

AUTHORS

MARIA CASSELLA

ELENA GIGLIA

Assessment report on
CeOS activities at
partner institutions

PR3A2

Citizen-enhanced Open Science

Southeastern Europe



Erasmus+

Overview	
Document title	Assessment report on CeOS activities at partner institutions
Dissemination Level	Public
Date of completion	
Type	
Version	
Number of Pages	

The information in this document reflects only the author's views and the European Community is not liable for any use that may be made of the information contained therein. The information in this document is provided "as is" without guarantee or warranty of any kind, express or implied, including but not limited to the fitness of the information for a particular purpose. The user thereof uses the information at his/ her sole risk and liability. This deliverable is licensed under a Creative Commons Attribution 4.0 International License.



Deliverable Factsheet	
Project number	KA220-HED-15D886A6
Project acronym	CeOS_SE
Project title	Citizen-enhanced Open Science in Southeastern Europe Higher Education knowledge hubs
Document title	Assessment report on CeOS activities at partner institutions
Output	PR3A2
Editor(s)	-
Contributor(s)	All project partners
Reviewer(s)	Alisa Martek, Dolores Mumelaš (NSK)
Approved by	All project partners
Abstract	Report of the Train the Trainers courses and Citizen Science activities carried out by CeOS_SE partners from July 2022 to November 2022 in European SE countries. Data were driven from 3 questionnaires for participants and from organisers' lessons learned.
Keyword list	Open Science; Citizen Science; academic libraries, research libraries; public engagement
Copyright	CC BY 4.0

The information in this document reflects only the author's views and the European Community is not liable for any use that may be made of the information contained therein. The information in this document is provided "as is" without guarantee or warranty of any kind, express or implied, including but not limited to the fitness of the information for a particular purpose. The user thereof uses the information at his/ her sole risk and liability. This deliverable is licensed under a Creative Commons Attribution 4.0 International License.



CONSORTIUM		
Organisation	Country	Author
Stichting LIBER	The Netherlands	Project Coordinator
Syddansk Universitet	Denmark	Partner
Universita Defli Studi Di Torino	Italy	Partner
Panepistimio Patron	Greece	Partner
University of Cyprus	Cyprus	Partner
Univerzitetska Biblioteka Svetozar Markovic	Serbia	Partner
Nacionalna I Sveucilisna Knjiznica U Zagrebu	Croatia	Partner
Universitet Po Bibliotekoznanie Informacionni Tehnologii	Bulgaria	Partner

DOCUMENT HISTORY			
Version	Date	Description	Author
0.0	5/12/2022	Structure and first information	Maria Cassella
0.1	6/12/2022	New structure and first revision of the content	Elena Giglia
0.2	10/01/2023	Text drafting	Maria Cassella
0.3	17/01/2023	General structure and text revision	Elena Giglia
0.4	29.01.2023	Text drafting	Maria Cassella
1	22/02/2023	Final revision	Elena Giglia
1.1	24/04/2023	Final version	Maria Cassella

List of tables	7
List of Figures	8
List of Acronyms	10
Executive summary	11
Setting the scene	11
Methodology	11
Scope and results	12
Impact	13
Collaborations	14
Challenges	15
Conclusions and main findings	15
1. Introduction	16
2. Scope and audience	19
3. Methodology and data	20
3.1 Methodology. Train the Trainers	20
3.2 Methodology. Learning by doing	22
3.3 Data	23
4. Report of the activities	24
4.1 UT - Training the partners	27
4.1.1 Training the partners on Citizen Science	28
Overview and Description	29
4.1.2 Training the partners on Open Science	30
Overview and Description	31
4.2 Train the Trainers activities	33
4.2.1 Train the Trainers - UT	34
Overview and Description	35
Overview and Description	37
Overview and Description	39
4.2.2 Train the trainers - UP	42
Overview and Description	43
4.2.3 Train the Trainers - UCY	45
Overview and Description	46
4.2.4. Train the Trainers - UniLIB	47
Overview and Description	48
4.2.5 Train the Trainers. NSK	51

Overview and Description	52
4.2.6 Train the Trainers - UniBIT	56
Overview and Description	57
4.2.7 Train the Trainers - SDU	60
Overview and description	61
4.3 Learning by doing activities	62
4.3.1 Learning by doing - UT	62
Overview and Description	63
Overview and Description	67
4.3.2 Learning by doing - UP	68
Overview and Description	69
4.3.3 Learning by doing - UCY	70
Overview and Description	72
4.3.4 Learning by doing - UniLIB	75
Overview and Description	76
4.3.5 Learning by doing - NSK	77
Overview and Description	78
4.3.6 Learning by doing - UniBIT	82
Overview and Description	83
4.3.7 Learning by doing - SDU	86
Overview and Description	86
5. Analysis of the questionnaires	87
5.1 The Train the Trainers questionnaires	87
5.1.1 The <i>ex-ante</i> questionnaire results	88
5.1.2 Analysis of the <i>ex-ante</i> questionnaire results	93
5.1.2.1 The Attitude dimension	93
5.1.2.2 The Learning dimension	95
5.1.3 <i>Ex-post</i> questionnaire results	97
5.1.4 Analysis of the <i>ex-post</i> questionnaire results	104
5.1.4.1 The Learning dimension	104
5.1.4.2 The Impact dimension	109
5.1.4.3 The Satisfaction dimension	109
5.1.4.4 The vision dimension	110
5.2 The Learning by doing questionnaire	116
5.2.2 Analysis of the Learning by doing questionnaire's results	118
5.2.2.1 The Attitude dimension	123

5.2.2.2 The Learning dimension	126
5.2.2.3 The Satisfaction dimension	127
5.2.2.4 The Vision dimension	131
6. Lessons learned from partners	132
6.1. SDU Library events' outcomes and challenges	134
6.2 UT events' outcomes and challenges	135
6.3 UP Library events outcomes and challenges	136
6.4 UCY events outcomes and challenges	137
6.5 UNILIB events' outcomes and challenges	138
6.6 NSK events' outcomes and challenges	138
6.7 UniBIT events' achievements and challenges	139
7. Conclusions	141
Impact	141
Collaborations	142
Challenges	143
Conclusions and main findings	143
References	145

List of tables

Table 1 - Train the Trainers activities carried out by CeOS partners	24
Table 2 - Learning by doing activities carried out by CeOS partners	26
Table 3 - Ex-ante questionnaire results	90
Table 4 - Ex-post questionnaire results	98
Table 5 - Ex-post questionnaire. Selection of answers to question n. 6	106
Table 6 - Ex-post questionnaire. Selection of answers to question n. 12	111
Table 7 - Ex-post questionnaire. Selection of answers to question n. 14	113
Table 8 - Learning by doing questionnaire's results	118
Table 9 - Learning by doing questionnaire. Selection of answers to question number 7	125
Table 10 - Learning by doing questionnaire. Selection of answers to question number 9	128
Table 11 - Learning by doing questionnaire. Selection of answers to question number 14	131
Table 12 - List of the events by CeOS_SE partners	132

