies in Italy. This chapter describes the results of the research carried out in Italy between December 2016 and March 2017 - updated with some of the most recent desk research. At the moment we do not know what will effectively happen to museums in the future. Despite the economic crisis and the current crisis of meaning, museums still stand out as an important reference point for our society that is constantly in motion. Within this scenario, the main investment to be achieved is still that in human capital, as confirmed also by the Mu.SA research.*

Keywords - *Training needs, digital and soft skills, strategy, communication, audiences, museum sector, Italy, human capital*

I. INTRODUCTION

What are the skills needed for museum professionals in Italy in order to meet the challenges posed by the introduction of digital technology? How can museums respond to the new needs of a constantly changing society?

This chapter describes the main results conducted between December 2016 and March 2017, within the Mu.SA – Museum Sector Alliance – project, co-funded by the Erasmus+ programme, strand *Skills Alliances* [1].

The research involved around 30 experts of the Italian Museum sector. The research revealed a complex and constantly developing – though highly fragmented – situation on the theme of digital technologies in the Italian museum sector.

We asked the experts involved to describe to us the present situation in Italy as regards the need for digital skills and the gaps currently existing. The results helped us understand the challenges that the sector now faces, and they were instrumental in identifying new training needs of professionals considering the spread of new and digital technologies

Most respondents stated that there are still many wide gaps that need to be filled, and they described a level of digital skills and an investment situation that reflects the fragmentary nature of the Italian museum scenario. Alongside those who reported a clear delay in the sector with respect to digital issues, "even if one just talks about digital technologies as a separate matter", there are also situations in which there is an awareness that "starting from internal competences, based on the vision of the upper management and the available resources one can build a quite well evolved digital scenario as regards heritage and the public". In these situations, a great deal is being done, despite very limited investments, in comparison to other European museum contexts.

The chapter starts by providing the context to the Italian Museum sector, and how the cultural policy reforms are moving towards a National system. Following, we present the state of the arts regarding the digital transformation process in Italy. Finally, we stress a crucial issue in Italy, which is the training of museum professionals and the importance of investing in digital training skills (both soft and technical skills), in human capital, as revealed also by the Mu.SA research. The digital dimension is a crosscutting dimension.

Although every person within the museum has their own role and specific expertise, the entire museum staff must be trained in the digital skills associated with communication and the management of collections, in order to understand their value.

II. FROM FRAGMENTATION TO THE NATIONAL MUSEUM SYSTEM

A peculiar characteristic of the Italian cultural heritage is its extensive diffusion and pervasiveness throughout the national territory, which means that many museums have inevitably taken on a role as centres for presenting the local area and providing information on it. In fact the “*Act concerning the technical-scientific criteria for the standards of operation and the development of museums*” [2] included a number of indications that essentially reflect those that were examined by the Code of Ethics of the ICOM [3], with the addition of “relationships with the territory”, a factor that effectively focuses on and enhances this specific prerogative of the Italian Cultural Heritage system.

Back in 2016, when we carried out the research, there was a lack of a National Museum Policy strategy that encouraged an integrated view among heritage and new technologies [4]. This absence often caused digital innovation, except for few cases, to simply consist of being equipped with a website and social media communication tools.

The Franceschini reform [5] (Ministerial Decree of December 23rd, 2014) brought about a radical change which aimed to create a long-term “national museum system”. One of the most prominent measures was the transfer of new powers and instruments to 20 museums with autonomy in the areas of accounting, administration and organisation entrusted to a director assisted by a small number of professional figures, in line with standards defined on the basis of the ICOM code. Moreover, all state museums must now have a mission, a statute and, above all, an autonomous budget.

According to the Report on the “Cultural Heritage Forecast” by Isfol Institute (2016) [6], (now called INAPP), the reform will have an impact on the request for new skills with respect to a number of professional figures ranging from that of superintendent of the national cultural heritage as well as museum technicians, directors, curators and conservators in addition to staff dealing with relations with the public and receptionists.

Finally, on February 21st, 2018, the Italian Ministry of Cultural Heritage and Tourism approved the Decree n. 113 “Adoption of the Uniform Quality Levels for Museums, Monuments and Archaeological Sites”. The Levels¹ form the basis for the setting up of the National Museum System. Around 5.000 Italian museums wanting to be part of the System will have to show evidence of compliance with the Uniform Quality Levels.

The Levels identify three relevant macro-areas of museum work: Organisation; Collections; Communications and relations with the public and the territory. In the latter the most significant indications regarding the importance of the use of technology are: “The institutional goal of a museum is to offer the public a

cultural service that is essentially based on the conservation and enhancement of its collections. Communicating knowledge about these collections and promoting them are fundamental tools for fulfilling that mandate. Communication should both be informal, for example via an information point, and formal via signage that should include the identifying information of each artefact on display, as well as printed or online informational material.

The museum must be careful to ensure that this information is always complete and up to date and is also in English and other languages as necessary. Sufficient space should also be given for the use of technologies. The importance of the internet as the first approach between users/visitors and museums has often been emphasised. It is therefore of primary importance that online information about access to the museum, its services, collections, and additional activities – via social networks, applications, etc. – should be available and that these are effective in keeping this information complete and up-to-date.” [7]

In addition to what prescribed by the Levels, in July 2019 the Italian Ministry of Cultural Heritage launched a ‘Three-year Plan for the Digitisation of Museums’ [8] to provide all Italian museums with a coherent reference framework capable of guiding the adoption of digital solutions². Both the adoption of the Uniform Quality Levels and the launch of the ‘Three year Plan for the Digitisation of Museums’ represent an essential challenge for Italian museums and at the same time an opportunity for growth and improvement for all museums and places of culture, regardless of ownership, size, region to which they belong.

Hopefully, this should foster a broader reflection leading to a genuine understanding of the potential and the opportunities of digital technologies as regards the role of museum concerning their collections and the public, and not just investments in technological facilities without understanding the purposes. The digital dimension must, therefore, be considered in a more cross-cutting way. Policy and planning must be shared in such a way that it involves the entire organization, with shared practices to be followed.

III. DIGITIZATION OF CULTURAL HERITAGE STARTED BUT INCOMPLETE

Despite the progressive diffusion and application of digital technologies in the museum world, in Italy only one museum out of ten (10.4%) [9] carried out the digital cataloging of the property owned. Of these, about a third (37.4%) have already completed the digitization process, two thirds have started the digitization activities but have covered about 50% of the goods and collections available.

The use by Italian museums of interactive technologies and digital tools that allow to enrich the visitor experience and the engagement of the public still appears limited: only

¹ The Levels were jointly developed by the Ministry, the Regional Governments, and the local authorities with the contribution of

universities, public Officials, and experts in the field of cultural heritage.

half of the structures surveyed (44.7%) make available at least one device between smartphone, tablet, touch screen, visit aids such as video and / or multimedia rooms, QR Code technology and augmented reality paths.

If onsite communication and information has wide margins for development, online communication involves an increasingly large number of structures: half of the institutes have a dedicated website (51.1%) and 53.4% have an account on the most important social media (such as Facebook, Twitter, Instagram, etc.).

The number of establishments offering the possibility to buy tickets online has doubled in three years - from 6.6% in 2015 to 14% in 2018 - while the number of establishments making Wi-Fi connection available to their users free (from 18.6% in 2015 to 25.1% in 2018). 38.4% of the museum institutes publish on the web links to digital maps and / or geographic coordinates useful for the geo-location of the structure and one museum out of ten (9.9%) offers the opportunity to virtually visit their institution.

IV. DIGITAL TRANSFORMATION IN ITALY

A study recently developed by the Observatory for Digital Innovation in Cultural Heritage and Activities [10], promoted by the School of Management of the Polytechnic of Milan, reveals that digital transformation is a reality. However, we can register still some diffuse resistance, as we did in 2016-2017.

This research is carried out on a representative sample of Italian Museums monitored over a period of three years (2017-2019). The results showed³ that 85% of museums have a website, but only 47% have a website mainly dedicated to their museum⁴. Looking at accessibility, 41% of the websites are available only in the Italian language, and 48% are non-compatible with mobile devices.

Regarding social media, 69% of the museums are active at least on one social media channel (in 2018 the number was 57%). Facebook is the most used channel (from 54% to 67%), followed by Instagram (rising from 23% to 26%) and continually growing. Newsletters are used by 76% of the museums, as a means to regularly keeping their audiences updated on events and activities. Only 14% of museums can send out customised information based on different segments.

Museums are broadening their online offer and increasing their partnership with other digital providers: 76% of museums are on TripAdvisor (1% more compared to 2018). Yet, the idea of exploiting other channels, like online travel agencies (OTA) or online tour operator, is less spread.

More than two tourists out of three (68%) research online places to visit for their holidays, but in Italy, 73% of the cultural activities can only be bought on the spot and in cash (66%).

The report states that there is an increase in visitor monitoring after the visit: 83% of the institutions declare

that they consult analytics, and 77% says to read reviews and to reply when needed. Also, the report argues that virtual reality is spreading (16%), as well as augmented reality (12%) and videogames (10%), as ways of engaging and interacting with visitors. 17% of the museums stated to have an app, and 62% declares that they are going to develop one shortly.

It is undeniable that one of the barriers to digital development is the lack of investment in technological infrastructure. Many museums have now understood the importance of digitalizing their collections to enhance their heritage. However, the report argues that still, 76% of interviewed museums declares to be lacking a digital strategy. These data are fundamental in light of the Mu.SA results and it was also revealed by our research: the lack of a strategy that puts the audience experience and participation at the center in a compelling manner, can result in the use of digital tools in a trivial and meaningless way. Digital tools or technological solutions should not be ends in themselves, but a means to an end.

The digital strategy of a museum is not only a matter of economic resources but also of an open-minded attitude and leadership that can catalyze change. A clear established digital strategy and priorities would result in better alignment and involvement of the different departments and enable the foreseen change eventually.

The results suggested how important it is to work strategically to extent a digital culture that overcomes resistance and that encourages understanding of the opportunity that it represents, with the prospect of expanding and accessing culture to those who are not experts or professionals. Technology has an enormous potential and all organizations, including museums, must learn to use it in conformity with their own mission. Digital culture and technology can also be a tool for social participation and technological tools must be used in order to create culture.

Only significant innovative processes as well as new behaviors and models can develop digital products.

Technology has an enormous potential and any organization, including museums, must gauge and calibrate its use concerning its own mission. In this sense digital technology is also a tool for social participation.

Today, some museums are beginning to keep track of the changes in our contemporary society, which tend to encourage contact between cultural institutions and the public, so that the museum can become a social place of participation and sharing. The value of a museum is no longer considered only for the collections it hosts, but as the value of the relationships that it can establish within society, with other institutions and with all kinds of stakeholders [11].

³ The study was carried out on a sample of 476 Italian institutions, amounting to about 10% of the museums that were open to the public in 2015.

V. TRAINING MUSEUM PROFESSIONALS

Our research revealed that one crucial point is the critical need to train these professional figures in Italy.

The Italian National Charter for Professional Training - approved by the International Council of Museums (ICOM) in 2006, states the necessity of professional upgrading for museum professionals [12] and its vital importance as a factor in the life of a museum. To thrive in a constantly changing environment and to bridge the gap between museums and the different audiences, investment in continuous training must be a top priority.

On the contrary, according to ISTAT (the Italian National Institute of Statistics) report in 2016, in the event of a 10% increase in their spending budgets, only 0,8% of these structures declared that they would use these funds to realize training interventions to improve the qualifications of their staff [13].

The Observatory for Digital Innovation in Cultural Heritage and Activities report states, that 64% of the museums argue that they lack internally professional figures with the right digital skills. Therefore, it seems to be quite difficult to talk about innovation at this stage. Today, many institutions are self-taught or are initiating specific internal training. There is still a lot of work to do in terms of increasing the awareness of Italian Museum institutions of the huge changes happening nowadays, accelerated by the speed of new technologies, and the need of appropriate investment in training to spread a digital culture.

The research of Mu.SA aimed to understand if there are any trends related to the new museum profiles as regards digital technologies. This is why we started from the results of the previous eCult Skills project, of which Mu.SA is the follow-up, which led to the identification of five profiles.

Overall, the four job- role profiles identified by the Mu.SA project to help museums face the digital challenges: *Digital strategy manager*, *Digital Collections Curator*, *Digital Interactive Experience Developer*, *Online Community Manager* [14], are seen as being too advanced or utopian in consideration of the current situation in Italy. They are also difficult to integrate due to administrative problems.

The research in Italy suggested that the most important profiles that would be important to invest in are the Online Community Manager and the Digital Strategy Manager. The most important competences of the Online Community Manager (also known as Digital Media Curator or Visual Media Curator) range from the monitoring of technological trends, to managing the online and offline community. Senior roles are needed to work successfully with social media; however, the general trend is to have this position occupied by junior profiles. Some skills can be acquired by practice only.

The second most important role in the Italian museum landscape is the Digital Strategy Manager, a technological mediator capable of building a profitable dialogue between the museum context and the world of technology, a person who can promote technological innovation and who is very familiar with both these areas. The other two profiles are

also important, Digital Collections Curator and the Digital Interactive Experience Developer.

In general, all these profiles able to renovate the museum sector, should have a sound knowledge of strategic skills, a good knowledge of how a museum works. These new professional figures may partly consist of the trained-up staff of museums, but they must also be recruited on the job market, although in this matter the theme of institutional reforms is still an open debate. One interviewee emphasized that "*in order to make the change possible, museums should be autonomous as regards staff recruitment*".

Another, one of the problems is that there is no match between academic titles and public job competitions. The relevant professional skills are often acquired in the field, and they are often not recognized, when applying for public jobs competitions. Therefore, a reform in Italy on this topic is a priority. As a matter of fact, on this regard, the Italian National Museum System is indeed based on networking and collaboration between the State, the Regions, Municipalities and other Local Authorities, but also Universities and the whole education and training system.

With specific regard to the continuous professional development of museum operators required to meet the important challenges described so far, in January 2020 an agreement has been signed between the Ministry for Cultural Heritage - Directorate-General for Education and Research and DG Museums - and the Foundation 'School of Cultural Heritage' to develop forms of collaboration in the field of advanced training, continuous professional development, research and dissemination in the field of museums and cultural heritage.

ICOM Italy is also actively collaborating to the initiative. The objective is to develop an "Integrated training project for the national museum system" aimed to promote knowledge and maximum participation of museums to the national museum system and to implement a series of training initiatives and video lessons, support the circulation of guidelines, operational notebooks and other material useful for the creation of a common knowledge base among museum professionals in the country.

VI. THE IMPORTANCE OF TEAMWORK

The digital dimension is a crosscutting dimension. Although every person within the museum has their own role and specific expertise, the entire museum staff must be trained in the digital skills associated with communication and the management of collections, in order to understand their value. Among good European practices in Britain there is the excellent example of the National Museum of Wales, which has trained its entire staff at all levels in the use of social media.

As the interviewees have pointed out, transversal/soft skills and vertical skills are very important. Museum professionals are going to be able to better contribute to the future of their museums if they are fully engaged in innovative organizational processes, working in multidisciplinary teams, improving internal collaborations

within museum departments and external partnerships with different communities. A mutually beneficial exchange between humanities and digital competences. This can promote a culture of cross-sectorial and interdisciplinary collaboration and communication that benefits the museum community as a whole.

For this reason, the training courses of the Mu.SA project tried to strike a balance between digital technical skills and soft⁵ skills. All areas of museum activities must be influenced by digital and must be guided by a knowledge and an awareness of the opportunities offered by new technologies throughout the whole organisation. Soft skills are important "because they are the skills that facilitate the work, especially in relation to contemporary digital skills" as said by one of the Italian interviewees.

At the moment we do not know what will effectively happen to museums in the future. Despite the economic crisis and the current crisis of meaning, museums still stand out as an important reference point for a society that is constantly in motion. Within this scenario, the main investment to be affected is still that in human capital.

VII. CONCLUSIONS

Technology has an enormous potential and any organisation, including museums, must gauge and calibrate its use concerning its own mission. In this sense digital technology is also a tool for social participation.

The value of a museum is no longer considered only for the collections it hosts, but as the value of the relationships that it can establish within society, with other institutions and with all kinds of stakeholders.

At the moment we do not know what will effectively happen to museums in the future. Despite the economic crisis and the current crisis of meaning, museums still stand out as an important fortress or bulwark of a society that is constantly in motion. Within this scenario, the main investment to be achieved is still that in human capital. The digital dimension is a crosscutting dimension.

Although every person within the museum has their own role and specific expertise role and specific expertise, the entire museum staff must be trained in the digital skills associated with communication and the management of collections, in order to understand their value.

Museum professionals are going to be able to better contribute to the future of their museums if they are fully engaged in innovative organizational processes, working in multidisciplinary teams, improving internal collaborations within museum departments and external partnerships with different communities.

All areas of museum activities must be influenced by digital and must be guided by a knowledge and an awareness of the opportunities offered by new technologies throughout the whole organisation. Digital training must

try to strike a balance between digital technical skills and soft skills.

ACKNOWLEDGMENT

The authors would like to express her acknowledgments to all colleagues of the Mu.SA-Museum Sector Alliance Project consortium. Special thanks are due to all Italian participants in the research phase of Mu.SA project. The research conducted was funded under the auspices of Mu.SA project – Museum Sector Alliance (575907-EEP-1-2016-1-EL-EPPKA2-SSA) with support from the European Commission through Erasmus + (Sector Skills Alliance).

REFERENCES

- [1] A. Silvaggi, F. Pesce and R. Surace, (Eds) *Musei del futuro. Competenze digitali per il cambiamento e l'innovazione in Italia.*[Roma]. Melting Pro & Symbola Foundation, Museum Sector Alliance, 2018. <http://www.project-musa.eu/results/>
- [2] Ministero per i Beni e le Attività Culturali, *Atto di indirizzo sui criteri tecnico-scientifici e sugli standard di funzionamento e sviluppo dei musei*, D. Lgs. n.112/98 art. 150 comma 6 – (D.M. 25.7.2000) (<https://bit.ly/210j7d9>)
- [3] G. Lewis, ICOM Code of Ethics for Museums, L. Baldin et al Trans IT, Milan, Zurig 2009 (<https://bit.ly/3qLX7V1>).
- [4] A. Silvaggi, F. Pesce, *The Museum Professionals in the Digital Era. Agents of change and innovation, 2018* Short version (<https://bit.ly/3p4aKOP>) Full version (<https://bit.ly/2TZ7BRH>)
- [5] Ministero per i Beni e le Attività Culturali, organizzazione e funzionamento dei musei statali, DM 23 Dicembre 2014 (<https://bit.ly/3oS189L>)
- [6] ISFOL, Franceschetti M., Le professioni della cultura: scenario dei fabbisogni professionali per il settore dei beni culturali, Intervento a "Le trasformazioni culturali in Italia", Fondazione Università di Mantova (<https://bit.ly/3eq5Lmj>).
- [7] Ministero per i Beni e le Attività Culturali, Annex to the Legislative Decree no. 42 of 22 January 2004, Article 114 of the Cultural Heritage and Landscape Code, Uniform quality levels for Museums (<https://bit.ly/3n4j9Qv>).
- [8] Ministero per i Beni e le Attività Culturali, July 2019, *Piano Triennale per la Digitalizzazione e l'Innovazione dei Musei* (<https://bit.ly/3eqWRft>).
- [9] ISTAT. *L'Italia dei musei, 2018* <https://www.istat.it/it/archivio/167566>
- [10] M. Arnaboldi, E. Lorenzini, 2019, Third edition of the Digital Innovation Observatory for Cultural Heritage and Activities, promoted by the School of Management of the Politecnico di Milano
- [11] Sturabotti, D., and R. Surace (Eds.). *Museum of the Future: Insights and Reflections from 10 International Museums.* [Roma]: Symbola Foundation & Mu.SA - Museum Sector Alliance, 2017.
- [12] <https://bit.ly/32b99Nh> (Downloaded in April 2017)
- [13] ISTAT. I musei, le aree archeologiche e i monumenti in Italia, 2016 <https://www.istat.it/it/archivio/194402>
- [14] Silvaggi, A., Pesce F., (Ed.) *Emerging job Profiles for museum professionals (Full version report)* 2017 (<https://bit.ly/3exCUgc>)

⁵ Soft skills, also referred to as communication skills, transversal skills or talents, are transferable skills that everyone has and that everyone uses, like the ability to work in a team, leadership, creativity, self-motivation, the ability to make decisions, time management and problem-solving

(<https://ec.europa.eu/esf/transnationality/content/how-boost-soft-skills-recognition>)

3. Digital Competences: Needs and Training in the Portuguese Museum Sector

Ana Carvalho

Interdisciplinary Centre for History, Cultures and Societies (CIDEHUS) of University of Évora
Évora, Portugal
arcarvalho@uevora.pt

Alexandre Matos

Transdisciplinary Research Centre “Culture, Space and Memory” (CITCEM) of the University of Porto
Porto, Portugal
ammatos@letras.up.pt

Abstract— *Recognising the rise of digital technologies as one of the challenges currently facing contemporary museums means stepping back to reflect on how to orchestrate the acquisition of new competences and mind-sets. Professional development will need to address new competences related to digital technologies as part of the changing dynamics and expectations of contemporary society. More than ever, the current crisis due to the impact of the Covid-19 in society has demonstrated the value and importance of digital engagement, not as rhetorical potentiality, but a real opportunity to increase museum digital services to engage remotely with audiences, in a time where museums were forced to close doors. Increasing digital literacy and confidence among museum professionals is a crucial aspect of supporting the digital transformation of museums and enabling change. That is also the key argument that informed Mu.SA - Museum Sector Alliance (2016-2020) project, by focusing on the development of digital competences in the museum sector and supporting professional training in Greece, Italy and Portugal. In this chapter, we analyse the situation regarding the needs and training offer in the Portuguese context based on the Mu.SA project research findings and complemented with desk-based research.*

Keywords— *digital transformation, museum professionals, digital technologies, digital competences, professional development.*

I. INTRODUCTION

To recognise the rise of digital technologies as one of the challenges currently facing contemporary museums means stepping back to reflect on how to orchestrate the acquisition of new competences and mindsets [1] [2] [3] [4] [5]. Whether through formal training, such as a university degree, or non-formal training through lifelong learning, professional development will need to address new competences related to digital technologies as part of the

changing dynamics and expectations of contemporary society [6] [7] [8] [9].

Increasing digital literacy and confidence among museum professionals is a crucial aspect of supporting the digital transformation of museums and enabling change [10] [11] [12]. That is also the key argument that informed Mu.SA - *Museum Sector Alliance* (2016-2020) project, by focusing on the development of digital competences in the museum sector and supporting professional training in Greece, Italy and Portugal. In their role as partner in the Mu.SA project consortium, ICOM Portugal participated in the empirical study of the project’s first phase, focusing on the Portuguese museum sector. The main objectives were to understand how museums are embracing the challenges of digital technologies, to map professionals’ needs in terms of digital competences, and to identify emerging job profiles.

Primary research was carried out by applying qualitative research methods (interviews, focus groups) to grasp how the development of digital technologies is affecting museums, taking into consideration the perceptions and interpretations of this community of professionals itself. The research was carried out from December 2016 to July 2017.

In total, 12 in-depth interviews (in person) were conducted during this phase. Each one addressed a number of open-ended questions, including inquiring about whether there are gaps in digital competences among museum professionals and also which digital and transferable competences will need to be developed.

Interviews focused also on a set of open-ended and closed questions concerning the five eCult skills profiles¹ framework (provided in advance), in order to understand its relevance in the Portuguese museum sector. Our aim in constituting the interview target group was to reach museum staff (full-time or freelance) from different levels of expertise (management, curatorial, education,

¹ The design of the Mu.SA project takes into consideration the findings of a previous European two-year project (2013-2015), eCultSkills (*eSkills for Future Cultural Jobs*) which identified five emergent role profiles in the culture sector that involve digital skills, namely: ‘Cultural ICT Consultant’, ‘Digital Cultural Asset Manager’, ‘Interactive Cultural

Experience Developer’, ‘Cultural ICT Guide, and ‘Online Cultural Community Manager’. See more about the project: <http://groupspaces.com/eCult/pages/project-results> (Accessed 13 April 2020).

communication and marketing, accessibility, technician, conservation).

Another point was to obtain a diversified sample of museums, in terms of management (national and local museums, public and private) and in terms of museum types. As regards size, the majority of museums covered were small/medium organisations with 21-50 staff members.² Additional interviews were conducted with two experts in technology from external companies to provide another perspective and two academic researchers with expertise in the field.

A focus group was also carried out on 22 July, 2017, in collaboration with Mapa das Ideias, another Portuguese partner within the Mu.SA project consortium. The main objective of the focus group was to explore and consolidate some of the ideas from the individual interviews, regarding the digital shift and the competences needed to address it in the museum field. Focus group participants were invited to consider three main topics: museums and digital challenges, new emerging digital job profiles, and museum training needs (from formal to non-formal). The same criteria adopted for the interviews were applied in choosing the 12 participants for the focus group.

Primary research was complemented with desk-based research, focusing on literature review regarding the Portuguese museum sector, gathering evidence on national museum policy, museum development (needs and gaps), museum workforce and training, including reports and academic studies focussed on the application of technologies within the sector.

In this chapter we analyse the research findings from project's first phase, focusing on the needs and training regarding digital competences in the Portuguese museum sector.³

II. INTRODUCTORY NOTES ABOUT THE PORTUGUESE MUSEUM CONTEXT

To understand how museums are embracing the challenges of digital technologies and to map professionals' needs in terms of digital competences, was also relevant to collect and analyse data regarding the Portuguese museum context, since challenges facing digital transformation are multiple and interdependent. Considering such an integrated approach, the issues raised include an overview about the museum sector development, governance, funding and policies, the museum workforce profile and, finally, an analysis of the training programmes available.

² We structured museum size parameters to take into account the number of staff as follows: micro (under 10); small (11-20); small/medium (21-50); and large (more than 50).

³ See [13] for a more in-depth analysis of the Portuguese museum context regarding digital transformation challenges.

⁴ These parameters concern the definition of what qualifies as a museum. In this case, the criteria adopted were: 'any organisation that is self-designated as museum, functioning on a permanent or seasonal basis with, at least, an exhibition room or an exhibition space, and having at least one

A. A growing museum sector

According to the data available, there are approximately 1,223 museums in Portugal (counting all self-designated museums), which corresponds to a 68 per cent growth as compared to the year 2000 [14], testimony that the Portuguese museum boom, which began in the 1980s, continued unabated in the first decade of 2000. Nonetheless, a more detailed approach to the parameters highlights a more restricted universe of 683 museums⁴, of which only 156 museums are accredited,⁵ according to the Portuguese Network of Museums (RPM) standards, an organisation created in 2000, which is presently under the General-Directorate for Cultural Heritage (DGPC).⁶

B. Governance, funding and policies

Regarding governance, a significant number of museums are run by local authorities (48,6 per cent), while museums in the private sector constitute 35 per cent of the total. The central government (e.g. Ministry of Culture, Ministry of Defence, public universities, and other organisations) run 13.1 per cent of museums, including the national museums [14]. There are currently 15 national museums run and funded by the DGPC (under the Ministry of Culture). Furthermore, a small percentage (3.4 per cent) of museums are managed by the regional governments of Azores and Madeira [14].

Traditionally, museums in Portugal have been heavily dependent on public funding. Although a small portion of funding for special projects may be secured through fundraising, this path has been explored in an unstructured and punctual way. That means that the museum sector is particularly vulnerable when confronted with overall financial crises and subsequent public funding retraction.

In fact, Portugal was among the European Union member-states most affected by the international financial crisis of 2008 [16]. A global analysis of the cultural landscape in Portugal reveals two important cycles in the last decades. The first is related to the period from the 1990s to 2008, showing a trend of overall growth of investment in culture (including museums) by the State and local governments. The second cycle is linked to the effects of the international financial crisis of 2008, but also to the subsequent sovereign debt crisis of 2011. Both circumstances contributed to an inversion of the first cycle, with tightening budgets, disinvestment and overall containment and discontinuity, in addition to reinforcement of (existing) asymmetries, considering an analysis until 2016 [16].

While the museum sector is still dealing with the impacts of previous crisis, the current situation due to the

staff member' (p. 32) [14]. For an overview of the methodological challenges of setting up statistical information concerning the Portuguese museum landscape in the past years, see [15].

⁵ See the list of accredited museums: <https://bit.ly/2Ug0jt7> (Accessed 7 April 2020).

⁶ DGPC is the Portuguese government body for museums and heritage within the Ministry of Culture, which is mainly responsible for developing a national museum public policy.

Covid-19 is a significant threat to a sector that is already fragile, and where the effects on the short and long-term are yet to be assessed.

The current national policy for museums contains no guidelines that specifically address digital challenges in museums. However, a report resulting from an internal qualitative analysis of the DGPC, including the 15 national museums, contains some key points that can help us to comprehend existing challenges [17]. The report found insufficient communication (internal and external) to be one of the difficulties needing to be addressed. Additionally, the lack of IT hardware was also identified as a limitation [17]. Following this internal assessment, communication (e.g. implementation of communications plans at national museums, addressing digital as an asset, etc.) was presented as one of the strategic goals in a reviewed vision of the whole organisation for 2015-2019. However, this plan was never implemented, due to changes to the DGPC board and a new political cycle in government.

While acknowledging the lack of a national policy that promotes the strategic integration of technologies in the museum sector, recently there has been some noticeable developments that seem to express an increasing awareness regarding the topic. Digital transformation is addressed in the political agenda as one of the key features in the current government program (since 2019) encompassing several areas, including the museum sector. In what concerns museums there is a focus on the need to consider new information and communication technologies and, thus, the need to develop a program that deals with the transformation and improvement of museums, namely their adaptation to digital transformation [18].

In the political sphere, another development can be observed from the Ministry of culture that created in February 2019 the Task Group “Museums of the Future”. The aim is to identify, design and propose public policy measures for the 30 national museums and monuments that are under the management of the main governing body for cultural heritage and museums – the DGPC –, in order to promote their sustainability, accessibility, innovation and relevance in society. Recommendations on the use of new technologies in the framework of innovative models of mediation are among the responsibilities and mandate of such Group, along with proposals in key areas, such as: museum management, networks and partnerships, audiences, collection management and human resources [19].

C. The museum workforce

Regarding the museum workforce, the data available identifies 6,284 people working in museums (comprising every job level, full-time, part-time, internships). In spite of overall growth of 39 per cent in relation to 2000, the average number of people working per museum within the period 2000-2009 has fluctuated between nine and 11 [14].

If, however, we consider only the group of people working in the job category of ‘curator/professional with academic degree’ (*conservador/técnico superior*), this

number is considerably reduced to three individuals per museum, showing no change between 2000 and 2009 [14]. This may suggest that Portuguese museums have, in general, small teams, in which professionals may cumulate a range of functions and roles, a point also raised in the interviews carried out under the Mu.SA framework.

On the other hand, such quantitative data was gathered in 2009 (and since then there is no updated data on the subject), meaning that it may no longer be representative of the complexity exhibited by today’s reality, notably because it may not take into account the post-2008 international financial crisis (intensified after 2011 with the sovereign debt crisis) and its impact on museums, with possible effects also on the loss of qualified human resources).

Another trend found at the level of national museums is the aging museum workforce. A study conducted on the DGPC (comprising the 15 national museums) has demonstrated the generalised aging of teams: 58 per cent of employees are over 50 years old and only 4 per cent fall in the age range of 25-34 years. Furthermore, it is expected that 120 people (out of 800) will retire by 2020, considering the current mandatory retirement age of 66 [17].

This evidence is particularly relevant regarding the present critical state of the museum sector, where recruitment has been frozen since the application of government restrictions in the last years, making the entry into the sector difficult or impossible [20], since the majority of Portuguese museums are dependent on government funding (either central or local). This may impose limitations on the possibilities of renewing the museum workforce, including the recruitment of new professionals to address digital responsibilities, for instance.

