Benefits of taking part in CitizenHeritage: A Way Forward

Deliverable O6-02 Erasmus University Rotterdam

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This deliverable was created in the style of CitizenHeritage, with the contribution of several individuals taking part in our workshops, providing feedback during presentations, reviewing the work, and writing the text. We thank everybody.

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Table of Contents

Consortium

	Katholieke Universiteit Leuven (Coordinator)	KULeuven	Belgium
	National Technical University of Athens	NTUA	Greece
	Erasmus University Rotterdam	EUR	Netherlands
	Web2Learn	W2L	Greece
	European Fashion Heritage Association	EFHA	Italy
	Photoconsortium International Consortium of Photographic Heritage	Photoconsortium	Italy

Introduction to the project

Citizen science in the cultural sector is a topic that has received surprisingly little scientific attention. The **CitizenHeritage** project was initiated to explore the link between the vast evidence on cultural participation and related benefits, to the role of gaining greater agency by participants, engaging with cultural participation, and eventually contributing to science. **CitizenHeritage** took place from 2020 to 2023, and was funded by the European+ program.

The “Citizen enhanced open science in cultural heritage” report (Zourou and Ziku, 2022) highlights the long history of public participation in cultural heritage to advance scientific knowledge, illustrated with an example from the 18th century of the Dictionary of Medieval Latin which has compiled information contributed by the public throughout the years. Analysis of the projects reveals a common contributory approach to participation, as often crowdsourcing projects do, with participants performing analytical tasks and pooling resources. Engaging participants in collaboration and co-creation efforts, tapping into collective intelligence, and grassroots activities, is less often found across cases studied.

The recent policy attention to support participatory cultural practices, visible through Horizon grant programs that aim to strengthen society’s contribution to safeguard cultural heritage or the recent European Commission publication linking cultural participation and democracy, is a welcomed force to raise awareness of the role of participants in the preservation of cultural practices and in the transferring of cultural knowledge.

We want to add the role of the higher education institutions as key actors in this process. As several reports have evidenced, project based efforts have a tendency towards a perennial engagement of participants, resulting in the loss of valuable work once the project ends. We propose the involvement of higher education institutions can support a sustainable approach to participation including students and embedding collaborations within the university’s curricula. In this way, the higher education institutions would take a knowledge-driven development approach to stimulate a sustainable link to society in order to facilitate engaged cultural participation with a contribution to science.

This report presents our first exploration, which faced the unexpected challenges brought by the global pandemic and resulted in a methodological change in our approach to conceptualise the

problem. We initiated the discussion in the classroom during the Museums in Context MA course, where students explored the social return of investment methodology to evaluate cultural participation. Students decided to consider a non-financial approach to returns with focus on social wellbeing, which resulted in a MA thesis. The pandemic highlighted the potential cultural participation can have on social transformation, one unprecedented example found in the experience of people singing in balconies during the high lockdown in Italy. How can we collaborate with cultural participants to advance science, in our case, to understand the benefits related to cultural participation? What follows is our proposal.

We build from the initial results of the CitizenHeritage project to propose a sustainable and engaged form of cultural participation with greater benefits for participants within an academic setting. We have analysed the results of the *O1 Citizen enhanced open science in cultural heritage* and the *O6 Benefits of taking part in CitizenHeritage: Systematic Literature Review* reports, and developed a methodology to explore the extent to which social well being was experienced by participants in our workshops.

Based on our results, we argue cultural participation with greater engagement, based on contributory, collaborative, and co-creative cultural practices in partnerships among cultural, academic, and civic institutions, has the greatest potential to advance a sustainable and impactful sector.

In the following section, we review the results from the *O1 Citizen enhanced open science in cultural heritage* and the *O6 Benefits of taking part in CitizenHeritage: Systematic Literature Review* and build our framework to design the analysis of the workshops conducted. In **CitizenHeritage** we conducted 9 workshops. The methodology section describes our process to design a survey to evaluate participants' perception, and the challenges encountered during analysis. From the analysis of the data collected, the results presented include our insights regarding the perception of our participants in light of the literature reviewed. We conclude by describing the process that led to our current proposal, the creation of a series of videos to present **CitizenHeritage**, to discuss the key elements of an aware cultural practice, and to invite the younger generation to take agency in the cultural practice.

We provide a student-based proposal for communicating our findings with peers, increasing awareness, commitment, engagement, and CitizenHeritage.

The objectives of this deliverable were to examine the conditions favouring sustainability of results gathered from collaborations between HEIs and CHIs in CS projects. Sustainability was considered both in the use of resources as well as in the social engagement with the leading institution. O6 was envisioned to answer whether (1) CS projects can stimulate engagement to increase CH activities, (2) public support is conductive to increase private support and in what forms, (3) HEIs can serve as anchors to improve sustainability of CS projects, and (4) citizen enhanced open projects have a greater sustainability rate when embedded in HEI curricula.

Given the changes experienced in the project, activities of the O6 transformed to focus on providing a feasible proposal to replicate the harvested knowledge gathered from the project regarding the role of HEIs. As such, we worked closely with students to develop our recommendations using video as the preferred format for communication.

Cultural Participation

The core of our framework includes the main findings from two earlier deliverables of **CitizenHeritage** O1 and O6-01 which informed development of the workshops and framed analysis of data collected.

> Participants gain greater benefits through awareness of and commitment to the act of participating in cultural activities, engaging through contribution, collaboration, or co-creation.

O1 Citizen Enhanced CulturalHeritage

The report “Citizen Enhanced Open Science in Cultural Heritage - Review and Analysis of practices in higher education” by Katerina Zourou and Mariana Ziku (2022) explores the role of higher education institutions (HEIs) in promoting open and citizen science in the field of cultural heritage. The report maps the infrastructures, digital tools, and typologies that enable citizen participation in scientific knowledge co-creation. It focuses on the integration of citizen science into open science.

Chapter 1 of the report focuses on citizen-enhanced open science. It highlights that open science, including concepts like citizen science, participatory research and public engagement with science, aims to increase openness in scientific knowledge production. Moreover, the authors discuss the significant role HEIs play in promoting open science and implementing related policies. HEIs, including academic libraries, support and promote open science through training initiatives and research data management. Additionally, the report talks about how citizen science, falling under the umbrella term Public Participation in Scientific Research (PPSR), actively involves the public in scientific investigation. It requires a certain degree of openness and emphasises the release of publicly available data. Citizen science projects should align with open science principles and make data and results publicly accessible. Finally,

Chapter 1 presents various typologies and frameworks for citizen science, including those developed by Bonney et al., Haklay, Turbé et al., and Socientize. These typologies categorise citizen science projects based on the level of public involvement, the nature of the tasks, and the types of engagement.

Chapter 2 of the report focuses on citizen-enhanced open science in the cultural heritage field. It explores the integration of citizen science in social sciences and humanities (SSH) and cultural heritage institutions, such as galleries, libraries, archives, and museums (GLAMs). The chapter discusses the challenges, advancements, and methodologies employed in citizen science initiatives related to SSH and cultural heritage. It also examines open access policies in GLAMs and the ethical considerations of using cultural data in citizen science.

Chapter 3 outlines the methodology used, including the identification of selection criteria, building a pool of citizen science projects through data collection and a public survey, and the selection and analysis of 25 practices. The analysis includes data visualisation, the application of typologies, and a synthesis of findings.

Chapter 4 introduces the 25 citizen science projects. The cases are presented in a one-page short analysis for each practice, which includes a description and its categorization based on the 6 item typology.

1. The 3 forms of civic engagement: **contributory, collaborative, and co-creative** (Bonney et al., 2009)
2. The 7 models of civic engagement in science (Sanz et al., 2014)
3. The 3 types of Higher Education involvement in citizen science (Zourou, 2020)
4. The 9-factor stack on the openness scope of citizen science practices (Zourou & Ziku, 2022)
5. The 4 categories of platforms used by citizen science practices (Zourou & Ziku, 2022)
6. The binary categorisation for software development (Zourou & Ziku, 2022)

Chapter 5 presents the results and findings. These indicate that most citizen science practices adopt a contributory approach, with fewer initiatives employing collaborative and co-creative approaches. Analysis tasks and pooling of resources are the most prevalent forms of participation. The report highlights the significant involvement of higher education institutions in the selected practices, with various types of support provided. Additionally, several practices have developed application software to support their citizen science projects. The report

emphasises the importance of openness in citizen science and identifies areas where there is room for improvement, such as open-source, soft- and hardware, metrics, and datasets.

Overall, the report provides a comprehensive overview of citizen-enhanced open science in cultural heritage, highlighting the role of higher education institutions and presenting a range of practices and typologies. It underscores the potential for active public engagement in scholarly research and the importance of open access and data sharing in the field of cultural heritage.