List of Figures

Figure 1 - Different levels of CS (from Andrea Sforzi's presentation, UT workshop, 7 June 2022)	16
Figure 2 - ORION co-creation menu	23
Figure 3 - Elena Giglia's training activity at LTTA in Zagreb, Croatia, 21 September 2022	33
Figure 4	40
Figure 5	41
Figure 6 - Elena Giglia's training activity on OS for UT Library Staff and HE Research Staff, Turin, Italy 24 November 2022	41
Figure 7 - UP Train the Trainers activity at 28th Panhellenic Academic Library Conference, in Corfu, 19 October 2022	45
Figure 8 - Participants at the online UCY Train the Trainers event show the results of the interactive activity, 25 October, 2022	47
Figure 9	49
Figure 10 - Participants at UNILIB Train the Trainers activity, Belgrade, Serbia, 17 November 2022	50
Figure 11 - Nataša Dakić presenting at UNILIB Train the Trainers activity, Belgrade, Serbia, 17 November 2022	50
Figure 12 - Participants at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022	54
Figure 13 - Alisa Martek and Goran Zloti presenting at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022	54
Figure 14 - Interactive work of groups of participants at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022	55
Figure 15 - Interactive work of groups of participants at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022	56
Figure 16 - UniBIT Train the Trainers activity, Sofia, Bulgaria, 30 November 2022	59
Figure 17 - Tereza Trencheva and Svetoslava Dimitrova presenting at the National Library "St. St. Cyril and Methodius" during the Train the Trainers activity, Sofia, Bulgaria, 30 November 2022	60
Figure 18 - WikiDonne APS project's page administrator showing the results of the all-day long editathon carried out in presence and online in Turin, Italy, 4 November 2022	64
Figure 19 - Camelia Boban, Elena Giglia and some of the participants at UT editathon event, Turin, Italy, 4 November 2022	65
Figure 20 - Camelia Boban presenting Wikipedia's edit page structure during editathon, Turin, Italy, 4 November 2022	65
Figure 21 - Elena Giglia presenting CeOS_SE project at UT internal workshop, Turin, Italy, 8 November 2022	67
Figure 22 - Participants at UT internal workshop, Turin, Italy, 8 November 2022	68
Figure 23- Interactive work of participants at UP Learning by doing activity, Patras, Greece, 25 November 2022	70
Figure 24 - Georgios Artopoulos presenting at the interactive workshop in Strovolos, Cyprus, 15 November 2022	74
Figure 25 - Sylvia Koukounidou and Georgios Artopoulos presenting at the interactive workshop in Strovolos, Cyprus, 15 November 2022	75
Figure 26	80

Figure 27 - Students of the University of Zagreb listening to Prof. Iva Žurić Jakovina (University of Rijeka) and collecting data during the NSK Learning by doing activity, Zagreb, 16 November 2022	81
Figure 28 - Svetoslava Dimitrova presenting at the Open Knowledge Cafè, University of Library Studies and Information Technologies, Sofia, 28 July 2022	84
Figure 29 - Open Knowledge Cafè participants at the University of Library Studies and Information Technologies, Sofia, 28 July 2022	85
Figure 30 - Tereza Trencheva and all participants at the Open Knowledge Cafè of the University of Library Studies and Information Technologies, Sofia, 28 July 2022	85

List of Acronyms

EOSC	European Open Science Cloud
FAIR	Open data principles Findable. Accessible. Interoperable. Reusable.
CS	Citizen Science
CSA	Citizen Science Activity
OS	Open Science
SE	South - Eastern
GDPR	General Data Protection Regulation

The information in this document reflects only the author's views and the European Community is not liable for any use that may be made of the information contained therein. The information in this document is provided "as is" without guarantee or warranty of any kind, express or implied, including but not limited to the fitness of the information for a particular purpose. The user thereof uses the information at his/ her sole risk and liability. This deliverable is licensed under a Creative Commons Attribution 4.0 International License.



Executive summary

Setting the scene

Libraries in Europe, especially those in Northern Europe, have realised recently that they can play a significant role in promoting and advancing citizen science and citizen science activities (CSA). Libraries bring people together and serve as centres for cooperation, communication, and inclusivity. Like public libraries and other types of libraries, research libraries have the potential to build cultural networks that unite the academic and non-academic communities. They can serve as a link between the academic world and the rest of society.

By carrying out CSA, research libraries expand their audiences as well as their network of internal and external partners.

In relationships with public libraries and other stakeholders (such as Public Engagement Offices, Open Science Offices, Municipalities, museums, and so forth) academic research libraries have demonstrated to be excellent in participating in CS marketing activities, in promoting a positive attitude towards citizen science, and, last but not least, in organising events to support citizen science in different ways.

To plan and develop CSA, library staff should develop knowledge, skills, and competencies in different domains (see Introduction).

Methodology

This report is the result of the LIBERs international Erasmus+ project Citizen-enhanced Open Science in Southeastern Europe Higher Education knowledge hubs, and it is one of the deliverables of the PR3 package led by University of Turin (UT).

The PR3 takes a two-pronged approach and focuses on training activities and learning by doing activities. CeOS makes an effort to upskill additional trainers/multipliers to assist researchers, administrative personnel, public libraries, and citizens in CS projects and CSA by employing a Train-the-Trainer methodology.

Training activities are supported by events carried out using a Learning by doing approach to engage the public into real co-creation activities for a social purpose and in an open science approach.

To align perspectives and basic knowledge, UT carried out in July 2022 a CS training course and in September an OS one for all partners.

Later on, in October and November 2022 all CeOS_SE partners carried out 10 CS training local events and 8 Learning by doing activities.

Types of activities selected were selected among a list of given possibilities: Co-creation (in collaboration with other educational institutions) of a Toolkit on CeOS – Open Knowledge Café - Datathon - Hackathon - Transcribathon, etc.

Scope and results

The scope of this report is to provide an assessment of the PR3A1 CeOS activities in partner institutions in terms of improvements (or unrealised potential) in professional skills of library staff.

The analysis is supported by:

- the answers to 2 questionnaires, *ex ante* and *ex post*, completed by attendees at the training courses, with library staff serving as the primary target group;
- the answers to a third questionnaire completed by participants in the CSA: students, citizens, HE academic staff, teaching, and administrative;
- the lessons learned gathered from CeOS_Se partners.

Globally, the CEOS_SE project partners (UT, UP, UCY, UNILIB, NSK, UniBIT, and SDU)¹ organised from July to November 2022 20 among Train the Trainers activities (12, including 2 UT training events directed to CeOS_SE partners) and Learning by doing events (8). All PR3 activities carried out by CeOS_SE partners were successful.

A total of 408 stakeholders, including academic librarians, librarians from national libraries, public librarians, researchers, university students, citizens and some other CS

¹ LIBER, in collaboration with SDU, is responsible for a knowledge transfer of the results from the training activities and CSA. LIBER and UP, UNILIB and NSK reported on the results and lessons learned from PR3A1-2 to LIBER research libraries members and specifically the LIBER Working groups (including the LIBER Citizen Science Working Group) during the new LIBER Winter event on 1-2 December 2022 in the Lightning talk and workshop section.

stakeholders (1 policy maker, 1 teacher, 1 student), participated in 18 events organised by CeOS SE partners for institutional and external stakeholders.

There were 348 participants in presence and 60 online. Both the number of events and the number of participants exceeded the parameters set by the CeOS project, in particular the PR1 CeOS_SE quality assurance indicators set for PR3 events (at least 20 participants per event).