As concerns the museum workforce profile, a survey conducted in 2017 based on a sample of 710 Portuguese museums finds that professionals with a university degree background in museology represent 32 per cent of this group, while a plurality holds a specialised degree in ‘other areas’ (39 per cent). It is also worth mentioning that professionals with a background in ‘information and communication technology’ are among the least represented (2.7 per cent) of professionals working in museums [21].

As for the specific universe of the 15 national museums, the same point could also be highlighted. Recent collected data shows that only one national museum integrates in their team an Information Technology technician [22]. The point here is not to discuss that such positions are underrepresented regarding other museum professions. The question is whether the current lack of those positions meet museums needs for digital transformation and if on the contrary undermine the full potential of museums to adapt their IT infrastructure and ensure long-term planning for the best use of technology across all departments, functions and areas in order to support the museum strategy and objectives.⁷

⁷ Ngairé Blankenberg description of such job category (‘Head of Technology/Head of IT/Chief Information Officer’) is useful: ‘This position is responsible for the planning, staffing, and operations of a

museum’s IT infrastructure, including the LAN, datacom centers, individual systems, and outsourced services. [...] He or she oversees the purchase and maintenance of hardware and software for enterprise and

D. Training

Formal training in museum studies is available through university degrees (post-graduate, Master's, Ph.D.). Looking at 2016-2017, there were seven active Master's programmes in museum studies. From the analysis of the curricula, core disciplines prevail, such as museum theory, history of museums and museology, management, collections (inventory, preventive conservation, management), heritage laws, museum architecture, programming, and to some extent communications and interpretation/education.

Of the seven active Master's degrees mentioned, two programmes include specific units dedicated to technology applied to museums. These are the University of Porto (the programme was created in 1994) and the University Lusófona of Humanities and Technologies⁸. The latter addresses augmented reality since 2013.

Nevertheless, in general, there is little evidence of a systematic approach to digital competences in these programmes, where technology may make a punctual and fragmented appearance according to the themes covered (e.g. inventory and collections management). This impression was further reinforced by informal conversations with professors and directors from these programmes. In spite of the topic awareness and acknowledgement of technology relevance for museums, the challenge remains to achieve balanced programmes that can provide a broad base of knowledge about the museum context but also an essential set of skills for working in museums, including those skills related to the digital.

Non-formal training for museum professionals is also available. The RPM annual training programme (running from 2001 to 2010 and from 2014 to present) is one short courses programme that promotes continuing professional development in the sector under the auspices of the central government, through the DGPC. Traditional competences in areas of work associated with the care and management of collections predominate, and address, to some extent, communications and accessibility issues, among others.

Globally, however, the analysis of publicly available information indicates a limited focus on digital competences and technology topics, insofar as it is explored in an unstructured way—something that was also acknowledged in the interviews conducted as part of the Mu.SA project.

While not exhaustive, the points mentioned above (museum development, governance, funding and policies, museum workforce and training) contribute to an overview of Portuguese museums landscape and their professional workforce, therefore helping to frame the main findings of the project's primary research (interviews and focus group).

individual use, and ensures appropriate policies and procedures are in place for operations, upgrades, and security. [...] Duties include long-range strategic planning to ensure optimal use of technology by all the departments and functions of the museum, long-range technology and infrastructure planning that supports the strategic application plan, operational and capital budgeting, and project management.' (p. 281) [3]. This job profile, also known as 'IT Manager' is included in the list of 20

III. UP-SKILLING DIGITAL COMPETENCES, ORGANIZATION CHANGE AND NEW ROLES

From the findings of the project's primary research (interviews and focus group), next we will highlight and discuss some topics concerning competence needs and training.

A. Up-skilling digital competences

Most interviewees and participants in the focus group spoke of the need to develop the digital competences of the Portuguese museum workforce. To some extent, a subset of museum professionals has been up-skilling their digital competences through non-formal and *ad hoc* learning, each according to their individual interests and needs. There is, however, an absence of in-house planned training in such areas, including from official training programmes available for museums professionals (e.g. RPM programme).

It was seen as helpful for museum professionals at all levels to possess basic familiarity with digital competences to provide a common language and understanding among professionals. Also noted was the need to overcome communication barriers, not only between older generations of museum professionals and the younger cohort that may be more digitally literate, but also to facilitate exchanges with in-house IT professionals or manage external service providers.

These findings resonate the research advances on the topic that envision the importance of digital responsibilities to be more dispersed across organizations [4]. From back-office to front-of-house (management, communication, education, exhibition, collections management, and visitor engagement) all departments may produce digital and shareable content, and all should be technologically linked [3].

In such context, increasing digital literacy and confidence among museum professionals is a crucial aspect of supporting the digital transformation of museums, establishing a new mind-set and enabling change.

B. Organization needs and new ways of working

One interviewee pointed out that few museums have staff with a communications background, a profile crucial to develop and implement an overall strategy across media, including the digital sphere. Likewise, other interviewees also pointed to the lack of museum communication plans as an overall limitation. This is a telling indication as to the limited degree of digital maturity achieved by most Portuguese museums, given that digital initiatives are also shaped by strategic communication plans. To some extent,

museum professions by ICTOP (ICOM International Committee for the Training of Personnel) in 2008, see [23].

⁸ It should be pointed out that the unit dedicated to technology at the University of Porto has been restructured since 1994 in terms of its designation, its scope and its contents. From 2009 onwards, the unit has been known as 'Information technologies and communication in museums' (*Tecnologias da Informação e Comunicação em Museus*).

this is intertwined with the way the organisational structure within museums have accommodated communication demands and responsibilities (including digital initiatives).

As several interviewees observed, museums generally have small teams in which professionals cumulate a range of functions and roles (including communication), and where structured departments for communications, marketing or audience development are not fully developed. To expand and include digital responsibilities museums may need to strengthen communication, in the sense that committing to digital transformation or to a digital culture in organizations, there is also a need to develop a strong culture of communication and bring it to a strategic level.

There seems to be no model that fits all museums. Museums that have been committed to introduce digital technologies in their operations have evolved in different ways [4], according to their needs, size, vision and resources. As Ngaire Blankenberg points out, ‘every museum needs to develop an approach that works for its own staff and culture’, and that may imply a ‘gradualist approach to organization transformation’ (p. 274) [3]. This means that hiring people with new digital skills may not be enough to make significant shifts in the structure and culture of the organization.

Change will need to be reflected in a revised vision and anchored in the heart of the museum strategy and outcomes, being shared by all staff and with the commitment of all departments. It also means changing to new ways of working. For instance, developing small-scale projects to start gradually introducing change through the organization, based in agility and on an experimentation basis and, thus, learning from experience why projects fail and succeed, and exploit the lessons learned in coming projects and within the museum culture [3].

C. Leadership

The importance of leadership is another point raised by both interviewees and the focus group. Leadership (at several levels, from public authorities’ managers to museum directors) was identified as a critical factor in the strength or weakness of a museum strategy, and consequently the communication plan (including digital initiatives). The consensus held, i.e. that the digital transformation of museums requires that leaders become more familiar and involved. Leaders who understand the importance of digital, it was suggested, are better able to identify their organisation’s needs (including staff training), and nurture strategic outcomes.

D. Soft skills

Overall, a changing attitude towards digital transformation of museums and a willingness to take risks were recognised

as significant soft skills needed in leadership. Communication and teamwork were considered the relevant soft skills to be fostered transversally among the museum workforce.

E. Lifelong learning is key

Reflecting on training needs, most interviewees identified gaps in the currently available offerings in formal or non-formal learning. Lifelong learning was generally seen as the mechanism best adapted to keep pace with the rate at which digital technologies themselves are changing. Some interviewees argued for customised training that would take into account specific staff needs and raised the possibility of learning from peers by sharing working methods and practices.

F. New roles and responsibilities asks for specialization

The challenge of digital transformation has led to the creation of new job positions in museums all over the world to deal with digital responsibilities, a trend especially noticeable in larger museums.

Among such job titles, we highlight a few, in European museums: ‘Head of Digital Media’ (National Museum of Wales), ‘Chief Digital Officer/Head of Technology’ (Museo Nacional del Prado), ‘Head of Digital Collection and Resource’ (Polin – Museum of the History of Polish Jews), ‘Head of Digital Media and Publishing’ (Victoria and Albert Museum) [24].⁹ Ngaire Blankenberg [3], for instance, elaborates an exhaustive list of current common jobs related to digital activities in museums, revealing the extent of specialization that entails digital transformation and its broad application in many museum functions and areas.

Depending on each museum needs and size, these jobs may be performed by permanent staff or contract staff through outsourcing services. It may also involve hiring outside of the museum sector, considering people from different backgrounds.

It was also on the basis of acknowledging such need for specialization required by the digital transformation that the project Mu.SA was designed.

One of the aims of the first phase was to map specific role profiles, adopting a framework drawn from the results of a previous European project, eCultSkills (*eSkills for Future Cultural Jobs*), which identified five emergent role profiles involving digital competences across the cultural sector more generally (‘Cultural ICT Consultant’, ‘Digital Cultural Asset Manager’, ‘Interactive Cultural Experience Developer’, ‘Cultural ICT Guide’, and ‘Online Cultural Community Manager’).

⁹ ‘Chief Digital Officer’, ‘Head of Technology/Head of IT/Chief Information Officer’, ‘Digital Content Manager’, ‘Analytics and Evaluation Manager’, ‘Database Manager’, ‘Network Manager’, ‘Digital Project Manager’, ‘Bookings Manager’, ‘Membership and Development Manager’, ‘Email Marketing Manager’, ‘Social Media Manager’,

‘Collection Information Manager’, ‘Digital Archivist’, ‘Photographer’, ‘Digital Learning Programs Manager’, ‘Public Participation Officer’, ‘Digital Content Producer’, ‘Media Writer’, ‘Graphic Designer’, ‘Web and Digital Media Developer’, ‘Rights and Reproductions Coordinator’, and ‘Ecommerce Manager’ [3].

This framework was analysed via interviews and focus groups in Portugal, but also in Greece and Italy, to examine its relevance for the museum context. From the findings of the three case studies, four emerging job profiles were identified as suitable for guiding professional development and museum workforce up-skilling: ‘Digital Strategy Manager’, ‘Digital Collections Curator’, ‘Digital Interactive Experience Developer’ and ‘Online Community Manager’ [25].

While the initial findings from the Portuguese case may differ slightly from the final collective findings gathered from the three countries, the point here is to highlight some of the remarks that emerged in discussions from interviews and focus group that stress some of the challenges that such specialization entails in practice for the Portuguese museum sector.

Many interviewees recognized the relevance of the profiles, but also acknowledged the challenges that such framework presents if strictly interpreted, given that application is directly intertwined with other factors, such as the museums’ capacity to recruit or up-skill their staff for the job profiles that were identified. That was one of the limitations highlighted, meaning the low feasibility considering the Portuguese museum landscape: short budgets, small and multitasking teams, low digital (and communications) maturity at the structural level, lack of strategic planning, all of which to some extent thwart extensive future application of the job profiles.

Another issue was raised by one interviewee, which is the apparently conflict between trends and practice, meaning the demand for specialization – that the profiles entail – and a trend towards the generalization of knowledge. In the Portuguese public administration, that affects many museums that are run by local authorities (48,6 per cent of museums in Portugal), the approach being implemented is rather towards multitasking which leads to the generalization of careers and does not favor specialization. In sum, the effort instigated is more towards multitasking, consequently people are asked to have multiple and broad competences, not specialized profiles. This context challenges museum capacity in fulfilling more and more specialized activities according to new advances.

Considering the framework offered by Mu.SA regarding the four profiles identified, it can be understood as a prospective guide and a flexible set of recommendations with a forward-looking attitude to professional development and up-skilling of the museum workforce in the area of digital technologies.

IV. CONCLUSION

From the discussions presented in this chapter, it seems clear that the investment in professional development in regard to digital competences is paramount to push museum digital transformation. For that, the following questions should guide every museum in that pursuit: what core competences can be identified in my museum and which competences can be strengthen? And what competences need to be hired in?

While the answers remain linked to every museum needs, size, mission and resources, the framework offered

by Mu.SA regarding the four profiles can be understood as a set of recommendations with a forward-looking attitude.

The discussions also demonstrate that the investment in competence development is not sufficient if not integrated in a structured approach. Such approach involves planning for digital transformation, includes designing strategic guidelines and objectives, it requires a new mind-set and new ways of working, and assessing the effort and resources (skilled people, IT infrastructure, money and time) required going forward.

Also connected, is the importance of a national public policy that supports digital transformation within the museum sector. At present times, and due to the Covid-19 crisis, the ‘digital’ and ‘online’ are key words all-around of us, including for museums, that alike all sectors of society were caught in a unprecedented situation. Many museums were forced to close doors.

The preliminary findings from a NEMO (Network of European Museum Organisations) survey state that in reaction to the current situation more than 60 per cent of the museums have increased their online presence [26]. It seems natural to turn to digital when the physical is for the time being temporally restricted. There is a compelling urgency and need to demonstrate museums value in society and increase visibility by the means available – the digital public sphere. The importance of digital engagement is no longer a rhetorical potentiality, but a real opportunity to increase museum digital services to engage remotely with audiences.

From the 60 per cent of the museums that recently have increased their online presence, what the data doesn't answer yet is how structured these responses are (in adding value to museum work) and how prepared were these museums to digital engagement. For now, one can only speculate that the museums that are better equipped with departing resources (skilled people and adequate IT infrastructure) and with a track in digital transformation maturity might be better positioned to going digital. Admitting the complexity and asymmetries of the museum world, it seems possible that the current crisis will lead to unequal responses from museums.

While the current crisis may highlight an unprecedented urgency and need to put digital transformation in the agenda to strengthen museums digital engagement, it also reinforces and validates the arguments already presented in this chapter. If not before, those museums that have not stepped into the reflection (and action) about digital transformation, now might be the time and opportunity to do so.

ACKNOWLEDGMENT

The authors wish to acknowledge support from ICOM Portugal and the Portuguese partners involved: Mapa das Ideias and University of Porto. Special thanks are due to all Portuguese participants in the research phase of Mu.SA project. The research conducted was funded under the auspices of Mu.SA project – Museum Sector Alliance (575907-EFP-1-2016-1-EL-EPPKA2-SSA) with support from the European Commission through Erasmus + (Sector Skills Alliance).

REFERENCES

- [1] White, H. "The Goal Posts Have Moved: The Implications of New Paradigms for Professional Skills in Museums". *Museum International*, vol. 68, n.º 269-270, pp. 71-80, 2016.
- [2] Gainon-Court, M-A., and D. Vuillaume. "Can Museums Keep up With a Changing World? Skills Management as a Practical Response". *Museum International*, vol. 68, n.º 269-270, pp. 81-96, 2016.
- [3] Blankenberg, N. "Museum Organization for the Future." In *Manual of Digital Museum Planning*, ed. by A. Hossaini, N. Blankenberg, and G. Dexter Lord, pp. 271-87. Lanham: Rowman & Littlefield, 2017.
- [4] Price, K., and J. Dafydd. "Structuring for Digital Success: A Global Survey of How Museums and Other Cultural Organisations Resource, Fund, and Structure their Digital Teams and Activity", *MW18: Museums and the Web 2018*, 2018. <https://bit.ly/2xL9pGs>
- [5] Filipe, G., and C. Camacho. "Que Futuro Queremos dar aos(s) Museu(s)?" *RP - Revista Património*, 5, pp. 50-59, 2018.
- [6] Réseau Canadien d'Information sur le Patrimoine. *Travailleurs du Savoir dans les Musées du XXIe Siècle*. Toronto: Réseau Canadien d'Information sur le Patrimoine, Université de Toronto, 2009.
- [7] Langlois, E. "Rendre l'Enseignement de la Muséologie en Phase avec la Technologie: Une Évidence!" In *Musées et Muséologie: Au-delà des Frontières*. La Muséologie Nouvelle en Question, ed. by Y. Bergeron, D. Arsenault, & L. Provencher St-Pierre, pp. 333-49. Québec: Presses de l'Université Laval, 2015.
- [8] Dahlquist, S. *5D – En Kompetenspolicy För Framtidens Museer*. [Stockholm]: DIK, 2017.
- [9] Raoul-Duval, J. (Ed.). *Cycle Soirée-débat Déontologie: Qu'est-ce qu'être, Aujourd'hui, un «Professionnel de Musée» en Europe?* Paris, Auditorium Colbert, 5 Juin 2018. [Dijon]: ICOM France (Comité National Français de L'ICOM), 2019.
- [10] Museums Association. *Working Wonders: An Action Plan for the Museum Workforce*. London: Museums Association, 2013.
- [11] Murphy, O. "Increasing the Digital Literacy of Museum Professionals: Digital Innovation and the Museum Sector in Northern Ireland." Thesis submitted for a Degree of Doctor of Philosophy, University of Ulster, 2014.
- [12] Parry, R., D. R. Eikhof, S-A. Barnes, and E. Kispeter. *Mapping the Museum Digital Skills Ecosystem: Phase One Report*. Leicester: University of Leicester, 2018.
- [13] Carvalho, A., and A. Matos. "Museum Professionals in a Digital World: Insights from a Case Study in Portugal." *Museum International (Special Issue: Museums in a Digital World)*, vol. 70 (277-278), pp. 34-47, 2018.
- [14] Neves, J., Santos, J. and Lima, M. *Panorama Museológico em Portugal (2000-2010)*. Lisboa: Direção-Geral do Património Cultural, 2013.
- [15] Santos, J. and Neves, J. 2017. "Estatísticas Oficiais, Políticas Museológicas e Investigação: Reflexão a Propósito do Caso Português." *La Critica Sociologica*, vol. 51, n.º. 203, pp. 75-86, 2017.
- [16] Garcia, J., Lopes, J., Martinho, T., Neves, J., Gomes, R. and Borges, V. "Mapping Cultural Policy in Portugal: From Incentives to Crisis," *International Journal of Cultural Policy*, pp. 1-17, 2016. <https://bit.ly/2K3PlIv>
- [17] Camacho, C. (Coord.). *Plano Estratégico da Direção-Geral do Património Cultural 2015-2019*. Lisboa: Direção-Geral do Património Cultural (DGPC), 2015.
- [18] República Portuguesa. "Valorizar os Museus, os Monumentos e o Património Cultural: Uma Causa de Todos." In *Programa do XXII Governo Constitucional 2019-2023*, pp. 186-187, 2019.
- [19] Presidência do Conselho de Ministros. "Resolução do Conselho de Ministros n.º 35/2019", *Diário da República*, 1.a série, n.º 34, pp. 1272-1274, 18 February, 2019.
- [20] ICOM Portugal. "Contributos para uma Urgente e Necessária Política Museológica Nacional." *Boletim ICOM Portugal* 9 (Jun.), pp. 12-22, 2017.
- [21] Santos, J., Seródio, C. and Ferreira, F. *Diagnóstico aos Sistemas de Informação nos Museus Portugueses: Relatório Final*. [n.p.]: Grupo de Trabalho Sistemas de Informação em Museus (GT-SIM) da Associação Portuguesa de Bibliotecários, Arquivistas e Documentalistas (BAD), 2017. <https://bit.ly/2wKQkE6>
- [22] OPAC. "Museus no Futuro: Base de Dados e Indicadores." OPAC (Observatório Português das Atividades Culturais), 2019, unpublished.
- [23] Ruge, A. (Ed.). *Museum Professions - A European Frame of Reference*. [Berlin]: ICOM International Committee for the Training of Personnel (ICTOP), 2008.
- [24] Sturabotti, D., and R. Surace (Eds.). *Museum of the Future: Insights and Reflections from 10 International Museums*. [Roma]: Symbola Foundation & Mu.SA - Museum Sector Alliance, 2017.
- [25] Silvaggi, A. (Ed.). *Museum Professionals in the Digital Era: Agents of Change and Innovation (Full Version Report)*. [Rome]: Mu.SA - Museum Sector Alliance, 2017.
- NEMO. "Survey on the Impact of the COVID-19 Situation on Museums in Europe." [n.p.]: NEMO (Network of European Museum Organisations), 2020. <https://bit.ly/3eyuqVI> (Accessed 15th April 2020).

4. Mu.SA: The Emerging VET curricula

Spiros Ap. Borotis
DAISSy Research Group
Hellenic Open University
Athens, Greece
borotis@daissy.eap.gr

Panagiota Polymeropoulou
DAISSy Research Group
Hellenic Open University
Patras, Greece
ppolymero@eap.gr

Christos Pierrakeas
DAISSy Research Group
Hellenic Open University
Patras, Greece
pierrakeas@eap.gr

Konstantinos Giannakopoulos
Hellenic Open University
Athens, Greece
giakos@yahoo.com

Achilles Kameas
DAISSy Research Group
Hellenic Open University
Patras, Greece
kameas@eap.gr

Abstract—*The Mu.SA project developed a set of Job Role profiles for museum and cultural organization professionals, and the respective curricula that can be used by VET providers to support the re-skilling and up-skilling of the human capital of the sector. This study presents in detail the Job Role profiles, the VET curricula developed and the competences included, how they were implemented, and various details related to the quality, the validation of prior knowledge, etc.*

Keywords—*VET curricula, learning outcomes, Job Role profiles.*

1. THE MU.SA IN A NUTSHELL

Modern times, contemporary arts, engaging cultural events, information and learning, technology-enabled meaningful experiences; terms used continuously and repeatedly, highly interconnected, creating skills and competences needs for professionals working in the museums and cultural organisations, as well as neighboring sectors typically supporting them.

The Mu.SA – Museum Sector Alliance Project funded by the Erasmus+ Programme of the EC, aimed to bridge the gap between formal education and training and the (cultural) world of work, building upon the continuing adoption of contemporary technologies by museums and other cultural organizations. In this regard, the following key questions were put forward: (a) what are the new / updated job roles museums and cultural organizations need in order to survive and thrive in the continuously changing landscape? (b) What are the competences that these professionals need to have so as to be efficient and effective in their work duties? (c) What are the quality dimensions that should be taken into account when designing the training offer? (d) How do we incorporate prior and existing knowledge and skills of the individuals?

Mu.SA was implemented in three south Europe countries; Italy, Greece and Portugal. Building upon the knowledge of previous projects (i.e. eCult, ArtS, ADESTE, Aspire2Create), and going through an extensive review of

the status and emerging training needs, training provision and occupational profiles requirements, it developed a set of emerging Job Role profiles for the museums of the future [1]. These profiles are the Digital Strategy Manager (DSM), the Digital Collections Curator (DCC), the Digital Interactive Experience Developer (DID), and the Online Community Manager (OCM). All profiles aim to address the needs of the museums and cultural organizations in the coming decade, as they are transformed due to the proliferation of information technologies, the change of their nature (becoming borderless and networked), the engagement of the community and increase of their social impact, etc.

These four Job Role profiles were mapped into a set of respective VET curricula; a set of modules / competences was identified after an extensive research, mainly oriented to the exploitation of digital technologies (digital competences) and the success in 21st century society and workplaces (21st century skills / transferable competences). The training content supporting the implementation of the VET curricula was designed based on a cohesive set of learning outcomes, so as to increase transparency, align with qualifications and occupations, and facilitate assessment [2].

According to the EC Culture Statistics (Eurostat data), Italy and Portugal had the most tertiary education students in culture-related fields in education in 2017, as a percentage (18,8%) of all its tertiary education students. In all three countries, the cultural employment was below the EU-28 average (in 2014 and 2017), with the share of women being below 50% in all three countries and the persons with tertiary educational attainment in cultural employment being again below the EU-28 average. Moreover, the share of self-employment in the sector was above the EU-28 average in Italy and Greece, whereas in the same countries the share of young people was below the EU-28 average. Last, in Italy and Greece the number of cultural enterprises and their percentage in terms of the total services were above the EU-28 average, proving the significance of the sector for the country economies. On the

other side, Portugal was lagging behind. But in all the three countries, the average number of persons employed per enterprise operating in the culture sector was 2.0 – 2.2, at least 30% less than the EU-28 average (2013 data), signifying the operation of a lot of very small businesses in the sector. These findings pinpointed the need for:

- Support the re-skilling / up-skilling of museum and cultural organization professionals, holders of a tertiary education degree, through the development of their practical skills and competences on the EQF level 5, so as to improve their employability and serve the actual needs of the organizations of the sector.
- Broad human capital development interventions oriented to individual professionals, accompanied with occupation-specific initiatives having a strong work-based learning dimension.

II. MU.SA EMERGING JOB ROLES

Mu.SA started its journey with the identification of emerging Job Role profiles in museums and cultural organizations. After an extensive literature and market review, and the exploitation of results of previous projects, four different Job Role Profiles were identified, and based on that, the respective VET curricula were created. As mentioned earlier, the four curricula were synthesized by a set of digital and transferable competences / 21st century skills. Given the fact that the digital competences required from the modern cultural professionals could be on basic or advanced level, depending on the tasks required to be conducted by each separate job role profile, as well as the fact that the Mu.SA consortium decided to exploit the state-of-the-art in the European level, two frameworks were identified as the sources of digital competences for the curricula of interest. DigComp 2.1 [3] provided the baseline for the basic digital competences, while the European e-Competence Framework 3.0 [4] served as the basis for more advanced / job-specific digital competences. Moreover, a set of transferable competences [5] / 21st century skills [6] were used to enhance the employability of the learners.

A. Digital Strategy Manager (DSM)

The Digital Strategy Manager is a strategic role in leading museums to thrive in a digital environment. S/he is in charge of a digital transformation plan in line with the overall museum strategy. S/he is responsible for the museum digital strategy and the financial planning of technological resources at a senior level, alongside the overall museum management. S/he plays a mediating role between the internal museum departments and external stakeholders, and is able to effectively communicate with various different stakeholders, especially high-tech companies. S/he is comfortable with working with both back-end and front-end technologies. S/he has a good

knowledge of how a museum works.

Typically, s/he has to have a master degree in museum studies or equivalent working experience in museums. Some of his/her main tasks and responsibilities include the following:

- Plan the digital strategy and the financial planning of technological resources, in line with the overall management of a museum.
- Play a mediating role between the museum and the outside world, and effectively communicate with various different stakeholders, especially high-tech companies.
- Facilitate the smooth flow from content production to technology in various different departments.
- Supervise upgrades, installations and backup operations on a day-to-day basis, as well as the safety of all digital infrastructures
- Make strategic decisions based on the relevant evidence and knowledge on new digital products

B. Digital Collections Curator (DCC)

The Digital Collections Curator is responsible for implementing the digital strategy relevant to collecting, storing, archiving, preserving and making accessible the digital collections (either born – digital or digitized). In larger museums this could be a role-profile in itself, while in smaller museums a curator should be up skilled in the area.

Typically, s/he has to have a university degree, but a master's degree in relevant field is preferable. Some of his/her main tasks and responsibilities include the following:

- Improve a museum's digital preservation, management and exploitation plan for all digital cultural content/objects, on an on-going basis.
- Provide information on copyright and protection of digital cultural property according to international standards.
- Supervise the implementation of cataloguing/archiving standards, and produce metadata according to recognized international standards.
- Collaborate with museum staff in order to facilitate their work with digital cultural assets, and with other departments and design and manage projects involving the enhancement of digital materials.
- Supervise the security and safety of digital materials.

C. Digital Interactive Experience Developer (DID)

The Digital Interactive Experience Developer designs, develops and implements innovative and interactive experiences based on audience needs, providing meaningful experiences for all types of audiences. Usually,

s/he has to have a university degree (in arts, humanities, information technologies), but a master's degree in relevant field is desired. Some of his/her main tasks and responsibilities include the following:

- Design and prototype interactive and innovative installations providing meaningful experiences for all types of audiences.
- Carry out audience research and observation analysis.
- Develop accessibility tools for all types of visitors.
- Facilitate communication flows between various different museum teams and external high-tech companies.
- Facilitate relations between various different museum teams and departments: curatorial, ICT, education, marketing, communication, etc.

D. Online Community Manager (OCM)

The Online Community Manager answers to the needs of both the online and offline museum communities. S/he creates and manages accessible and collaborative online communities for all museum stakeholders (audiences, colleagues in museums and cultural heritage sector, educational organisations, donors, sponsors, decision makers, etc).

S/he has to have a university degree (in communications, arts, etc), but a museum specialization is desired, as well as vocational education in web management. Some of his/her main tasks and responsibilities include the following:

- Engage, monitor and manage online audiences, carry out audience research and observation analysis, as well as online surveys tracing audience needs.
- Design and prototype interactive and innovative installations providing meaningful experiences for all types of audiences.
- Facilitate communication flows between various different museum teams and external high-tech companies as well as the relations between various different museum departments.
- Design and implement an online audience development plan in line with the museum's overall strategic communication plan.
- Assess and evaluate the effectiveness and efficiency of online activities.

III. THE VET CURRICULA

The identification of the training needs of the aforementioned four Job Role profiles led to the selection of a set of competences that have to be developed, in order to support the employability of the respective professionals. The research proved that these were mostly digital and transferable competences. Some of them – mostly the generic ones – were common for all four

profiles, while others were more oriented to the different tasks of each profile.

The curricula developed were (a) designed following the EQAVET principles [7], and (b) were implemented following a coherent VET methodology. The quality of the four VET curricula supporting the up-skilling of museum professionals in the four Mu.SA Job Role Profiles was assured through the incorporation of the EQAVET principles, following the EQAVET Quality Reference framework. This framework foresees four stages: (a) Planning, (b) Implementation, (c) Evaluation, and (d) Review.

During the first stage (Planning), the Mu.SA consortium defined the explicit goals and objectives of the four curricula and designed the respective training program. Ongoing consultation with the social partners and relevant stakeholders took place in order to identify the needs. The curricula were described using learning outcomes (around 600 in total), while particular mechanisms were established for the quality assurance of the design, the assessment, the certification and the review of qualifications.

In the second phase (Implementation), the quality was assured through the implementation of partnerships between relevant stakeholders, while the adoption of the learning outcomes approach helped us support learners in meeting the expected outcomes and in ensuring the achievement of the outputs through learning-outcomes enabled assessment.

The third phase, evaluation, was implemented following a hybrid approach that combined internal and external evaluation, engaging all relevant stakeholders. A detailed data collection and analysis activity was implemented in order to feed back into the design and inform accordingly all relevant stakeholders.

In the last phase, review, learners' feedback was gathered about their individual learning experience and the environments and tools used, feeding in the improvement tasks.

The VET methodology used was based on the principles of adult education [8]; it was a two-stage methodology, which was composed of an introductory course (in the form of a MOOC – Massive Open Online Course), and a blended learning course, including online, face-to-face, and work-based learning.

The Mu.SA learners were working adults, many of them with family obligations and heavy work duties, therefore they had to be supported in learning on their own pace; in this regard, an extensive online learning approach was followed and stressed as much as possible. In the same time, the learners were engaged in face-to-face sessions, in order to implement group learning, facilitate problem solving, and connect with their peers. And last, the practical application of the newly acquired knowledge was more than essential, in order to perform effectively and efficiently in their (newly defined) working (job) role, and in the context of a “real” organization, i.e. a museum or a cultural organization.

Overall, the effort was supported by tutors, in order to facilitate learning and solve the queries of the learners.

A. The common part of the curricula

As mentioned earlier, the first part was common in all four VET curricula, and was delivered online through a MOOC. It had 8 weeks learning duration, with each week including 2-3 modules (competences). The learners had to devote in total 80 hours in order to attend the course and fill in the assessment quizzes (on average 10 hours per week). Each e-CF competence was taught in 4-5 hours of study, each DigComp competence was taught in 2,5 hours of study, whereas each transferable competence was taught in approximately 4 hours of study. The aforementioned hours per competence included both learning and assessment. The learners were able to communicate with the tutor of each competence through a dedicated communication online mechanism (forum).