O6 Cultural Participation

The convergence of citizen science and the cultural domain has surprisingly received limited scholarly attention. The report titled “Benefits of taking part in CitizenHeritage”, penned by Valeria Morea and Trilce Navarrete, underscores the significant potential of higher education institutions as pivotal players in this arena. It also stresses the importance of sustainable engagement and introduces a knowledge-centred method that engages students and incorporates collaborative efforts into university curricula.

Due to unexpected challenges brought about by the global pandemic, the exploration outlined in this report necessitated a change in the approach taken, underscoring the profound influence of cultural participation on societal change.

Chapter 1 of the report presents and expands on the chosen methodology: a systematic literature review. The SLR performed followed an eight-step process part of planning, conducting, and reporting of the literature review. The review focused on theoretical constructs like cultural participation, consumption, attendance, as well as their impact, benefits, and externalities. The search for relevant terms took place in titles, abstracts, and keywords across major academic databases, namely Scopus and Web of Science. A quantitative assessment was conducted using both deductive and inductive approaches. The coding phase concentrated on specific elements such as discipline, research strategy, design, geographical coverage, dataset aggregation, and definitions of cultural terms.

Chapters 2, 3 and 4 present the results of the thematic synthesis. Chapter 2 explores the various methodological approaches used by researchers looking into the effects and advantages of cultural participation. The findings indicated that quantitative research methods were most common. The report also highlights some flaws with this method, such as the heavy reliance on secondary data, which makes it challenging to replicate studies. The results also

cover qualitative research, which looks into the causes of cultural participation but has trouble generalising its findings. The conclusion of the chapter makes the case that future research would greatly benefit from combining the advantages of both qualitative and quantitative approaches.

Chapter 3 explores the varied understandings of cultural participation based on the categorisation of **active and passive**. The findings of the SLR underscore a notable absence of consensus regarding the precise definition of cultural participation across various works. This disparity suggests that the interpretation of cultural participation is contingent upon many factors, such as the data employed. Notably, passive cultural participation emerges as the predominant form under empirical scrutiny, constituting 42% of the dataset. Conversely, active cultural participation is identified in approximately a quarter of the analysed works (28%); however, the characterization of active participation is considerably more heterogeneous than that of passive engagement, with no shared definition observed within the dataset.

Chapter 4 focuses on a comprehensive analysis of the substantiated effects, advantages, and broader consequences stemming from cultural participation. Notably, the scholarly discourse has concentrated its efforts on exploring a range of dependent variables. An examination of the accumulated evidence portrays a predominantly affirmative perspective: cultural participation yields discernible advantages. The body of literature under review prominently centres on the evaluation of several key dimensions, encompassing subjective well-being, health-related outcomes, socioeconomic ramifications, the nexus between youth and learning, as well as the intricate interplay within urban and civic spheres.

In essence, this report fills an important scholarly gap and further serves as a beacon directing attention towards the transformative potential of cultural participation within the realm of citizen science. Its findings underscore the importance of inclusive educational strategies and interdisciplinary research to further unravel the intricate dynamics of this convergence, fostering societal growth and change in an increasingly interconnected world.

Participatory Workshops: CitizenHeritage evidence

As part of the **CitizenHeritage** project, we conducted nine workshops where citizens contributed to advancing scientific research related to culture. Participants were invited to complete a survey, which allowed us to test the effects of participating in a cultural activity that advanced science, from the participants' perspective. We received a total of 59 survey results from nine workshops, which form the base of our analysis. The following section presents an overview of the workshops, followed by the study's methodology, our results, and insights emerging from our analysis.

Workshop Overview

Location	**Sofia**	**Budapest**	**Antwerp**	**Athens**	**Pisa**	**Cyprus**	**Florence**	**Rotterdam**
Partnership	University Library	University Library	Museum Wikipedia	University	Museum	University	University Museum	University Living Lab
Engagement	Contribution	Contribution	Collaborative	Contribution	Contribution	Contribution	Collaborative	Co-creative
Participation	Active	Active	Active	Active	Active	Passive	Active	Active
# of responses	Pre: 21 Post: 12	Pre: 10 Post: 10	Pre: 14 Post: 13	NA	During: 8	NA	NA	Pre: 7 Post: 5
Survey format	Digital	Digital	Paper	-	Paper	-	-	Digital

Table 1: Description of workshops and surveys (source: elaboration of the authors).

The table shown above provides a comprehensive overview of the conducted workshops and surveys, accompanied by significant contextual details. Initially, attention is directed towards the geographical locations where the workshops were held. Subsequently, the collaborative partnerships established for each workshop are highlighted, as these alliances play a crucial role in shaping workshop development. Notably, the involvement of diverse institutions in three distinct areas (academic, cultural, and civic) underscores their potential influence on the workshops' outcomes.

In accordance with the framework presented in Deliverable O1, the level of engagement for each workshop is described. This evaluation employs the engagement levels framework introduced by Zourou and Ziku (2022). Three engagement tiers are identified: contributory, collaborative, and co-creative civic engagement. Contributory engagement entails citizen science projects initiated by research scientists, who then request public participation in data contribution. This form of engagement exhibits a hierarchical structure. Collaborative

engagement, on the other hand, involves more interactive and reciprocal citizen participation within the scientific process. Citizens are not solely data contributors but actively collaborate in project activities, data utilisation, and project development stages. The co-creative engagement category denotes projects initiated and developed as partnerships between researchers and the public. Often referred to as "community science," these projects frequently originate from public inquiries and expand through partnerships. Out of all the workshops, 5 followed a contributory civic engagement model, 2 embraced a collaborative approach, and a single workshop was characterised by co-creative civic engagement. Notably, the latter involved a collaborative effort between a bachelor student and project researchers to design and execute a cooking workshop.

Moreover, in alignment with the framework detailed in Deliverable O6-01, the nature of cultural participation exhibited by participants is presented. Despite the varying definitions of cultural participation, a consensus emerges when categorising it as either passive or active engagement. Accordingly, 7 workshops fostered active cultural participation, whereas a sole workshop observed passive cultural participation. The discrepancy arises from the nature of the workshop, with the latter involving conference attendance while the others needed more active involvement such as making annotations and cooking.

Additionally, attention is drawn to the survey response rate. Although both pre- and post-event survey versions were designed, challenges arose in obtaining post-event responses. This perhaps signals the need for optimising survey distribution timing.

Finally, the manner in which surveys were administered is acknowledged. Due to diverse formats for survey administration, the specific questions posed varied. However, the core inquiries remained consistent throughout.

A brief overview of each workshop can be found below.

Workshop 1: History in Pictures from Bulgaria

The workshop organised in collaboration with the University of Sofia and NALIS Foundation took place on 26th May, 2021 (10.00 - 12.00 hrs) and aimed to address the challenge of making digitised photographic heritage more accessible and discoverable by improving their metadata. Recognizing that images have immense historical value, the workshop emphasised the importance of enabling users to find the specific images they seek within vast online repositories. To achieve this, the workshop stressed the necessity of good metadata, including comprehensive keywords and links to authoritative files and thesauri.

The workshop showcased the successful collaboration between students of digital humanities from the University of Sofia and the NALIS Foundation in Europeana. The students worked diligently to improve the metadata of the digitised collection of early Bulgarian photography. Through annotation and enrichment efforts, they added over 5,000 new tags to nearly 700 heritage photographs, enhancing their accessibility and enabling users to better explore and engage with Bulgaria's rich cultural history.

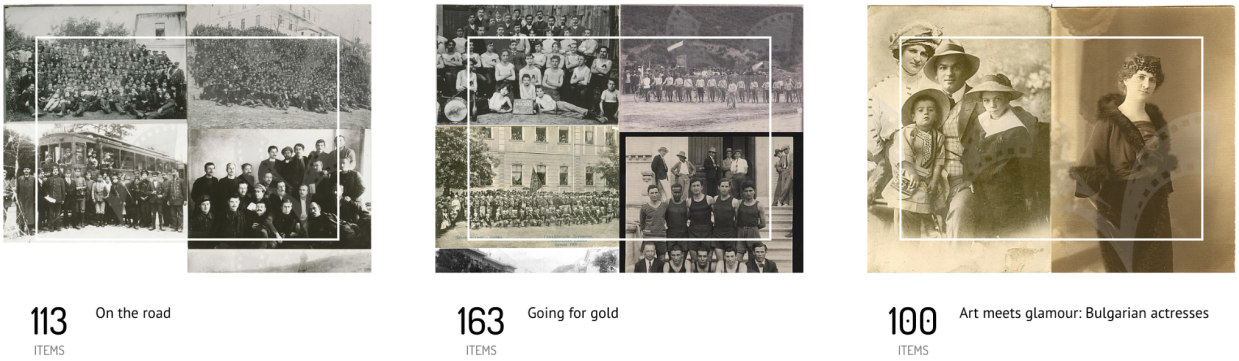

Figure 1: Pictures from Workshop 1 (source: https://www.citizenheritage.eu/citizen-science-workshops/sofia/)

Workshop 2: Facts & Fiction - Hungary in Black-and-White Photographs

The workshop organised by Pázmány Péter Catholic University, in collaboration with OSZK (the National Széchényi Library) in Budapest, took place on 15th October, 2021 (9.00 - 12.00 hrs) and aimed to address the challenge of facilitating the discovery and retrieval of digitised photographic heritage within online repositories. While Artificial Intelligence can play a supportive role in improving metadata, the workshop highlighted the crucial role of the human factor in uncovering the knowledge embedded in historical images, particularly in the realm of photographic heritage. To achieve this, the workshop advocated for citizen involvement as the best strategy to allow photography to speak for itself.