In qualitative terms, all CeOS_SE courses were aligned to the PR3 *Training Design and Implementation Framework* and were successful in terms of participant satisfaction and in terms of usefulness, impact on daily activities, generation of innovative ideas and future projects.

Impact

A positive impact of all training and CSA activities carried out by the CeOS partners can be expected for both organisers and participants.

As far as organisers are concerned, the European SE CeOS partners developed a structured technique for training librarians on OS and CS topics and for planning CSA.

A more organised training activity was successfully introduced by three partners (UT, NSK and UNILIB):

1. UT set a roadmap to develop together with UT public engagement office CSA and CS events in Turin. The first CS activity will be held on 11 May 2023 at the Campus Luigi Einaudi, in Turin under the premises of the Norberto Bobbio Library. The event will bring together researchers involved in CS projects and will be addressed to a target audience of schools from Turin Municipality.
2. NSK accredited the webinar *Citizen Science in libraries* for all types of libraries of the Republic of Croatia as a part of the Training Center for Continuing Education of Librarians in the Republic of Croatia (CSSU). The first webinar module was carried out on 28 February 2023. The course was attended by 140 library specialists.² The second webinar module was held on 3 March and gathered 80 librarians.

² More information about training course can be found here (in Croatian): <http://cssu.nsk.hr/tecajevi/gradanska-znanost-u-knjiznicama/>

3. UNILIB also succeeded in nationally accrediting a new CS training course in Serbia for librarians. The course was held on 8 March in Novi Sad and gathered around 200 participants including public, school, and academic librarians.

Collaborations

Both Train the Trainers and Learning by doing activities attracted the interest of various stakeholders and gave all CeOS members the opportunity to improve their connections, both internally and externally:

- To organise the Learning by doing activity, UP collaborated with the CSI-COP project,
- NSK collaborated with the University of Zagreb and organisations already conducting CS projects in Croatia,
- The UT training for partners was realised in cooperation with Alessia Smaniotto, Project Manager of COESO, and Andrea Sforzi, now President of the newly founded Italian Citizen Science Association,
- UCY strengthened its partnership with the Municipality of Strovolos and Web2Learn;
- UniBIT strengthened its partnership with the Bulgarian National Library 'Sv. Cyril and Methodius' and with the public libraries in Sofia,
- UNILIB consolidated its position in Serbia among the various library communities and strengthened its collaboration with some Serbian researchers interested in CS,
- the SDU library consolidated its role among SDU researchers as a valuable partner in CS projects.

Given the above-mentioned premises, the CeOS partners can now claim a recognised role in the promotion of CS in their respective countries.

As for the participants, the librarians and administrative staff who took part in the CeOS training activities became aware of the importance of their role in the dissemination of CS and to acquire an active role as trainers. University students and other stakeholders became aware of what CS is and why it is important for society and science.

Challenges

- Nevertheless, by carrying out Train the Trainers and Learning by doing activities CEOS_SE partners faced some challenges:
- it was difficult to gather participants, especially citizens, to be actively involved. This is one of the most recurring challenges in CS activities and has been a shared problem among the partners, with the exception of SDU. It is hoped that the increased level of collaboration between the CeOS partners and their stakeholders and the experience gained in organising 18 events will lead the library partners from the SEE countries to find solutions to solve this problem.
- Lack of library staff is a second challenge among the Eastern European partners; if not solved in the coming years, this problem might negatively affect the future development of OS and CS activities in the Eastern European country libraries.

Conclusions and main findings

From the assessment of the PR3A2 events we can draw the following conclusions:

- Librarians like to be trained on innovative topics such as OS and CS; they are curious and proactive;
- Librarians in SE European countries are aware of the importance of CS for their libraries and society;
- Librarians from SE European countries feel they have a role in promoting SO and CS in their respective countries;
- Librarians from SE European countries are aware of the need to update themselves in the field of SO and CS, in particular
- Libraries in SE European countries need adequate staff and funding to prioritise OS and CS courses in their agenda;
- In order to realise successful training, libraries should try to identify relevant case studies;
- In order to realise a successful CSA, libraries should:
 - try to involve different stakeholders;
 - balance training activities to different target groups;
- Gathering an interested audience for the CSA is a challenge;

- Communication plays a crucial role in the realisation of successful training events and CSAs. Librarians also need to improve their communication skills.

1. Introduction

Citizen Science (CS) is an umbrella term that refers to science created by experts with the participation of non-experts (citizens, students, professionals and so on).

A broad definition of CS is “the engagement of volunteers and scientists in collaborative research activities to create new knowledge based on scientific evidence³” (Andrea Sforzi).

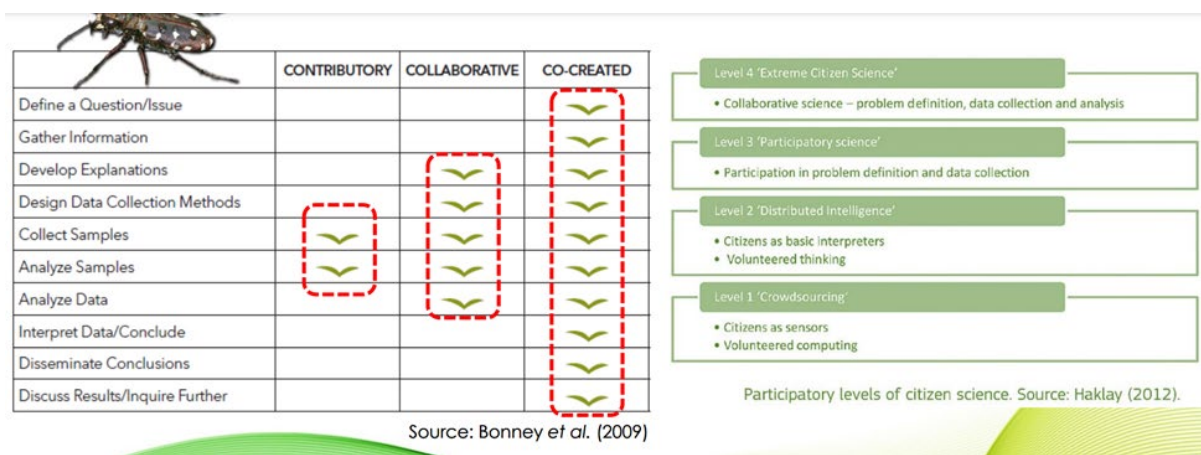


Figure 1 - Different levels of CS (from Andrea Sforzi's presentation, UT workshop, 7 June 2022)

Muki Haklay⁴ identifies four level of citizen engagement in science:

1. data collection: volunteers are like sensors that gather data and make them available through laptops, smartphones and other devices. This level does not necessarily require expert supervision.
2. distributed intelligence: volunteers are basic interpreters; they should have basic knowledge of the project domain;

³ The definition of *Citizen Science* is translated from Italian language and can be found on the Museo Naturale della Maremma homepage, <https://www.museonaturalemaremma.it/citizen-science/>

⁴ Muki Haklay, *Participatory citizen science*, in Susanne Hecker, Muki Haklay, Anne Bowser, Zen Makuch, Johannes Vogel, Aletta Bonn, *Citizen science: innovation in Open science, society and policy*, UCL Press, 2018

3. participatory level: volunteers participate in problem definition and in data collection;
4. data analysis the extreme level of CS; volunteers have a role in data analysis and in results assessment.