Table 1: Common competences of the four VET curricula

MOOC (Introductory course)		
Competence	Type	Hours
IS and business strategy alignment	e-CF	5
Browsing, searching and filtering data, information and digital content	DigComp	2,5
Managing data, information and digital content	DigComp	2,5
Business Plan Development	e-CF	5,5
Evaluating data, information and digital content	DigComp	2,5
Identifying needs and technological responses	DigComp	2,5
Technology trend monitoring	e-CF	4
Netiquette	DigComp	2,5
Leadership and change facilitator	Transferable	4
Innovating	e-CF	5
Innovating and creatively using technology	DigComp	2,5
Creative thinking skills	Transferable	4
Needs identification	e-CF	4
Developing digital content	DigComp	2,5
Collaborating through digital technologies	DigComp	2,5
Forecast development	e-CF	5
Team working	Transferable	4
Relationship management	e-CF	4
Protecting personal data and privacy	DigComp	2,5
ICT quality management	e-CF	5
Communication skills	Transferable	4
Time management	Transferable	4
TOTAL		80

B. The four specializations

The alumni of the introductory course were eligible to apply for the specialization course in one of the four different Job Role profiles. This course included a blended learning (online and face-to-face) and a work-based learning component.

The specialization course for each different curriculum lasted totally 24 weeks. It included a number of competences / modules delivered online, accompanied with face-to-face instruction (practice, problem solving, exercises, case studies presentation, etc) and work-based learning (completed in 10 weeks' time).

The online learning materials delivered to the learners through the Mu.SA platform included also learning quizzes for the assessment of the achievement of learning outcomes and the grading. The assessment of the work-based learning was conducted through a presentation and a report detailing the work conducted during the work-based learning.

Table 2: MU.SA VET curricula synthesis

VET Curricula	# of hours (learning equivalent)				
	Online	Face-to-face	WBL	TOTAL (Spec)	TOTAL (curriculum)
DSM (23 competences)	130	24	205	359	439
DCC (22 competences)	115	24	205	344	424
DID (27 competences)	135	24	205	364	444
OCM (26 competences)	137	24	205	366	446

Each e-CF competence was taught in 4-6 hours of study, each DigComp competence was taught in 1,5 hours of study, whereas each transferable competence was taught in approximately 3 hours of study. All competence modules were accompanied with a practical assignment, which varied between 2-5 hours for the e-CF competences (depending on the level taught), 1 hour for the DigComp competences, and 2 hours for the transferable competences.

Table 3: Specializations competences

Table Head	TYPE	# of hours for online learning (learning equivalent)			
		DSM	DCC	DID	OCM
Product / Service Planning	e-CF	6	6	6	6
Identifying digital competences gaps	DigComp	2,5	2,5	2,5	2,5
Service Level Management	e-CF	8,5			

Table Head	TYPE	# of hours for online learning (learning equivalent)			
		DSM	DCC	DID	OCM
Application Design	e-CF			6	
Management skills	Transferable		5		5
Protecting personal data and privacy	DigComp	2,5	2,5	2,5	2,5
Sustainable Development	e-CF	8,5			
Application Development	e-CF			6	
Managing digital identity	DigComp	2,5	2,5	2,5	2,5
Influence / persuasion skills	Transferable		5		5
Testing	e-CF			6	
Information Security Strategy Development	e-CF	8,5			
Documentation Production	e-CF		6	6	6
Mentoring / coaching skills	Transferable	5	5		5
Copyright and licenses	DigComp	2,5	2,5	2,5	2,5
Solution Deployment	e-CF			6	
Education and Training Provision	e-CF	6			
Service Delivery	e-CF		6		
Integrity / ethical	Transferable				5
Programming	DigComp	2,5	2,5	2,5	2,5
User Support	e-CF			6	6
Information and Knowledge Management	e-CF	8,5	11		
Change Support	e-CF			6	
Decision making	Transferable	5	5	5	5
Solving technical problems	DigComp	2,5	2,5	2,5	2,5
Problem Management	e-CF		8,5	8,5	8,5
Purchasing	e-CF	8,5	8,5		
ICT Quality Strategy Development	e-CF				11
Process Improvement	e-CF	8,5			
Fact-driven	Transferable			5	
Sense of initiative and entrepreneurship	Transferable	5	5	5	5

Table Head	TYPE	# of hours for online learning (learning equivalent)			
		DSM	DCC	DID	OCM
Analyse and synthesize information	Transferable	5		5	5
Digital Marketing	e-CF				8,5
Risk Management	e-CF	8,5	8,5	8,5	
Business Change Management	e-CF	8,5			11
Interpersonal skills	Transferable		5	5	5
Mediation skills	Transferable			5	
Networking skills	Transferable	5	5	5	5
Negotiation skills	Transferable	5		5	5
Active listening skills	Transferable		5	5	5
Resilience	Transferable	5		5	5
Storytelling	Transferable			5	5
Mediation skills	Transferable		5		

The aforementioned hours per competence included both learning and assessment. The learners were able to communicate with the tutor of each competence through a dedicated communication mechanism online (forum).

IV. VALIDATION OF PRIOR, INFORMAL AND NON-FORMAL LEARNING

Beyond the formal classroom settings, people can acquire the most valuable of knowledge, skills and competences in their daily lives, being at work, at home or during leisure. Learning throughout life is a key route to personal development and acknowledging such learning can give greater value to citizen's achievements and their potential contributions to society.

Such an idea was introduced by the European Council in 2012 with the launching of the Council Recommendation on the validation of non-formal and informal learning [9]. The aforementioned Recommendation stressed the value of making prior learning visible for enhancing employability and mobility, as well as increasing motivation for lifelong learning, particularly in the case of the socio-economically disadvantaged or the low-qualified. Mu.SA developed a modular approach for the implementation of the four VET curricula.

According to the Recommendation, a procedure should be set in place by the VET providers that would like to implement the curricula, after the piloting phase, aiming at the identification, documentation, assessment and certification, in order to validate prior, informal and non-formal learning, and deliver to the learners the competences

required by each one of them, leading them in parallel to the same certification.

In other words, candidates willing to attend the Mu.SA VET trainings will be initially introduced by the VET providers in the scope, rationale and contents of the curricula. Following that, each of them will be asked, if relevant, to demonstrate any related professional experience in the cultural field, completed trainings in similar modules or other self-directed learning in the appropriate topics.

The main scope of this procedure is to guide the candidates in the Mu.SA trainings in such a way that learners attend modules they actually need and exclude modules they already know. In the following sections we see how Mu.SA proposes to the respective stakeholders (VET providers) to implement the procedure, being “as compliant as possible” with the EC Recommendation.

- *Identification of knowledge, skills and competence acquired*

The Mu.SA project has developed training modules / competences that synthesize the training offer. These modules were built based on learning outcomes. The Mu.SA VET curricula validation office should invite the candidates into dialogue with counselors / advisors, possibly using relevant tools, such as Europass tools, ICT standardized tools or self-assessments, so as to identify which of each Mu.SA VET curriculum’s learning outcomes the candidate already disposes.

- *Documentation*

Following the establishment of the previous list, the Mu.SA VET curricula validation office asks the candidate to provide evidence, so as to synthesize his/her portfolio. Almost every evidence should be taken into account, respecting always the national legislation.

- *Assessment*

The Mu.SA VET curricula validation office compares the candidates’ existing learning outcomes with the ones included in the Mu.SA VET curricula using particular assessment methods. In this stage, the candidate becomes eligible to attend only the modules that he/she needs so as to reach the range of the learning outcomes of each Mu.SA VET curricula. No written or oral tests are foreseen so as to complete the assessment.

- *Certification*

Learners attain and complete the course and its partial competences and take part in the final certification procedures, e.g. assessment tests, projects, etc.

After that, the learner who completes successfully the final exams receives recognition of the achievement of particular learning outcomes and s/he is in principle able to follow the particular Mu.SA competences and eventually get the same Mu.SA Job Role Profile Certificate with the learners that followed successfully the complete Mu.SA VET Curricula training offers.

The same Certifications are awarded to every learner who has successfully completed the course, regardless of

his/her type of enrolling, e.g. full course learner or partial course learner deriving from prior experience.

V. CONCLUSIONS

The Mu.SA project established a set of VET curricula for professionals of museum and cultural organizations, aiming at addressing the needs of the coming decade. These needs mainly originate from the proliferation of information technologies and the need for improvement of people collaboration, productivity and quality of services towards the “internal and the external” customers.

By exploiting the potential of the approach of developing the VET curricula on the basis of the “learning outcomes”, all the four VET curricula certifications were accompanied with ECVET points and Europass compliant supplements, facilitating the transfer, recognition and accumulation of the assessed learning outcomes of individuals (certification holders) who aim to achieve a qualification [10].

The four VET curricula were designed using a modular format, thus allowing for the creation of additional Job Role profiles in the future, and supporting procedures for the validation of prior, informal and non-formal learning. They were implemented through a two-stage approach, using solely online learning in the first stage, and blended learning (online, face-to-face, work-based learning), respecting adult learning principles and bridging the gap between training and the world of work.

The results of this study address the needs of different target audiences. The employers will find in the Mu.SA offer (VET curricula and learning materials) a well structured set of human capital development interventions so as to help their employees exploit the potential of ICT technologies in order to enhance the services of their organizations, serving both the “internal” and the “external” customers/ audience. Employees will find a scientifically developed and tested approach and content so as to improve their employability opportunities, improve their effectiveness and efficiency, and provide new engaging cultural experiences for the public target groups. Self-employed people that will be following one of the Mu.SA VET curricula, will manage to become specialized and provide targeted services to their customers and audience, especially the smaller organizations that would like to outsource one of the functions (e.g. management of online communities of visitors).

Unemployed people can get a certificate so as to increase their employability potential, developing competences on emerging topics for the museums of the future. Students will get practical knowledge and will be facilitated for their transition from education to work.

Other target groups include VET providers, adult trainers and policy makers. VET providers will find a coherent set of tools accompanying the VET curricula (methodologies, handbooks, lessons learned) on how to organize a program addressing the emerging training needs of museum professionals. They can exploit also the potential of scientifically developed and tested learning materials, freely available, so as to serve the community

offering the predefined VET curricula, or even develop more for the sector or neighboring sectors, taking advantage of the modular approach. Adult trainers can find a coherent methodology to support their students, tight up with the particular needs of (working) adults, using the pre-developed (per competence) handbooks.

And last, policy makers will find a wisely developed and tested approach on how to re-skill and up-skill professionals of the sector, using it as a template in design new human resource development interventions.

ACKNOWLEDGMENT

This research was carried out within the Museum Sector Alliance – Mu.SA project (Agreement number 575907-EFP-1-2016-1-EL-EPPKA2-SSA), under the Erasmus+ Programme / Action KA2: Cooperation for Innovation and the exchange of good practices – Sector Skills Alliance.

REFERENCES

- [1] Mu.SA Project, “Museum professionals in the digital era. Agents of change and innovation”, 2017. Available at <https://bit.ly/2Tsn0Dr>, accessed on April 2020.
- [2] CEDEFOP, “Defining, writing and applying learning outcomes. A European handbook”. Luxembourg: Publications Office of the European Union, 2017. Available at <https://bit.ly/3oUCjd6>, accessed on April 2020.
- [3] S.Carretero, R. Vuorikari, and Y. Punie “DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use”, EUR 28558 EN, doi:10.2760/3884, 2017.
- [4] European e-Competence Framework 3.0, “A common European Framework for ICT Professionals in all industry sectors”, 2014.
- [5] ESCOpedia, “Skill reusability level”, available at <https://bit.ly/3jUx35p>
- [6] B. Stauffer, “What are 21st century skills?”, available at <https://bit.ly/34WxibZ>
- [7] European Parliament and Council, “Recommendation of the European Parliament and of the Council of 18 June 2009 on the establishment of a European Quality Assurance Reference Framework for Vocational Education and Training” (2009/C 155/01), Official Journal of the European Union, 8.7.2009.
- [8] J. Collins, “Education techniques for lifelong learning. Principles of adults learning”, *Radiographics*, vol. 24, no. 5, September – October 2004, pp. 1483 – 1489.
- [9] European Parliament and Council, “Recommendation of 20 December 2012 on the validation of non-formal and informal learning” (2012/C 398/01), Official Journal of the European Union, 22.12.2012.
- [10] European Parliament and Council, “Recommendation of 18 June 2009 on the establishment of a European Credit System for Vocational Education and Training (ECVET)” (2009/C 155/02), Official Journal of the European Union, 8.7.2009.

5. A Methodology for realizing VET curricula: The Mu.SA case

Christos Pierrakeas
DAISSy Research Group
Hellenic Open University
Patras, Greece
pierrakeas@eap.gr

Panagiota Polymeropoulou
DAISSy Research Group
Hellenic Open University
Patras, Greece
ppolymero@eap.gr

Spiros Ap. Borotis
DAISSy Research Group
Hellenic Open University
Athens, Greece
borotis@daissy.eap.gr

Achilles Kameas
DAISSy Research Group
Hellenic Open University
Patras, Greece
kameas@eap.gr

Abstract— *In recent decades there has been a continuous development of information and communication technologies (ICTs), which in combination with the need for lifelong and continuing learning, have made distance education one of the key enablers for the human capital development today.*

The Museum and cultural organizations sector enjoys a constant integration of new ICTs in various functions, making – among others – the acquisition of the necessary new skills and competences for the sector professionals a reality in order to manage effectively and efficiently the emerging digital challenges. In this regard, the Mu.SA (Museum Sector Alliance) project aimed to underline and deal with the lack of digital and transferable competences in the sector [1].

To this end, the Mu.SA consortium applied a two level methodology for the design, development and implementation of its human capital development interventions. The 1st level refers to the “strategic” approach for the human capital development, and focuses to the methodology adopted and used throughout the project lifecycle in order to realize the Mu.SA VET curricula that were established by the project after extensive research. The 2nd level refers to the “operational” approach used, and includes the methodology for designing and developing the educational materials and content used in the delivery of training in two stages (an introductory MOOC (Massive Open Online Course) and a Specialization course with four specializations). This methodology includes the concept of learning outcomes based on the Bloom Taxonomy [2] at its heart, enabling the design and implementation of the Mu.SA VET curricula following the principles of EQAVET. The educational material plays significant role in the process of delivering knowledge and supporting the skills and competences development, especially in the case of unsupervised and distance learning courses. The need for educational material and content of high quality that ensures learners will achieve the predefined learning goals necessitates the development and use of Instructional Design methodologies oriented to the needs of the particular target group (adults, museum professionals, linking theory with applied practice).

Keywords— *ADDIE methodology, Instructional design methodology, MOOC, blended learning, work-based learning, educational material, learning outcomes, learning object, assessment object.*

I. INTRODUCTION

Museums and cultural organizations today face various challenges, like the engagement of audiences, the smoothness of their operations, the development of new engaging experiences for the public, the redefinition of their role, etc. These and other challenges are more imperative in regional and smaller museums over time, where professionals are called to undertake various different responsibilities and tasks, with modest resources, less training opportunities, but with increased passion [3]. These challenges set the route towards free or low cost but qualitative interventions for the sector, funded by various sources, but with the aim to empower museum professionals and cultural organizations overall so as to improve their capacities and manage change effectively and efficiently.

The Mu.SA–Museum Sector Alliance Project (575907-EFP-1-2016-1-EL-EPPKA2-SSA) funded by the Erasmus+ Programme of the EC, aimed to bridge the gap between formal education and training and the (cultural) world of work, building upon the continuing adoption of contemporary technologies by museums and other cultural organizations. In this regard, Mu.SA offered to the sector a set of pilot professional development interventions, and a set of Open Educational Resources of high quality and relevance with the actual needs of the human capital of the sector. Mu.SA was implemented in three southern European countries; Italy, Greece and Portugal. It exploited the results of previous projects (i.e. eCult, ArtS, ADESTE,

Aspire2Create), and extended them developing a set of emerging Job Role profiles for the museums of the future [1]. These Job Role profiles were mapped into VET curricula, synthesized by modules representing competences of utilizing digital technologies (digital competences) and of dealing with the challenges of the 21st century society and workplaces (21st century skills / transversal competences).

The training content supporting the implementation of the Mu.SA VET curricula was accompanied with a carefully designed set of learning outcomes, so as to increase transparency, be aligned with qualifications and occupations framework, and facilitate assessment [4]. To this end the Mu.SA consortium applied a two level methodology. The first level described below, refers to the methodology that was adopted by the Mu.SA consortium and was used throughout the project lifecycle in order to realize the Mu.SA VET curricula. This level focuses mainly on the (educational) strategy used in order to support and empower the human capital of the museum sector, and is based on the ADDIE instructional systems design framework; ADDIE is a generalized design model used by most instructional designers, system designers and creators [5]. The second level refers to the operational effort; in which two training stages (an introductory Massive Open Online Course (MOOC) and four Specialization courses) took place. Special emphasis was given to the methodology for the design and development of the educational material and content supporting the implementation of the four Mu.SA VET curricula; the methodology was based on learning outcomes according to the Bloom Taxonomy[2], making it the most critical part for the effectiveness of both the MOOC and the Specialization course.

II. THE METHODOLOGY FOR REALIZING VET CURRICULA

The first level methodology / strategic approach adopted by the Mu.SA consortium for realizing the emerging VET curricula was in practice an instructional methodology, that was developed and applied throughout the project lifecycle to support the development for museum professionals. The methodology is mapped to the five phases of instructional design of the well-known ADDIE model (Analysis, Design, Development, Implementation and Evaluation) [6] and its application is supported by a set of digital tools.

A. Analysis phase

During the analysis phase the training problem that would be addressed through the Mu.SA VET curricula was analyzed in order to specify the purpose of training, the knowledge domain, the main learning goals, the basic learning objectives and the learners' profile, and to set the necessary limitations and knowledge prerequisites. The Mu.SA project initiated with the identification of the emerging job role profiles in museums and cultural organizations which were the Digital Strategy Manager, the

Digital Collections Curator, the Digital Interactive Experience Developer, and the Online Community Manager. As already mentioned, for each of these four Job Role profiles a set of modules / competences was identified which constituted the subject of teaching / tutoring (depending on the type of learning used, i.e. online, face-to-face or work-based learning). In the same phase, the main learning goals and the basic learning objectives were also identified.

B. Design phase

The purpose of this phase was to define and describe in detail the way training will be conducted. Subsequently, for each training stage and for each training component, the detailed learning objectives were defined, as well as the educational strategy that would be applied, with the respective learning outcomes and the assessment methods for the trainees.

Thus, the professional development for the four job roles specified encompasses two main stages; the initial (introductory) training stage, which was conducted online for all four Job roles concurrently (and before trainees are allocated into / select them). The common training strategy was applied through a MOOC, using the same learning materials and activities for all roles, addressing the trainees' common training needs. This decision was made because (a) the particular competences were common for all the four Job role profiles, and (b) was considered as introductory to the second stage.

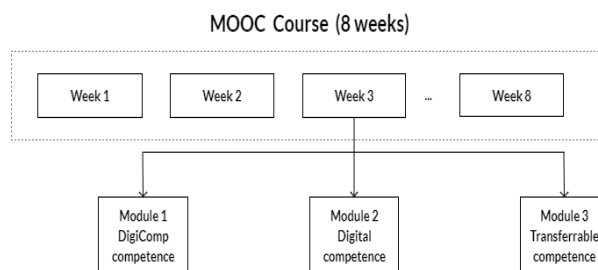


Figure 1: MOOC structure

The second stage follows a blended learning approach, where trainees of each different Job role (profile) would participate in online and traditional face-to-face learning sessions, and in parallel would join an engaging and productive work-based learning activity hosted by a museum or a cultural organization.

The first stage of the VET methodology included a "horizontal" **MOOC of 80 hours equivalent of learning**. During this training, all participants were trained in 22 competences in 8 weeks. The people that successfully completed this first stage received a certificate and were eligible to continue to a specialization course on one of the Mu.SA Job Role Profiles. This course included a blended learning (online and face-to-face) and a work-based learning component.

The educational material and content for the blended training course was developed using the existing Methodology with some modifications as shown in Table I, while additional training (f2f) activities for Trainers, Employers and Learners took place in all participating countries.

Table 1: The Fundamentals of the Specialization Course

Mu.SA Specialization Course
<i>Blended Learning</i>
Blended training course will last 24 weeks (6 months), with an effort of approximately 15h of study / week (totally 360h of study) <ul style="list-style-type: none"> • A1: Online and self-study (288h) (material) • A2: Face-to-face sessions (24h = 6 x 4h) (once a month) (included skype sessions) • A3: Assessment (48h)
<i>Work-Based Learning</i>
Work-based learning will last 10 weeks, approximately 20,5h of work in the placement / week (totally 205h) <ul style="list-style-type: none"> • B1: Work placement (200h) • B2: Assessment (5h)

The online and self-study (A1), plus the assessment (A3) components of the **Blended training course has foreseen 336h of educational material** (in total for all Job Role profiles) which was developed using an Instructional Methodology to Design and Develop content for the Mu.SA VET curricula (as described in the next section).

Thereafter, the specification of the course's Learning Outcomes (LOuts) was conducted using the Bloom Taxonomy, by analyzing the learning goals and objectives that have been defined during Analysis. The Learning Outcomes were defined in terms of knowledge, abilities and / or skills, detailing what the trainees would ideally be able to do after the successful completion of the course. For each Learning Outcome defined above, at least one Learning Object (LO) would be designed. Its design should include at least the following information:

- The LOs *title*
- A short *description* of the LO's content
- The primary *language* used within the LO
- The LO's *learning resource type*
- The *format* of the LO
- The *keywords* describing the topic of the LO
- The *learning outcomes* that the LO serve
- *Reference to existing educational material* that can be used as content of the LO

The above elements provided all the required information that is necessary for the development of the Learning Object.

C. Development Phase

The development phase includes the production of the educational material and content which is based on the design realized in the previous phases of the Mu.SA VET curricula.

The learning objects (core, additional supportive material, collaboration and assessment learning objects, practical assignments, indicative work-based learning activities) were developed as conceived in the previous phase with respect to their learning resource type for each of the two training stages (MOOC and Specialization course) and for every module (competence).

During the development phase, authors collaborated with multimedia developers, video experts (technical staff), and other staff who contributed in creating or editing qualitative educational videos and additional digital educational material as described in the design phase.

Simultaneously, the technical team sets up the on line platform, integrated the educational material into the platform and created the platform manuals, while other stakeholders (VET providers, social partners) designed the implementation of the MOOC and the Specialization course (blended course, work-based learning).

C. Implementation phase

During this phase, the educational process was implemented as designed and developed in the previous phases, and the learning effectiveness was assessed. The primary goal of this phase was the dissemination and publication of the courses. The courses were promoted and disseminated via the social networks, advertising, communities and email DBs, newsletters and relevant websites of culture. Subsequently, the education process of the Mu.SA VET curricula (MOOC course, blended learning course and work based learning) were realized in predefined time periods, supported by tutors and technical staff.

First, the pilot version of the MOOC was delivered in 80 hours equivalent of learning. During this training, all participants were trained in 22 competences in 8 weeks.

The delivery of the blended course followed the completion of the Mu.SA MOOC. It consisted of Face-to-Face (or in class training), online and self-study via the e-learning platform and other educational sources.

During the specialization course, the Mu.SA VET methodology foresaw that the trainees would need to devote around 20 hours per week in the beginning of the online course. Then, gradually, this effort should decrease as they were enrolling in parallel to the work based learning. Both online and work-based learning were characterized by specified learning outcomes. The online learning included also practical learning activities (assignments) related to the actual working tasks of the four different Mu.SA Job role profiles. Formative and summative techniques were employed to validate the accomplishment of the foreseen learning outcomes.

The specialization course included 115-137 hours of online learning (depending on the specialization path), 23 hours of face-to-face instruction, and 205 hours of work-based learning. This learning effort included also the assessment. The online and face-to-face training lasted 24 weeks, whereas the work-based learning 10 weeks (overlapping).

The components of the blended course were the following:

1. Face-to-Face Classroom: this included class based activities and the practical application of the learning attained.
2. Digital/Virtual Classes and self-study: The virtual learning environment contained lecture notes and practical assignments.
3. Assessment: Formative and summative assessment was foreseen as described in the Evaluation phase.

Work-based learning was considered as an immersive experience for the learners as they had the opportunity to learn in practice, by applying their knowledge and experience to a pre-defined situation.

The Project partners worked in country clusters with the social partners undertaking the task to find and select the work places that hosted the trainees, and selecting the candidate trainees based on predefined criteria.

The social partners were also engaged to the quality assurance of the learning materials, mainly through scientific review of the practical assignments. In addition supervisors were checking the learners on a weekly basis. Moreover, the social partners were engaged also in assessment through their collaboration in the development of the assessment materials for work-based learning.

III. THE MUSA VET CONTENT DEVELOPMENT AND VET CURRICULA IMPLEMENTATION

During the design and development phases of the above mentioned methodology and in order to apply the second of the two-fold level methodology, the well-known ADDIE model (Analysis, Design, Development, Implementation and Evaluation) was applied in the two training stages (MOOC and Specialization course). The objective was to develop educational material and content based on the learning outcomes approach according to the Bloom Taxonomy. The Mu.SA consortium adopted a collaborative approach engaging a multidisciplinary team of professionals (authors, reviewers, technical (multimedia developers, video experts) etc.), in the development tasks [7].

It is worth mentioning that these two training cycles (MOOC and Specialization course) were implemented in two different time periods separated by almost six months; therefore the content development methodologies described below were also realized separately.

Each module / competence delivered online consisted mainly of 3 basic components: learning outcomes, learning objects and assessment objects. The combination of these 3 components created learning units, each of which dealt with a specific topic to be taught. The learning outcomes were phrases that described what the learner would be able to do upon completion of a specific unit, the learning objects were educational materials and the assessment

objects were used to evaluate the knowledge acquired by the trainees.

Bloom and his colleagues advanced their work mainly in the cognitive domain, as this is required in the majority of cases. They produced a hierarchical framework through which a trainee may build upon prior learning and upscale his / her knowledge. Apart from other purposes, it is used extensively to write learning outcomes providing the foundations for developers. It is a ready-made structure, in conjunction with the provided (list of) verbs, facilitating significantly the writing of learning outcomes. Bloom’s taxonomy of cognitive domain consists of the following six levels [2], [8]: Knowledge level, Comprehension level, Application level, Analysis level, Synthesis level and Evaluation level.

Therefore, in order to develop the necessary educational material and content for the MOOC and the four Specialization courses, during **the analysis phase**, the training problem that would be addressed through the Mu.SA course was analyzed. The analysis included the specification of the purpose of training, the knowledge domain, the main learning goals, the basic learning objectives, the learners’ profile and the timeframe of the training process.

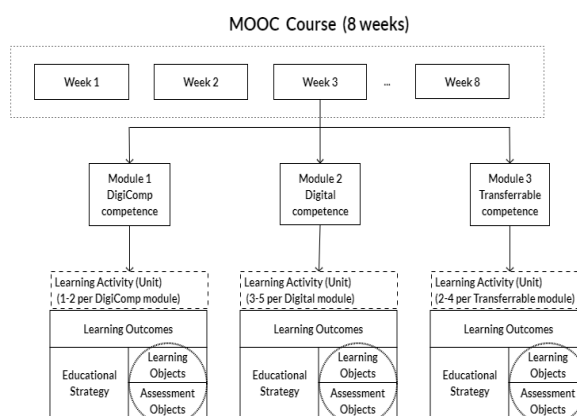


Figure 2: MOOC Analysis flowchart (The same approach is used for the analysis phase of the Specialization course)

The design phase was the most essential and demanding one in the course development methodology. The purpose of this phase was to define and describe the detailed learning objectives for each module, the units (learning activities) in which each module is divided, the educational strategy that would be applied in each unit and the learning outcomes of each unit. In this phase, it was equally important to define the students’ assessment method. Consequently, the learning objects could be designed according to the learning outcomes.

During the above described design and development phases, an important number of supportive documents were produced in addition to those previously mentioned (Course Module Description template, Course Module Schedule template, Course Unit Description template, Learning Outcomes template, Learning Objects template, Assessment Object template, Learning Object template for Practical Assignments, Work-based learning activity

template); these were used for content designing and authoring in order to assure the quality of the produced results.

The main outcomes of the development phase were: C1. Learning Objects Development in the way the following flowchart (Fig.4) demonstrates, C2. Course Development and C3. User Guides Development in the way described visually by the flowchart in (Fig.5).

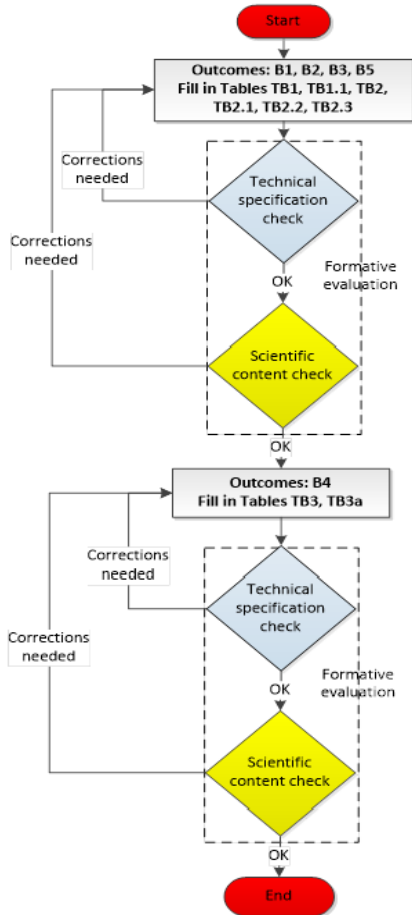


Figure 3: MOOC and Specialization Course Design flowchart

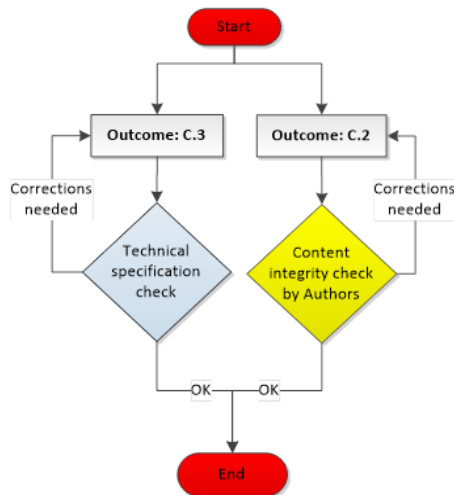


Figure 5: MOOC and Specialization Course Development (course setup and user guides) flowchart

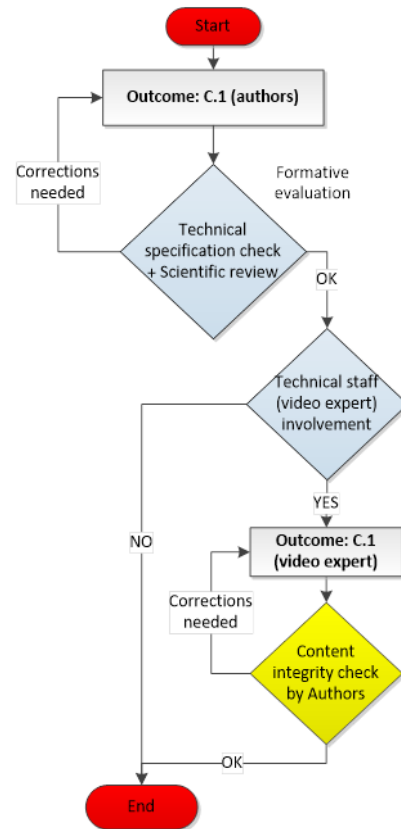


Figure 4: MOOC and Specialization Course Development (educational materials and content) flowchart

Finally, the evaluation phase was conducted in two directions. Formative evaluations took place in every phase of the design and development procedure, while the final evaluation took place at the end of all phases, in order to uncover improvement issues.