The event featured the collaboration between students specialising in digital humanities and film history from the Media and Communication department of Pázmány Péter Catholic University. They focused on improving metadata by annotating and enriching a captivating digitised collection of early photography and film stills published by the National Széchényi Library in Europeana (OSZK). By working on this collection, the students contributed to its discoverability and provided a deeper understanding of Hungary's rich cultural heritage through the lens of black-and-white photographs.

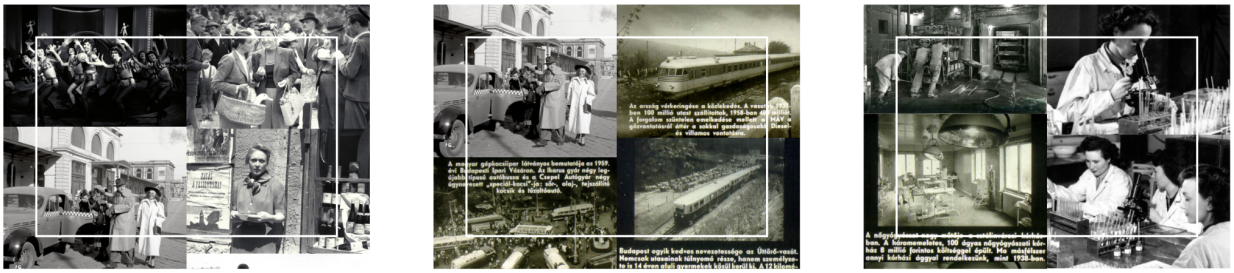

Figure 2: Pictures from Workshop 2 (source: https://www.citizenheritage.eu/citizen-science-workshops/budapest/)

Workshop 3: Mapping Fashion Heritage through Patterns

The Pattern-a-thon workshop was organised by EFHA (European Fashion Heritage Association) and ModeMuseum Antwerp in collaboration with KU Leuven, University of Antwerp, and Erasmus University Rotterdam on November 27th, 2021 (10:00 - 16.00 hrs) and aimed to uncover and recover patterns of fashion objects.

Participants contributed to Wikipedia by designing patterns and donating them to Wikimedia Commons. The patterns are the result of fashion ideas being translated onto paper and then adapted to fit the human body. The workshop highlighted the craftsmanship and knowledge involved in creating three-dimensional garments from two-dimensional patterns through this process.

Figure 3: Pictures from Workshop 3 (source: https://www.citizenheritage.eu/citizen-science-workshops/antwerp/)

Workshop 4: ICT at the service of Citizen Science

During Spring 2022, Citizen Heritage focused on involving university students in cultural heritage projects, aiming to promote participatory approaches and citizen science. Partnering with the National Technical University of Athens (NTUA), a citizen science case study using crowdsourcing techniques was conducted.

The students took part in an online challenge as part of an undergraduate course on computer science, where they improved metadata for music tracks from the Europeana digital library. They listened to the tracks and annotated them using a crowdsourcing platform developed by NTUA, based on three main categories: emotion, genre, and instruments. More than 98 students participated, contributing over 8300 tags for 854 music tracks.

The campaign data was analysed and used by the students to build a knowledge graph and ontology, extract additional knowledge, and generate music recommendations using semantic web technologies. An openly available annotated dataset was also created, which can be useful for music tagging models.

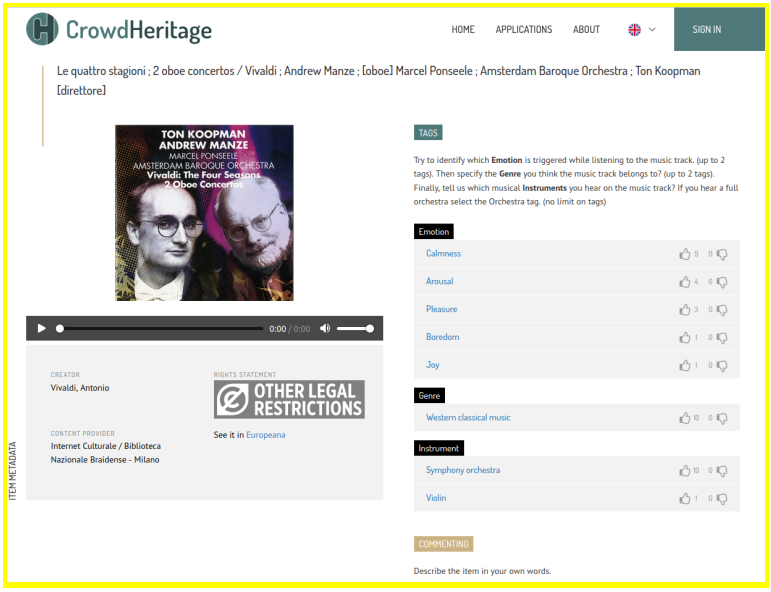

Figure 4: Example of music track annotated by NTUA students with information about instruments, emotion, and genre (source: Eirini Kaldeli).

Workshop 5: Collection Day for Family Photographs in Pisa (Multiplier Event)

The Photo Consortium multiplier event, organised in collaboration with the Museo della Grafica and the University of Pisa, took place on June 28, 2022 (9.30 - 15.00 hrs) at Palazzo Lanfranchi in Pisa, Italy. It was a one-day conference featuring prominent speakers who discussed the role of photographic heritage in empowering community participation in cultural heritage. Experts in digital cultural heritage, research in the Social Sciences and Humanities, and participatory approaches in cultural and educational contexts shared successful stories of citizen participation in Cultural Heritage Institutions and Higher Education Institutions.

A digitization desk was set up during the event so that attendees could share family photos from their albums. A professional photographer digitised these photos on the spot, and the accompanying stories were collected and converted into appropriate metadata to accompany the digital objects. Photoconsortium compiled the collected records, which were then published in Europeana, the European digital library. A panel discussion supplemented the conference, and the day concluded with a preview visit to the Museo della Grafica's golf exhibition.

Figure 5: Pictures from Workshop 5 (source: https://www.citizenheritage.eu/multiplier-events/Pisa/)

Workshop 6: Citizen Science and engagement in Cultural Heritage

During the EUROMED 2022 conference in Cyprus, PhotoConsortium organised a key event on 8th November, 2022 (17.00 - 19.30 hrs), and focused on citizen science in digital cultural heritage and education. The conference was a hybrid event organised by the Cyprus University of Technology under the auspices of the Republic of Cyprus's Deputy Minister of Culture. An interactive session was held at the event to provide professionals with various tools for connecting local citizens and communities with their tangible and intangible heritage.

During the interactive session, participants in Cyprus and online had the opportunity to try out various tools. These tools included QANDR, a discussion platform accessible via personal smartphones, Europeana Gallery Builder, a curation tool for creating thematic galleries using

Europeana items, MuPoP, a tool for creating virtual exhibitions displayed on HDMI screens with user control via smartphones, and CrowdHeritage, which allowed participants to enrich metadata of heritage photography collections related to Cyprus's history, heritage, and communities through an online platform.