CS plays a crucial role also in the EU funding framework Horizon Europe, as part of Open Science practices which are now part of the *ex-ante* evaluation of the project proposal. CS is initially defined as “involving all relevant knowledge actors including citizens, civil society and end users in the co-creation of R&I agendas and contents” and being shaped as co-design, co-creation, co-assessment activities. The Horizon Europe Programme Guide underlines “the greater the interaction from across the quadruple helix (academia-industry-government-civil), the more the R&I results will be reliable, trusted and taken up by society”⁵.

The link to society and societal needs is stressed also by the EU Horizon2020 funded project ORION: “for science to be truly open, responsible and responsive to societal needs, multiple stakeholders must be engaged at all points of the research lifecycle”.⁶

The recent *UNESCO Recommendations on Open Science*⁷ recognize the transformative potential of Open Science for reducing the existing inequalities. The Recommendations are based on 5 pillars: open scientific knowledge, open science infrastructures, science communication, open engagement of societal actors and open dialogue with other knowledge systems.

UNESCO stresses that “the collaborative and inclusive characteristics of Open Science allow new social actors to engage in scientific processes, including through citizen and participatory science, thus contributing to democratisation of knowledge, fighting misinformation and disinformation, addressing existing systemic inequalities and enclosures of wealth, knowledge and power and guiding scientific work towards solving problems of social importance”, thus assigning CS a relevant role in this process.

⁵ *Horizon Europe Programme Guide*, Version 2.0, 11 April 2022, page 53, available at https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

⁶ <https://www.orion-openscience.eu>

⁷ *UNESCO Recommendations on Open Science*, 2021, <https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>

One of the keywords of the *Recommendations* being inclusivity and respect of diversity, it's also clear that the engagement of actors outside academia - as foreseen in CS - “promotes inclusion and exchange of scholarly knowledge from traditionally underrepresented or excluded groups (such as women, minorities, indigenous scholars, scholars from less-advantaged countries and low-resource languages)”.

CS also plays an important role in implementing the broader idea of OS. As a matter of fact, CS is both an aim and an enabler of OS.⁸

CeOS_SE project contributed to highlighting the potential of research libraries in supporting OS and CS.

As stated by T. Ignat et al.⁹ research libraries may support CS activities and projects in different ways:

- develop skills for engaging in citizen science projects;
- support, build (or be part of) a toolkit for developing citizen science projects in your institution or offer your respective services to other organisations;
- build collections of protocols, data forms and educational materials;
- contribute to making data FAIR (findable, accessible, interoperable and reusable) and develop collections of data sets;
- offer infrastructure;
- contribute to evaluation processes;
- communicate all new findings and support both scholarly and popular science communications;
- participate in recruitment and retention processes and assist volunteers to participate in projects;
- participate in marketing activities;
- promote a positive attitude towards citizen science.

To implement CS activities and projects in library services staff should

⁸ Anna Cigarini et al., *Public libraries embrace citizen science: strengths and challenges*, “Library and Information Science Research”, 43 (2021), n. 2, open access, available at <https://doi.org/10.1016/j.lisr.2021.101090>

⁹ Tiberius Ignat et al., *Merry work: libraries and Citizen Science*, “Insights”, 31 (2018) <https://insights.uksg.org/articles/10.1629/uksg.431> ; DOI: 10.1629/uksg.431

- a) be aware of the potentiality of research libraries in supporting CS
- b) develop adequate skills, both professional and soft skills.

As the CeOS PR1 results of the survey on skills and competencies show, there is a high level of technical skills in a variety of areas within libraries, i.e. skills in advocacy, organising event organisation, workshops facilitation, teaching, and communication. These are all transferable core skills for citizen enhanced OS.

Other relevant skills can be assessed in the following seven areas: project coordination, project management, evaluation, research data management, publishing FAIR data, preservation of data and protocols, and GDPR.

The PR1 survey results also showed that lack of skills was considered to be an obstacle by 36% of respondents agreeing this was a barrier to getting engaged with OS and CS activities.

Different sets of skills are also required to libraries to successfully participate in CS projects, as assessed by PR2 deliverables.¹⁰

CeOS PR3 focuses on upskilling library staff, particularly in Southeastern Europe, in order to support CSA in academic and public libraries.

UT was chosen to lead PR3 considering its long-lasting involvement in the Open Science international network and, particularly, in Open Science training thanks to the UT Open Science Office (Unità di Progetto Open Science).¹¹

2. Scope and audience

The aims of this report are:

- to highlight the efforts made by the CEOS_SE project partners in filling the skills gap (as was evident in the PR1 survey)
- to present a summary of the manifold activities carried out, providing keywords to identify issues relevant to various future users

¹⁰ Dolores Mumelas, Alisa Martek, Dorja Mucnjak, *Upscaling collaboration between academic and public libraries for CeOS in SE Europe*, Study, 2023, available at <https://zenodo.org/record/7414551#.Y77W5XbMJPY>

¹¹ <https://www.oa.unito.it/new/openaccess-unito>.

- to provide, whenever possible, a direct link to the training material, to facilitate reuse by all interested
- to highlight the lessons learned and the difficulties encountered
- to share useful suggestions for the organisation of future CSA.

Our intended audience is composed of:

- academic library staff,
- public library staff,
- academic administrative staff,
- citizen science associations,
- citizens interested in CSA or participating in CSA projects.

3. Methodology and data

3.1 Methodology. Train the Trainers

The Train the Trainers approach is intended to engage master trainers in coaching new trainers that are less experienced with a particular topic or skill, in a scalable sustainable learning program.

The model's primary objective is to train instructors/trainers to provide material in an effective way, respond to participant inquiries, and oversee learning-reinforcing activities. Additional objectives include making sure that instructors/trainers can:

- direct participants to supplementary resources and reference materials
- lead discussions
- listen effectively
- make accurate observations
- help participants link the training to their jobs.

Benefits of the Train the Trainers methodology are:

- cost-effectiveness;
- scalability;
- consistency in delivering a training program;

- fast dissemination.

As a result of attending a Train the Trainers course, participants should be able to:

- plan training courses for different audiences at different levels;
- deliver training courses for different audiences at different levels;
- assess training course participants' upskills;
- assess training course impact;
- deliver proven facilitative skills to promote learner engagement, reflective practice, critical thinking, and skill acquisition
- show ability in delivering key training strategies commonly used (brainstorming, roleplays, practice sessions...)
- initiate a personal path to strengthen their training and facilitation skills.

2023 is the European “Year of Skills”¹²: CEOS_SE commitment to upskill library staff, to engage citizens and act as a multiplier perfectly resonates with the EU Commission vision of giving a fresh impetus to lifelong learning, empowering people and supporting innovation.

In the era of EOSC, the European Open Science Cloud, training material should be “as FAIR as possible”, to ensure reuse and meet the growing demand for upskilling in any realm.

The training material produced by the CEOS_SE project PR3 will try to follow the *Ten simple rules for making training material FAIR*¹³, i.e.