The production

During the above mentioned stages an enormous amount of educational material and content was developed in order to deliver the competencies allocated to each one of the four job profiles. The content developed belonged in two major categories (thematic), digital and transferable: (a) digital skills (basic compliant with the DigComp 2.1 framework [9] and advanced compliant with the e-CF 3.0 framework [10]), and (b) transferable competences [11] or 21st century skills [12].

Therefore, for the MOOC 22 competences were developed according to Table II, where:

- each e-CF competence was taught in about 5 hours of study (for the e-4 level equivalent to EQF 7, plus 2 hours for e-5 level equivalent to EQF 8),
- each DigComp competence was taught in 1-2 hours of study,
- each 21st century (transferable) competence was taught in approximately 3 hours of study.

All those competencies taught, aggregate 80 hours of study (10 hours per week on average). It is worth mentioning here that the application of DigComp in professional development by Mu.SA was one of its key achievements in the European level.

Table 2: Competences in the MOOC

MOOC		
Digital (e-CF)	Digital (DigComp)	21 st Cent – Transferrable
8	9	5

Furthermore, for the Specialization Course, a total of 42 competencies were produced according to Table III, in OER format, and their duration concerning their framework and their educational type appears in Table IV.

Table 3: Competences in the Specialization Course

SPECIALIZATION COURSE		
Digital (e-CF)	Digital (DigComp)	21 st Cent – Transferrable
21	6	15

Table 4: Educational material learning duration per type of Competence/Module

Educational material	Digital Competences (e-CF)		
	Level e-3	Level e-4	Level e-5
Core material	4h	5h	6h
Practical assignment	2h	3,5h	5h
Total	6h	8,5h	11h
Educational material	Digital Competences (DigComp)		
Core material	1,5h (min)		
Practical assignment	1,0h		
Total	2,5h		
Educational material	21st Century competences (Transferrable)		
Core material	3h (min)		
Practical assignment	2h		
Total	5h		

IV. THE MUSA VET EVALUATION PHASE

Curriculum evaluation is a necessary and important aspect of any training process. It provides the basis for curriculum policy decisions, for feedback on continuous curriculum adjustments and processes of curriculum implementation.

The fundamental concerns of curriculum evaluation are the following:

- Effectiveness and efficiency of educational practice;
- Status of curriculum contents and practices;
- The achievement of the goals and aims of training programs.

Curriculum evaluation aims to examine the impact of implemented curriculum on trainees (learning) achievement in order to be revised if necessary and to review teaching and learning processes in the classroom.

In order to define the Curriculum Evaluation for the Mu.Sa VET curricula, we had to consider the *Assessment strategy* and the *Assessment methodology*. *Assessment strategy* refers to the overall framework within which the various assessment activities that are envisaged are set, while *assessment methodology* refers to techniques and tools for assessing from one hand the activities designed and realized and from the other side, the acquired learning outcomes.

Furthermore, the evaluation should be conducted in two directions. Formative evaluations should take place in every phase while the final evaluation should be conducted at the end of all phases, in order to uncover improvement issues. Therefore, the evaluation consists of formative and summative assessment.

Formative Assessment: The formative evaluation was conducted in each stage of the process and included information collection (check sheets, focus groups results, interviews, questionnaires etc.) in order to identify problems. During the procedure, revisions should be done whenever evaluation considers it necessary. The purpose of the formative evaluation was (a) to control the correct implementation of every step of the development process and (b) to verify the quality of the delivered course.

Summative Assessment: The final assessment measures the effectiveness of the educational procedure, providing feedback from users and team members using interviews, system logs (providing information of platform usage, rates of attendance in every activity etc.), questionnaires etc.

The Mu.SA consortium adopted the following approach to address these complementary components in every stage and step of the realization of VET curricula. First of all, for each one of the two training stages (MOOC and Specialization course) were performed both formative assessment (using check-lists and technical and scientific reviewers) and summative assessment (using questionnaires), during the content development procedure. The quality of the outcomes in each phase during the content development procedure was assured by the employment of three roles; the author, the technical reviewer, and the scientific reviewer. The author was responsible for the design and the development of the content. The technical reviewer monitored the intermediary outcomes and assured that they were following the instruction, e.g. each particular template was appropriately

filled in. The scientific reviewer assured on the coherence and validity of the contents produced.

Subsequently, during the delivery of the MOOC and the blended learning course, the acquisition of the learning outcomes (educational performance) was measured in order to define the training effectiveness (using learning quizzes, practical assignments etc.). On the other hand in the work-based learning, monitoring was conducted by both the VET provider and the social partner (per country). Given the fact that on-site visits were not always feasible, at least in high frequency as many learners / WBL sites were spread all over the countries:

- the social partners was sending a message to the trainees every week requesting information about the progress of the WBL and solving their questions.
- the VET providers were sending a message to the learners every two weeks focusing mostly on the learning aspect of the WBL.
- both types of partners enhanced their monitoring through on site visits.

The **Assessment** methods used are analyzed in the following Table:

Table 5: Mu.SA Assessment types adopted

Type of assessment	Online	Work-based learning
Formative	1. Observation (monitoring) of learners' progress by the tutor 2. Monitoring of the learners' progress for the submission of practical assignments 3. Informative feedback from tutors through a particular form	1. Description of tasks and activities performed (learner – supervisor) 2. Weekly question by the social partner (optional) ¹ 3. Bi-weekly questionnaire by the VET provider 4. On site visits
Summative	1. Learning quizzes 2. Practical assignments	1. Final presentation 2. WBL final report

Therefore, methods used included: online forms (questionnaires), papers (practical assignment description), exams and project assessment. Peer assessment was not employed. Concerning Work-based learning, the Mu.SA project developed and shared with the engaged stakeholders (learners, VET providers, employers) indicative learning activities furnished with learning outcomes. The assessment of work-based learning was conducted (a) through a WBL (predefined) detailed report, respecting the copyrights issue, and (b) through a WBL presentation. The engagement of social partners to that

¹ This applies only if the VET provider organizes the program in collaboration with a sector representative

(assessment design) ensured the scientific coherence of the approach.

All summative questions / project work in the online learning were based on units of learning outcomes per learning module. The summative assessment of the WBL was based on the WBL presentation (30%) and the WBL report (70%). Formative assessment is also based on learning outcomes, mainly qualitatively by the tutor.

V. CONCLUSIONS

In this paper, a generalized model based on a two level installation, of the well-known ADDIE methodology (Analysis, Design, Development, Implementation and Evaluation) was presented, used by the Mu.SA project for the professional development of museum and cultural organization scientific personnel. This two level methodology included a “strategic” component used to guide the professional development, and an operational component implemented through the particular Mu.SA VET curricula interventions, i.e. the MOOC and the four Specialization courses. The results of our proposed model was (a) the implementation of the four VET Curricula, that confirmed the significance of the team-based (cooperative) development in large-scale courses (such as MOOCs), (b) the exploitation of a recognized instructional methodology such as ADDIE in developing sector oriented training interventions and content of high quality..

The first level (strategic) of the methodology assured the relevance of the training approach with the particularities of the target group and the sector (working adults, professionals facing emerging (work-related) challenges, proliferation of emerging technologies). The second level (operational) assured the high quality of the content and materials produced, teaching in parallel the sector representatives on how to enhance the design of the human capital of the sector with state of the art instructional design methodologies, assuring the quality and the relevance (to the actual needs) of the results produced.

These findings are useful as they could be a step for future efforts and proposals for the establishment of these kinds of innovative approaches in the development of VET Curricula.

ACKNOWLEDGMENT

This research was carried out within the Museum Sector Alliance – Mu.SA project (Agreement number 575907-EFP-1-2016-1-EL-EPPKA2-SSA), under the Erasmus+ Programme / Action KA2: Cooperation for Innovation and the exchange of good practices – Sector Skills Alliance.

REFERENCES

- [1] Mu.SA Project, “Museum professionals in the digital era. Agents of change and innovation”, 2017. Available at <https://bit.ly/35gZtTh>, accessed on April 2020.

- [2] Bloom, B.S. *Taxonomy of educational objectives: The classification of educational goals*. New York, NY: Longmans, Green, 1956.
- [3] Legget, J. (2011). *Staff and Training in Regional Museums*. ICOM International Committee for Regional Museums (ICR) and ICOM International Committee for the Training of Personnel (ICTOP). JOint annual mmeting, Mantia and Val Trompia, Italy, 2009. Available at http://network.icom.museum/fileadmin/user_upload/minisit es/icr/pdf/StaffAndTraining_WEB.pdf.
- [4] CEDEFOP, “Defining, writing and applying learning outcomes. A European handbook”. Luxembourg: Publications Office of the European Union, 2017. Available at https://www.cedefop.europa.eu/files/4156_en.pdf, accessed on April 2020.
- [5] Brown, A., & Green, T. D. (2011). *The Essentials of Instructional Design* (2nd ed., pp. 3–17). Boston, MA: Allyn & Bacon.
- [6] Molenda, M. (2003). In search of the elusive ADDIE model. *Performance Improvement*, 42(5), 34–37. doi:10.1002/pfi.493 0420508.
- [7] Spyropoulou, N., Pierrakeas, C.J., & Kameas, A. (2019). *Experience Gained From Applying a Team-Based Approach for MOOC Development*. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, Volume 14(2), 15-30, April-June 2019. doi:10.4018/IJWLTT.2019040102.
- [8] Kennedy, D., Hyland, A. & Ryan, N. *Writing and Using Learning Outcomes: a Practical Guide*. Bologna: European Higher Education Area (EHEA), 2006.
- [9] S.Carretero, R. Vuorikari, and Y. Punie “DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use”, EUR 28558 EN, doi:10.2760/3884, 2017.
- [10] European e-Competence Framework 3.0, “A common European Framework for ICT Professionals in all industry sectors”, 2014.
- [11] ESCOpedia, “Skill reusability level”, available at <https://bit.ly/38ydMoj>.
- [12] B. Stauffer, “What are 21st century skills?”, available at <https://bit.ly/2It9Omv>.

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

Paula Menino Homem
Department of Heritage Studies, FLUP CITCEM
University of Porto
Porto, Portugal
phomem@letras.up.pt

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	21 st Cent.
Module	W3.1	W3.2	W3.3
Week W4			
Competence	Innovating	Creatively using technologies	Creative thinking skills
Type	e-CF	DigComp	21 st 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	
Type	e-CF	21 st Cent.	
Module	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	21 st Cent.	21 st 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

Countries identified	Number of interested/ Country
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

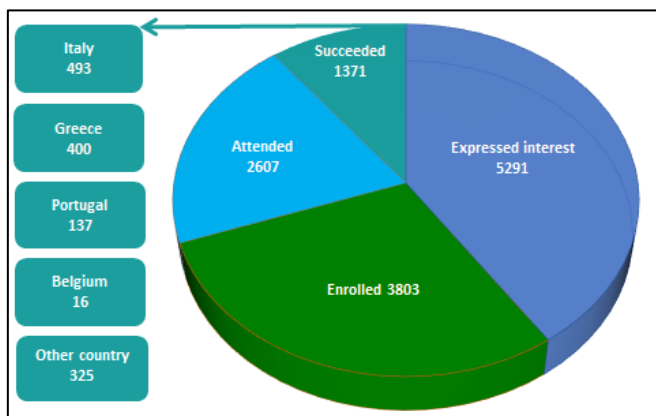


Figure 1: Involved in the MOOC according to the different stages of the process and geographical context of those who have been successful.

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;	
Romania	9	Mongolia	1

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%

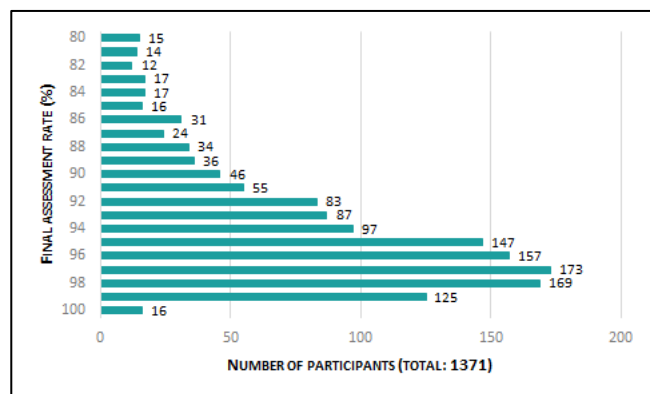


Figure 2: Number of successful MOOC participants by final assessment rate.

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.

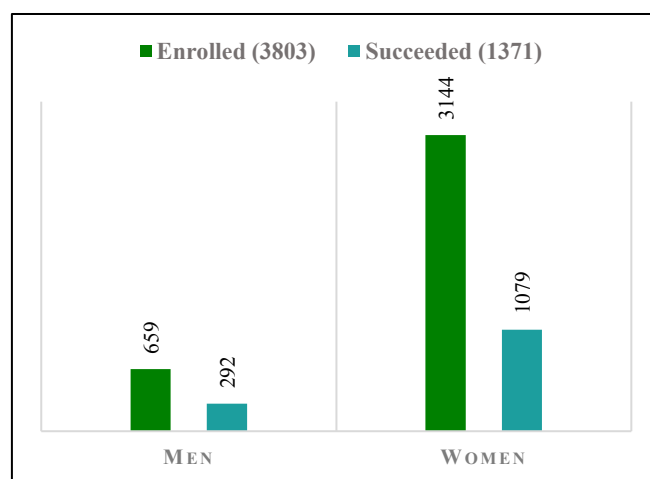


Figure 3: MOOC participants, enrolled and successful, by gender.

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.

ACKNOWLEDGMENT

The author would like to express her acknowledgments to all colleagues of the Mu.SA - Museum Sector Alliance Project consortium, especially to all U.PORTO members, as well as to all who have been collaborating with it.

REFERENCES

- [1] ICOM, Museum definition, Accessed 2 September, 2019. Retrieved from <https://bit.ly/38a9p2G>.
- [2] Silvaggi A, editor. Museum professionals in the Digital Era. Agents of change and innovation. Bologna: Centro Stampa Regione Emilia-Romagna; 2017.
- [3] EU, A Digital Agenda for Europe. Brussels: European Commission, 2010.
- [4] AXIELL, Digital transformation in the museum industry. Museums Report. Manchester: AXIELL Archives, Libraries, Museums, 2016.
- [5] CEDEFOP, Terminology of European education and training policy. A selection of 130 key terms. 2 ed. Luxembourg: Publications Office of the European Union, 2014.
- [6] CEDEFOP, European training thesaurus. Luxembourg: Office for Official Publications of the European Communities, 2008.
- [7] Ruge A, editor. Museum Professions - A European Frame of Reference. Paris: ICTOP-ICOM; 2008.
- [8] ICOM. Code of ethics for museums. Paris: International Council of Museums; 2013.
- [9] Pierrakeas, C., et al., Design of Vet Curricula. Brussels: Mu.SA - Museum Sector Alliance, 2018.
- [10] Culatta R. Weaknesses of the ADDIE Model: InstructionalDesign.org; 2007 [Available from: <https://bit.ly/3mOkb2C>].
- [11] Branch RM. Instructional design: the ADDIE approach. New York: Springer Science + Business Media, LLC; 2009.
- [12] Downes S. What makes a mooc massive? [Internet] 2013. [05.10.2017]. Available from: <https://bit.ly/2I3xUDB>.
- [13] Chiappe-Laverde A, Hine N, Martínez-Silva J-A. Literature and practice: a critical review of MOOCs. Communicate Media Education Research Journal Special Topic Issue MOOCs in Education Interactivity and Annotations for New Teaching Models. 2015; XXII (44): 09-17.
- [14] Montoya MSR, Aguilar JVB, editors. Open educational movement. Access, collaboration and mobilization of open educational resources. Mexico: CIITE-ITESM; 2012
- [15] Ehlers U-D. Extending the territory: from Open Educational Resources to Open Educational Practices. Journal of Open, Flexible and Distance Learning. 2011;15(2):1-10.
- [16] EU. MOOCKnowledge: The European Commission's Science and Knowledge Service; 2019 [Available from: <https://ec.europa.eu/jrc/en/moocknowledge>].
- [17] Jansen D, Konings L. MOOC strategies of European institutions. Status report based on a mapping survey conducted in November 2016 - February 2017. Maastricht: European Association of Distance Teaching Universities (EADTU); 2017. Available from: <https://bit.ly/363v7mg>.
- [18] Schoenack L. A new framework for Massive Open Online Courses (MOOCs). Journal of Adult Education. 2013;42(2).
- [19] OpenupEd. Definition Massive Open Online Courses (MOOCs) (V1.1) 2015. Available from: <https://bit.ly/385TIPv>.
- [20] Mu.SA. Mu.SA MOOC | Registration open 2018 [Available from: <https://bit.ly/3eke1Eo>].
- [21] Silvaggi A, editor. Museum Professionals in the Digital Era. Agents of Change and Innovation. Bologna: Centro Stampa Regione Emilia-Romagna; 2017.
- [22] Pierrakeas C, Borotis S, Kameas A, Polymeropoulou P. Design of Vet Curricula: Mu.SA - Museum Sector Alliance; 2018.
- [23] CEN. European e-Competence Framework 3.0. A common European Framework for ICT Professionals in all industry sectors. CWA 16234 Part 1. CEN-CENELEC, 2014.
- [24] Carretero S, Vuorikari R, Punie Y. Digcomp 2.1. The Digital Competence Framework for Citizens. With Eight Proficiency Levels and Examples of Use. Luxembourg: Publications Office of the European Union; 2017.
- [25] AES. What Are 21st Century Skills? Lancaster: Applied Educational Systems; 2019 [Available from: <https://bit.ly/3mLyp4r>].
- [26] Moodle. Empower educators with a flexible, open source LMS. West Perth, Australia: Moodle Pty Ltd; 2020 [Available from: <https://moodle.com/>].
- [27] Kalemis I. Museum Sector Alliance - Essential Skills for Museum Professionals: Massive Open Online Course. Platform User Guide. Patra: Mu.SA Project; 2018. Available from: <https://bit.ly/3jXkbeN>.
- [28] EC. Communities of Practice: European Commission. EPALE - Electronic Platform for Adult Learning in Europe; 2020 [Available from: <https://bit.ly/2TP9uAI>].
- [29] Ferguson R, Sharples M, Beale R. MOOCs 2030: a future for massive open online learning. In: Bonk CJ, Lee MM, Reeves TC, Reynolds TH, editors. MOOCs and Open Education around the World. Abingdon: Routledge; 2015. p. 315–26.
- [30] Mazzola L. MOOCs and Museums: Not Such Strange Bedfellows. Journal of Museum Education [Internet]. 2015; 40(2):[159-70 pp.].
- [31] Parry R, Moseley A, Gretton N, Tunstall R, Mobbs M. Why MOOCs matter: The consequence of massive open online courses for museums, universities, and their publics Dale Drive, Silver Spring, USA: Museums and the Web, LLC. Archives & Museum Informatics; 2016 [Available from: <https://bit.ly/3oR9Bd9>].
- [32] Bishara H. 2,500 Museums You Can Now Visit Virtually [Internet]. Hyperallergic, editor. New York: Hyperallergic Media Inc. 2020. [16.03.2020]. Available from: <https://bit.ly/3mOh8rc>.

7. Evaluation of the Mu.SA MOOC Course

Massimiliano Dibitonto
DASIC
Link Campus University
Rome, Italy
m.dibitonto@unilink.it

Katarzyna Leszczynska
DASIC
Link Campus University
Rome, Italy
k.leszczynska@unilink.it

Elisa Cruciani
DASIC
Link Campus University
Rome, Italy
e.cruciani@unilink.it

Abstract— *This chapter presents the results of the Mu.SA MOOC (Massive Open Online Course) "Essential digital skills for museum professionals", the first step of a training programme within the Mu.SA – Museum Sector Alliance project [1]. The chapter analyses the functionality, usability and accessibility of the course, the learning activities and content delivery, and quality of contents and subject coverage. The analysis is based on quantitative data on the progress of activities, on quali-quantitative surveys collected during the course and qualitative data from the interviews conducted with a representative sample of learners. Based on this data, the emerged results show an overall good level of satisfaction for all the evaluated aspects.*

Keywords— *MOOC, MOOC Evaluation, Usability, Educational Content Quality, Effectiveness, Quality Reference Framework*

I. INTRODUCTION

This work presents the evaluation of the MOOC (Massive Open Online Course) "Essential digital skills for museum professionals" that is the first phase of the Mu.SA - Museum Sector Alliance project [1][2].

This document is part of a broader evaluation process that has as its primary objective the validation and improvement of the methodology and content produced. According to the MOOC, the specific evaluation objectives are to assess the:

- Functionality, usability and accessibility of the online platform (technical level);
- Learning activities and content delivery (learning level);
- Quality of the contents and subject coverage (learning outcomes level).

The analysis was based on quantitative data on the progress of activities, supplemented by quali-quantitative surveys collected during the course. In particular, the following tools and data sources were used: pre-course survey, quantitative monitoring data (log of the platform used for the course), post-course survey, feedbacks from the tutors and interviews with the students.

The evaluation strategy takes into account the QRF Quality Criteria and Checklist for the Evaluation as indicated by the Quality Reference Framework (QRF) for

the Quality of Massive Open Online Courses (MOOCs) [3]. The Quality Reference Framework (QRF) was designed and organized by MOOQ, the European Alliance for the quality of Massive Open Online Courses (MOOCs). The QRF provides quality criteria and a checklist for designing and developing MOOCs.

II. PRE-COURSE QUESTIONNAIRE

The pre-course questionnaire administered to participants at the beginning of the course was aimed at collecting participants' demographics information, their previous knowledge of the topics covered in the course and their expectations.

A. Demographic

The overall number of respondents to the pre-course survey is 1391, indicating a response rate of 36% on the total of 3803 participants that registered to the platform at the beginning of the course. Analyzing the completed questionnaires, there is a very high proportion of women, equal to 84% of the total. Furthermore, participants come from 56 different countries with a prevalence of Italians and Greeks. From the analysis of the platform log it resulted that 659 (17,3%) were male and the rest 3.144 female (82,7%). The 34% of participants are aged between 35 and 44 years and the 42% are between 24-34 years. The rest is divided between the <44 class (16%) and the 18-24 class (7,5%).

As a result of the selection criteria, the majority of participants show an high level of education as 58% of them has a master's degree, 22% has a bachelor's degree, while 11% has a doctorate. Only the remaining 9 percent have a lower qualification (professional or high school).

B. Previous knowledge of the course's topics

Participants were asked to self-assess their competence level about the topics covered in the course on a scale from 0 to 5. All the participants declared that they think they had a knowledge greater than 3 on all the topics indicated, with an average value of 3,67, with a low Standard Deviation (0,26) and a variation of 0,98 points between the maximum scores (netiquette) and minimum scores (forecast development). The 22,5% claimed an high level, the 36% a

medium-high level, the 26,5% and average level and only the remaining 12,4% indicated a medium-low level representing a quite homogenous group.

C. Expectations

The participants were asked to express personal and professional objectives and expectations. The objectives were mostly related to the acquisition of new skills (17,9%) and knowledge (17,6%) followed by the development of new competences (16,3%). The 13,7% stated as objective to get a certification, the 13,7% to access educational resources and the 10,7% to gain a competitive advantage.

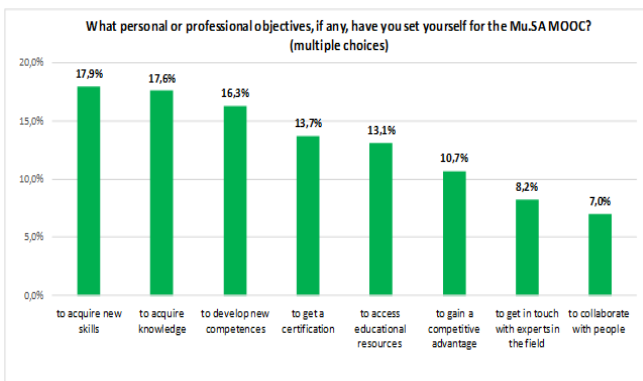


Figure 1: Pre-course survey: Objectives of participants of the MOOC.

The expected impact was mainly related with the sphere of work both in terms of improving skills and knowledge and expanding opportunities. Participants were asked to choose from a series of eight options, presented as multiple choices. The majority of respondent indicated that they expected to be able to apply the learnings to their job (77%) and to be able to get more job opportunities (72%). Moreover we observed that participants had expectations of self-development like as being able to improve the current job, being able to get a better job (both scoring above 40%) but they looked also to have an impact on their ecosystem, with a 40% that expected to be able to change “how things work” in their organization.

III. POST-COURSE QUESTIONNAIRE

The post-course questionnaire, administered to students after the completion of the course, was aimed at collecting participants’ opinion and experiences about the course organization and structure, the learning environment, the usability of contents and of educational resources, the learning resources and the workload, the coherence with learning needs, as well as their level of satisfaction with each training module. The overall number of respondents to the pre-course survey is 717.

A. Course organization

To evaluate this aspects students were asked to express their opinions on the adequacy of the structure and organization of the MOOC with respect to the achievement of the training objectives. In response to this, they judged the course content and provided training resources particularly appropriate to previous knowledge and to support learning. However, there is only moderate consensus (39% fully agrees, 49% moderately agrees) that the course has achieved its goals and the strategies/educational activities implemented in the teaching practice have been adequate in comparison with the course’s training goals, as stated at the initial stage (32% fully agrees, 48% moderately agrees).

B. Learning environment and usability

The learning environment created for the MOOC, based on the Moodle platform [4], was perceived as effective and usable, ensuring an easy interaction with the training contents. People showed appreciation for the availability and easiness of access of the training materials. The only aspect that obtained a slightly inferior appreciation was related to the tools to interact with other students (only the 22% is very satisfied while the 40% is only moderately satisfied). It was observed that the students created a group on Facebook to exchange information and content and to interact with each other also on topics not strictly related to the course.

To sum up, taking into consideration all their observations, we can conclude that the opinion on the overall learning environment was strongly positive.

With regards to the modalities of participation to the course, the majority of interviewees (62%) reported to use only a computer to connect to the Mu.SA learning environment, followed by those who use different devices (36%). The remaining 2% of participants connects either only from a mobile phone or only from a tablet. For those connecting from different devices, most of them consider the experience of use very coherent (45%), followed by those deeming it as moderately coherent (31%) and few of them believe that it as only somewhat coherent (16%). Only 7% of them evaluate the IT devices not coherent at all when accessing from different devices.

C. Learning resources and workload

Another aspect to consider is about the workload and the quality of the learning resources, considered by the students quite good. Indeed the level of satisfaction with the student performance in the MOOC, gain a very high score. The 40% of the students stated of being gratified, concerning their MOOC path, while only a little part of students underlined to have been involved in a negative experience, above all because they found the course too much time-demanding and not in line with their current job or life.

Table 1: Workload and quality of the learning resources

Question	Very much	Mode rarely	Some what	Not at all	ND
1. Pleasant	36%	50%	11%	2%	1%
2. Carefully elaborated	28%	49%	20%	3%	0%
3. Marked by clarity of exposition and presented with additional training resources (graphics, pictures, appendix, etc.)	34%	44%	19%	3%	1%
4. Integrated with clear and effective explanatory support	32%	46%	19%	3%	1%
5. How much mental activity was required to conduct the Mu.SA MOOC on Essential Skills for Museum Professionals (thinking, deciding, remembering, searching, etc)?	29%	57%	12%	1%	0%
6. Was the time given enough for studying the modules and doing the activities, scheduled each week?	36%	38%	38%	16%	1%
7. How demanding was the level of study in order to accomplish your performance?	23%	58%	58%	17%	0%
8. How satisfied are you with your performance in MuSA MOOC on Essential Skills for Museum Professionals?	51%	41%	41%	7%	0%
9. How secure, gratified, content, relaxed and complacent did you feel about your Mu.SA MOOC learning?	40%	47%	47%	11%	1%

D. Coherence with learning needs

The opinion of participants on the coherence with their learning needs shows a very positive rating, having more than the 84% of responses ranging homogeneously from moderately coherent to very coherent. Only 13,2% of respondents considered the course as only somewhat coherent with their learning needs, while just 2% of them did not perceive any coherence between the topics and their learning needs.

E. Level of satisfaction with each training module

Charts allow one more time to have a deeper idea of what students have liked, concerning the training material. The most favoured modules that have scored a high percentage (about 50%) were “creative thinking skills”, “creatively using technologies”, “netiquette” and “team working”.

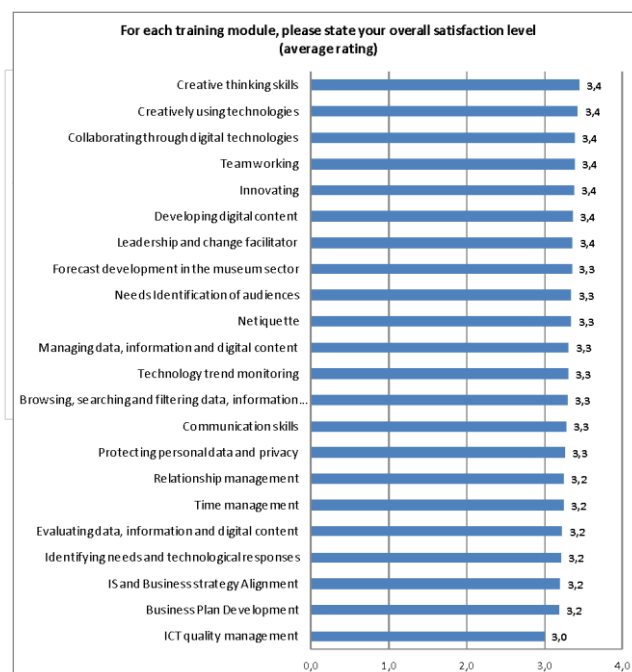


Figure 3: Module satisfaction level of participants of the MOOC.

It is also true that the average value of evaluations given per module, does not show big differences: only 0.4 points from the maximum to the minimum score. The only negative note is represented by the module on ICT Quality Management, which obtained a fairly low level of appreciation. The average level of satisfaction for each week also appears rather homogeneous considering that between week 8, which is the less favoured one and week 4, which is the most favoured one, a distance of 0.25 points is revealed. It is possible to state that overall a moderate level of satisfaction was recorded even because, on a scale from 1 to 5, the average value calculated on all the weeks is 3.3.

In conclusion, the overall level of appreciation about the modules proposed in the course was rather high, as the tables 3-5 confirm.

IV. ACTIVITIES COMPLETED

At the beginning, 3803 students registered to attend the Mu.SA course and, as we can see in table 1, 1241 completed it. It means that the successful participation of the students is around 25,9%.

Table 2: Courses completed

Monitoring data	Number	%
Registered members	3.803	100%
Total of completed courses	1.371	25,9%
Total of not completed courses	2.432	74,1%

Through the analysis of the logs of the MOOC platform we were able to analyze not only the participation but also the behaviour of the students during this learning path.

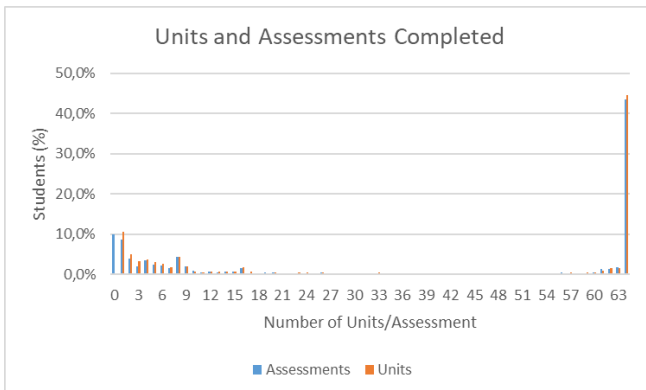


Figure 4: Frequency distribution of units and assessments completed

The course was designed proposing a total of 64 assessments to do, but students could successfully pass the course by succeeding in the 80% of the activities (51 assessments in total). Considering the frequency distribution of the units and assessments completed by the students that attended at least one unit of the course, it is possible to see that about 40% of students have completed all 64 units and assessments of the course while, in the left of the graph, it can be seen that a group of students has completed only a few activities, probably for having stopped following the course.