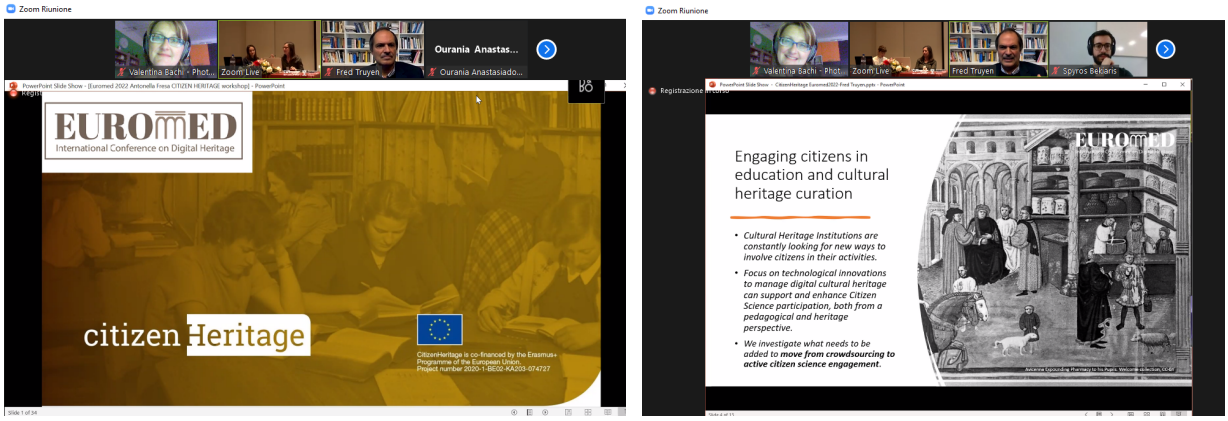

Figure 6: Pictures from Workshop 6 (source: https://www.citizenheritage.eu/citizen-science-workshops/cyprus/)

Workshop 7: Enriching Textile Heritage

On March 17, 2023, students from the University of Florence's Department of Design added new voices to Wikipedia about textile heritage using the collections and expertise of the Museo del Tessuto di Prato in this event organised in collaboration with the Italian Wikimedia Chapter and the Crafted project. This edit-a-thon added more than 30 new voices to Wikimedia Commons about textile heritage.

Figure 7: Picture from Workshop 7 (source: https://www.digitalmeetsculture.net/article/enriching-textile-heritage/)

Workshop 8: Fair Principles for Citizen Science (Multiplier Event)

On 19th of May, 2023 (9:30 - 12:00 hrs), KU Leuven organised a workshop, during which participants were introduced to the FAIR principles for Citizen Science, and they learned about the essential elements required to ensure that citizen contributions are integrated in line with scientific best practices and ethical standards.

The main focus of the workshop was to share experiences and engage in discussions about practical and achievable approaches to enhancing crowdsourcing activities in the heritage sector. The participants explored questions such as when and how citizens can contribute to the heritage guardianship process and how these contributions can be recognized and valued. Collaborative groups of participants worked on specific themes like recognition, authorship, and co-curation.

Figure 8: Picture from Workshop 8 (source: https://www.citizenheritage.eu/multiplier-events/multiplier-event-leuven-19-may-2023/)

Workshop 9: Flavours of the Globe - A Cultural Exploration through Food

The workshop organised by Erasmus University Rotterdam took place on 24th May 2023 (12:30 - 15:00 hrs) at the Erasmus Food Lab, and aimed to raise awareness of the profound connection between food and culture. Food was portrayed as more than just sustenance, but as a symbol of identity, tradition, and heritage. The workshop provided college students with an opportunity to explore and understand the rich diversity of food cultures globally and discuss the intricate connections between food, culture, and the formation of personal and collective identities.

The workshop specifically focused on the preparation of four bio-vegan dishes, highlighting the lab's commitment to plant-based culinary exploration, characteristic of four different parts of the world, representing cultural identity. Through this immersive culinary experience, participants were able to engage with the vibrant world of food, cultural heritage, and sustainable practices, fostering a deeper understanding of the intricate relationship between food and the societies it originates from. A report on the workshop can be found at the Digital Meets Culture blog post.

Figure 9: Pictures from Workshop 9 (source: Denise Martin and Trilce Navarrete)

Methodology

Incorporating the work from a MA student Valentina Snidaro at the Erasmus University Rotterdam, Cultural Economics and Entrepreneurship Program, we selected the University College London's Museum Wellbeing Measure Toolkit as the most effective option to assess the subjective well-being benefits related to participation in a cultural activity, online or onsite.

Participants were asked to fill in a survey before taking part of the activity and after completion of the activity. While the initial method design of the CitizenHeritage project involved 3 data collection moments, before the activity, immediately after the activity, and 2 months after the activity, the pandemic and overall changes in the project resulted in a pragmatic version of the experiment.

The survey follows the UCL Museum Wellbeing Measure Toolkit framework positive and negative Generic versions. We opted for the Generic option over the Young adult or the Older adult because we were unsure of the age of participants. In hindsight, the Young adult version may have been more engaging as most our respondents were 20 years of age, and the concepts used to describe feelings included Friendly, Interested, Lively, Motivated, Positive, and Talkative, instead of the pragmatic Active, Alert, Enthusiastic, Excited, Happy, and Inspired. The negative umbrella is the same for all groups and includes feeling Distressed, Irritable, Nervous, Scared, Unhappy, and Upset.

The original toolkit entails the so-called Well-being Measures Umbrella, consisting of two hexagonal paper shapes with six sections of different colours. We opted to transfer the questions into a GoogleForms format to facilitate responses and analysis. In hindsight, the colourful and tactile format may have inspired a greater number of responses, even if manual input onto a digital format may have taken longer. In fact, the survey was distributed as GoogleForms survey (38 responses), as Quandr survey (24 responses), and as paper survey (22 responses).

The survey was organised in two main parts: before the activity and after the activity. In the first part and after a general introduction of the activity, the survey contained a personal section where we included only the minimum necessary to place the respondent. A second section was composed of an initial set of generic well-being questions of six statements which refer to an

aspect of emotion or quality of life and to rate them out of five according to the extent they agree with them. For instance, participants read ‘in the last week, how much have you felt happy’ and rate this on a scale from 1 (not at all) to 5 (very much). Participants were then invited to take part in the activity.

A second part of the survey was meant to be filled upon completion of the activity and included a question on general satisfaction of the activity, followed by a second set of the same generic well-being questions and ending with a question of extent to which the activity had an emotional value to the participant. The survey continued into a section about the activity from a citizen science perspective and asked participants to state the extent to which they were informed about the goals of the project, their role in science making, their consent contribution, and their motivation to participate. A last section included participant’s perception on the ease of use of the platform, which was relevant only for the online activities.

Data was collated in a spreadsheet and cleaned before being analysed. Analysis focused on three main topics: (1) general demographics, including age, gender, employment and education, (2) the methodology to generate participant’s awareness of and commitment to the cultural activity, including questions related to perception of being part of science, and (3) the participants’ perception of their wellbeing.

All surveys included the section on self perceived well being, which were analysed jointly. Some surveys had a different version to ask participants about their awareness of and commitment to the cultural activity. These were analysed separately.

During the analysis phase, we identified gender as a singular topic of interest, which was further analysed in relation to the responses on feelings, motivation, and outcomes.

While the survey employed in this study proved effective and the questions yielded valuable insights, certain limitations should be acknowledged to enhance the reliability and scope of future surveys. The primary constraint lies in the relatively small sample size utilised in the current survey, which hinders the attainment of statistically significant and generalizable findings. Not all workshops delivered a survey, and of those who did, not all workshops requested the pre- and post- responses. To bolster the survey's robustness, future iterations should aim for larger and more diverse samples, encompassing a broader range of participants across various age groups. Notably, the present surveys predominantly featured young

participants, with only a few exceptions, potentially skewing the results and overlooking valuable perspectives from other age cohorts.

By incorporating greater diversity, these future surveys can offer a more comprehensive understanding of the subject matter, ensuring a more inclusive and representative exploration of the workshops' impact on a broader demographic spectrum. With these considerations in mind, the survey and its questions exhibit great promise for continued use and improvement, paving the way for even more insightful and encompassing research endeavours in the realm of cultural heritage workshops.

Nevertheless, the results from the survey, together with the framework provided by *O1 Citizen enhanced open science in cultural heritage* and the *O6 Benefits of taking part in CitizenHeritage: Systematic Literature Review* provided fruitful insights to feed our final proposal: a series of short videos to engage the younger generations in the core concepts and actions of **CitizenHeritage.** The videos were developed by a student in conversation with researchers engaged in the analysis of the systematic literature review.

One main limitation to our analysis turned out to be the missing question regarding the cultural participation profile of participants. Primarily, our capacity to comprehend and subsequently evaluate the potential influence of prior experiences and involvement with cultural activities on the emotional responses exhibited by participants within the context of our own cultural undertaking was hindered. Literature suggests that greater benefit in cultural activities can be gained by participants with greater experience. Future research may consider adding additional questions to capture cultural capital levels of participants.

Results

The results of the workshops and surveys seek to understand the profound effects that these immersive experiences have on both people and communities. As we dissect the results and insights from these surveys, we learn invaluable information about the effectiveness of cultural heritage workshops in protecting and celebrating our rich and diverse past.