- Rule 1: Plan to share your training materials online
- Rule 2: Improve findability of your training materials by properly describing them
- Rule 3: Give your training materials a unique identity
- Rule 4: Register your training materials online
- Rule 5: Define access rules for your training materials
- Rule 6: Use an interoperable format for your training materials

¹² *European year of skills* https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-year-skills-2023_en

¹³ Leyla Garcia et al., *Ten simple rules for making training material FAIR*, PLOS Computational Biology 16 (5): e1007854, available at <https://doi.org/10.1371/journal.pcbi.1007854>

- Rule 7: Make your training materials (re)usable for trainers
- Rule 8: Make your training materials usable for trainees
- Rule 9: Make your training materials contribution friendly
- Rule 10: Keep your training materials up-to-date

3.2 Methodology. Learning by doing

Lave and Wenger¹⁴ contend that instruction and training must encourage the use of information and skills in practical contexts in order to be effective.

Schank, Berman, and Macpherson¹⁵ also emphasise that, more than knowing or remembering, real-life learning requires doing. Learning by doing must inspire, must be realistic, must create a demand for the goal, and must allow sufficient opportunities to practise skills and to seek knowledge (Schank, Berman, & Macpherson, 1999).

According to the Liz Romero and Maria Glass model¹⁶, a learning activity should encompass the following 5 components:

- learning goals;
- a cover story, a background plot lot that establishes a mission to be accomplished and institutes the role students will play in the story;
- the scenarios of operation;
- resources necessary to achieve the goals;
- support and feedback, which refer to the help and comments provided by the teacher/librarians/facilitator and participants.

The above-mentioned components also align to the steps adopted by the CeOS_SE *Training design and implementation framework*, published as a deliverable of the PR3A1.

Learning by doing activities can be carried out following different patterns and methodologies, co-creation being one of the most important ones. Co-creation plays

¹⁴ Jean Lave - Etienne Wenger, *Situated learning : Legitimate peripheral participation*. New York: Cambridge University Press, 1991

¹⁵ R. Schank - T. Berman - K. Macpherson, *Learning by doing*. In C. M. Reigeluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory*. Hillsdale, NJ: Lawrence Erlbaum Associate, 1999.

¹⁶ Liz Romero - Maria Glass, *Learning by doing: creating, engaging online learning*, "Educational Technology", 55, (2015), No. 2, p. 35-39

an important role, indeed, in engaging multiple stakeholders to explore different ways to make scientific research more participatory¹⁷.

The ORION project *Co-creation Menu*¹⁸ tool identifies 31 different co-creation methods according to the level of participation required by the different interest groups: citizen hearing, citizen summits, science café, focus group, perspective workshops ecc.

The menu is really helpful as for each level of engagement (deliberative, participative, survey, conference, prize) shows methods, objective, optimal audience size and type, event and planning time, and estimated costs, as shown in Fig.2. The *Menu* also presents a list of interesting Case studies, which can inspire or serve as a suggestion.

Method Type	Method Name(s)	Objective	Audience Size	Audience Type	Event Time	Total Time	Budget (€-€€€€)	Case Study
Deliberative	Citizens Hearing	To inform and create discussion among citizens	20-25	Citizens, experts, decision-makers	1D	7M	€€€	Regional Development in Copenhagen, Danish Board of Technology Founda
	Citizens Summit / Assembly	To find out the citizens' attitudes about political priorities and possible courses of action provided on an informed basis	200-5000	Anyone	1D	Var	€€€€	EU Project Surprise, 2013-2015
	Civic Dialogue	To encourage innovation, trust and confidence to facilitate the creation of a legitimate roadmap for moving forward in a particular direction	Var	CSOs, policy-makers, researchers	Var	Var	€€€	High-level dialogue on International Migration and Development, UN,
	Deep Democracy / The Lewis Method	To access and bring out the wisdom within a group, and particularly to release the creative potential that results from conflict	Var	Anyone	1-2 D	Var	€€	Conversation Across the Socio-Economic Divide (Deep Democracy in A
	Deliberative Mapping	To provide a more robust, democratic and accountable decision making which better reflects public values	~ 60	Citizens, experts	6D	4M-1Y	€€€€	Appraising options for addressing the 'kidney Gap', Sussex University (MT
	Democs Card Game / Play Decide	To enable small groups of people to engage with complex public policy issues	4 to 8	Citizens	1-4 D	Var	€	Public engagement on synthetic biology: development of a 'Democs' tool, ESRC Genomics Policy & Research Forum, 2009
	Distributed Dialogue	To develop ongoing, embedded discussions around a topic	>5000	Researchers, citizens	2-5 D	>1Y	€€€	Bioenergy Dialogue, BBSRC/Sciencewise, 2013
	Expert Panel	To synthesise a variety of inputs on a specialised topic and produce recommendations	~ 100	Researchers, citizens, policy makers	1-2 H	6M	€€	Translating Research into Practice, Massachusetts Women's Health Networ
	Interdisciplinary Work Groups	To take professional stock of the situation and partly to propose possible courses of action to ensure, initiate, promote or check development in the area	15-30	CSOs, policy-makers, researchers	2-5 D	8M	€€	Opening up the Human Brain Project to the neuroscience community, Danish Board of Technology, 2015
	Multi Criteria Decision Analysis (MCDA)	To rank a set of options from the most preferred to the least preferred option; policy formulation, programme development	Var	CSOs, researchers, citizens	4D	1Y	€€	PorGrow - Policy options for responding to the growing challenge of obesity, Sus
	Planning Cells / Citizens Jury	To develop a set of solutions to a problem delegated to the participants by a commissioning body	25	Citizens	4-5 D	5M	€€€€	Citizens jury on Water Management, Free University of Amsterdam
	Q Methodology	To gain insight into the diversity of perspectives	50-100	CSOs, policy makers, researchers	3M	6M	€€	Biomass Dialogue, Institute for Environmental Studies (INL), 2009
	Scenario Building Exercise	To plan and prepare for an uncertain future; vision building	Var	Anyone	2-5 D	6M	€-€€€	Research Agenda Scenario for the future of Europe, CIMULAT, April 2
	World Café & Science Café	To provide a means for public debates about societal issues of science and technology	<50	Anyone	40' - 2 H	1-2M	€	www.Sciencecafes.org

Figure 2 - ORION co-creation menu

3.3 Data

Data to assess the Train the Trainers activities and the Learning by doing activities carried out by CeOS_SE partner institutions were gathered from two distinct kinds of sources:

- 3 questionnaires to be handed out to participants: 2 questionnaires (*ex ante*; *ex post*) to evaluate the training activities, 1 questionnaire to evaluate the Learning by doing activities;

¹⁷ For the deliverables of the European ORION project see: <https://www.orion-openscience.eu/activities/co-creation/s/deliverables/201804/d31-menu-co-creation-methods>

¹⁸ <https://www.orion-openscience.eu/activities/co-creation/201711/menu-co-creation-tools>

- Lessons learned provided from CeOS partner institutions.