Analyzing also the trend of the active students during the weeks, we can notice that during the first 2 weeks, that have 8 units/assessments each one, there is a significant dropout (around the 38%) but, after that, the level seems to be constant.

Moreover, a small subset of the students (50) completed 80% of the units without concluding the assessments.

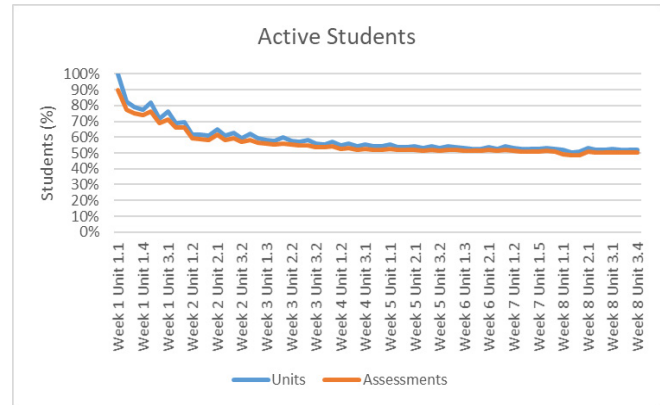


Figure 5: Active students.

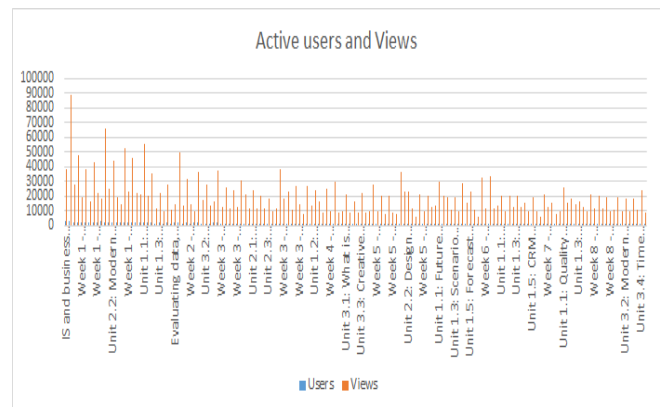


Figure 6: Active users and views.

Besides, the analysis of the users' activity on the platform (figure 6), allows us to say that it was not uniform and that some modules required more "views" by the learners.

Another interesting thing to evaluate is the interaction on the Forum, used to enhance peer to peer interactions, to encouraging questions related to contents and practical issues and to reach students for institutional communication by the partnership.

The analysis of the activity on the forum, shown in figure 9, serves as a sign of the engagement of the students in the course and a helpful tool for the identification of the weeks "more active".

During the first weeks we can notice some peaks of views related to communications about the course rules, deadlines or similar questions about the MOOC.

In the other cases, the request of information was about the comprehension of some topics like the assessments.

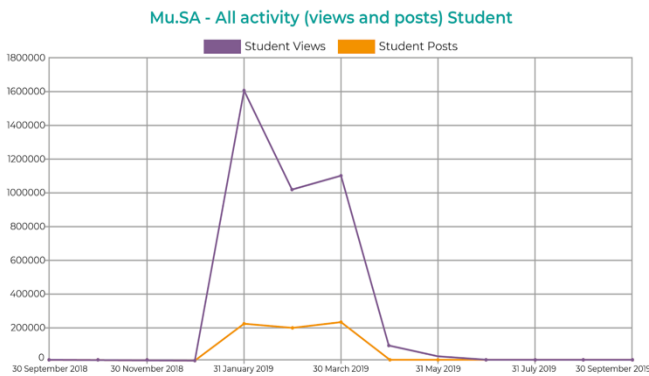


Figure 7: Forum activity (views and posts).

V. TUTORS FEEDBACK

The perceptions of the tutors can be useful to identify the aspects to enhance in the future. We have collected several comments through the different categories so that we have general, positive and negative remarks. The most interesting were those belonging to the general feedback group. Many of them related suggestions on materials, content and learning tools: for example, many students suggested to add case study tailored to the museum environment (to have a direct experience of what they were about to learn) together with some technical information regarding subjects not familiar to them (as the very basic knowledge of what data management is and how it can be managed). Again on the learning side, some students suggested a revision of the written content by mother-tongue experts together with the adding of translation and subtitles in other languages. Many learners contacted tutors asking more time to assimilate, reflect, evaluate and use the information received.

Other comments regarding the usability aspect focused on the possibility of inserting some buttons to support some features (e.g. a button that allows moving to the next module or to go back to the start of the unit). Moreover, someone asked tutors to insert video testimonials of users on the platforms to illustrate real experiences even in the use of it.

Most of the reasons that brought students to contact tutors were asking help to fix problem and technical issues with the downloading of some contents (transcripts) and the visibility of the grades. Besides, some people expressed confusion about the calendar of the course, and on assessment questions that referred to subjects not explicitly mentioned in the videos. Many times it happened that they requested extra information to better understand the content in order to succeed in the self-evaluation.

In conclusion, tutors were contacted especially through private messages and not very much through the forum. The things requested by the learners' concerned general clarifications and technical issues about the platform. No noticeable difference related in the frequency of the requests: from the beginning of the MOOC (January 2019) to the end of it (March 2019) they expressed the need of having available tutors as support persons. All of the

suggestions collected have been considered for the improvement of the learning offer.

VI. INTERVIEWS

With the aim of collecting feedback from students, we conducted some interviews at the end of the MOOC, by involving a representative sample of students from each job profile that emerged from their expression of interest.

We had prepared less than ten really precise questions, taking into consideration the aim of the analysis: investigating several aspects of their experience with the MOOC, such as content quality, the usability of the platform and the organization of the course.

A. Content quality

The interviewed learners agreed that all the modules proposed were interesting and useful for their professional growth, and that they met the initial expectations. Someone added that some modules have represented a stimulating starting point to deepen unfamiliar topics, thanks to the suggested bibliography, the further suggestions and the keywords emphasized.

The modules appeared as more interesting concerned matters like Management and Leadership skills, Psychology, Personal and Creative thinking skills, Mentoring and Coaching skills, but also more technical topics such as the application of new technologies in the museum's context (i.e. QR Code, AR, etc.), Programming, Managing data, Information and digital content, Netiquette, and Online Writing.

On the other hand, the modules that have been evaluated as less interesting, or too much complicated or not well-designed have been ICT Quality management, Product and Service Planning, Service Level Management, Information and Knowledge Management.

B. Usability

Regarding the use and the interaction with the platform, the learners expressed positive feedback because the digital tool was considered enough user-friendly and easy to interact with. Nevertheless, they faced some difficulties that we can list in these following points:

- The lack of intuitiveness to find the various topics on the platform, during the first interactions.
- Following the lessons on the screen and not being able to download the presentations.
- Some technical problems that affected the platform.

C. Organization

All the people interviewed agreed that the organization of the MOOC was quite good.

With regard to the time to complete successfully the MOOC, a large part of them reported it was enough but not

always organized in the best way and some interviewees stated the program is very ambitious and not suitable for working students.

When asked if they have some general suggestions about the MOOC, they focused on:

- The improvement of direct contact among people, tutors and other students.
- The introduction of more practical exercises (maybe at the end of all the weeks of the course) instead of all quizzes assessments.

In conclusion, we can say that the MOOC was appreciated by the students, having provided them with useful basic knowledge of various topics related to digital transformation in museums.

VII. RESULTS

Based on the data collected and the analysis performed, we can summarize an assessment of the general objectives of the survey.

A. Technical level

The available features, the usability level and the accessibility of the online platform were positively evaluated both as regards the technical characteristics and the organization of the contents. A slightly lower score was obtained from the interaction possibilities offered by the platform. Another problem that emerged was the need to download the presentations. It should be noted that the constant assistance of the tutors made possible to quickly resolve some technical and interaction problems, especially in the initial phase. The overall evaluation of this objective can be considered positive and the problems encountered can be solved with subsequent updates.

B. Learning level

As regards learning activities and content delivery, the level of satisfaction is overall high. The dropout rate is consistent even though in line with the levels observed by Onah et al [5]. Although it can still be considered an indicator of some flaws in the learning planning of the course, the result that emerges from the questionnaires and interviews is that the learning activities have been well designed and implemented. Most of the students reported that the course time and cognitive demand were consistent with their expectations, needs and possibilities. About 30% of the students (especially working students) reported having some difficulty meeting the deadlines imposed by the course. Some problems were identified in slight delays in loading new modules onto the platform, but this problem

is attributable to the pilot status of the course. Overall, the design of the training activities and their delivery can be considered quite high.

C. Learning Outcomes level

The evaluation produced a good overall score for the quality of the contents, the coverage of the subjects and the correspondence with the initial expectations and learning needs.

The average of the interviewees was moderately positive in relation to the comprehensibility and quality of the content. The tutors received requests, through the forum and with direct messages, for clarifications or additional resources for some topics. These comments were taken into consideration for a subsequent course upgrade.

As shown in the questionnaires and interviews, the participants expressed overall positive opinions on the subject coverage, albeit with some small differences. As for the objectives of the course, it is interesting to note how the participants considered the modules useful for their professional development. Some requests for additional materials showed how the modules stimulated curiosity and self-learning ability.

The various tools used confirm what has already emerged from the questionnaire with the majority of students agreeing that the course has achieved its objectives and that it has been consistent with their expectations and needs.

ACKNOWLEDGMENT

This research was carried out within the Museum Sector Alliance – Mu.SA project (Project Number 575907-EEP-1- 2016-1-EL-EPPKA2-SSA) under the Erasmus+ programme/ Action KA2: Cooperation for innovation and the exchange of good practices – Sector Skills Alliances.

REFERENCES

- [1] Project-musa.eu. 2020. Project Musa – Mu.SA: Museum Sector Alliance. [online] Available at: <<http://www.project-musa.eu/>> [Accessed 7 April 2020].
- [2] P. Polymeropoulou, C. Pierrakeas, S. Borotis, A. Kameas, “Implementing a MOOC course for Museum Professionals with a worldwide effect,” in 2019 10th International Conference on Information, Intelligence, Systems and Applications, IISA, IEEE pp. 1–8, July 2019.
- [3] “Quality Reference Framework (QRF) for MOOCs - developed by MOOQ,” MOOQ for the Quality of MOOCs. [Online]. Available at: <<http://mooc-quality.eu/QRF>> [Accessed: 07-Apr-2020].
- [4] “Moodle - Open-source learning platform,” Moodle.org. [Online]. Available at: <<https://moodle.org/>> [Accessed: 07-Apr-2020].
- D. F. Onah, J. Sinclair, R. Boyatt, “Dropout rates of massive open online courses: behavioural patterns,” In Proc. EDULEARN14, 2014, vol.1, pp. 5825-5834.

8. Piloting the Specialisation Courses of the Mu.SA project: Shifting towards the museum of the future

Eleni Damianou
AKMI S.A.
Athens, Greece
edamianou@iek-akmi.edu.gr

Giannis Panopoulos
AKMI S.A.
Athens, Greece
gpanopoulos@iek-akmi.edu.gr

Abstract— *This chapter guides the readers through the activities of the Specialisation Courses designed, developed and provided by the partnership within Mu.SA - Museum Sector Alliance.*

Keywords: *Piloting, Specialisation, E-learning, Blended learning, Work-Based Learning*

I. INTRODUCTION

The piloting of the Specialisation Courses has been an important stage of the Mu.SA project. Having already worked in researching the trends and knowledge gaps of museum professionals in digital skills, the Mu.SA partners created educational material in the form of Open Educational Resources ultimately aiming to be delivered to museum professionals via a MOOC (Massive Open Online Course) addressed to all, that was followed by Specialisation Courses for those willing to continue their learning path in one of the more specialised curricula.

The Mu.SA project partners designed and delivered one Specialisation Course for each of the 4 identified new museum professional profiles that came up as a result of research conducted in the project (figure 1). The courses were designed to be fit-for-purpose, relevant to the identified professional needs, as well as related to the requirements of EQF and ECVET.

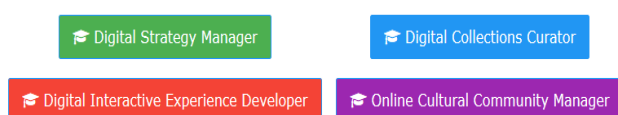


Figure 1. The titles of the 4 Specialization Courses

Following the successful completion of the MOOC, the organization and implementation of the Specialisation Courses resulted to ultimately allow the testing and refinement of the curricula, including both theoretical and practical learning delivered in a blended way, complemented with Work-Based Learning. To this end, in

order to optimize the results of the Mu.SA project, innovative approaches to teaching and learning were designed. First, the modules of the specialization course were designed and developed with the inclusion of 3 different qualification frameworks, namely e-CF, DigComp and 21st Century skills.

The European Norm (EN) 16234-1 European e-Competence Framework (e-CF) provides a reference of 41 competences as applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills, knowledge and proficiency levels that can be understood across Europe¹.

DigComp is a reference framework developed by the European Commission, that can be adapted to support the development and understanding of digital competence in any setting, working as a reference framework to explain what it means to be ‘digitally competent’². 21st Century skills are 12 abilities that today’s students need to succeed in their careers during the Information Age. Second, in class training, online learning via the online platform, self-study and Worked-Based Learning were included in the delivery of the specialisation course.

II. DELIVERY AND RESULTS OF SPECIALISATION COURSES

A. Selection of course trainees

Breaking down the steps followed for the successful delivery of the Specialisation Courses, the Mu.SA team called for an Expression of Interest to all successful MOOC learners willing to continue their learning path.

Learners from the Mu.SA participant countries namely, Greece, Italy and Portugal declared their willingness to be part of one Specialisation Course in a procedure that invited them to support their candidature by stating the reasons why they would be willing to continue their studies while also filling their personal profile via identification questions and uploading their professional record.

The Mu.SA team received over 330 expressions of interest for a limited number of 75 positions (according to

¹ <https://www.ecompetences.eu/>

² DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use

the proposal) for all three participant countries indicating the high resonance of the program among the museum and culture professionals and its great dynamic.

Each educational provider per project country, namely AKMI for Greece, Link Campus University (LCU) for Italy and University of Porto for Portugal had the responsibility of evaluating the applications of the interested professionals and forming the groups of the learners of the Mu.SA Specialisation Courses by including both learners already working in museums and cultural organizations but also sector professionals willing to work in such environment, shaping in this way a diverse group of learners.

B. *Compilation of the Specialisation Courses*

The structure of the Specialisation Courses and its modules were aligned to the two European Frameworks of Digital Skills, namely, e-CF and DigComp. In total, the 4 courses consisted of 38 modules that were distributed to the 4 professional profiles based on the level of their use in each of them, delivering to the learners a big variety of competences to improve their expertise.

The methodology of training delivery was designed in such way that learners, trainers and tutors were involved in the learning process with active roles, and that in the end the learners would benefit from the delivery of the course.

Within this spirit, the principles for efficient online learning environment that were taken into consideration were:

- *Learners to be able to work collaboratively and actively by promoting reciprocity and cooperation among them.*
- *Learners to be able to make connections by enhancing “active learning”.*
- *Learners to be able to interact with their instructors as part of the course.*
- *Ensure that the technology options of the e-learning platform are appropriate for the learning outcomes of the Mu.SA project.*

As the result of the instructional design, the Specialisation Courses consisted of both in-class and e-learning (blended learning) as well as Work-Based Learning (WBL).

C. *Training the Mu.SA trainers, learners and museum supervisors*

In the dawn of the launch of the Specialisation Courses the educational providers of the Mu.SA team invited the main actors of the course, namely the Mu.SA trainers, responsible to deliver the in-class training, the learners and their supervisors within the museum where the WBL would ultimately take place, in different trainings with the aim of

welcoming them in the piloting phase, addressing their questions and enhance the cooperation dynamics among them and with the Mu.SA program.

The trainings ensured better understanding of the objectives, benefits and scope of the program.

D. *Delivery of blended training*

The delivery of each blended Specialisation Course lasted 29 weeks and consisted of face-to-face (in class training), online and self-study via the dedicated Mu.SA e-learning platform. 360 hours of training were delivered in total; of these, 24 hours were dedicated to face-to-face learning, 288 hours to online and self-study and 48 hours to assessment.

More analytically, the Mu.SA blended course offered:

1. *Face-to-Face Classes:* AKMI, LCU and the University of Porto provided in-class lectures focusing on learning by doing activities in the form of co-creation workshops, group activities and DIT (Do It Together) tasks which supported peer learning. The trainers and the invited guests acted as facilitators rather than delivering a traditional teaching role.

2. *Digital/Virtual Classes and self-study:* The virtual learning environment contained lecture notes and practical assignments set by the tutors of the Mu.SA team that included professionals from numerous academic backgrounds ranging from Museologists to ICT and Business professionals

3. *Assessment:* Assessment took place continuously during the course, via practical assignments and quizzes following each module that were assessed by the Mu.SA tutors.

III. WORK-BASED LEARNING AND ITS INCLUSION IN THE MUSA PROJECT

A. *The Importance of Work-Based Learning*

Work-based learning is recognized as an educational strategy that provides students with the opportunity to put theory into practice with real-life work experiences. It gives students the opportunity to explore what they have learned in the classroom within a real-world context³.

To this end, workplace learning and classroom learning should not be seen as separate activities. They should be treated as part of a complete package: classroom learning complements and adds to learning in the workplace; learning at work complements and adds to learning in the classroom. In the modern society, Work-Based Learning is of critical importance for both learners and employers⁴.

Using the European Training Foundation's relevant report, it has been identified that from the learners' point of view, work-based learning can make their study more

³ EC. Communities of Practice: European Commission. EPAL - Electronic Platform for Adult Learning in Europe; 2020 [Available from: <https://epale.ec.europa.eu/en/communities-of-practice>].

⁴ CEDEFOP, Terminology of European education and training policy. A selection of 130 key terms. 2 ed. Luxembourg: Publications Office of the European Union, 2014.

interesting and connect them more directly to the world of work, improving their job prospects by giving them more relevant work skills and by connecting them to employers who may offer them jobs after they graduate⁵.

B. Work-Based Learning in VET

Putting the whole concept of Work-based learning in the Vocational Education context, the VET teacher, responsible for the theoretical part of a course, plays a vital role in the WBL as well, assuring that the practical training is aligned with the curriculum and learning outcomes⁶.

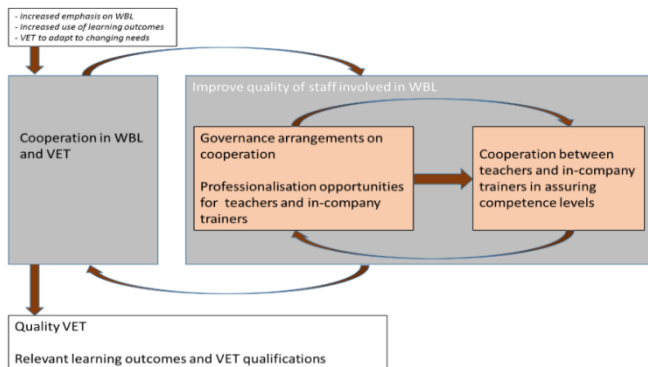


Figure 2: Schematic representation of the relationships between cooperation in WBL and VET and quality of staff in WBL.¹

Should WBL take place outside the VET school, the teachers assume the responsibility to guide the learners in their practical training. On their side, the employers hosting the learners in their workplaces assume the responsibility of being a mentor to the learner within the learning place.

C. The role of WBL in the Mu.SA Project

The WBL stage lasted 200 hours with another 5 hours of assessment. The WBL constituted an immersive experience for the learners, where they could learn first-hand, by applying their knowledge gained from the blended learning.

More specifically, the Mu.SA team having produced the learning outcomes for all delivered modules, thoroughly designed and developed a number of practical activities per profile, aligned with the learning outcomes. The learners along with their supervisors within the museum, selected and carried out a number of these activities summing up to the necessary 200 hours.

More than 50 museums from the three countries participating in the Mu.SA project hosted the Mu.SA learners in their premises. Each learner had the absolute freedom to select any activity he/she wished or suggest new ones, always within the context set by the learning outcomes pertinent to the specific Specialisation Course that the WBL belonged to.

Regarding the placement of a learner within a museum or cultural organization, for the learners not already

working within the establishment, the Mu.SA team assisted in order to achieve a match covering any social security costs required, based on the legal framework of the project countries.

In addition to the development procedures, the Mu.SA team monitored closely the WBL activities assisting both the learners and their supervisors in any potential issues they faced. To this end, ICOM Greece, ICOM Portugal and Symbola, being representatives of the museum and culture sector, undertook the task to monitor the WBL procedures of the learners in each country and offer their assistance on a weekly basis while the education providers monitored the educational aspect of the WBL meeting with trainees and providing the technical support, when necessary.

IV. ASSESSMENT AND VALIDATION

Each Specialisation Course cumulated with assessment and validation. In addition to the quizzes and practical assignments, the learners were assessed for their WBL activities via an Assessment Report and an Oral Presentation of their activities in the museum, in which they presented their project and how they put in practice the knowledge gained from the delivered modules.

Those learners who successfully completed their Specialisation Course were awarded 30 ECVET points at level 5 of EQF, as a recognition that they achieved the learning outcomes associated with it.

V. CRITICAL REFLECTION

Reflecting on the Specialisation Courses and addressing their benefits for the learners and the participating museums, the feedback collected via personal discussions and interviews indicated that the Mu.SA project provided the museum professionals with advanced knowledge that surpassed the digital skills and expanded to other disciplines, helping them create a complete and updated professional profile.

The Mu.SA learners managed to create an active Community attesting that the training program enhanced their skills, essential in the digital world but within the museum environment, giving them the opportunity to develop useful and modern projects in their working place ultimately leading to the increase of their museums' followers in the Social Media, their visitors and in some cases the museums' revenues.

From their point of view, the host organizations have been thankful for the opportunity that the Mu.SA project gave to museum professionals to be more creative and generate innovative ideas that will ultimately contribute to the museums of the future in a digital world.

⁵ European Training Foundation, Work Based Learning, A handbook for policy makers and social partners in ETF partner countries, 2014.

⁶ CEDEFOP, Work-based learning in continuing vocational education and training: policies and practices in Europe, 2015.

VI. FINAL CONSIDERATIONS

With the completion of the Mu.SA Specialisation Course, all actors involved along with the Mu.SA team have come to practically realize the importance of enhancing digital skills in today's society, making museum and cultural professionals and making museums a better place to work and a better place to visit.

The Mu.SA project has succeeded in motivating and supporting all actors to expand their full potential via a modernized, learning experience and that can and should be used as a guide and a best practice for similar programs in the future.

REFERENCES

- [1] Broek et al, Teachers and trainers in work-based learning/apprenticeships, 2017.
- [2] CEDEFOP, Terminology of European education and training policy. A selection of 130 key terms. 2 ed. Luxembourg: Publications Office of the European Union, 2014.
- [3] CEDEFOP, Work-based learning in continuing vocational education and training: policies and practices in Europe, 2015. Available from: <https://bit.ly/32wGXUY>
- [4] DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, European Commission, 2017.
- [5] EC. Communities of Practice: European Commission. EPAL Electronic Platform for Adult Learning in Europe; 2020. Available from: <https://bit.ly/2JN7eIb>.
- [6] European Training Foundation, Work Based Learning, A handbook for policy makers and social partners in ETF partner countries, 2014.: <https://bit.ly/32yzZ1U>
- [7] The what, how and why guide to the e-CF <https://www.ecompetences.eu/>.

9. Evaluation of the Mu.SA Blended Course

Massimiliano Dibitonto
DASIC
Link Campus University
Rome, Italy
 m.dibitonto@unilink.it

Katarzyna Leszczynska
DASIC
Link Campus University
Rome, Italy
 k.leszczynska@unilink.it

Elisa Cruciani
DASIC
Link Campus University
Rome, Italy
 e.cruciani@unilink.it

Abstract— *This chapter analyses some relevant data about the evaluation of Mu.SA Blended Course, which represent the second phase of the Mu.SA – Museum Sector Alliance project [1]. The logs of the platform were analyzed to evaluate the completion rate of the learning objects, the assignments and the assessments, revealing the behavior of the students, the general trends and the dropouts. Interviews have been conducted to add a qualitative dimension of analysis. Taking into account that each job profile has a different set of learning paths, we will present the results for each of them, showing also the students’ performance.*

Keywords— *MOOC, MOOC Evaluation, Blended Learning, Usability, Educational Content Quality, Effectiveness*

I. INTRODUCTION

This chapter presents the evaluation of the Blended Learning phase of the Mu.SA course. The Blended Course started at the end of the MOOC and affected four different job profiles that received a blended training through online lessons and face-to-face meetings.

The main objectives of the evaluation are:

1. to assess the functionality, usability and accessibility of the online platform (technical level);
2. to assess the learning activities and content delivery (learning level);
3. to assess the quality of the contents and subject coverage (learning outcomes level).

The evaluation of the Blended Course used a mix of qualitative and quantitative data collection techniques, including pre and post-course questionnaires to participants, log analysis, semi-structured interviews with participants and feedback from tutors. The data analysis was performed both through statistical analysis and through qualitative content analysis of the open answers of the questionnaires and the text emerging from interviews and focus groups.

Moreover, the evaluation follows the Template Model for Educational Content Quality [2]. It consists in a synthesis based on the quality standards ISO/IEC 9126, ISO/IEC 25000 series and specifically to the ISO/IEC 25010 (Software engineering-Software product Quality

Requirements and Evaluation – SquaRE - Quality model), the ISO/IEC 25012 (SQuaRE quality model-Data quality model) and the ISO 25020 (measurement method) especially for the dimensions related to the external quality.

As each profile had a different set of learning modules and, accordingly, a different workload, we will present the results separately for each profile (Digital Strategy Manager, Digital Collection Curator, Digital Interactive Experience Developer, Online Cultural Community Manager).

II. PARTICIPANTS

The participants of the Blended Course were selected on the base of their expression of interest sent at the end of the MOOC [3].

A total of 113 students from the three countries (IT, PT, GR) have been selected and divided among the different profiles:

- Digital Strategy Manager (DSM)
- Digital Collection Curator (DCC)
- Digital Interactive Experience Developer (DIED)
- Online Cultural Community Manager (OCCM) [4]

Table 1: Course participants

	IT	PT	GR	Tot	DR%
DSM	12	6	11	29	19,35
DCC	17	22	12	51	28,30
DIED	9	5	5	19	18,18
OCCM	7	2	5	14	42,86
Total	45	35	33	113	25,83

The distribution among the different profiles was not uniform as reported in Table 1.

During the course we registered a dropout rate of 25,83% (31 out of 113) of the initial number of participants, taking into consideration written or oral communication. In some cases, we had direct feedback from the students and their motivations were related mainly to personal problems (i.e. illness, pregnancy, passing away) or to the effort required to complete the course. A better understanding of this could be achieved thanks to qualitative data, collected

through interviews (presented in section VII), and with the analysis of the post-course questionnaire (presented in sections VI).

III. PRE-COURSE SURVEY

Before enrolling the Blended Course students were required to fill in a pre-course survey, with the main purpose of focusing on their feedback on MOOC, their current knowledge, and their needs and expectation on the next stage of the learning path. We collected answers from a total of 75 students that gave overall positive feedback on the previous Mu.SA MOOC, except for 14.3% of the OCCM students that indicated they were slightly dissatisfied on the significance of obtained learning outcomes through the MOOC.

Indeed, 50% of DSM declared to be very satisfied and moderately satisfied and the same percentage expressed a high level of satisfaction regarding the significance of the learning outcomes they developed from the previous course. 64.7%, which is the majority of the students of the DCC course, were moderately satisfied with MOOC, and 61.8% were moderately satisfied regarding the significance of the learning outcomes. 63.6% of the DIED students stated to be enough satisfied with MOOC, and 72.7% moderately satisfied with the learning outcomes achieved. The main percentage of the OCCM group, 42.5%, showed complete and moderate satisfaction at the same rate and 42.9% of the respondents were very satisfied with learning outcomes).

Interviewed on current knowledge at the end on MOOC, the majority of the students indicated having current knowledge on active listening skills (79% of DSM, 74% of DCC, 92% OCCM), interpersonal skills (78% of DSM, 72% of DCC, 75% of DIED), but a little percentage of the evaluated students showed confidence with practical disciplines as programming (only 46% of DSM, and 45% of DCC) ICT quality strategy development, or information security strategy development (41% DIED, 51% OCCM).

Concerning the priorities that pushed learners to continue the studies, the highest fraction of the interviewees indicated that their priority was to acquire new skills (100% of DSM, 96% of DCC, 98% of DIED, 97% of OCCM), to acquire knowledge (99% of DSM, 96% of DCC, 93% of DIED, 97% of OCCM), and to develop new competencies (98% of DSM, 97% of DCC, 96% of DIED, 97% of OCCM). Moreover, about learning goals and expectations, most of the students expected they would be able to apply what they have learned to related individual jobs (39% of DSM, 44% of DCC, 73% of DIED, 57% of OCCM) on pursuing the Blended Course.

IV. ACTIVITIES COMPLETED

As a premise, we have to specify that, according to the project, the learning workload is not uniform among the different profiles.

The following table shows the different effort required to the students, highlighting the number of units and sub-units, the assessments and the practical assignments.

Table 2: Workload

	DSM	DCC	DIED	OCCM
Units	64	56	65	60
Assessments	64	56	65	60
Practical Assignments	25	23	29	27

A. Units

The first activity that students had to complete was studying online materials provided on the platform. Learning materials are organized in weeks and units each of which can contain sub-units. By observing the completion of the units during the course, it is possible to see the level of activity of the students. The four profiles have a common decreasing trend. This could be related to dropouts but, as emerged from the interviews, also to: difficulty on the content, excessive workload, lack of interest for the content and personal issues.

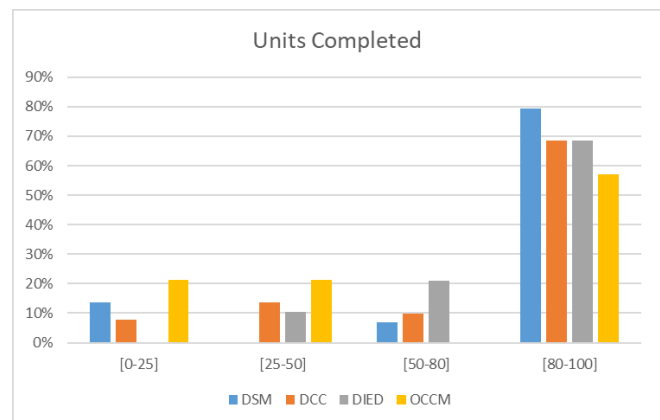


Figure 1: Units completed.

Considering the four profiles, we clustered the students according to the percentage of units completed, as figure 1 shows. The last cluster includes students that are above the completion rate required to pass the course (80%).

The first thing that could be noticed is that more than half of the students were successful. For the four profiles, we can see that the percentage of students below the threshold coincides with the percentage of students who withdrew during the course. Clusters can suggest when students have stopped attending the course.

B. Assessments

Each element of a unit has its assessment object used to assess the success of learning of the students. It is required to complete at least the 80% of the assessments to successfully complete the course. Analyzing the platform logs we can see the trends of Units and Assessments completed are quite similar with a constant decrease. Some negative peaks correspond to weeks that have required more effort from the students, as is confirmed by interviews and final questionnaires. Moreover, to successfully pass the course is necessary to complete the 80% of the assessments, this could explain a lower number of assessments completed.