General Demographics

The table below shows an overview of the general demographics from participants of the surveys conducted. The demographics include information about age, gender, education, and employment status.

Location	Sofia	Budapest	Antwerp	Pisa	Rotterdam
Average age	21	24	53	58	31
Gender	71% female And (1) non-binary	80% female And (1) non-binary	64% female	63% female	86% female
Education	Highschool: 12	Highschool: 1	Highschool: 2	Highschool: 4	Highschool: 0
	Bachelor: 3	Bachelor: 5	Bachelor: 6	Bachelor: 2	Bachelor: 2
	Master or PhD: 6	Master or PhD: 4	Master or PhD: 6	Master or PhD: 2	Master or PhD: 5
Employment Status	Student: 11	Student: 4	Student: 3	Student: NA	Student: 3
	Working: 8	Working: 5	Working: 9	Working: NA	Working: 3
	Looking for work: 1	Looking for work: 0	Looking for work: 0	Looking for work: 0	Looking for work: 1
	Doing what you love: 1	Doing what you love: 1	Doing what you love: 2	Doing what you love: 0	Doing what you love: 0

Table 2: General demographics of participants (source: elaboration of the authors).

Perceived well-being / feelings

The survey delved into the participants' perceived well-being and emotions, encompassing three distinct sets of questions. Initially, participants were queried about their feelings "in the last week," both before and after the workshop, gauging emotions such as happiness, engagement, a sense of safety and security, comfort, enjoyment of social interactions, and communication with others. Intriguingly, participants revealed that while they mostly enjoyed the company of

others and talked to others, feeling engaged emerged as the least prevalent emotion, presenting a curious contradiction.

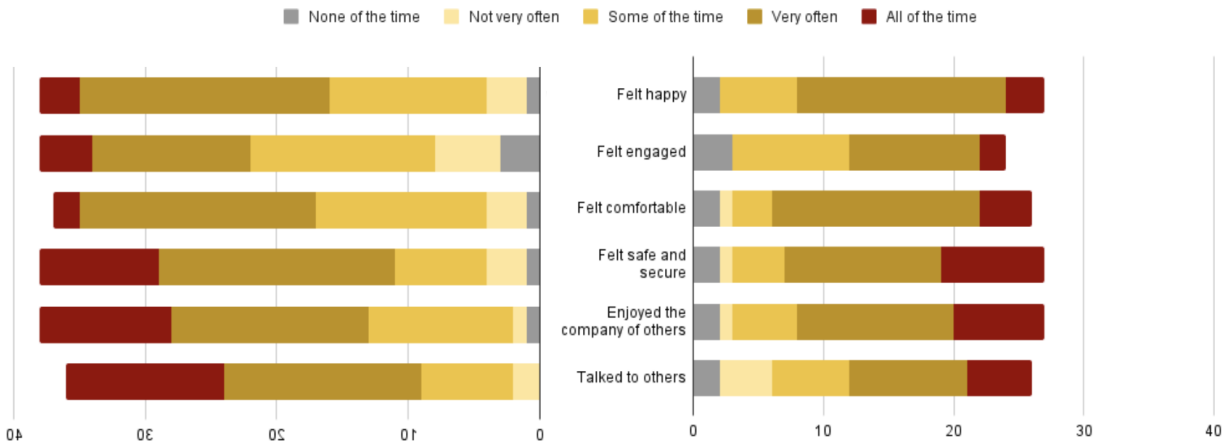

Figure 10: Responses to the question “In the last week, how much have you…?” from the pre-event (left side) and post-event (right side) surveys (source: elaboration of the authors).

Upon investigating the relationship between gender and emotional states, notable observations emerged. Specifically, an examination of participants indicating the absence of emotional experiences "none of the time" in both pre- and post-event survey contexts revealed a predominant representation of individuals identifying as non-binary and female. This trend was occasionally punctuated by a singular exception, wherein a male respondent exhibited contrary emotional response patterns.

On the other hand, in instances where participants conveyed perpetual emotional experiences denoted by responses of "all of the time" across both pre- and post-event survey administrations, the demographic affiliation predominantly comprised individuals self-identifying as either female or male.

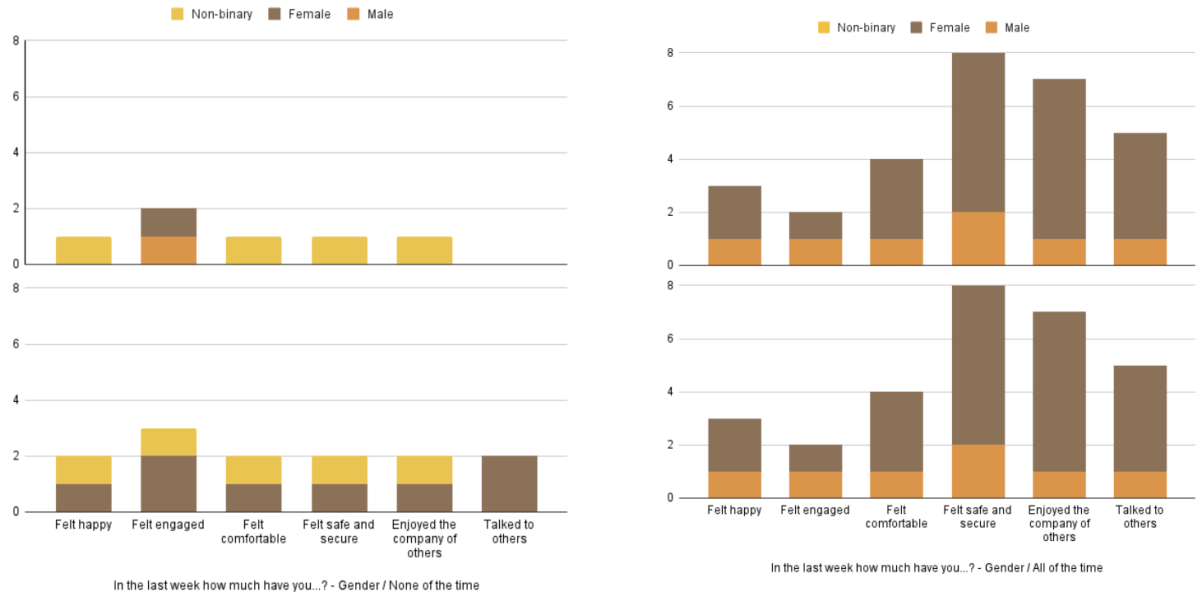

Figure 11: Gender of who responded “none of the time” (left side) and “all of the time” (right side) to the question “In the last week, how much have you…?” from the pre-event (up) and post-event (down) surveys (source: elaboration of the authors).

Additionally, participants were prompted to reflect on six "positive" feelings, including being active, alert, enthusiastic, excited, happy, and inspired, as well as six "negative" feelings, such as distress, irritability, nervousness, fear, unhappiness, and upset. Remarkably, the surveys indicated consistently high levels of positive emotions in both the pre- and post-event assessments. On the other hand, the negative feelings exhibited a simultaneous increase from the pre-event to post-event surveys (see Figure 10).

A tertiary survey was planned to be conducted one month after the workshops concluded, as specified in the survey's methodological framework. However, a confluence of multifaceted determinants prevented the execution of this intended follow-up. It is still noticeable that the precise extent of the workshops' influence on the manifestation of negative emotional states among participants has not been clarified. Unfortunately, it is impossible to determine the precise extent to which workshop participation significantly influenced how negative emotional states were perceived.