4. Report of the activities

Globally, the CEOS_SE project partners (UT, UP, UCY, UNILIB, NSK, UniBIT, and SDU) organised from July to November 2022 20 among Train the Trainers activities (12, including 2 UT training events addressed to CeOS_SE partners) and Learning by doing events (8). All events are reported in chronological order in Table 1 and 2:

Table 1 - Train the Trainers activities carried out by CeOS partners

Date	Event title	Event type	Organiser	Reference to this document
July 13 2022	Citizen Science. What it is (and what it is not	Train the trainers	UT	4.1.1
September 21 2022	Open Science why and how	Train the trainers	UT	4.1.2
October 17 2022	Open Science why and how	Train the trainers	UT	4.2.1.1
October 19 2022	Citizen Science and the role of Academic Libraries	Train the trainers	UP	4.2.2
October 25, 2022	Active citizenship: the role of librarians in citizen science	Train the trainers	UCY	4.2.3

November 3, 2022	Learnings from the SDU Library workshop on skills and strategy within Citizen-Enhanced Open Science	Workshop	SDU	4.2.7
November 16, 2022	Citizen Science. Train the Trainers	Train the trainers	UNILIB	4.2.4
November 21, 2022	Citizen Science and libraries	Train the trainers	NSK	4.2.5
November 22, 2022	Citizen Science and libraries: new opportunities of engagement with the communities	Train the trainers	UT	4.2.1.2
November 24, 2022	Open Science how and why	Train the trainers	UT	4.2.1.3
November 30, 2022	Like the siren song of Ulysses: the irresistible temptation to consider oneself an expert	Train the trainers	UT	4.2.1.4
November 30, 2022	Citizen Science & Libraries in Bulgaria	Train the trainers	UniBIT	4.2.6

Table 2 - Learning by doing activities carried out by CeOS partners

Date	Event title	Event type	Organiser	Reference to this document
July 28, 2022	Social media and CS in Gen Z's life	Open Knowledge Cafè	UniBIT	4.3.6
November 4, 2022	Women in science	Editathon	UT	4.3.1.1
November 8, 2022	Citizen science, public engagement and academic libraries	Interactive workshop	UT	4.3.1.2
November 14, 2022	Well-being and self-help in academic online environment	Lecture and workshop	NSK	4.3.5
November 15, 2022	What's in my neighbourhood? Using citizen science to map social change in Strovolos	Interactive workshop	UCY	4.3.3
November 16, 2022	Citizen science activities: best practices on the line	Open Knowledge Cafè/workshop	UNILIB	4.3.4

November 18, 2022	Learning by doing: Citizen Science collaboration and European funding opportunities	Interactive workshop	SDU	4.3.7
November 25, 2022	Protection of personal data on the Internet	Interactive workshop	UP	4.3.2

More details on the single events are displayed in the following subsections 4.2 and 4.3.

Most of the training material is publicly available on the CEOS_SE community in Zenodo and /or on the LIBER YouTube Channel. (see the following subsections for details and links).

4.1 UT - Training the partners

According to the CeOS_SE PR3 program Train the Trainers activities were delivered in two steps.

A first preliminary course for CEOS_SE partners, divided into 2 lessons, was carried out by UT to set the scene, improve the general knowledge about OS and CS and to share methodological insights and suggestions for an effective training course:

- in July, an online course was delivered on Citizen Science by Maria Cassella and Andrea Sforzi, one of the main international experts on CS (see 4.1.2)
- in September, during the face to face LTTA meeting in Zagreb, Elena Giglia delivered a sort of meta-training course on Open Science, giving at the same time information on OS and tips & tricks on how to give an effective training,

based on her long lasting experience and the feedback of the previous attendees (see 4.1.2).

These courses were held in English, as the targeted groups were CEOS_SE partners of different nationalities.

Later on, in Autumn 2022, partners delivered 10 training courses (see 4.2) in local languages in different scenario contexts mainly addressed to librarians.

LIBER and SDU were in charge of knowledge transfer activities.

4.1.1 Training the partners on Citizen Science

Title: Citizen Science. What it is (and what it is not)

Summary of the activity			
Date: 13 July 2022	Duration: 3 hours	Participants: CEOS_SE partners	Number of participants: 20
Public library (partner): N.A (internal CeOS-SE training)		Speakers/lecturers: Andrea Sforzi (Natural History Museum of Maremma) Alessia Smaniotto (OPERAS) Maria Cassella (UT)	Number of speakers/lecturers: 3
Training material availability: <ul style="list-style-type: none"> Slides on Zenodo https://zenodo.org/record/6873990#.Y859xnbMLIV Video recording https://youtu.be/HM788smxOJA 		Location: online, Webex	Language: English
Topics			

<ul style="list-style-type: none"> ● CS basics (definitions, main characteristics, projects, stakeholders, platforms) ● CS and the Humanities ● CS and libraries 	<ul style="list-style-type: none"> ● Citizen Science. What it is and why it is important for society ● CS projects in Europe ● CS platforms and portals ● CS and the Humanities ● Definitions and differences from CS in the sciences ● CS and libraries ● Role of public and academic libraries in CS ● Case studies
Data analysed	
Questionnaire for participants	N.A.

Overview and Description

On the 13th of July UT carried out an online workshop for partners. The workshop was conceived as an introduction to the “Train the trainers” activities to be delivered by all partners in Autumn as deliverable of PR3; its main scope was to upskill the competencies of CeOS_SE partners, particularly of librarian staff involved in the project, on main CS issues.

Workshop contents were organised into three parts:

The first speaker, Andrea Sforzi, Director of the Natural History Museum of Maremma in Tuscany and one of the main expert of CS in Italy, gave a powerful presentation on what citizen science is and what it is not; he highlighted the main characteristics of CS projects and gave some good examples of successful CS projects. Alessia Smaniotto, OPERAS Research Project Coordination Manager and COESO project, gave examples of how to connect CS with Humanities and Social Sciences. The third speaker, Maria Cassella, Library Director at the UT and CeOS_SE partner, offered a presentation on CS and libraries, focusing on research libraries, highlighting their role in CS projects. As Smaniotto did, Cassella presented some Citizen Humanities

projects involving research libraries on Zooniverse and the European portal: *Europeana Transcribe*. She also presented the SciStarter platform and the portal *eu-citizen.science*.¹⁹

The workshop was recorded on the WebEx platform of the University of Turin and recording was shared with all partners on YouTube. No evaluation tools were planned for this preliminary course as the main output of this activity was simply to give basic knowledge.

4.1.2 Training the partners on Open Science

Title: Open Science why and how

Summary of the activity			
Date: 21 September 2022	Duration: 3 hours	Participants: CEOS_SE partners	Number of participants: 24
Public library (partner): N.A. (internal CEOS-SE training)	Speakers/lecturers: Elena Giglia (UT)	Number of speakers/lecturers: 1	
Training material availability: <ul style="list-style-type: none"> Slides on Zenodo https://doi.org/10.5281/zenodo.7082967 	Location: Zagreb, National and University Library in Zagreb (co-located training course during the LTTA meeting)	Language: English	
Topics			
<ul style="list-style-type: none"> The scholarly communication system: does it work? [or: Why do we need Open Science?] Open Science: definition, principles and tools 			

¹⁹ <https://eu-citizen.science/>

<ul style="list-style-type: none"> ● Focus on Open Access: getting rid of the myths ● Open Science in Horizon Europe ● Why should we care about data? ● Data management: importance and tools ● FAIR principles ● Open data ● Data Management Plans ● Tips & tricks for effective training 	
Data analysed	
Questionnaire for the participants	N.A.
Lesson learned	N.A.