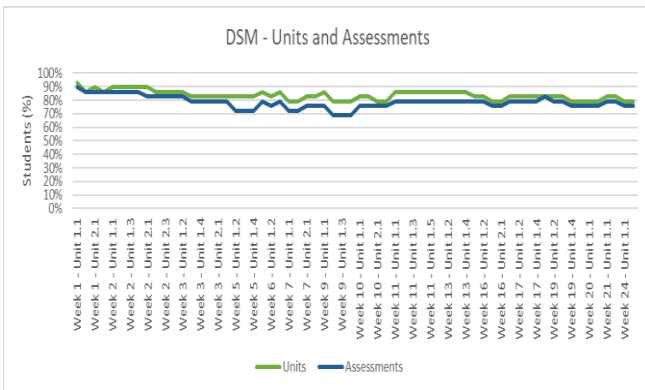


Figure 2: Units and assessments completed for DSM students.

As it is shown in figure 2, students belonging to the DSM group faced problems with the contents offered during week 9. The difficulties in succeeding both to follow the unit and to do the assessment, as the two lines testify, are probably related to the contents of this week, which

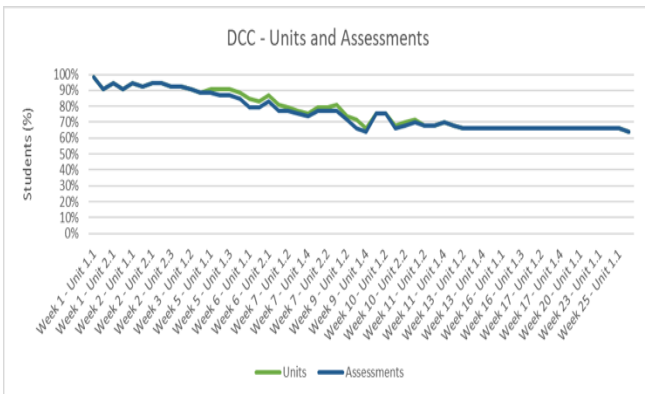


Figure 3: Units and assessments completed for DCC students.

concerned “Information and Knowledge Management”. The topic is one of the widest and technical of the course and many students contacted tutors asking for help. Moreover, as the interviews and the forum confirm, they found the content very difficult and not very well-designed.

As it is shown in figure 3, two negative peaks are corresponding to week 9 and week 10 for students

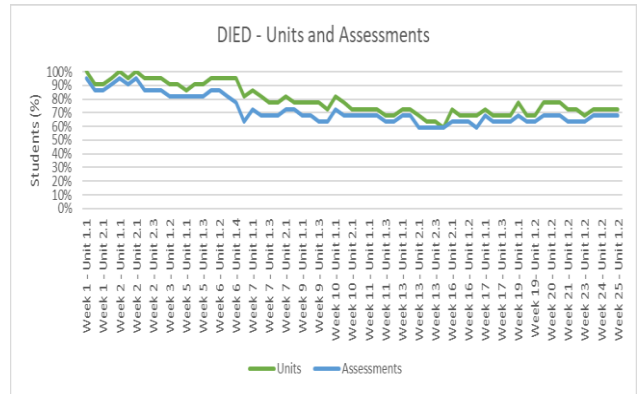


Figure 4: Units and assessments completed for DIED students.

attending DCC course. This means, as in the precedent case, that they faced difficulties both to follow the unit and to do the relative assessment. The topic of week 9 is again “Information and Knowledge Management” while the topics proposed during week 10 are “Decision Making” and “Solving technical problems”. Unfortunately, we don’t have enough data to explain the peak of week 10 but, in general, we notice a gradual decrease of the performance as time goes by.

Figure 4 shows two main negative peaks corresponding to week 13 and week 17, whose topics are respectively “Solving technical problems” and “Fact Driven”. But from a general point of view, another interesting data is that there is a more irregular evolution between units and assessment, compared with what happened in figures 1 and 2. In this case, it seems that the DIED students preferred to follow the content of the units without doing the assessment, maybe because they know that they need to complete 80% of it. Moreover, even in this case, we notice a gradual decrease in performance as time goes by.

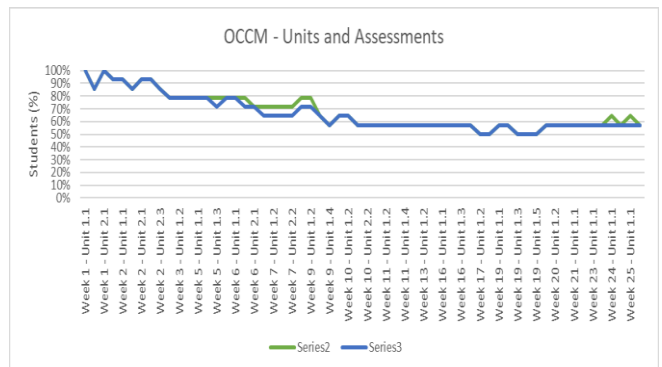


Figure 5: Units and assessments completed for OCCM students.

Figure 5 shows a clear constant decrease of the performance by OCCM students as time goes by, with no precise correspondence between units and assessments. There are the main negative peaks in weeks 10, 11, and 17, whose topics are respectively “Decision Making” and “Solving technical problems”, “Problem-Solving”, and “Digital Marketing”. A general consideration based on the initial data and the final dropouts says that the OCCM students are the least engaged in the course.

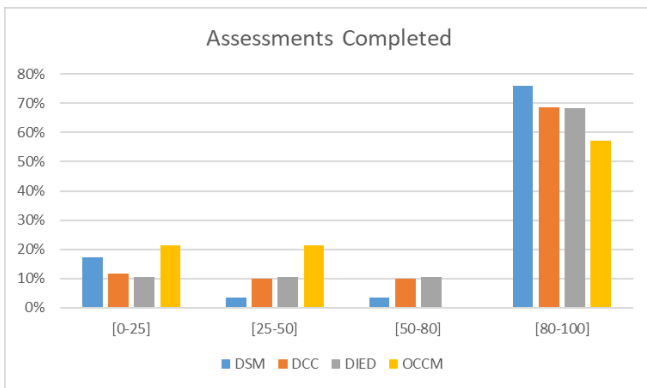


Figure 6: Assessments completed.

In figure 6 it is possible to have a precise idea of assessments completed by learners. This is interesting because it allows measuring the quantity of work realized from those who have not passed the course. The data of students who completed less than 80% of assessments can be compared with the percentage of dropout presented in Table 1.

C. Practical Assignments

The practical assignments are a new element introduced in the Blended Course. Students are required to perform some tasks (writing an essay, a strategy, etc.) applying what they have learned in the modules.

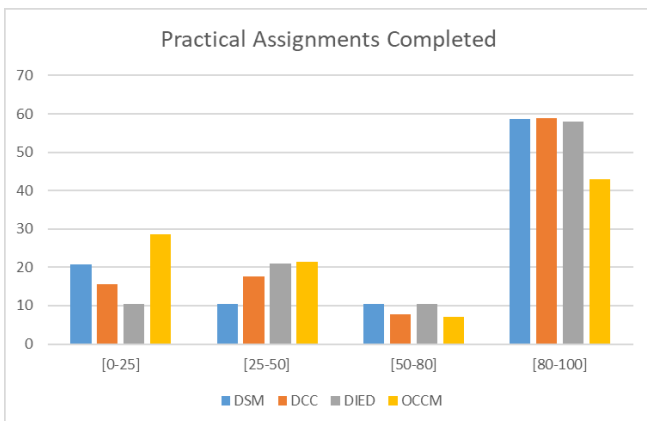


Figure 7: Practical Assignments completed.

The analysis of the practical assignments in figure 7 offers a very different scenario. As emerged from the interviews, this activity required a lot of effort and this could explain why, two weeks before the end of the course, many students were still missing more than half of their assignments. Indeed, from the platform's logs, we observed an increment of the Practical Assignments completed in the last weeks, especially for DCC and OCCM profile.

D. Forum

The interaction on the forum could be read as a sign of participation of the students. The forum was used for broadcast communication to the students, for peer to peer interactions and questions related to contents and practical issues. We see a quite constant level of activity from the students with a peak of views corresponding to communications about the course rules, deadlines etc.

However, students also used private messages to talk with tutors and authors, to ask for clarification or to solve technical problems. This part is analyzed through the feedback collected by the tutors.

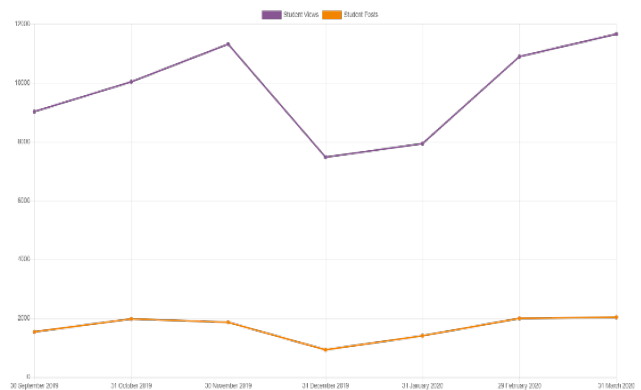


Figure 8: Forum interactions DSM.

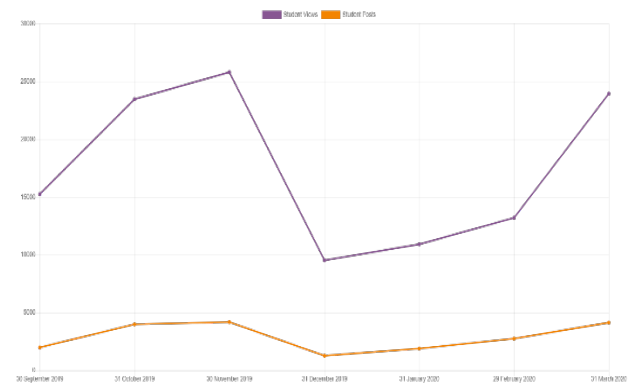


Figure 9: Forum Interactions DCC.

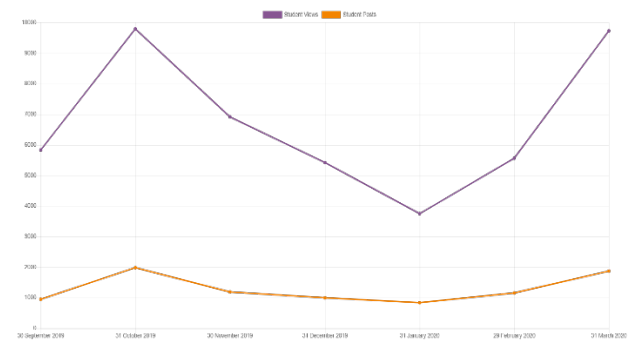


Figure 10: Forum interactions DIED.

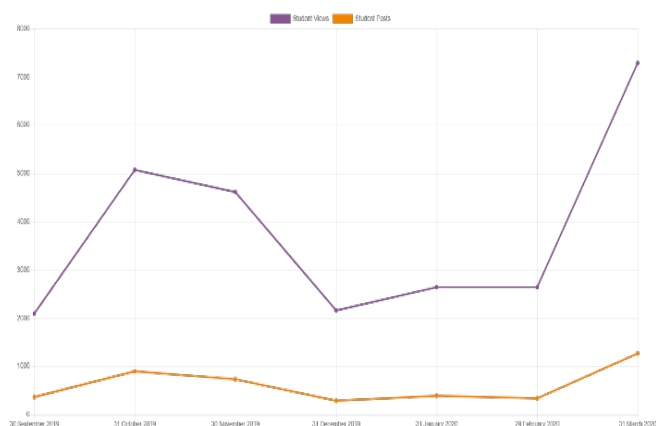


Figure 11: Forum interactions OCCM.

V. TUTORS FEEDBACK

Another thing to take into consideration is the perception of the tutors engaged in the development of the modules and constantly in contact with learners.

Regarding the quality of material (text, video, audio and quizzes) tutors state they received few comments by the students and this could suggest that it is of good quality and at a good level of understanding. Among the positive feedback, many students said they have appreciated the opportunity to enable filling a gap about some subjects and that all the instructional material (presentations, references, etc.) increased their knowledge skills and interest in a field. Some students found the quality of the material high and someone complained that the quizzes were difficult. Usually, students didn't use the forum to send requests or to express an opinion, because they preferred to directly keep in contact with the tutor through private message.

With regard to the practical assignments, tutors state they received more comments by the students and this could suggest a general worry to approach, to understand and to succeed in the tasks. Someone underlined the restriction or the difficulties faced on during the development of the practical assignment (short deadline to submit the task or the word limit to fulfill a document) but, in general, many students complained about the workload, which was considered too much in comparison with the rest (work, online lessons and WBL), asking for that reason a possible extension of the deadlines. Many times it happened that they requested other information to better understand the task or some feedback or revisions before the official submission on the platform.

In conclusion, tutors were contacted through private messages and not very much through the forum and the things requested by the learners concerned explication on the practical assignments, clarification about deadlines and technical issues about the platform. No noticeable difference related to the frequency of the requests: from the beginning of the Blended Course phase (September 2019) to the end of it (April 2020) they expressed the need of having available tutors to monitor their learning path.

VI. FINAL EVALUATION SURVEY

An analysis of the final course evaluation allows us to have several comprehensive insights about the significance of the learning outcomes the participants had developed in the Blended Course. In this occasion, it is interesting to deepen the new competencies in different areas students have obtained and their feedback on the overall experience.

Concerning the significance of the learning outcomes, many students reported it was very significant (75% of DSM, 44% of DCC, 50% of DIED, 33% of OCCM).

About the competencies developed in different areas after following the Blended Course, they expressed a positive judge.

The overall students' competency after course completion was 78% for DSM, who declared to be more competent in Communication and collaboration (91%) and Problem-Solving (86%) and less competent in Enabling ICTs (73%); DCC felt to have the overall competency at 68% and declared to have become familiar with Communication and Collaboration (85%), Digital content creation and Problem-Solving (both rated at 74%) but less with Building ICTs (57%). The overall students' competency for the DIED group was rated at 77%: they declared to be more competent in Communication and collaboration (90%), Information and Data Literacy (83%) but less competent in Running ICTs (70%). Similar situation for the OCCM students, whose overall competency after course completion was 71%, having the same area in competencies ((92% of the students felt more competent in Communication and collaboration, 88% in Digital content creation but only 59% seemed to be familiar with Building ICTs, Enabling ICTs and Managing ICTs). As confirmed by interviews, students felt more difficulty in the acquisition of new knowledge in technical areas.

Concerning students' expectations and satisfaction with different objectives of the course, we registered a very high rate, above 86% for all job profiles (88% for DSM, 87% for DCC, 92% for DIED, and 88% for OCCM).

VII. INTERVIEWS

To analyze better what learners think about the content quality, organization and usability of the Blended Course, 10 Italian, 7 Portuguese and 11 Greek students (representative of the four Mu.SA profiles) were invited for a short interview. The questions investigated mainly the perceived quality of the course and the learning material proposed, the organization of the course with a special focus on the effort required and the usability of the learning materials and the platform.

A. Content quality

All the interviewed learners agreed that all the modules proposed in the Blended Course were interesting but, since the modules were split to the four profiles and not common to all, there were some differences in the answers:

- the Digital Strategy Managers showed a greater interest in topics such as Networking and Mentoring;
- the Digital Collections Curators have found more interesting modules like Linked Open Data, Data Mining, Knowledge management and Copyright and license;
- the Digital Interactive Experience Developers have found more useful modules relating to Programming, Digital Identity and Copyright;
- the Online Cultural Community Managers preferred topics relating to Networking, Storytelling, Mentoring and Digital Marketing.

In addition to the differences derived from the various profile's interests, even personal backgrounds influenced the answers. It is interesting to mention the example of two Digital Collections Curators learners. While one of them reported the Documentation Production module as the most interesting for him (because this was the area of his master), the other one qualified the same module as the less interesting for him (because he already works as a curator of the museum collections and the information didn't bring anything new to him). Some other less interesting modules for some students were Service Delivery and Information and Knowledge Management.

In general, the main difficulties highlighted by the learners concerned some modules that used complex and technical language and required further study on their own to complete successfully the assessments and the assignments. This was ascribed in some cases to an insufficient textual explanation for a certain topic, and in other cases, to a very specialized material not necessary to complete the relative assessments. As an example, we can quote the response of an interviewee: "The modules with a lot of technical information about computers and metadata are the most complicated, in my opinion, and the least clear. I can't understand some things very well and that is why I was unable to perform the proposed exercises in the best way."

The main differences between the MOOC and the Blended Course that came out from the interviews are that the first was more general covering different areas of knowledge, while the second one was more practical and specific because of the different profiles and the assignments and also more focused on technical parts of information technology. Another aspect noticed by all the interviewed students was the time available to complete the modules. All of them highlighted the great usefulness of assignments to apply the knowledge learned during the online course (they suggested the introduction of this kind of exercises also in the MOOC), instead of all quizzes assessments; but, at the same time, the Blended Course was described as too much time demanding because of the assignments and the Work-Based Learning (it consisted of 200 hours of practical learning in a museum or other cultural organization during which the students had to work on activities related to the job profile chosen and develop a project work) that was running simultaneously.

All the students declared that they greatly appreciated the face to face meetings (both those who attended live and remotely), from an organizational and content point of view (workshops and guests), and a personal perspective because this was a very useful and profitable occasion to get in touch with tutors and colleagues to exchange ideas in a more collective environment. Although initially it seemed complicated to someone to be able to reconcile the face to face meetings and the professional life, the option of virtual participation made this a lot easier. It is interesting to report that a strong spontaneous community has been created among Italian learners and they would like to keep it alive even after the end of the course.

B. Organization

All the respondents generally agreed about the good organization of the course. Some students reported the non-uniform workload of the different units, especially related to the practical assignments, and the total effort required by this phase of the course (studying Units, completing Assessments, Assignments and carrying on the Work-Based Learning). This was confirmed by several requests of deadline postponement during the course.

Relating to the course organization the main suggestions are:

- to organize better the schedule and make more uniform the workload allotment;
- to extend the duration of the course;
- to start the Work-Based Training at the end of the Blended Course and so can assimilate the theoretical knowledge and then put it into practice;
- to know in advance which would be the more time-demanding and which would be the lighter modules (in order to better organize the study);
- to make more uniform the tutor's availability and behaviours (students highlighted that some tutor gave the learners all the support needed while others never answered to the messages).

In addition, some specific suggestions came from the Digital Collections Curator profile:

- one student observed that it would have been very useful to have more examples of technologies that can be used in smaller museum realities, or individuals, as well as examples of technologies available only for larger museum realities;
- another student suggested adding a module about "digital preservation".

C. Usability

All the respondents agreed that they did not have specific problems to interact with the platform and most of the tasks were easy to get and to complete.

The only suggestions regard a future implementation of other languages in addition to English and making more

intuitive the first interactions with the online platform (that becomes easier after a few attempts).

VIII. CONCLUSIONS

Based on the quali-quantitative analysis performed we can say that, regarding the evaluation objective number (1), technical level, the platform and the material demonstrated to be a usable and good support for the learning activities. Concerning the evaluation objective number (2), learning level, the students appreciated the organization of the course and in particular the practical and specialist approach. The mixed mode was considered an advantage with an appreciation for face-to-face meetings. In some cases, the students showed difficulties in following the pace of the course, particularly on more technical modules that required more effort. Even if a significant dropout rate was recorded due mainly to the effort required and to personal reason. Concerning the evaluation objective number (3), learning outcome level, students of various profiles rated the course as complete and able to meet their educational objectives (satisfaction rate above 88%). They also rated the content of the modules in good quality, relevant and reliable (ratings above 75%).

In conclusion, the students appreciated the Blended Learning experience considered more focused on technological and practical aspects suitable for the four profiles. The practical assignments (the opportunity to put the learned knowledge into practice) and the face-to-face meetings (the opportunity to interact with tutors and

colleagues, exchanging ideas and creating networks) were the parts most appreciated by the learners.

Thanks to the feedback obtained from the evaluation process, it was possible to update some modules and collect useful suggestions for the realization of future editions of the course.

ACKNOWLEDGMENT

This research was carried out within the Museum Sector Alliance – Mu.SA project (Project Number 575907-EEP-1- 2016-1-EL-EPPKA2-SSA) under the Erasmus+ programme/ Action KA2: Cooperation for innovation and the exchange of good practices – Sector Skills Alliances.

REFERENCES

- [1] Project-musa.eu. 2020. *Project Musa – Mu.SA: Museum Sector Alliance*. [online] Available at: <<http://www.project-musa.eu/>> [Accessed 2 April 2020].
- [2] H. Dimou and A. Kameas, “Quality assurance model for digital adult education materials,” *Quality Assurance in Education*, vol. 24, no. 4, pp. 562–585, May 2016.
- [3] P. Polymeropoulou, C. Pierrakeas, S. Borotis, A. Kameas, “Implementing a MOOC course for Museum Professionals with a worldwide effect,” in 2019 10th International Conference on Information, Intelligence, Systems and Applications, IISA, IEEE pp. 1–8, July 2019.
- A. Silvaggi, F. Pesce, “Job profiles for museums in the digital era: research conducted in Portugal, Italy and Greece within the Mu.SA project,” *Journal of Cultural Management and Policy*, vol.8, pp. 56–69 2018.

10. An Agenda for Digital Culture

Ivo Oosterbeek
Mapa das Ideias
Portugal
ivo.oosterbeek@mapadasideias.pt

Maria João Nunes
Mapa das Ideias
Portugal
mjoao.nunes@mapadasideias.pt

Ilídio Louro
Mapa das Ideias
Portugal
ilidio.louro@mapadasideias.pt

Ana Fernambuco
Mapa das Ideias
Portugal
ana.fernambuco@mapadasideias.pt

Inês Câmara
Mapa das Ideias
Portugal
ines.camara@mapadasideias.pt

Abstract - The importance of the digital in the agenda for culture has been present in European policy since the early years of the 21st century and currently extends to new approaches and challenges. The Mu.SA project is an example of how the trials implicated by the digital shift in the cultural sector can be tackled through cross-sectoral cooperation and addressing the up-skilling of professionals, one of the essential factors to guarantee the sustainability of the digital adoption by institutions.

Keywords—*Agenda for Culture, Cultural Policy, Digital shift*

I. INTRODUCTION

The digital presence in normal day-to-day behavior attests to the effective added value that digital technologies bring to our lives. If the latter years of the 20th century were met with awe to these technologies, the second decade of the 21st has forced societies to recognize the risks they entail. No other processes show this, better than the issues related to security amid the Facebook-Cambridge Analytica case, or the issues related to content authority raised by the growing body of fake news. These issues have been part of the European Agenda for more than a year, and the newly elected Commission has not been indifferent to the matter.

In her *Shaping Europe's digital future* op-ed [15] published in February 2020, the President of the European Commission, Ursula von der Leyen, discussed the importance of technology on the economy and development of European societies, focusing particularly on two key issues of the Digital Agenda: data and artificial intelligence.

Mariya Gabriel, Commissioner for Innovation, Research, Culture, Education and Youth, has been reported to have her agenda, not only matters of technological innovation, but also the establishment and promotion of cross-sectorial synergies (within her own, a quite ample portfolio, but also with other areas of the Commission) [14]. In Parliament Hearings, Gabriel assumed synergies

beyond culture as a main priority, illustrating the benefits of such synergies with the results of the European Year of Cultural Heritage 2018, and referred her intent to avoid silos between her portfolio and those of "the Executive Vice-President for a Europe fit for the Digital Age and the Commissioner for Internal Market in areas of joint interest." [8].

In the same hearings, the Commissioner discussed topics like diversity, inclusion and participation, around the idea that "culture cuts across many policy fields, from education to research, from social cohesion to external relations" [8]. To the new Commission, the digital agenda is set on the tune of European values: a "digital Europe should reflect the best of Europe - open, fair, diverse, democratic, and confident." [15], with both the Digital and the Cultural as transversal areas of policy.

II. THE LEGAL FRAMEWORK

Supporting the future integration of culture in the digital era, the European Commission provides *A New European Agenda for Culture* which, paired with the *European Framework for Action on Cultural Heritage* and the *Cultural Heritage Strategy for the 21st Century* by the Committee of Ministers [5].

These documents provide a framework for action, setting recommendations addressing key issues, but also promote, in the European cultural sectors, a common set of values, reinforcing the European dimension of Cultural Heritage.

A. A New European Agenda for Culture

In 2018, the European Commission published its *New European Agenda for Culture*, which, from its introduction, links heritage and culture to the economy, either under the umbrella concept of cultural and creative sectors or industries or by the explicit reference to "create spillover effects in other economic sectors".

The importance of the role of culture is featured to balance a "changing landscape" that is not only being challenged by new technologies and digital communication, but also by financial, social and ideological threats. The New Agenda tasks itself to promote synergies between culture and education, as well as culture and other policy areas, articulating its action in three strategic objectives: using culture and cultural diversity to promote social cohesion and well-being, where participation in culture is presented as an engine towards community regeneration; developing ecosystems for culture-based creativity and employment, where professional skills have a special focus; and reinforcing international cultural relations, which hails the need to articulate initiatives such as the European Year of Cultural Heritage and the UN 2030 Agenda for Sustainable Development, or the expansion of the Enlargement Countries and Western Balkans.

It is noteworthy that references to digital skills are present in the document, the first amid a list of other skills needed ("Promote the skills needed by cultural and creative sectors, including digital, entrepreneurial, traditional and specialised skills.") and that "Professionals in the cultural and creative sectors require a broad mix of digital, traditional, transversal and specialized skills". Digitisation is also equated with co-creation, as tools to "break down artistic and economic boundaries".

The New Agenda also presents the Digital4Culture policy, which builds on the Digital Single Market strategy published by the Commission in 2019 (Directive (EU) 2019/790), and establishes six specific actions: the creation of a network of competence centres across the EU through large-scale digitisation; disseminate European films to European schools through an online directory; support digital transformation via a network of Digital Creative and Innovation Hubs; continue its commitment towards Europeana; pilot mentoring schemes for audiovisual professionals; promote cross-overs between art and technology. This strategy is meant by the Commission to "strengthen coherence between cultural, digital and audiovisual initiatives".

B. The European Framework for Action on Cultural Heritage

Announced in the New Agenda for Culture, and built to promote and implement integrated and participatory approaches to cultural heritage, and its contributions to EU policies, the European Framework for Action on Cultural Heritage (SWD(2018) 491 final) [6] [7] succeeds the results of the European Year of Cultural Heritage 2018 and its legacy in future actions.

This Framework for Action will provide orientation to European programs and policies related to heritage, through cooperation among the EU Member States, in the interval between 2019 and 2022.

The Framework is aligned with three orientation documents (the Cultural Heritage Strategy for the 21st century, and the UN 2030 Agenda for Sustainable

Development, and the Sendai Framework for Disaster Risk Reduction 2015-2030), and is set on four principles (holistic approach, mainstream and integrated approach, evidence-based policymaking, and multi-stakeholder cooperation) and five pillars (inclusion, sustainability, resilience, innovation, and cooperation).

It is worth noting that, in its Holistic Approach, the Framework for Action "looks at the tangible, intangible and digital dimensions of cultural heritage as inseparable and interconnected", reinforcing the digital component as a de facto dimension of heritage.

The social aspects of the first pillar are supported by the digital shift, as confirmed by the Commission's support for digitization and online accessibility of heritage, and promotion of use and re-use of digitized material in different sectors.

The fourth pillar, focused on innovation, is kick-started with a reference to digital technologies, and the opportunities they provide, including access, use and re-use. Among these technologies, some are identified as innovative (virtual or augmented reality) and others as digital tools (3D scanning), and their contribution to the heritage value-chain is explicit. The strengthening of competences required in innovative heritage professions is noticed under this pillar.

C. European Cultural Heritage Strategy for the 21st century

The Strategy for the 21st century (CM/Rec(2017)1) of the Council of Europe [4] builds on the complex history of heritage preservation ideas and policies, and sets itself as "heir to this whole tradition of reflection, sharing and co-operation which has been strengthened over the last 40 years".

The document lists the challenges visited upon heritage, from external (demography and climate), to use-related (tourism) and social divides, and aims to encourage heritage management policies and tools, built around three priority components: a social one, where concepts of diversity, empowerment and participatory governance are featured; a territorial and economic development component, oriented towards sustainability and development "based on local resources, tourism and employment"; and a knowledge and education component that aims to establish heritage knowledge centres for education, research and lifelong training, including professional training.

Throughout the annex to the document, 32 recommendations are set, circa a third on each component.

III. THE DIGITAL SHIFT

New technologies permeate all aspects of life, and museums are also seeing the effects of this process, as can be shown by the importance of the concepts of sharing or storytelling in the sector today. While the entry door into this world tends to be the digitization of heritage assets, communication is an increasingly digital area, with some

museums establishing internal departments of audiovisual production.

Despite this, wariness of a trivialization of technology can be felt, as the shift towards the digital should follow a wider strategy, so that technology does not hinder the learning experience, instead facilitates engagement with objects [11].

The digital shift brings new ways of accessing information, which can, not only attract new audiences and keep up in a competitive environment but also has the potential to upgrade the democratisation process of museums, through more flexible and creative experiences. Carvalho and Matos (2018) [2] identify two main implications for the sector: the need to adopt more agile and efficient management processes and provide meaningful experiences in or through the digital arena.

As the digital shapes new ways to interact with culture, it also requires a shift in behaviour and thinking, something commonly designated via the concept of organizational culture. Julie Goran, Laura LaBarge and Ramesh Srinivasan [9], in an article for McKinsey Quarterly, identify risk aversion and siloed departments as cultural obstacles who "correlate clearly with negative economic performance".

In the digital arena, they argue, risk and experimentation are paramount, which means nurturing "a culture where people feel comfortable trying things that might fail", as well as accepting a greater degree of transparency, or empowering frontline workers, are essential to build iterative processes with rapid decision-making and fast test-and-learn approaches, which are more suitable for the pace of the digital era.

It also means that the lack of information sharing or poor collaboration "across functions and departments can be corrosive to organizational culture", as it promotes a space where "every part of the organizations reaches different conclusions about their digital priorities, based on incomplete or simply different information" [9].

As it is also in line with the political agendas, accessibility can be the focal point to a successful digital strategy, as it is rooted on the museum's collections, providing them both physically and online. It is also important to consider the various internal stakeholders for this shift, as the digital touches on the needs of several departments, such as conservation, communication, ICT, marketing or education, as well as intellectual property rights management [11].

IV. SKILLS AND TRAINING

Recognizing that "Cultural changes within corporate institutions will always be slower and more complex than the technological changes that necessitate them." Goran et al. (2017) [9], provide some mechanics that could be adopted to counter this issue, among the regular rotation of managers between functions or departments, or promote cross-functional support and collaboration to counter "the tendency for employees to believe a given problem is someone else's responsibility" [9]. This kind of structural

response, although relevant, does not address the effective needs of the professionals of the sector.

Many potential skills and profiles emerge in this transition, and these can be characterized as having a good mix of competencies, both heritage to digital-based. Social media specialists, data analysts, experts in digital content (editorial, video or photographic) and interaction developers with design skills, along with digital copyright experts are roles that have naturally emerged in the sector [11].

But beyond the technological-based skills, the importance of soft skills in challenging processes is undeniable, as certain attributes such as openness to change, risk-taking and an appreciation to lifelong learning can be seen as essential in this transition [11].

As the adoption of new skills is presented as a requisite to sustain this transition, the need to increase "digital literacy and confidence among museum professionals" [2] becomes evident. This need is not, however, something that is currently addressed in the formal curricula of the available educational offer in for museum professionals in higher education (with few exceptions), despite the sector's recognition of the importance of these skills. Updating and training museum professionals are, therefore, a fundamental aspect to guarantee the sustainability of the digital shift in museums [3].