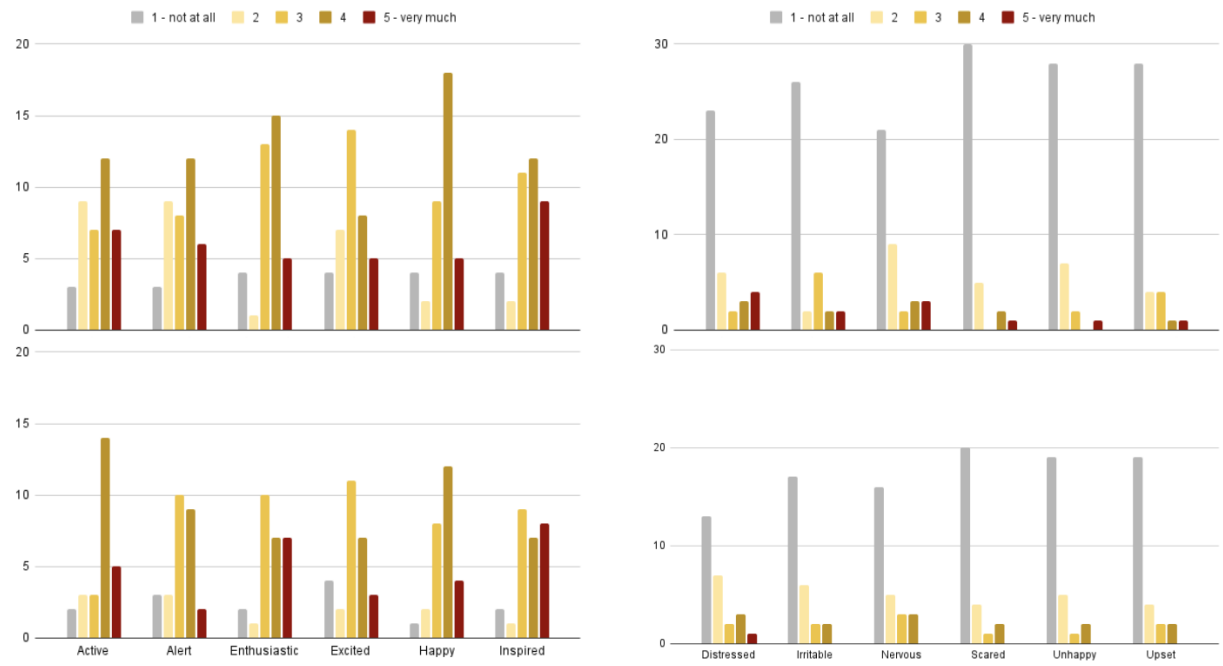

Figure 12: Results of the reflection on positive feelings (left side) and negative feelings (right side) from the pre-event (up) and post-event (down) surveys (source: elaboration of the authors).

Skills

The surveys conducted during the workshops placed significant emphasis on gauging the participants' perceived development of various essential skills. These skills encompassed a diverse range, including self-confidence, commitment, risk-taking propensity, innovativeness, ability to cooperate, opportunity realisation, problem-solving, tolerance for ambiguity, adaptability, team building, emotional intelligence, and mindset building. The results yielded intriguing insights, revealing that participants attributed the workshops' most significant impact to the cultivation of tolerance for ambiguity, mindset building, opportunity realisation, commitment, and risk-taking propensity. However, what emerged as particularly striking and thought-provoking were the findings related to self-confidence and emotional intelligence. Surprisingly, the workshops were not perceived as instrumental in fostering self-confidence, a result contradicting expectations derived from existing systematic literature reviews that often associate participatory activities with increased self-confidence and improved well-being. Equally fascinating was the revelation about emotional intelligence, with new research (Russo, 2023) suggesting that, particularly for the predominantly Gen Z age group that constituted the participants, this generation may not inherently possess the same aptitude for emotional

intelligence as previous generations. These unexpected outcomes open intriguing avenues for further exploration and underline the importance of comprehensive and nuanced research into the dynamics of skill development in diverse workshop settings.

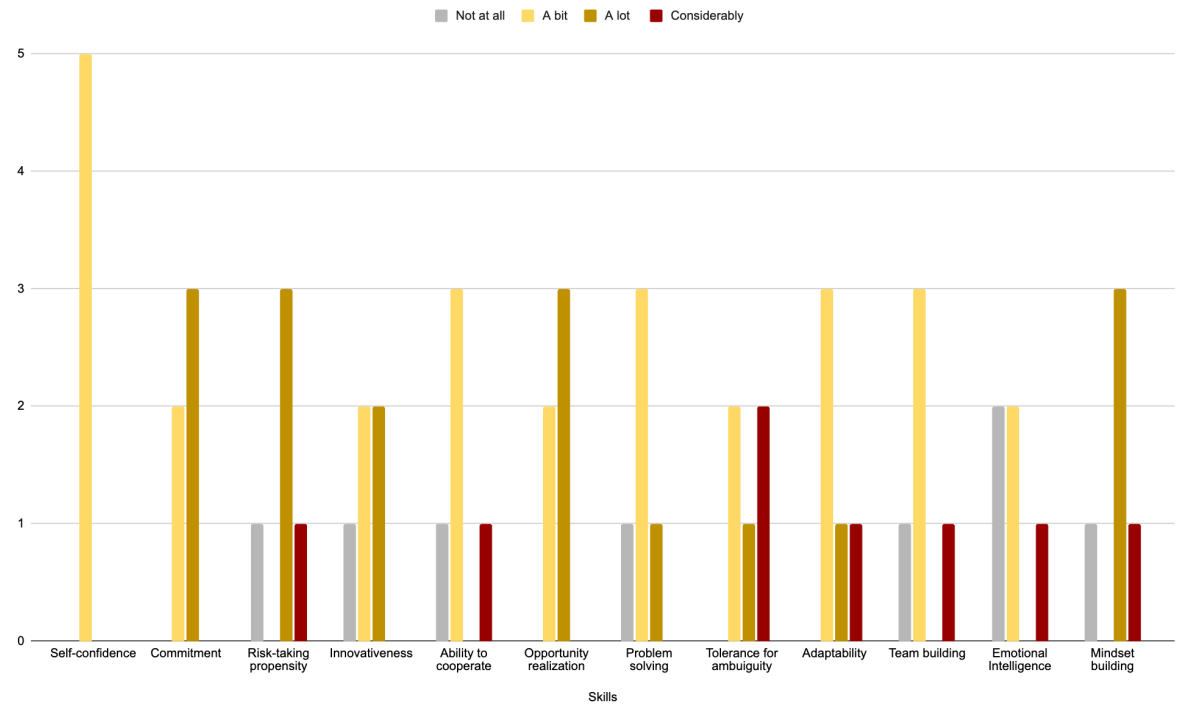

Figure 13: Answers to the question “Did you think this activity contributed to the development of the following skills…?” (source: elaboration of the authors).

Accountability

Ensuring accountability in the survey process was of utmost importance, and to achieve this, participants were presented with two distinct sets of questions. The first set was tailored to assess consent, covering vital aspects such as participation in the activity, the use and sharing of their contributions, the quoting of their statements, and the making of recordings or photographs. The second set of questions focused on the information provided to participants, encompassing the research's overarching goal, their role in relation to the research, expectations from them, how they could contribute, the utilisation of their contributions, and their privacy rights.

Even though the majority of participants agree that they were asked for consent and were informed appropriately, the two charts below show an alarming trend regarding consent and the

information provided to participants, in which participants claim they were either never informed or asked for consent, or that the information was not sufficient or clear.

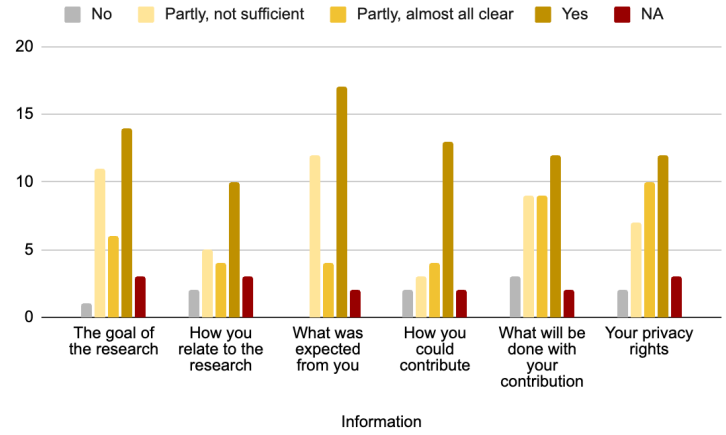

Figure 14: Answers to the question “Were you informed about…?” (source: elaboration of the authors).

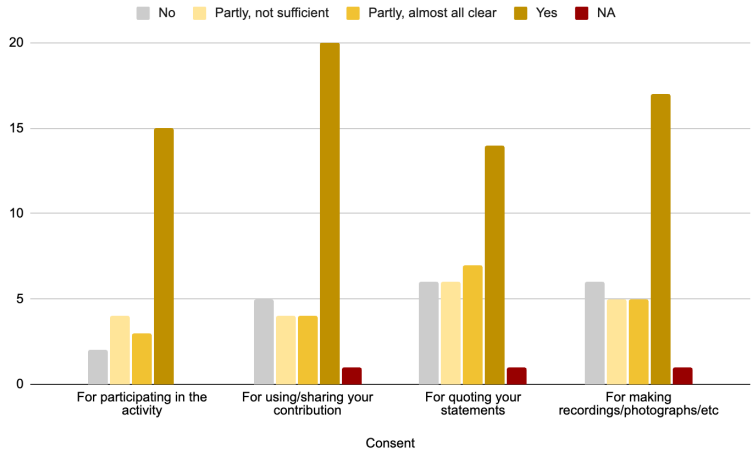

Figure 15: Answers to the question “Were you asked consent…?” (source: elaboration of the authors).