Overview and Description

The *Open Science Why and how* training material (available on Zenodo in English and Italian and in different versions, e.g. <https://doi.org/10.5281/zenodo.6761944>) created by the trainer, Elena Giglia (UT), was adapted to serve a twofold purpose: giving the latest insights on OS benefits, principles and tools and sharing some tips & tricks coming from a long lasting experience in giving courses to different audiences. In the slideshow (available at <https://doi.org/10.5281/zenodo.7082967>), these tips can be easily found as light blue clouds. The training material follows the common Elena's template based on her own photographs as slides background, usually highly appreciated by attendants (the photos are somehow linked to the slide content). According to the FAIR principles, the slides are available via a persistent identifier, in an Open repository, with open standards and a clear licence (CC BY).

As per OS basic knowledge, the course started on why OS is needed, showing what's wrong with the current scholarly communication system, highlighting the lessons learned from the COVID pandemic (e.g. we need to openly share data, not only articles, and we need them immediately, not after two years, as it happens with scientific journals) and the strict link with research assessment criteria which create adaptive behaviours in researchers. As stressed in the UNESCO Recommendation on Open

Science, CS plays a crucial role to have a more inclusive science, respectful of diversity (of languages and cultures) and more responsive to societal needs. Practical tools to make OS a reality in the daily workflow of a researcher were then presented, to show that OS is not just about theory but is “doable” on a daily basis.

As per tips, Elena added to almost each slide of the material some comments highlighting the usefulness of some choices or the messages to be stressed, among others:

- start with a Mentimeter (or similar online quick survey tool) to assess:
 - the starting knowledge about the topic
 - how much “false myths” are widespread among the audience
 - to listen to learning needs (“I expect to learn about...”) - and remember to check in the end if you properly addressed them all
- ask researchers “why do you do research” and make them reflect: is the current system still matching their initial choice/approach or does it clip their wings?
- always stress “what’s in it for me” for researchers
- try to connect/relate to their daily workflow/experience
- fix the concepts with a word cloud or a short test on the lesson topics
- start with the “why” - to make participants understand it’s not just the umpteenth administrative burden, there is a reason why they should care
- only after the “why” go for the “how”: if not, your lesson will just be seen a set of non-understandable, imposed rules
- start with “take home messages”: the concept you want them not to forget, now that minds are clear and not tired
- try to use jokes or unexpected images/cartoons: when people laugh, they learn and remember better, and you enjoy teaching
- try to use catch phrases - like “too easy not to do” referred to OS practices support
- try to be concrete. Use images or examples the audience can relate to
- provide data: e.g. researchers do not have a clue on how much libraries are spending in subscriptions, and upon this wrong assumption they are against Open Access fees



Figure 3 - Elena Giglia's training activity at LTTA in Zagreb, Croatia, 21 September 2022

4.2 Train the Trainers activities

Train the Trainers courses were delivered by CEOS_SE partners, leveraging on the basics learned in the two preliminary courses (see 4.1).

To maximise the outreach, to ease discussions, and to facilitate reuse, these training courses were held in national languages.

In order to assess the partners training activities UT shared with CeOS partners 2 questionnaires:

- an *ex-ante* questionnaire to be filled in by participants to assess their initial knowledge on OS and CS, their role in the library, and their motivation;
- an *ex-post* questionnaire to be filled in by participants to assess the level of upskilling, the possibility to use new skills and knowledge in their daily activity, and the level of course satisfaction.

4.2.1 Train the Trainers - UT

UT organised 3 training courses during PR3 plus an academic lesson with Prof. Tipaldo (UT), member of CeOS_SE Advisory Board.

- a) Open Science come e perché [Open Science why and how], October 17, for public libraries
- b) Citizen Science e biblioteche. Nuove opportunità di engagement con le comunità [Citizen Science and Libraries. New opportunities of public engagement with the communities], November 22, 2022 for academic libraries and HE research staff
- c) Open Science come e perché [Open Science why and how], November 24, 2022 for academic libraries and HE research staff

Title: Open Science come e perché [Open Science why and how]

Summary of the activity			
Date: 17 October 2022	Duration: 3 h	Targeted audience: Public libraries staff	Number of participants: 2
Organisational partner: Central Library of the Turin Municipality		Speakers/lecturers: Elena Giglia (UT)	Number of speakers/lecturers: 1
Training material availability: <ul style="list-style-type: none">● Slides on Zenodo https://doi.org/10.5281/zenodo.7198977● [14 views and 21 downloads 18/01/2022]		Location: Central library of the Municipality of Turin, Turin, Italy	Language: Italian
Topics			
<ul style="list-style-type: none">● The scholarly communication system: does it work? [or: Why do we need Open Science?]			

<ul style="list-style-type: none"> ● Open Science: definition, principles and tools ● Focus on Open Access: getting rid of the myths ● Open Science in Horizon Europe ● Why should we care about data? ● Data management: importance and tools ● FAIR principles ● Open data ● Data Management Plans 	
Data analysed	
Questionnaire for the participants	No
Lesson learned	Extreme difficulty in engaging participants from public libraries. They might have felt “Open Science” as a distant, academic-only topic. There was clearly a lack of clear/appealing communication

Overview and Description

The course aimed at giving public libraries staff the basics of Open Science.

The course started from the current scholarly communication system, its costs, the perverse effects of research assessment criteria, to then focus on the Open alternative, the tools to open up the entire research workflow, the different Open Access paths and the new rules in Horizon Europe. The session of research data, FAIR principles, Open data and the Data Management Plans was reduced and the approach was to provide staff with an overview of potentially useful tools if they ever have to support citizen scientists who are collaborating with scientists in properly managing the data they collect.

Notwithstanding the communication efforts, only two people attended the training. There must have been something wrong in the communication style, as the importance of the course was not perceived, as the two participants pointed out at the end of the

course. The course was postponed twice and this could have affected the scarce numerosity of attendees.

Being such a small number was a plus, as it created a very informal situation and eased a fruitful discussion.

Title: Citizen Science e biblioteche. Nuove opportunità di engagement con le comunità [Citizen Science and libraries. New opportunities for engagement with the communities]

Summary of the activity			
Date: 22 November 2022	Duration: 3 hours	Targeted audience: academic library staff, HE research staff	Number of participants: 22
Organisational partner: None		Speakers/lecturers: Maria Cassella (UT)	Number of speakers/lecturers: 1
Training material availability: <ul style="list-style-type: none"> Slides on Zenodo https://zenodo.org/record/7648935#.Y-9aOHbMKUk 		Location: Campus Luigi Einaudi, UT, Turin, Italy	Language: Italian
Topics			
<ul style="list-style-type: none"> CS definition and projects CS in the Humanities CS and libraries CeOS_SE 		<ul style="list-style-type: none"> CS. What it is CS and Open Science CS platforms and tools CS projects in Europe CS and the Humanities CS and public libraries CS and academic libraries Case studies of libraries involved in CS projects 	

	● CeOS_SE
Data analysed	
Ex-ante questionnaire for the participants	No
Ex-post questionnaire for the participants	No
Lesson learned	Teaching to different target groups was challenging; however, by fostering discussions and debate among participants the learning experience became positive and appreciated to all.