V. PROPERTY RIGHTS

The Museum sector is not one characteristically known for creation or production when compared to other Cultural and Creative Sector organisations.

However, the increasing synergies between culture and creative agents, as well as the new push towards cross-sectoral synergies, they may endure a process similar to what has been observed in the audiovisual or the gaming sectors. In his analysis of intellectual property rights, transnational strategies and communication and cultural policies in seven culture and communication sectors (books, disks, cinema, press, radio, television and videogame), Enrique Bustamante identifies "three main interrelated processes that have produced important changes in the cultural industries during the past few decades" [1]: deregulation, concentration and globalization of forms and principles of management.

While interwoven, the first issue relates to a change in the paradigm of the sectors, from a public service to a market regulation ideologies.

The second is characterized by external growth and vertical integration of the sectors.

The third can be essentially broken down to what Bustamante declares "a complete conversion of the cultural industries into institutions defined by finance" [1]. He argues, regarding the digital change, that the analyzed sectors present a consistency that rebuts revolutionary readings of this technological shift. The author states that the impact of digital networks is highly differentiated per sector, which he argues to derive from the specificities of production and consumption of each medium, as well as the social-cultural context of said production and consumption.

Regardless, he recognizes a disruptive effect of the digital shift in the power structures related to the creation, production and distribution of communication and culture [1].

The digital era is accompanied by reduced costs for the creation of contents or services, despite the limited experimental impact this has had in democratizing and expanding creativity and expression, as the most successful strategies tend to produce content that can be formatted into any technological platform, bringing "an increasing overlap between creativity, technique and marketing", which promote a cloning culture, but also mean "new occupations, newly 'needed' skills and new training requirements" [1].

The reduction of costs also extends to production, promoting easier access to digital markets, therefore greater competition, and lower prices, in huge economies of scale. This tends to reshape the labour structures, opening space for more SMEs operating in niche markets.

Distribution is highly impacted by the digital shift, as it suffers a process of 'disintermediation' of markets by establishing a direct relationship with the consumer.

However, that new forms of "re-intermediation" are breeding, "with new agents that have emerged from the digital environment", such as portals, search engines, content providers and service providers [1].

Consumption is affected as well, despite not always towards the right of consumers or citizens "to access a plural and open culture and information" [1]. There can be identified an extreme segmentation of audiences, as well as processes to transfer costs to consumers (escaping a logic of public service).

VI. A PROJECT WITHIN ITS CONTEXT

Starting in November 2018, the Mu.SA project was set to develop a set of activities, which seem all the more relevant when we consider the upcoming agenda for culture. Part of the relevance of the Mu.SA project is to do with the recognition that "The digital shift is already a reality that cannot be ignored by the museum community", as museums are currently "elements within a wider system of scientific, cultural and territorial relationships" [13].

In carrying out its goals, the Mu.SA project builds upon the results of the eCult Skills project, and designs training curricula for digital skills for culture sector professionals adopting the European Framework for e-Competence (e-CF), designed in accordance with the European Qualification Framework (EQF) to improve the mobility and transparency of ICT professionals across Europe, the DigComp (Digital Competence Framework for Citizens), which concerns basic digital competences to all European citizens as users of digital technologies, while also incorporating soft skills, designated as "transferable competencies" into the developed curricula [12]. The curricula of training modules include a roster of 64 competences in total, combining e-CF, DigComp and Transversal (21st Century) competences [10].

This effort was jointly assumed by a range of partners, some of which coming from the cultural sector, while other

from the educational sector. It was shared by public and private bodies, and implemented by a staff that combined cultural, technological and soft skills in their experience. In this, Mu.SA was already an example of a cross-sectoral synergy, born from the needs imposed by the digital shift.

While the project follows a segmentation strategy, by decomposing the identified emerging digital professional roles into digital and transferable components, the overview of the sector in Portugal, Italy and Greece revealed the need for synergies uniting various of the aspects of these profiles, particularly those related to digitization and collections management, as well as access to materials [12], although contexts are determinant, providing a fragmented picture [2], where communication still stands as the area where the effects of the digital shift are more easily identified [13].

Although the most visible aspects of the project have to do with the upskilling of museum professionals (and associated development of training curricula and materials) and with the updated professional profiles inherited by eCult Skills, the project also provided a platform to promote lifelong learning of the sector as a whole, and its outputs will be of use to other stakeholders.

VII. CONCLUSION

Museums and other culture sector organizations face many challenges given the digital transition, either internal, implicating some level of organizational change and staff up-skilling, or external, requiring adaptability in a changing market-scape.

These challenges are heightened in a cross-sectoral framework, where collaboration implies constant negotiation, and specific barriers suddenly materialize, from the simple need to redefine working concepts, to the need to standardize processes and regulate intellectual property.

The Mu.SA project was one experience that successfully navigated these not yet fully charted waters, and its contribution may present a pathway to tackle these trials.

REFERENCES

- [1] Bustamante, E. (2004). Cultural industries in the Digital Age: Some provisional conclusions. *Media, Culture & Society*, 26(6), 803–820.
- [2] Carvalho, A., & Matos, A. (2018). Museum Professionals in a Digital World: Insights from a Case Study in Portugal. *Museum International*, 70(1–2), 34–47.
- [3] Carvalho, A., & Matos, A. (2019). Os Profissionais de Museus no Mundo digital: Contributos do Projecto Mu.SA. *Boletim ICOM Portugal, Série III*(13), 57–67.
- [4] Recommendation of the Committee of Ministers to member States on the European Cultural Heritage Strategy for the 21st century, CM/Rec(2017)1 (2017).
- [5] Daubeuf, C. (2019, Setembro 23). Culture: Nowhere or everywhere? KEA. <https://bit.ly/36FcbLd>
- [6] Communication from the Commission to the European Parliament, The European Council: A New European Agenda for Culture, SWD(2018) 167 final (2018).

- [7] Commission Staff Working Document European Framework for Action on Cultural Heritage, SWD(2018) 491 final (2018).
- [8] Gabriel, M. (2019, Setembro). Answers to the European Parliament. Questionnaire to the Commissioner-Designate.
- [9] Goran, J., LaBerge, L., & Srinivasan, R. (2017). Culture for a digital age. *McKinsey Quarterly*, 3, 57–67.
- [10] Homem, P., & Pinto, M. (2019). Challenges in Educating Museum Professionals for the 21st Century. The Mu.SA - Museum Sector Alliance Project. 8406–8413. <https://doi.org/10.21125/iceri.2019.2003>
- [11] Rosso, S., Surace, R., & Silvaggi, A. (2017). Museum of the Future. Insights and reflections from 10 international museums (D. Sturabotti & R. Surace, Eds.). *Symbola - Fondazione per le Qualità Italiane, Melting Pro Learning*.
- [12] Silvaggi, A., & Pesce, F. (2018). Job profiles for museums in the digital era: Research conducted in Portugal, Italy and Greece within the Mu.SA project. 8(1), 14.
- [13] Silvaggi, A., & Pesce, F. (2019, Setembro). Museum Professionals in the Digital Era. *Agents of Change and Innovation. Carpet*, 32–43.
- [14] Ubeda, M. (2019, Outubro 9). Next European Commission: A pursuit of synergies for culture in the Digital Age. KEA. <https://bit.ly/35i77ww>
- [15] von der Leyen, U. (2020, Fevereiro 19). Shaping Europe's digital future: Op-ed by Commission President von der Leyen [Text]. European Commission - European Commission. <https://bit.ly/36tRt0q>

11. Museums for social inclusion: Exploring current trends in Greek museums

Artemis Stamatelou
ICOM Hellenic National Committee
Athens, Greece
artemis.stamatelou@gmail.com

Abstract— *This paper, draws on examples of museums in Greece, to explore the potential of museums, as trusted institutions in the service of society, to provide access for all to cultural life, to promote equality and become vehicles for social change.*

Keywords— *museums and social inclusion, museum and social change, museum accessibility, outreach programmes, museum educational programmes, Greek museums*

I. INTRODUCTION

The idea that museums can change people's lives is not new. While their value as learning institutions is well established and long standing, the trend since the 1990s has been to move towards more audience-oriented and participative museums that tend to rethink their purposes within a changing society. In recent years, collecting and interpreting practices, exhibitions, educational and outreach activities that engage diverse social groups lie at the heart of a significant body of museum work.

The potential of Museums for social change has been a key priority for the International Council of Museums (ICOM) since it was founded in 1946. Particularly in recent years, with the dramatic social and economic upheavals, ICOM has repeatedly dedicated the annual celebration of the International Museum Day to this theme i.e. "Museums for Peace and Harmony in Society" (2000), "Museums: building community" (2001), "Museums: agents of social change and development" (2008), "Museums: Memory + Creativity = Social Change" (2013) [1]. This year's theme "Museums for Equality: Diversity and Inclusion" also promotes the role of museums in creating meaningful experiences for peoples of all origins and backgrounds [2].

According to Richard Sandell [3], who researches the concept of social inclusion and its relevance to the sector for the last 25 years, museums of all kinds have long sought to become inclusive to people of all origins and backgrounds, especially to those under-represented in the traditional museum audiences. By providing them with access to cultural services, by creating opportunities to

participate in the process of cultural production, and by embracing diversity in museum collections, interpretations and narratives, many museums acknowledge their potential as well as their responsibility to combat social inequality and discrimination [4].

This paper aims to highlight the approaches museums have taken to address issues of social inclusion, drawing on characteristic examples of Greek museums and the strategies they have employed, particularly since 2008 due to the international economic crisis, so as to confront the great challenges facing society.

II. MUSEUMS FOR SOCIAL INCLUSION

A. Museum accessibility is a lifelong process

In many countries, museums have adopted a social model perspective to identify and tackle the barriers that hinder access to cultural life for reasons relating to race, ethnicity, age, class, disability, language, gender, socioeconomic status, level of education or living conditions. Many museums have already moved beyond the basic standards of physical accessibility, and beyond programmes, delivered periodically or in the format of -as they are often called- "special events". A significant body of cases suggests that today's museums seek to initiate long-lasting projects in partnership with the target audiences to enable permanent access to museum collections.

An example is the work on accessibility carried out by the Byzantine and Christian Museum in Athens, a state museum with a well-established educational role since 1989. In 2007¹, the museum provided to blind and partially sighted people, the opportunity to explore the permanent exhibition on their own, through touchable original objects explained by braille and large-print texts and a recorded audio description [5]. The touch tour, which was the first one implemented in a permanent archaeological exhibition in Greece, was designed in collaboration with the Lighthouse for the Blind of Greece [6].

¹ The initiative was implemented within the project "ACCU: Access to Cultural Heritage: Policies of Presentation and Use" supported by the CULTURE 2000 Programme of the European Union.

A further example can be found in the accessibility project developed by the National Historical Museum in Athens [7]. Working in partnership with the Lighthouse for the Blind of Greece and accessibility experts from the Balkan Museum Network², the museum created in 2017 a project titled “A Touch of History!” designed to improve access to blind and partially sighted people in the permanent exhibition, through tours, handling sessions and information in braille and large-print. The aim was to not only develop a service tailored to the needs of the specific group of visitors but also to provide opportunities to newly graduated blind and partially sighted museum guides to work in the exhibition and conduct tours for blind and not blind visitors. I would argue that such initiatives that go beyond standard practices of access to culture demonstrate a paradigm shift in the purpose and role of museums in society [8] as an organisation that could propose solutions to social problems, taking into account the challenges and aspirations of the target communities [9].

B. *“Museums are not islands in space” [10]*

In tune with the current global agenda of achieving a sustainable future for all, by ending poverty and bringing equality and justice [11], a growing number of museums acknowledge their responsibility to contribute and adopt a proactive attitude in approaching marginalised communities. The social dimension of museum work is becoming more systematic and is evident through numerous joint projects that, at an individual level, aim to empower participants, to offer them learning and upskilling opportunities, to develop confidence and self-esteem and to create a sense of belonging.

I am very happy that the museum came here and I learned so many things that I did not know until then, very interesting things (...) I was impressed by how difficult it was at that time for people to write on leather and we now have all the facilities and we do not appreciate it (...) And when I get out of prison, I want to visit the Byzantine Museum and see these interesting things up close.³

This is the comment of one of the 20 students of the High School of the Special Youth Detention Center in Avlonas-Attika, who participated in the project “An imaginary visit to the Byzantine Museum” in 2013. Inspired by the manuscript collections of the Byzantine and Christian Museum, the project focused on dialogue, sharing of experiences and hands-on activities in order to mobilise the students’ imagination and creativity [12]. It adds to a series of outreach programmes for people excluded from the mainstream designed and implemented at the museums and the archaeological sites around Greece

by the Hellenic Ministry of Culture and Sports (HMCS) [13]. The methodology and the results of the programmes delivered specifically to people in detention centers have been recently discussed in a two-day seminar and workshop, titled “Culture without bonds” organised by the HMCS. The evidence shared during the seminar illustrates the various strategies that Greek museums have adopted to address the symptoms of exclusion caused by the confinement itself and by other socio-economic characteristics of the specified groups. It also confirmed the fact that systematic work in partnership with the organisations of social welfare and the target audiences, as well as evaluation of the process is a prerequisite, in order for a museum to become a vehicle of positive social change [14].

Another key area for action is to enhance the representation of varied communities within the collections. Museum exhibitions and public events celebrate the life of socially excluded people, shed light on the roots of the discrimination they face, and encourage understanding and tolerance within the wider society [15]. The Byzantine and Christian Museum in Athens and the Ethnological Museum of Thrace in Alexandroupolis, for example, have been exploring ways to serve as platforms where interpretation of the collections and knowledge of the past combines with creativity and co-creation of events to promote dialogue, challenge stereotypes and support the human rights of socially excluded people.

The Byzantine and Christian Museum has organised a wide range of activities to provide access and participation of Roma populations in mainstream cultural life. Two subsequent projects titled “ROMA ROUTES” [16] [17] and “At the Museum with the Roma”⁴ transformed the museum into a meeting point for Roma and non-Roma visitors. Exhibitions, conferences, talks, music events, producing and screening films, highlighted the influence of Roma to society, discussed issues of history and identity and challenged stereotypes. Moreover, members of the Roma community participated in a series of meetings with the educational staff of the museum, with the objective to familiarise themselves with the collections and explore strategies that will help them become mediators between the Roma communities and the museum. A key methodological principle of the projects was “to involve from the outset Roma representatives in the design and implementation of the activities, incorporating their viewpoints, aspirations and reflections, taking into account the educational and social parameters that shape their attitudes and perceptions” [16]

The outreach programmes of the Ethnological Museum of Thrace for migrants, refugees and other marginalised groups, are embedded in the museum’s mission “to make society more aware and active in safekeeping and preserving regional culture, as well as the importance of

² The project was supported by the Stavros Niarchos Foundation through the Cultural Heritage without Borders Bosnia and Herzegovina and the Balkan Museum Network.

³ Translated from Greek by the author.

⁴ ROMA ROUTES project was implemented with the support of the Programme Culture 2007-2013 of the European Union. The action “At the

Museum with the Roma” was coordinated and implemented by the Byzantine and Christian Museum, in collaboration with the Greek Film Centre, in 2013-14. The action was supported by the Programme for Employment and Social Solidarity - PROGRESS (2007-2013) of the European Union.

integrating it into modern, cultural life” [18]. The idea of coexistence between various cultural groups and populations is dominant in the permanent exhibition and, thus, functions as a starting point in the conversation on people mobility and migration. As it is clearly stated: “the museum is people-oriented (...) is open to everyone; a place where different people from all over the world come together and form strong relationships with each other” [19]. Performance art events, seminars, as well as workshops for refugee children, in collaboration with the Unaccompanied Minor Hospitality Organization, are among the participatory projects organised by the museum. One project in particular, titled “A whole world in a plate”, was intended to welcome and support refugees staying in the region by representing contemporary migration through community engagement and sharing food. The project was one of the initiatives from Greece showcased in the ICOM international programme “Migration: Cities”, led by the Collections and Activities of Museums of Cities Committee in partnership with the Commonwealth Association of Museums and the International Committee for Regional Museums [20].

The goal of making a positive difference in people's lives, both at a personal and a community level, through equal access to culture, is at the core of the long standing outreach programme of the National Museum of Contemporary Art (EMST). It is called “EMST Without Borders” and was launched in 2009 by the educational department of the museum, in collaboration with social welfare and educational organisations, detention and rehabilitation centers and disability associations. It already counts a significant number of joint projects, like the Photographic Project with the students of the Photography Group of the Rehabilitation Center “18 Ano” [21].

The contribution of the museum in promoting social inclusion was recently recognised by the "The Marsh Christian Trust" international award to the Head Education Curator [22]. The recent interactive art project “Face Forward...into my home”, based on storytelling workshops, portrait photo shoots, and a photography exhibition created by and about of refugees who live in Athens, moved beyond the issue of accessibility. It challenged the negative portrayal of refugees by engaging them as “active stakeholders in a dialogue on issues of concern to us all” [23] and at the same time invited the museum visitors “to meet these faces, hear their voices and come to realize that whatever differences exist, they do not divide societies, but, on the contrary, enrich them” [23].

Whilst more examples can be cited, the ones above show that museum programmes towards social inclusion can benefit not only those who face discrimination, but mostly the society as a whole [24].

In today's polarised environments, the potential of museums as trusted institutions to become cultural hubs committed to diversity and the support of human rights has never been more important.

ACKNOWLEDGMENT

The author would like to express her acknowledgments to all colleagues of the Mu.SA-Museum Sector Alliance

Project consortium, especially to the ICOM-Hellenic National Committee Board of Trustees and team members, as well as to all who have been collaborating with it.

The paper is dedicated to Panos Vosnidis (1969-2020), archaeologist at the Byzantine and Christian Museum, one of the pioneers of museum education and outreach programmes in Greece, ICOM member, participant in the Mu.SA project, and dear colleague.

REFERENCES

- [1] Τ. Χατζηνικολάου, “Διεθνής Ημέρα Μουσείων 2013,” [“International Museum Day 2013”] ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο, No. 10, σ. 2-3, Δεκέμβριος 2013.
- [2] ICOM International Museum Day 2020 theme. Retrieved from: <http://imd.icom.museum/international-museum-day-2019/museums-as-cultural-hubs-the-future-of-tradition/>
- [3] R. Sandell, “Museums as Agents of Social Inclusion,” *Museum Management and Curatorship*, 17:4, pp. 401-418, 1998.
- [4] R. Sandell, *Museums, Prejudice and the Reframing of Difference*. London: Routledge, 2007.
- [5] Α. Σταματέλου, Ζ. Χαραλαμπίδου, “ACCU- Access to Cultural Heritage: Policies of Presentation and Use: μια ευρωπαϊκή πρωτοβουλία για τη βελτίωση της πρόσβασης σε χώρους πολιτιστικής κληρονομιάς” [“ACCU- Access to Cultural Heritage: Policies of Presentation and Use: A European initiative for the improvement of access in cultural heritage sites”], *ΤΟ ΜΟΥΣΕΙΟ Περιοδική έκδοση του Κέντρου Μουσειακών Σπουδών του Ε.Κ.Π.Α.*, Τεύχος 5, σ. 31-32, Ιούλιος 2007.
- [6] Ν. Κωνσταντίνος, “Μουσείο για όλους: το ευρωπαϊκό πρόγραμμα ACCU” [“Museum for all: the European programme ACCU”], *Ιλίσινα Περιοδική έκδοση για θέματα μουσείων, ΥΠΠΟ/Βυζαντινό και Χριστιανικό Μουσείο*, Τεύχος 5-6, σ. 30-35, 2008.
- [7] Κ. Καλαϊντζή, “Αγγίζουμε την Ιστορία! στο Εθνικό Ιστορικό Μουσείο,” [“A Touch of History! At the National Historical Museum”], *ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο*, No. 15, σ. 65-66, Δεκέμβριος 2018.
- [8] R. Sandell, “Social inclusion, the museum and the dynamics of sectoral change”, *Museum and Society*, University of Leicester, 1 (1), pp. 45-62, 2003.
- [9] R.R. Janes, “Τα μουσεία και η βιόσφαιρα,” [“Museums and the biosphere”], *Τετράδια Μουσειολογίας*, Τεύχος 7, σ. 4-13, 2010.
- [10] A. Wittlin, *Museums: In search of a usable future*. Cambridge, Massachusetts and London: MIT Press, 1970.
- [11] H.A. McGhie, “Museums and the Sustainable Development Goals: a how-to guide for museums, galleries, the cultural sector and their partners”, *Curating Tomorrow*, 2019. Available at www.curatingtomorrow.co.uk
- [12] Π. Βοσνίδης, Σ. Γκότσης, “Το μουσείο πάει στη φυλακή. Μια δράση του Βυζαντινού Μουσείου στο Ειδικό Κατάστημα Κράτησης Νέων Αυλώνα,” [“The Museum visits the prison. An activity of the Byzantine Museum at the Special Youth Detention Center in Avlonas”] στο *Πολιτισμός χωρίς Δεσμά. Πρακτικά σεμιναρίου σχεδιασμού πολιτιστικών εκπαιδευτικών δράσεων σε καταστήματα κράτησης*, Α. Κατσελάκη, Ο. Σάκαλη (Επιμ.), Αθήνα: ΥΠΠΟΑ/ΔΑΜΜΕΠ, 2019, σ. 65-71.
- [13] Α. Κατσελάκη, Ο. Σάκαλη, Α. Τσιτούρη, Τ. Φουρτούνη, “Πολιτισμός χωρίς δεσμά. Πολιτισμός για όλους: Μουσεία και μνημεία χωρίς αποκλεισμούς,” [“Culture without bonds. Culture for all: Museums and monuments without exclusion”], *ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο*, No. 15, σ. 27-28, Δεκέμβριος 2018.

- [14] Πολιτισμός χωρίς Δεσμά. Πρακτικά σεμιναρίου σχεδιασμού πολιτιστικών εκπαιδευτικών δράσεων σε καταστήματα κράτησης, [Culture without bonds. Proceedings of the seminar for the design of cultural educational activities in detention centers], Α. Κατσελάκη, Ο. Σάκαλη, Επιμ., Αθήνα: ΥΠΠΟΑ/ΔΑΜΜΕΠ, 2019.
- [15] J. Dodd, R. Sandell, D. Jolly, C. Jones, Eds., *Rethinking Disability Representation in Museums and Galleries*. Leicester: RCMG, University of Leicester, 2008.
- [16] Στ. Γκότσης, “Μουσείο, μνήμη και ταυτότητα. Η συμμετοχή του Βυζαντινού Μουσείου στο ευρωπαϊκό έργο συνεργασίας Roma Routes” [“Museum, memory and identity. The Byzantine Museum’s participation in the European project of collaboration Roma Routes”], στο Ρομά. Ιστορικές διαδρομές και σημερινές αναζητήσεις, Στ. Γκότσης, Επιμ., Αθήνα: ΥΠΠΟΑ/Βυζαντινό και Χριστιανικό Μουσείο, 2014, σ. 143-158.
- [17] Α. Σταματέλου, “Οι Δρόμοι των Ρομά” [“Roma Routes”], στο Ρομά. Ιστορικές διαδρομές και σημερινές αναζητήσεις, Στ. Γκότσης, Επιμ., Αθήνα: ΥΠΠΟΑ/Βυζαντινό και Χριστιανικό Μουσείο, 2014, σ. 131-141.
- [18] Ethnological Museum of Thrace. Mission Statement. Retrieved from: <https://emthrace.org/en/museum/mission-statement>
- [19] Ethnological Museum of Thrace. Social Programmes. Retrieved from: <https://emthrace.org/en/education/social-programmes>
- [20] Migration:Cities – (im)migration and arrival cities. Available at: <http://migrationcities.net/>
- [21] Μ. Τσέκου, “ΕΜΣΤ Χωρίς Σύνορα. Ένα πρόγραμμα του Εθνικού Μουσείου Σύγχρονης Τέχνης για την ισότιμη πρόσβαση στην τέχνη και τον πολιτισμό” [“EMST Without Borders. A programme of the National Museum of Contemporary Art about equal access to art and culture”], ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο, No. 10, σ. 35-37, Δεκέμβριος 2013.
- [22] Τ. Χατζηνικολάου, “Εθνικό Μουσείο Σύγχρονης Τέχνης. Βράβευση της Μαρίνας Τσέκου για προγράμματα μουσειακής εκπαίδευσης,” [“National Museum of Contemporary Art. Award to Marina Tsekou for the museum educational programmes”], ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο, No. 16, σ. 62-63, Δεκέμβριος 2019.
- [23] Μ. Tsekou, “Face Forward ...into my home. Introduction,” National Museum of Contemporary Art (EMST), 2017. Retrieved from: <http://www.faceforward.gr/en/texts/>
- Ε. Σολομών, “Μουσεία και κοινωνική αλλαγή”, [“Museums and social change”] ICOM Ελληνικό Τμήμα - Ενημερωτικό Δελτίο, No. 10, σ. 3-7, Δεκέμβριος 2013.

12. The Future of Museums and Digital Transformation Challenges

Ana Carvalho

Interdisciplinary Centre for History, Cultures and Societies (CIDEHUS) of University of Évora
Évora, Portugal
arcarvalho@uevora.pt

Alexandre Matos

Transdisciplinary Research Centre “Culture, Space and Memory” (CITCEM) of the University of Porto
Porto, Portugal
ammatos@letras.up.pt

Abstract— *Museums do not exist in a vacuum isolated from the digital world and the changes can be foreseen at different levels and at varying paces, admitting the complexity and asymmetries of the museum world. With regard to the influence of technology on museums and thinking on a broader horizon, it is likely (and desirable) that museums will be transformed to broaden and diversify the forms of access and digital engagement, in which the digital and the physical are increasingly interconnected dimensions. In this chapter, we analyse some critical points and interconnected challenges in addressing museums digital transformation shaped by the Mu.SA project research findings and using literature review. Furthermore, we discuss some of the ethical challenges related to digital transformation with the aim to contribute to the debate and provide some ideas for future reflection.*

Keywords— *digital transformation, museum professionals, digital technologies, digital competences, museum ethics*

I. INTRODUCTION

The digital age has deeply transformed our lives and our social habits, with consequences to all sectors of society, including museums. In the last years, digital transformation has become a topic of discussion in museum practice and a challenge to address. From a broad set of interconnected issues, one can highlight the relevance of increasing digital literacy and confidence among museum professionals as a crucial aspect of supporting the digital transformation of museums and enabling change. That is also the key argument that informed Mu.SA - Museum Sector Alliance (2016-2020), a European project funded by the Erasmus+ Programme that focussed on the development of digital competences in the museum sector by supporting professional training in Greece, Italy and Portugal.

A first phase of empirical research was conducted with the aim to understand how museums embrace the challenges of digital technologies, to map professionals' needs in terms of digital competences, and to identify emerging job profiles. A second phase consisted in

designing two e-learning programmes - a MOOC about *Essential Digital Skills for Museum Professionals* and a specialization course dedicated to four specific job role profiles - to address the sector needs and help museum professionals to better face digital transformation needs and challenges.

Both training programmes were designed following a combination of modules around digital competences (e.g. managing data, developing digital content, etc.) and transferable competences or soft skills (e.g. leadership, creative thinking, communication, integrity/ethical, etc.), considering also main reference frameworks (e.g. E-CF: e-Competences framework for IT professionals, DigComp: Digital Competences framework for citizens).

Following Mu.SA research findings and learning experience, and using literature review, in this chapter we identify and analyse some critical points and interconnected challenges in addressing museums digital transformation. In such context, we also discuss some of the ethical challenges related to digital transformation with the aim to contribute to the debate and provide some ideas for future reflection.

II. GOING DIGITAL: NOT A MISSION IN ITSELF, BUT A TOOL

Our society is becoming more and more dependent on digital technologies and there can be no doubt that there are inevitable consequences for the museum sector. Over the last decades museums have not been apart from these transformations¹, however one could also argue that the pace of such changes in museums has been slow when compared with other sectors in society [7]. In fact, the accelerated pace of change in the digital world stimulates and requires a more proficient and agile relation of museums with technology.

Therefore, the need to update museums by incorporating new forms of communication that enable knowledge sharing on museum collections and ensure that

¹ A number of scholars have analysed technology impact and influence in the museum and heritage field. See, for instance: [1], [2], [3], [4], [5] and [6].

museums establish relevant connections with their audiences. Globally, is also about pushing museums to be more relevant in the 21st century society.

Research also shows that technology development is one of the factors most likely to affect museums in the future, as well as: demographic changes, increasing mobility, public policy retraction, sustainability and participation [8].²

Examining new trends and the possibilities introduced by digital technologies has sparked a growing interest in the museum's world, that don't go unnoticed as testified by the growing number of debates and conferences organized in recent years around these topics.

Furthermore, the need for museums to adapt to society changes, namely embracing the digital age challenges, is already an aspect foreseen in several studies and reports shaping public national museum strategies in European countries.

That is the case of *Agenda 2026: Study on the Future of the Dutch Museum Sector* [11], the *Rapport de la Mission Musées do XXIe Siècle* [12], and the UK Government's report on *Culture is Digital* [13], among others. In this context, the potential of digital technologies is emphasised, not as an end or a value in itself, but rather as one of the means or tools to help museums achieve their mission and strategic goals. Therefore, it requires that museums plan ahead for digital transformation, it demands openness, collaboration, experimentation, taking risks, learn from experience and from other sectors as well.

III. FINDING A BALANCE: THE DIGITAL AND THE PHYSICAL

The possibilities of digital transformation encompass all areas of museum activities (management, communication, education, exhibition, collections management, and visitor engagement), from back-office to front-of-house, and in this context the challenges are multidimensional and interconnected. However, museums have not responded unanimously to digital transformation and are not equally endowed with the same means or resources. In fact, recent findings reveal that most museums are far from reaching full digital maturity [14].

The demand for digital transformation carries added complexity, requiring informed, creative and critical thinking about the role to give technology (digital or otherwise), as well as the need to frame it within the mission and the (communication) strategy of each museum. An informed, creative and critical thinking is also crucial to guide museums in using technology in a way that it adds value to museum activities. In that sense, to embrace technology as an opportunity is very much dependent on the use it's given.

Another stance that must not be overlooked in this context is also an ethical one. When applying digital technologies to engage and meet audience expectations, the needs of those that might be excluded should not to

ignored, namely those users or visitors that feel more comfortable with more traditional forms of engagement. In that way, there is a need to find a balance between digital engagement with existing physical forms of engagement [15].

Finally, we argue that technology does not replace human mediation, but it may contribute to enhance users' experiences, since it broadens the range of new means and conditions of access, which also must not be ignored.

IV. PROFESSIONAL DEVELOPMENT, NEW KNOWLEDGE AND COMPETENCES

To recognise the rise of digital technologies as one of the challenges currently facing contemporary museums means stepping back to reflect on how to orchestrate the acquisition of new knowledge, competences and mindsets [16] [17] [18] [8] [14]. Whether through formal training, such as a university degree, or non-formal training through lifelong learning, professional development will need to address new competences related to digital technologies as part of the changing dynamics and expectations of contemporary society [19] [20] [21] [22].

Increasing digital literacy and confidence among museum professionals is a crucial aspect of supporting the digital transformation of museums and enabling change [23] [24] [25]. That is also the key argument that informed Mu.SA - *Museum Sector Alliance* (2016-2020), by focusing on the development of digital competences in the museum sector and supporting professional training in Greece, Italy and Portugal.

Next, we analyse some critical points and interconnected challenges in addressing museums digital transformation, shaped by the Mu.SA project research findings, in particular considering the insights from the Portuguese case study.

V. CRITICAL POINTS AND INTERCONNECTED CHALLENGES

While focusing on professional development as a factor that enables change towards museums digital transformation, project Mu.SA research findings also provided a closer examination on how museums are responding to the digital transformation, identifying critical points and interconnected challenges, particularly in what concerns the Portuguese, Italian and Greece situation.