Motivation

In order to explore the participant’s motivations to be involved in the different workshops, we provided a couple of statements: science should be accessible to all, heritage collections should be open to all, science about people and their history should involve citizens, citizens have knowledge not found in libraries, sharing experiences brings heritage to life, and good data quality requires much work; with the main question being: “what is your motivation to participate?”. The predominant motivation that emerged was the shared belief in the

accessibility of science and heritage collections to all. However, equally notable was the absence of other motivations, such as the recognition of citizens' unique knowledge and the significance of sharing experiences to invigorate cultural heritage. This finding is particularly interesting as prior research has underscored the vital role of relationships and social connections in cultural heritage participation, highlighting the potential wealth of knowledge that can be derived from personal connections and experiences.

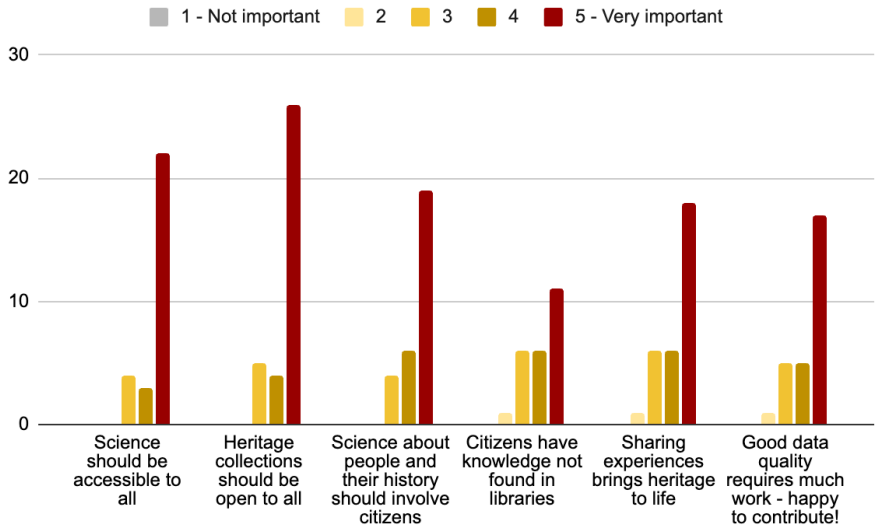

Figure 16: Answers to the question “What is your motivation to participate?” (source: elaboration of the authors).

Furthermore, participants who indicated that motivation held limited significance universally were predominantly of the female gender. Their stance aligned with specific assertions: firstly, that citizens possess knowledge beyond that housed within libraries; secondly, that the act of sharing experiences imparts vitality to cultural heritage; and lastly, that the attainment of high-quality data demands a substantial investment of effort.

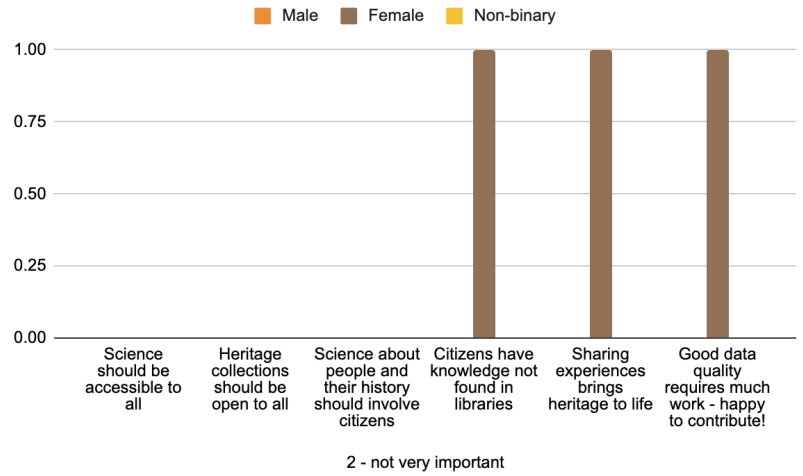

Figure 17: Gender of who responded “not very important” to the question “What is your motivation to participate?” (source: elaboration of the authors).

Conversely, when considering instances where respondents attributed paramount importance to motivation, the majority again consisted of female participants. However, a minor subset of male and non-binary respondents exhibited exceptions to this trend.

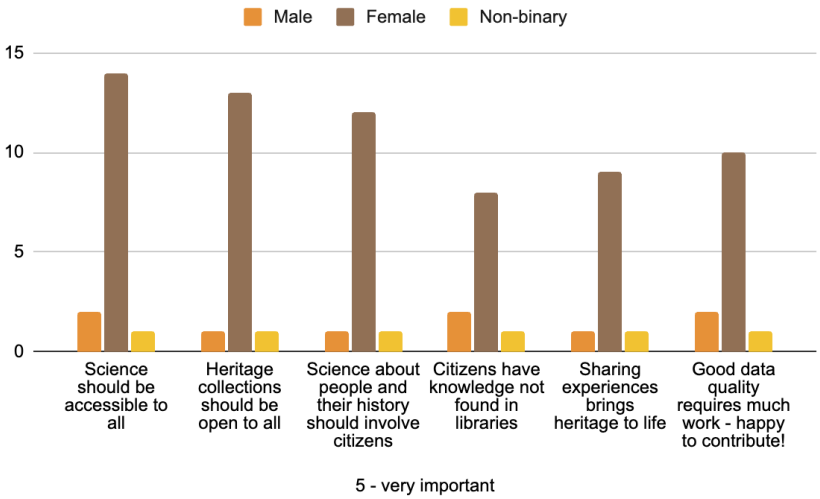

Figure 18: Gender of who responded “very important” to the question “What is your motivation to participate?” (source: elaboration of the authors).

Outcomes

The surveys concluded by seeking participants' insights on three crucial aspects concerning the impact of the workshops on their engagement and perception. Firstly, participants were asked

about the workshops' influence on strengthening their connection and interest with the research. Secondly, they were prompted to reflect on whether their participation in the workshops felt like a form of recognition for their involvement. Lastly, the surveys inquired about any changes in their level of trust in science resulting from the workshop experience. The collective responses unveiled a resounding consensus among participants, with the majority attesting to the workshops' remarkable ability to enhance their connection and interest with the research.

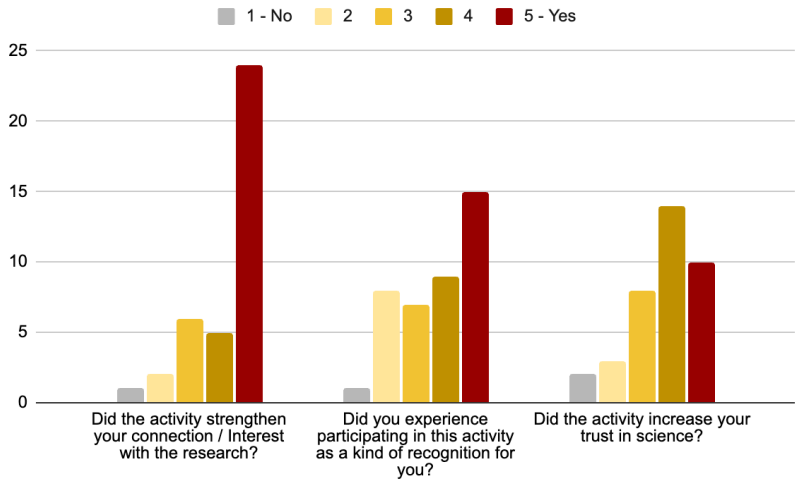

Figure 19: Answers to the questions related to the outcomes of participation (source: elaboration of the authors).

Nevertheless, a subset of respondents expressed dissenting viewpoints. Upon scrutinising the demographic of respondents who negated agreement with the aforementioned statements, a noteworthy observation emerged: all of these respondents identified as female.

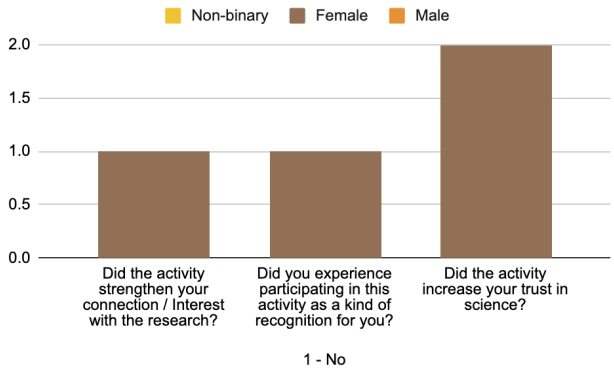

Figure 20: Gender of who responded “no” to the questions “Did the activity strengthen your connection / interest with research; did you experience participating in this activity as a recognition; and did the activity increase your trust in science?” (source: elaboration of the authors).

Strikingly, a corollary analysis of participants who emphatically endorsed these sentiments, signifying a response of "yes" (5), unveiled a curious trend; predominantly, these proponents were also female, save for two male outliers.

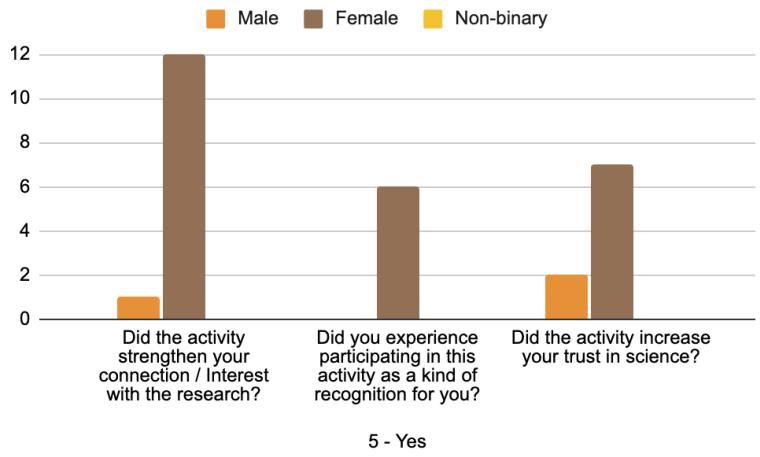

Figure 21: Gender of who responded “yes” to the question “Did the activity strengthen your connection / interest with research; did you experience participating in this activity as a recognition; and did the activity increase your trust in science?” (source: elaboration of the authors).

Moreover, in the context of participant inquiries regarding their perspectives concerning engagement in one of the workshops (workshop #5), a substantial majority of respondents (83%) expressed a firm conviction regarding the significance of their involvement in scientific endeavours and the attendant recognition thereof. Nevertheless, a segment of respondents evinced a measure of apprehension concerning matters of privacy (17%).

Protect my privacy and identity *Acknowledge my participation*

1	2	3	4	5
0	1	3	0	2

Table 3: Responses for: “In the possible re-use of your photos in the scientific or educational field, what is important to you? (scale from 1 to 5)” (source: elaboration of authors).

In addition, participants were also asked about their perceptions of engagement in workshop #3. When asked “do you feel recognized, endorsed, valued having been asked to take part in this activity?”,the majority of participants (69%), responded yes, while some (31%), did not believe their contribution was significant.

Yes				*I don't think so*
1	**2**	**3**	**4**	**5**
9	0	0	0	4

Table 4: Responses for: "Do you feel recognized/endorsed/valued having been asked to take part in this activity?" (source: elaboration of authors).

Workshop #5 had an older age cohort, whereas Workshop #3 had a younger age cohort. It is worth noting in this context that the younger cohort believed their participation had little substantive significance. Notably, a plausible inference emerges in which the youth of certain participants can be attributed to their tendency to regard their contribution as insignificant in the context of scientific endeavours. This hypothesis merits further investigation in future studies and substantiates the rationale underlying our proposal of using videos to foster an ethos that encourages new generations to participate in scientific discourse and to believe that their contributions, regardless of size, have inherent value and relevance.

In light of the aforementioned, we advocate for prospective surveys to adopt a focal point directed at probing how participants subjectively construe their own participation experiences. Such an inquiry into participants' perceptions stands to yield nuanced insights that could enhance the comprehension of the dynamics that govern their engagement and contributions within the scientific domain.

A Way Forward

To the question of what are the benefits of taking part in **CitizenHeritage** we can argue that methods to capture impact are far from perfect. The systematic literature review provided great insights into the limitations of available secondary data to understand the extent to which participants reflect on their engagement, as well as the insularity of the evidence based on primary data. Awareness of the process of being part of a cultural practice is as important as awareness and commitment to contribute to science. The role of HEIs can be instrumental in enabling commitment anchors to enable longer engagement, by having **CitizenHeritage** activities built in the curriculum.

The engagement of students at Erasmus University Rotterdam proved successful in that we could observe closely the effects of taking part in a cultural activity which contributed to science. Students' participation was housed within the Erasmus Food Lab, which has adopted the cultural elements related to food making and their influence on identity formation, social interactions, and overall learning process. Plans are underway to develop a course on the culture of food making. We consider the workshop a great success.

> We engage the young generation in doing CitizenHeritage through co-creating food making, interacting with their family or friends, shaping their cultural identity, and gaining full awareness of their culture making.

CitizenHeritage through videos

Videos are an invaluable tool for communicating scientific findings to youth because they provide an engaging and accessible platform for capturing their attention and fostering a sense of curiosity. "Citizen Heritage 101" is a mini-series that uses videos to introduce and explore the intersection of citizen science and cultural heritage, with each episode serving a specific purpose.

In Episode 1, "Introduction to Citizen Heritage," viewers are given a concise overview of the project's goals, setting the stage for the captivating journey ahead.

Episode 2 delves into Deliverable 6 and the O6 report: Benefits of Taking part in CitizenHeritage. This segment provides an introduction into the six deliverables from the project, with a particular spotlight on the sixth deliverable and its associated O6 report. This episode walks through the chosen methodology, a systematic literature review, showcasing the meticulous steps taken to prepare and execute this review.

Episode 3 ushers in the “Methodological Mosaic”. Within this episode, an expansive panorama of methodologies employed by researchers in the literature review is unveiled. The discussion navigates the nuances of quantitative research, highlighting its limitations, and segues into an exploration of qualitative research and its associated shortcomings. The episode culminates by advocating for a future research landscape in cultural studies that blends quantitative and qualitative approaches to yield more enriching outcomes.

Episode 4 shifts the spotlight to cultural participation. Using captivating visual aids and graphics, this episode serves as an illuminating guide to understanding the multifaceted concept of cultural participation.

Episode 5 navigates the troves of the literature review to present a compendium of discovered benefits and impacts of cultural participation. This exploration is meticulously segmented into three key spheres: subjective well-being, health-related outcomes, and various other factors. The positive correlations between these areas and cultural participation are thoughtfully expounded upon.

Finally, Episode 6 shifts to the Citizen Heritage Workshops. The narrative zeroes in on one specific workshop - the cooking workshop. The episode immerses viewers in the intricacies of this workshop, illuminating its essence and its interplay with cultural participation and its attendant benefits. As the episode draws to a close, an invitation is extended, encouraging viewers to partake in a do-it-yourself activity, like preparing a recipe and sharing it online. This final flourish reinforces the significance of collective engagement in safeguarding and commemorating cultural heritage.

Through these videos, the Citizen Heritage project not only educates and informs, but also inspires a new generation to value and contribute to the preservation of our shared cultural heritage.

Bibliography

Citizen Science and engagement in Cultural Heritage. (n.d.). https://www.citizenheritage.eu/citizen-science-workshops/cyprus/

Facts & fiction: Hungary in black-and-white photographs. (n.d.). https://www.citizenheritage.eu/citizen-science-workshops/budapest/

History in pictures from Bulgaria. (n.d.). https://www.citizenheritage.eu/citizen-science-workshops/sofia/

Mapping Fashion Heritage through Patterns. (n.d.). https://www.citizenheritage.eu/citizen-science-workshops/antwerp/

Morea, V., Martin, D., Navarrete, T. (2023) Benefits of taking part in CitizenHeritage: Systematic Literature Review. O6 Deliverable CitizenHeritage project. Erasmus University Rotterdam.

Multiplier event: Leuven, 19 May 2023. (n.d.). https://www.citizenheritage.eu/multiplier-events/multiplier-event-leuven-19-may-2023/

Multiplier event: Pisa, 28 June 2022. (n.d.). https://www.citizenheritage.eu/multiplier-events/Pisa/

Russo, S. (2023). Digital Museums and Cultural Participation of Generation Z, Università di Catania.

Zourou, K. & Ziku, M. (2022). Citizen Enhanced Open Science in Cultural Heritage - Review and analysis of practices in Higher Education. Accessible at https://www.citizenheritage.eu.

List of Tables and Figures

Tables

Figures

Appendix 1. List of contributors

Workshop participants (to ensure anonymity, participants were asked to provide either their first name or their initials):

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L	K.J.	R
N.L.	Reka	T.S.Z.R.
Husek	T.I.	M.N.
T.P.	T.N.	V.V.V.
T.P.	R.A.	R.D.
E.P.	D.S.	K.M. - G
K.Y.	Lidiq	F.G.
K.S.	S.B.M.	T.A.
M.M.	F.J.A.D.T.	C.M.
F.M.O.	K	V.M.
B.M.C.	C.R.J.	N.V.