Looking more closely at the Portuguese case study, research revealed a very unstructured and limited experience of digital transformation. To some extent, this conclusion is also shared by overall findings in Greece and Italy [26]. Clearly, the reasons are multiple and interdependent. Drawing from the findings of the Portuguese case, we will briefly focus on a number of critical points.³

² See also [9] and [10].

³ See [27] for a more in-depth analysis of the Portuguese museum context regarding digital transformation challenges.

The first is related to digitization of collections, which in spite of progress still remains an under-developed area that requires significant investment, including the need to improve standardization in managing information systems (e.g. collections, archives, data) and their interoperability. Digitization investment is key in the sense that it can underpin activity in other museum areas and the creation of digital content or resources, and also a culture of sharing, considering the distribution of those resources using a variety of digital channels (e.g. websites, online catalogues, social media, etc.) according to their specificity or requirements.

Another critical point identified is the limited use of digital platforms or channels (e.g. websites, online catalogues, etc.) and the need to move forward towards more agile, user-friendly, accessible, responsive, updated and driven by compelling and relevant museum content.

At a more structural point of view, other aspects relate to a limited investment in infrastructure (Information Technology - IT, e-commerce services, etc.), including, in most cases, an insufficient IT support (and planning) in what maintenance concerns. Furthermore, a low communication maturity, which means that museums develop communication in an unstructured manner. In many cases, museums operate with small teams where multi-skilled professionals cumulate a range of functions and roles, including communication. To expand and include digital responsibilities museums may need to strengthen specialized roles in communication, in the sense that committing to digital transformation or to a digital culture in organizations, there is also a need to develop and strengthen a communication culture.

Also related with the latter point is the lack of digital competences and the need to develop it further in the museum workforce; and, on the other hand, insufficient training programmes available to address it (e.g. in-house planned training or others). At the same time, there is also the challenge of filling existing gaps within museum organisational structures to support digital maturity, by creating new job positions according to customised museum needs, considering the demands for new roles and digital responsibilities.

Other aspects have to do with bringing digital transformation to a strategic level. In this regard, also observable in most cases was the lack of strategy or planning in addressing communication operations (including the digital media) within the museum activities. Furthermore, the lack of attitude or motivation, meaning the need for leadership awareness to understand the importance of the digital, and responsiveness towards a more acting role to lead change by identifying organization's needs (including staff training), set priorities and nurture strategic outcomes. In this regard, another difficulty is related to how the issue of digital transformation is explored and supported in the agenda for museums policy at national level.

In fact, the current Portuguese national policy for museums contains no guidelines that specifically address digital challenges in museums. This point emphasises that the development of national museum policy and strong

leadership remains crucial to establishing strategic guidelines and objectives, and to supporting the digital transformation of museums in an integrated and coherent manner. This not only involves establishing new organizational mindsets, but also assessing the effort and resources required to move forward.

VI. THE DIGITAL AND RELATED ETHICAL CHALLENGES: A TIME FOR REFLECTION

Technologies are challenging the way museums work, are contributing to expand boundaries and adding another layer of complexity to museum operations. Along with emerging new opportunities, there are also new ethical challenges to be aware of when considering digital transformation. As Gary Edson underlines: “the temptation to unethical practice becomes greater as the challenges for museums increase” (p. 133) [28].

Furthermore, ethical challenges that arise from the digital environment “are far from simple, probably not all yet apparent” (p. 319), as Ross Parry reminds us [29]. There is a need to encompass discussions in the future, since some of these challenges are probably not fully evident and to some extent unclear on how they will unfold. Next, we will discuss some of these challenges, while not in an exhaustive way, taking in consideration the International Council of Museums (ICOM) Code of Ethics and other professional codes.

A. *Protection of personal data and privacy*

The ease of sharing data, collections or digital content in the digital environment entails a correct understanding of the limits around the protection of personal data and privacy.

Often, privacy issues conflicts with the goal of providing full access to digital collections and data, namely in the case of personal data associated with collections. For example, ethnographic objects or materials, which often relate to sensitive information, intimate details, or references to other persons (or events) made by informants. In some cases, online access was not originally anticipated, and therefore it requires the negotiation and clarification of different levels of confidentiality with informants (or with donors) of such materials. While this is not a new topic, it requires careful attention when considering what content and data can be made available or not in the digital environment. In this regard, the ICOM Code of Ethics clarifies (2.22 *Security of Collection and Associated Data*) [30]:

The museum should exercise control to avoid disclosing sensitive personal or related information and other confidential matters when collection data is made available to the public.

Moreover, the Code states (3.2 *Availability of collections*) [30]:

Museums have a particular responsibility for making collections and all relevant information available as freely as possible, having regard to restraints arising for reasons of confidentiality and security.

In sum, while the Code does not specify the management of these issues in the digital environment these guidelines remain applicable.

There is another dimension of privacy to consider - the right to be forgotten. This concept was introduced by the European Union General Data Protection Regulation (GDPR) in 2016 (became law on 25 May 2018). It allows the possibility of a person to withdraw information from the Internet or make that information anonymous, and thus the ability to control its personal information online. This brings another complexity to ethical privacy issues. Since the measure applies to any organization in society, museums also have to comply, by establishing public policies declaring how they collect personal data from any interaction with people.

This interaction can occur in a variety of forms, from membership, marketing, fundraising, ticketing, financial operations, events, visiting the museum, and so on. This means that a museum must disclose what kind of information is collected, how is stored and how this information is used, and such policies should be regularly revisited and updated.

B. Balancing access with copyright restraints

Providing access to collections and knowledge in the digital environment is a compelling and strong argument for museums to expand their reach and increase their visibility. Several museums have led the way in pursuing open access for their collections, meaning the online availability of images of museum objects in the public domain, in good resolution, for unrestricted use and for free.

The Rijksmuseum (Netherlands), for instance, has released online (since 2011) around 150,000 images of public domain, with the highest resolution possible and without any copyright restrictions. Several other museums have been taking the same direction, designing new open access policies. That is the case of some renowned museums from the USA, such as the J. Paul Getty Museum [31], the National Gallery of Art [32], the Smithsonian Institution [33] and the Metropolitan Museum of Art [34] just to name a few. In Europe, other examples can also be highlighted, such as the National Gallery of Denmark [35] and, more recently, the Museums of the City of Paris [36], among others.

The museums commitment to open access continues to be a very debated issue, and in spite of some developments is far from being fully embraced by a large portion of museums.⁴

The point is to highlight that any initiative of this kind implies a careful assessment of which items in museum collections are in the public domain and those that have legal constraints, such as their copyright status, which may limit its usability in open access policies. This is also related to national copyrights laws, and the inherent negotiation processes that are implied when museums pursue rights clearance with copyrights holders (including time-consuming and resources).

Nevertheless, in the case of those images of objects of public domain, the underlining question is that those images “belong to everyone and that the museum that holds them in trust does not have the right to condition their use” (n.p.) [38], an argument that is acknowledged in many of the museums with open access policies.

C. Open access vs loss of income?

An interconnected aspect with the latter point is the argument that museums may potentially lose income by not charging for the images (e.g. high-resolution reproductions), as they usually do, if they are releasing them freely and openly. Not ignoring the fact that digitization of museum collections is not free of costs.

However, if we look at the case of the Rijksmuseum it seems there is potential for a compromise around access and sustainability issues. By releasing images of good quality for free, the museum did not ignore the possibility of extra charged services, which are currently available. Furthermore, in 2011, following the availability of a first set of images without restrictions, there was an increase in revenue in the museum that continued in 2012 with a significant increase in sales [39].

While not exploring here the whole level of complexity that the issue involves, it seems clear that navigating around issues of sustainability and open access from an ethical standpoint is not as straightforward as it might appear at first glance. While from museums are expected responsibilities on the availability of collections as freely as possible, other standards also remind us that “income-generating activities should not comprise the standards of the institution or its public” (1.10 *Income-generating policy*) [30].

D. Loss of control?

Another issue unfolds regarding the above discussions, which is the issue of control over what happens after the availability of images of museum objects or other museum digital content in the Internet. These resources can be easily shared, combined and aggregated online, and can also be modified or manipulated.

The arguments that drive a more open approach to the availability of these resources in the Internet rely on its potential benefits: that they can promote knowledge, fuel creativity, and spark other interpretations and creative

⁴ A survey is currently being done to provide an update picture of open access policies and practices in Galleries, Libraries, Archives and Museums (GLAM) throughout the world. Data is available at:

<https://bit.ly/39ztVXK> (Accessed 2 April 2020). For more information about the survey see: [37].

works. Barranha [40], for instance, makes strong arguments around a more “open culture”, emphasizing the importance of this approach towards the stimulation of different interpretations of the artworks, considering museum art collections. However, another argument is that these resources can also be used for many other purposes, including abusive appropriation.

Do museum professionals want to control what happens after? Should they? Can they do it? In the words of the museologist Maria Vlachou [38]:

[...] how do we know what people are going to do with these freely accessible images? This is, perhaps, the hardest thing for some museum professionals, who feel they have a responsibility to “protect” the works of art and their reproductions. The hard, truth, though, is that they do not. Objects in the public domain belong to everyone and no one has appointed museum professionals as arbiters of taste. (n.p.)

Generally speaking, it would be very difficult for museums to follow up on every use of images reproduction after they are in the digital environment, to ensure that its use respects integrity or accuracy. But there seems no doubt that the issues over power, authority and control do spark anxiety within the museum sector, including tensions and legal disputes when abusive appropriation occurs [41]. There seems not to be additional guidelines in ICOM Code of Ethics on acting ethically on this regard, other than to act when the law is breached (e.g. illicit use). Also, not ignoring the primary responsibilities of museums in maintaining collections towards the benefit of society and its development.

Nevertheless, it remains a challenging and divisive issue, considering as well that museum professionals and audiences alike are both in the process experimentation and learning how to navigate and deal with it.

E. Social media

Social media (e.g. blogs, Twitter, Facebook, LinkedIn, YouTube, among others) has challenged the cultural landscape, and museums have embraced it with considerable enthusiasm when faced with the opportunity to expand access to collections and information around museum activities.

One highlighted advantage is the possibility of interaction with users, allowing comments, sharing and re-using content. To some extent, it can potentiate a more participatory, inclusive and engaging communication between museums and their audiences.

However, if social media engagement offers potential, it also opens areas of tension as it revisits issues of control, authority, ownership, voice and responsibilities that are expanded into the digital environment. To some extent, it

may not pose new ethical dilemmas, since it revisits old ones [42].

Let us consider the issue of control, from the perspective of social media commentary, and how it also resonates ethical challenges.

One of the questions is: how do museums envisage moderation when faced with the abusive, hating comments, mocking comments or virulent expressions of racism and anti-Semitism?

While considering netiquette⁵, there are general guidelines that should be addressed while communication in digital environments, namely the respect for different points of view and opinions.

In that sense, profanity, racist, sexist, ageist and religious comments are not acceptable. While this seems clear and straightforward, the practice is quite more complex, blurred and subjective when reconciling the diversity of opinions with freedom of speech. Can a museum allow any comment in the name of freedom of speech? What are the limits?

For example, the United States Holocaust Memorial Museum (Washington D.C.), being faced more often than not with virulent expressions of anti-Semitism and racism decided to draw an internal set of criteria to help navigating issues of moderation in social media, including the option of deleting comments in the interest of preventing misinformation [42].

Amelia S. Wong, at the time managing social media at the United States Holocaust Memorial Museum, underlined [42]:

As with the physical gallery, choices about what gets displayed, how it gets displayed, and what interactions might be encouraged must be considered on a case-by-case basis with regard to museum goals and their ethical obligations to constituencies. (p. 35)

As for the ICOM Code of Ethics, there are no specific standards that address these issues. On the other hand, the Museums Association (UK) Code of Ethics for Museums recognizes: “Museums and those who work in and with them should support freedom of speech and debate” (*Public engagement & public benefit*, p. 6) [43].

Moreover, it underlines the need to “respect the right of all to express different views within the museum unless illegal to do so or inconsistent with the purpose of the museum as an inclusive public space” (1.3, *Digital and Online Engagement*, p. 10) [43].

About overall guidelines concerning the use of social media for audience engagement, the Museums Association Code of Ethics for Museums also advert [43]:

Be aware of both the potential and the risks of social media, apps and other forms of digital engagement as tools to access and promote collections and museum activities. Consider publishing a digital

⁵ Netiquette is the abbreviation of Network Etiquette or Internet Netiquette; consists in guidelines of behaviour norms and know-how while using digital technologies and interacting in digital environments.

It is based on a common ground of adequate behaviour while communicating for different and diverse audiences.

media policy and ensure that staff and volunteers receive adequate training in the correct use of the media platforms used by the museum. (p. 5)

Moreover, the Code also emphasizes the need for content integrity and expresses concerns related to content moderation, as follows [43]:

Digital media is a fast changing area; innovations are often accompanied by new pitfalls and the museum should balance the need to engage audiences via digital and online activities with its professional and legal responsibilities. Ensure that staff are aware of their responsibilities in this regard, and ensure the museum is able to adequately moderate user-generated content hosted on online platforms directly managed by the museum. (p. 5)

In sum, there is a need to be aware of the ethical challenges that emerge from the use of social media. From a phase of experimentation with social media engagement, museums may need to face more professionalized approaches, not ignoring the need to understand its potentials as well as the risks or limitations. This is not a straightforward process and many blurred areas may emerge. Nonetheless, any ethical practice must be grounded within the museum mission and goals.

In such context, museums should also consider developing a digital media policy to ensure that the personnel involved understand how to use social media in a relevant and responsible manner towards audience engagement. In this context, there is a need to define: “parameters of how to observe, how to moderate, when (and how) to react and intervene and where the limits of responsibility might be. It is here where the ethics of social media are still absent, or at best, only emergent” (p. 321) [29].

VII. THE FUTURE OF MUSEUMS: LOOKING FORWARD

Museums do not exist in a vacuum isolated from the digital world and the changes can be foreseen at different levels and at varying paces, admitting the complexity and asymmetries of the museum world.

In this sense, we agree with Mairesse [9] when he states that there is no future, but several futures for museums. With regard to the influence of technology on museums and thinking on a broader horizon, it is likely (and desirable) that museums will be transformed to broaden and diversify the forms of access and digital engagement, in which the digital and the physical are increasingly interconnected dimensions - like two sides of the same coin - both for visitors and for museum staff [44].

It is not possible to predict the extent to which technology will evolve in society unless developments are expected and, consequently, changes in social habits, behaviours, motivations and expectations. From this point of view, the museum sector must be able to renew itself and

adapt to changes in society. Clearly, planning for digital transformation, along with strong leadership remain crucial to establishing strategic guidelines and objectives. This not only involves establishing a new mind-set, organizational transformation, the inputs of new knowledge and competences, but also assessing the effort and resources (skilled people, IT infrastructure, money and time) required going forward.

Beyond strategy and resources, embracing digital transformation also poses new ethical issues as discussed in this chapter. Museum professionals not only have to carry out their work in a skilled, informed and creative way, but also have to be aware of the broader ethical implications of their work, namely the responsibilities, consequences and limits of using digital technologies in museum practice, in response to changing conditions, values and ideas in society. As the ethical challenges that arise from the digital environment are probably not fully evident and to some extent unclear on how they will unfold there is also a need to further investigation and reflection.

Furthermore, there is also the need to embed the discussions around ethics in the context of professional development. In Mu.SA e-learning programmes, designing a module about ethics in museums was fundamental to approach the challenges of digital transformation in museums, acknowledging ethics and integrity as a relevant competence in the 21st century learning and working life of museum professionals.

In sum, as discussed in this chapter, the challenges are multidimensional and interconnected, but professional development remains a fundamental aspect to enable change and adaptation considering the evolving nature of technology and the changing conditions in society.

As tested by Mu.SA project, flexible training programmes are key to address new competences and the specialization required by digital transformation and, thus, to deal with current and future challenges in museums.

ACKNOWLEDGMENT

The authors wish to acknowledge support from ICOM Portugal and the Portuguese partners involved: Mapa das Ideias and University of Porto. Special thanks are due to all Portuguese participants in the research phase of Mu.SA project. The research conducted was funded under the auspices of Mu.SA project – Museum Sector Alliance (575907-EEP-1-2016-1-EL-EPPKA2-SSA) with support from the European Commission through Erasmus + (Sector Skills Alliance).

REFERENCES

- [1] MacDonald, L. (Ed.). *Digital Heritage Applying Digital Imaging to Cultural Heritage*. Burlington: Elsevier, 2006.
- [2] Cameron, F., and Kenderdine, S. (Eds.). *Theorising Digital Cultural Heritage: A Critical Discourse*. Cambridge, MA: MIT Press, 2007.
- [3] Parry, R. *Recoding the Museum: Digital Heritage and the Technologies of Change*. London: Routledge, 2007.

- [4] Parry, R. "The Practice of Digital Heritage and the Heritage of Digital Practice." In *Museums in a Digital Age*. (Ed.) R. Parry. London: Routledge, pp. 1-7. (Leicester Readers in Museum Studies), 2010.
- [5] Drotner, K., and K. C. Schröder. (Eds.). *Museum Communication and Social Media: The Connected Museum*. New York: Routledge, 2013.
- [6] Drotner, K., V. Dziekan, R. Parry, and K. C. Schröder. (Eds.). *The Routledge Handbook of Museums, Media and Communication*. New York, NY: Taylor & Francis, 2018.
- [7] Hossaini, A. 2017. "The Omnichannel Museum." In *Manual of Digital Museum Planning*, ed. by A. Hossaini, N. Blankenberg, and G. Dexter Lord, 13–25. Lanham: Rowman & Littlefield, 2017.
- [8] Filipe, G., and C. Camacho. "Que Futuro Queremos dar aos(s) Museu(s)?" *RP - Revista Património*, 5, pp. 50-59, 2018.
- [9] Mairesse, F. "Éléments de Prospective Muséale." *La Lettre de l'OCIM. Musées, Patrimoine et Culture Scientifiques et Techniques*, n.º 150 (November), 2013.
- [10] Mairesse, F. (Ed.). *Nouvelles Tendances de la Muséologie*. Paris: La Documentation Française, 2016.
- [11] Meijer, M., S. Weide, and M. Krabshuis. *Agenda 2026: Study on the Future of the Dutch Museum Sector*. Amsterdam: Netherlands Museums Association, 2010.
- [12] Eidelman, Jacqueline (Ed.). *Rapport de la Mission Musées du XXIe Siècle. Vol. I*. [Paris]: Ministère de la Culture et de la Communication, Direction Générale des Patrimoines, 2017.
- [13] Department for Digital, Culture, Media & Sport. *Culture is Digital*. [London]: Department for Digital, Culture, Media & Sport, 2018.
- [14] Price, K., and J. Dafydd. "Structuring for Digital Success: A Global Survey of How Museums and Other Cultural Organisations Resource, Fund, and Structure their Digital Teams and Activity", *MW18: Museums and the Web 2018*, 2018. <https://bit.ly/2xL9pGs> (Accessed 1 April 2020).
- [15] Museums Association. *Code of Ethics for Museums: Additional Guidance*. [n.p.]: Museums Association, 2015.
- [16] White, H. "The Goal Posts Have Moved: The Implications of New Paradigms for Professional Skills in Museums". *Museum International*, vol. 68, n.º 269-270, pp. 71–80, 2016.
- [17] Gainon-Court, M-A., and D. Vuillaume. "Can Museums Keep up With a Changing World? Skills Management as a Practical Response". *Museum International*, vol. 68, n.º 269-270, pp. 81-96, 2016.
- [18] Blankenberg, N. "Museum Organization for the Future." In *Manual of Digital Museum Planning*, ed. by A. Hossaini, N. Blankenberg, and G. Dexter Lord, pp. 271–87. Lanham: Rowman & Littlefield, 2017.
- [19] Réseau Canadien d'Information sur le Patrimoine. *Travailleurs du Savoir dans les Musées du XXIe Siècle*. Toronto: Réseau Canadien d'Information sur le Patrimoine, Université de Toronto, 2009.
- [20] Dahlquist, S. 5D – En Kompetenspolicy För Framtidens Museer. [Stockholm]: DIK, 2017.
- [21] Langlois, E. "Rendre l'Enseignement de la Muséologie en Phase avec la Technologie: Une Évidence!" In *Musées et Muséologie: Au-delà des Frontières. La Muséologie Nouvelle en Question*, ed. by Y. Bergeron, D. Arsenaault, & L. Provencher St-Pierre, pp. 333–49. Québec: Presses de l'Université Laval, 2015.
- [22] Raoul-Duval, J. (Ed.). *Cycle Soirée-débat Déontologie: Qu'est-ce qu'être, Aujourd'hui, un «Professionnel de Musée» en Europe?* Paris, Auditorium Colbert, 5 Juin 2018. [Dijon]: ICOM France (Comité National Français de L'ICOM), 2019.
- [23] Museums Association. *Working Wonders: An Action Plan for the Museum Workforce*. London: Museums Association, 2013.
- [24] Murphy, O. "Increasing the Digital Literacy of Museum Professionals: Digital Innovation and the Museum Sector in Northern Ireland." Thesis submitted for a Degree of Doctor of Philosophy, University of Ulster, 2014.
- [25] Parry, R., D. R. Eikhof, S-A, Barnes, and E. Kispeter. *Mapping the Museum Digital Skills Ecosystem: Phase One Report*. Leicester: University of Leicester, 2018.
- [26] Silvaggi, A. (Ed.). *Museum Professionals in the Digital Era: Agents of Change and Innovation (Full Version Report)*. [Rome]: Mu.SA - Museum Sector Alliance, 2017.
- [27] Carvalho, A., and A. Matos. "Museum Professionals in a Digital World: Insights from a Case Study in Portugal." *Museum International (Special Issue: Museums in a Digital World)*, vol. 70 (277–278), pp. 34–47, 2018.
- [28] Edson, G. "Unchanging Ethics in a Changing World." In *Museums, Ethics and Cultural Heritage*, ed. by B. L. Murphy, pp. 131–140. Abingdon, Oxon: ICOM (International Council of Museums) and Routledge, 2016.
- [29] Parry, R. "Transfer Protocols: Museum Codes and Ethics in the New Digital Environment." In *Routledge Companion to Museum Ethics: Redefining Ethics for the Twenty-First Century Museum*, ed. by J. Marstine, pp. 316–331. Milton Park: Routledge, 2011.
- [30] ICOM. *ICOM Code of Ethics for Museums*. Paris: ICOM (International Council of Museums), 2004 [2017].
- [31] Paul Getty Museum. "Open Content Program: Frequently Asked Questions (FAQs)". <https://bit.ly/2UXvHfQ> (Accessed 2 April 2020)
- [32] National Gallery of Art. "Open Access Policy for Images of Works of Art Presumed in the Public Domain". <https://bit.ly/343ItO5> (Accessed 2 April 2020)
- [33] Smithsonian Institution. "Collections Access Policies". <https://s.si.edu/2UASpVb> (Accessed 2 April 2020)
- [34] Metropolitan Museum of Art. "The Met Makes Its Images of Public-Domain Artworks Freely Available through New Open Access Policy". <https://bit.ly/2R44HdC> (Accessed 2 April 2020)
- [35] National Gallery of Denmark. "Art in the Public Domain". <https://bit.ly/2xJR0JM> (Accessed 2 April 2020)
- [36] Museums of the City of Paris. "Open Content: 150,000 Works from the Museum Collections of the City of Paris, Freely Available". <https://bit.ly/3axXhXH> (Accessed 2 April 2020)
- [37] MacCarthy, D. "Uncovering the Global Picture of Open GLAM." 4 April 2019. <https://bit.ly/39Iv6UV>
- [38] Vlachou, M. "That's Mine Too!". In CIDOC blog, September 2017. <http://bit.ly/33Xc22y>
- [39] Pekel, J. "Democratising the Rijksmuseum", pp. 1–15, 2014. <http://bit.ly/2JlrMEF>
- [40] Barranha, H. "Derivative Narratives: The Multiple Lives of a Masterpiece on the Internet." *Museum International (Special Issue Museums in a Digital World)*, vol. 70 (277–278), pp. 24-33, 2018.
- [41] Fouseki, K., and K. Vacharopoulou. "Digital Museum Collections and Social Media: Ethical Considerations of Ownership and Use." *Journal of Conservation and Museum Studies*, vol. 11(1), p. Art. 5, 2013. <http://bit.ly/2PjnyB6>
- [42] Wong, A. "Ethical Issues of Social Media in Museums: A Case Study." In *New Directions in Museum Ethics*, pp. 24–39. Milton Park: Routledge, 2013.
- [43] Museums Association. *Code of Ethics for Museums*. [n.p.]: Museums Association, 2015. <http://bit.ly/2Ozu46G>
- [44] Sturabotti, D., and R. Surace (Eds.). *Museum of the Future: Insights and Reflections from 10 International Museums*. [Roma]: Symbola Foundation & Mu.SA - Museum Sector Alliance, 2017.

Conclusions

The use of Information and Communication Technologies (ICT) at the beginning of the second decade of the 21st century became necessary not only for large museums, but also for quite small, and even municipal ones. Information technologies helped solve many, if not all, issues that are traditional for museums. The new technologies offered many possibilities to the cultural organizations from the simple museum registration and storage through the data bases to the online presence of the museum in the web.

The ICT facilitated the museum personnel to better manage the huge amount of information in order to compile lists, to prepare catalogues and documents regarding curatorship and restoration. Also, the advent of the internet has brought with it a great opportunity for museums to document their collections digitally and allow them to present the collections and artifacts beyond the museum walls.

The digital display of collections and its objects made the museum as accessible as possible. This is why museums' efforts to make their collections available online or create virtual exhibitions and multimedia publications are so important. When a museum and its collection becomes broadly published, this consequently results to the attraction of new (and more) visitors and the creation of new partnerships. Well – known projects as GoogleArtProject and Europeana permitted the inclusion of the digitalized world cultural heritage putting the museums in an international context.

The metamorphosis of the cultural organizations from object - oriented institutions to audience - oriented organizations, emphasized the importance of the Internet as a powerful means of communication between a museum and its visitors.

Nowadays, information is the most valuable product. All cultural organizations have or make sure they have an official website and social media for providing information and promoting their activities, exhibitions, educational programmes, guided tours to a wider audience. The aim of such communication is always the expansion of the museum's audience, providing access to the cultural heritage for the maximum number of people, wherever they are located.

Without doubt, the museum professionals saw the application of the new technologies very useful and promising, not only for informing the public about the current and future museum activities but also as a digital strategy and a communication plan for their organization.

In the case of cooperation between the museum and outsourced companies or partners in creating digital products and resolving the technical problems, it is necessary for the museum community and technicians to speak «in the same language». From one hand the demand

for IT specialists within the museum is very high, while on the other hand the museum employees who have digital skills play a significant role in museums. Capacity-building in information technologies skills for museum employees is a long-felt need (UNESCO, 2014).

The Mu.SA–Museum Sector Alliance project (2016 - 2002) addresses this particular need by providing museum professionals with a comprehensive training program to develop a range of skills that will help them meet the demands of the digital era. More specifically, the aim of the Mu.SA project was to address the increasing disconnection between formal education and training and the world of work because of the emergence of new job roles and associated skill needs due to the quickening pace of the adoption of ICT in the museum sector.

Through the desk and field research in the three countries (Greece, Italy, Portugal), the research findings supported the main premise of the project that digital literacy is of critical importance for all museum professionals. Museum professionals must be able to gain expertise in diverse areas, so to be both creative and analytical, to operate within complex and diverse organizations. In that context, continuous training in digital and soft skills targeted to the actual needs is considered crucial not only for keeping up with fast-changing technology but mostly for fulfilling the multifaceted social role of today's museum.

The project focused on the development of digital and transferrable competences so that (working and unemployed) museum professionals maximize the ROI of education, become more resilient, increase their creativity and efficiency and acquire career adaptive competences. It enabled museums to offer enhanced experiences, by up-skilling and re-skilling of museum professionals, thus raising the quality of life of the general public.

Mu.SA brought into light the 4 emerging job profiles (Digital strategy manager, Digital Collections Curator, Digital Interactive Experience Developer, Online Community Manager). The project designed, developed and provided Open Educational Resources (OERs) on necessary digital competences and 21st century skills. For that reason, the two European Frameworks for Digital Competences (e-CF and DigComp) were used together for the first time, adapting the level of each digital competence to the needs of the museum professionals. This book details the different stages of the project work activities conducted by the Mu.SA partnership, ranging from the needs and training provisions research to the development, implementation and evaluation of the training programs ran (MOOC and the 4 blended specialisation courses followed) throughout the lifecycle of the project.

The digital literacy of the workforce remains one of the key challenges for the adoption of technology within

museums (NMC, 2015; 2016). Increasing digital literacy and confidence among museum professionals is a crucial aspect of supporting the digital transformation of museums, establishing a new mind-set and enabling change.

In 2018, the European Commission published its *New European Agenda for Culture*, which, from its introduction, links heritage and culture to the economy, either under the umbrella concept of cultural and creative sectors or industries or by the explicit reference to "create spillover effects in other economic sectors". The

importance of the digital in the Agenda for culture has been present in European policy since the early years of the 21st century and currently extends to new approaches and challenges.

The Mu.SA project is a valuable example of how the trials implicated by the digital shift in the cultural sector can be tackled through cross-sectoral cooperation and addressing the up-skilling of professionals, one of the essential factors to guarantee the sustainability of the digital adoption by institutions.

Prof. Dr. Achilles Kameas

*DAISSy research group,
Hellenic Open University, Greece*

Panagiota Polymeropoulou

*DAISSy research group,
Hellenic Open University, Greece*

Dr. Achilles Kameas is Professor at the School of Science and Technology of the Hellenic Open University (HOU) in the subject of Diverse and Spherical Systems and Director of the Postgraduate Studies Program “Diverse Computation Systems” (CMS) of the Hellenic Open University. Director of the Dynamic Ambient Intelligent Social Systems (DAISSy) Research Team (<http://daissy.eap.gr>). He is the Scientific Coordinator of Mu.SA - Museum Sector Alliance. He has participated as a researcher or coordinator in more than 30 European or national projects. He has participated in organizing committees of more than 100 international conferences and has published more than 120 scientific papers in books, international journals and international conference proceedings, has written 3 University Books and has participated in the publication of 10 books by international publishing houses. His research interests include diffuse calculation systems, ontologies, educational information systems and the promotion of research and science together with / for society.

Dr. Achilles Kameas
Professor
Hellenic Open University
DAISSy Research Group
Patras, Hellas
kameas@eap.gr

Panagiota Polymeropoulou is Senior Researcher, member of the DAISSy Research Group of the Hellenic Open University, Greece, in EU funding Research & Development Projects. She is a graduate of the National and Kapodistrian University of Athens with degree in Archeology and History of Art and holds a Master of Science (MSc.) Postgraduate Diploma with honors in Cultural Informatics and Communication with specialism in Museology from the University of the Aegean, Mytilene. Panagiota is awarded with a scholarship from the State Scholarship Foundation (IKY) for her postgraduate studies in Museology. She has been adjunct faculty during 2012 -2014 in the Technological Educational Institute of Western Greece. She has worked as archaeologist in the Service of Antiquities in Achaia and Aitolokarnania, Ministry of Culture. Her professional activity focuses on museology, digital cultural heritage, virtual archaeology, e - learning, ICT skills in Culture. The results of her research have been published in scientific journals and in National and International Conference proceedings. She is a member of the International Council of Museums (ICOM).

Panagiota Polymeropoulou
Researcher, MSc.
Hellenic Open University
DAISSy Research Group
Patras, Hellas
ppolymero@eap.gr



Mu.SA: Museum Sector Alliance
575907-EEP-1-2016-1-EL-EPPKA2-SSA
www.project-musa.eu

Mu.SA consortium



Co-funded by the
Erasmus+ Programme
of the European Union

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.