Overview and Description

On the 22 of November UT carried out a training course for UT librarians and UT Research staff.

This course, held by Maria Cassella (UT), was conceived as a part of the Open Science how and why course held by Elena Giglia (UT) on 24th of the same month (see next).

It focused on Citizen Science definitions and main characteristics, Citizen Science projects in Europe, role of libraries and librarians in supporting CS projects, Citizen Science platforms and tools, best practices and case studies of libraries and CS. The case study of *SDU Knowledge Center* and of *UCL Transcribe Bentham* were presented. The *Barcelona OpenSystems* project Citizen Science in Action was selected as a best practice of a successful collaboration among researchers, public libraries, and academic libraries. The CeOS_SE project was also presented as a best practice of academic libraries actively involved in a CS project.

At the end of the first training session participants were split into three groups and they were engaged in a scenario activity that asked them to consider their own methods for recruiting volunteers for a citizen science project led by the University of Turin (TO-Herp).

The decision to teach the course to librarians and UT research staff was successful as the two groups shared their different know-how and perspectives. The scenario

problem was solved using a variety of approaches and the debate was engaging and productive.

Title: Open Science: come e perché [Open Science how and why]

Summary of the activity			
Date: 24 November 2022	Duration: 3	Participants: academic library staff, UT research staff	Number of participants: 22
Organisational partner: None		Speakers/lecturers: Elena Giglia (UT)	Number of speakers/lecturers: 1
Training material availability: <ul style="list-style-type: none"> Slides on Zenodo https://doi.org/10.5281/zenodo.7082967 		Location: Campus Luigi Einaudi, UT, Turin, Italy	Language: Italian
Topics			
<ul style="list-style-type: none"> The scholarly communication system: does it work? [or: Why do we need Open Science?] Open Science: definition, principles and tools Focus on Open Access: getting rid of the myths Open Science in Horizon Europe Why should we care about data? Data management: importance and tools FAIR principles Open data Data Management Plans Tips&tricks for effective training 			
Data analysed			
Ex-ante questionnaire for the participants		Yes	

Ex-post questionnaire for the participants	Yes
Lesson learned	Yes

Overview and Description

The course *Open Science how and why* was conceived as a complementary part of Maria Cassella's course on Citizen Science and libraries held on the 22nd of November.

It aimed at giving academic libraries staff and research staff of the University of Turin an update of Open Science major challenges and achievements in 2022.

The course was divided into 2 sessions.

The first one focused on the reasons why we need Open Science, which is of the utmost importance: if researchers are not aware of the transformative potential of Open Science, Open Access to text, FAIR data, they will see it as an administrative burden. Hence, the first part of the course presented in a very critical way the current scholarly communication system, its inefficiencies, the waste of public money in a subscription world which is based only on prestige, the perverse effects of research assessment criteria which creates adaptive behaviours in researchers and can bring even to fraud and data manipulation in order to get published.

The second part presented the Open alternative, starting from definitions and principles to get to practical tools to open up every step of the research workflow. Among the components of Open Science, Open Access was thoroughly examined, along with the ongoing reform of research assessment criteria in Europe. Horizon Europe and its requirements to adopt and adapt Open Science practices were the topics of the final part of this session.

The session on data was aimed at providing the floor with the basic notions on the three steps: how to manage research data, how to make data FAIR, how to make them Open according to the principle "as open as possible, as closed as necessary". Practical tools were presented to support both researchers and citizen scientists who are collaborating with scientists in properly managing the data they collect. To ease the

job, some tools to create Data Management Plans (DMP) were shown and some tips&tricks were provided in order to draft an effective DMP.

At the end of the course, participants were asked to fill in the ex-post questionnaire. They were asked to evaluate both Maria Cassella's and Elena Giglia's courses, being the same attendees.

19 out of 22 participants answered the two questionnaires.



Figure 4



Figure 5



Figure 6 - Elena Giglia's training activity on OS for UT Library Staff and HE Research Staff, Turin, Italy 24 November 2022

Title: Come il canto delle sirene di Ulisse: l'irresistibile tentazione di considerarsi esperti
 [Like the siren song of Ulysses: the irresistible temptation to consider oneself an expert]

Summary of the activity			
Date: 30 November 2022	Duration: 2 h	Participants: academic library staff, university students	Number of participants: 7
Organisational partner: None		Speakers/lecturers: Giuseppe Tipaldo (UT, CeOS Advisory Committee)	Number of speakers/lecturers: 1
Training material availability: No		Location: Campus Luigi Einaudi, UT, Turin, Italy	Language: Italian
Topics			
<ul style="list-style-type: none"> ● Science, politics, media and society ● What is science communication (and what it is not) ● Science communication in the digital era ● Fake news: how they are conceived and why ● Fake news and science ● Case studies 			
Data analysed			
Questionnaire for the participants		No	
Lesson learned		Yes	

4.2.2 Train the trainers - UP

Title: Citizen Science and the role of Academic Libraries

Summary of the activity	

Date: 19 October 2022	Duration: 2 h	Participants: academic library staff	Number of participants: 20
Organisational partner: None		Speakers/lecturers: Alexandra Goudis (UP) Theodora Karaiskou (UP)	Number of speakers/lecturers: 2
Training material availability: <ul style="list-style-type: none"> • https://zenodo.org/record/7252044#.Yies3bMLIU 		Location: 28th Panhellenic Academic Libraries Conference, Corfu, Greece	Language: Greek
Topics			
<ul style="list-style-type: none"> • Introduction to CS • CS Definitions and projects • CS in Europe • CS and Open Science • Benefits for society • CS and libraries • Case studies involving libraries 			
Data analysed			
Ex-ante questionnaire for the participants		Yes	
Ex-post questionnaire for the participants		Yes	
Lesson learned		Yes	

Overview and Description

The Train the Trainers activity of the University of Patras was organised during the [28th Panhellenic Academic Libraries Conference](#), whose main topic of discussion was the “Green and sustainable academic libraries in the post-COVID era”.

The [Library & Information Center of the University of Patras](#) was given the opportunity to carry out a train-the-trainer workshop and a paper presentation regarding Citizen Science activities in research libraries. Trainers and presenters were Alexandra Goudis (UP) and Theodora Karaiskou (UP).

The topic discussed during the workshop was: “Citizen Science and the role of academic libraries”.

During the workshop, 20 librarians were given an introduction to what Citizen Science is, how it fits into our libraries and how we all benefit from its induction into our lives. Examples of Citizen Science projects from inside libraries (to show how a library can become an even more vital part of the community) and outside libraries were presented. Participants took part in interactive sessions that focused on how to start creating a Citizen Science project and who could participate. They were active in the ongoing discussion that took place during the workshop and were interested in how to build a Citizen Science project and a network of collaborations. A brief introduction to CeOS_SE also took place, and the participants were informed of our efforts in making Citizen Science known in Greece. The reception was highly positive and there were talks about further training events in the near future.

UP also presented a paper during the conference, entitled *The library as a knowledge hub for citizen science*. It received a warm welcome and some of the attendees were surprised to discover how they were already doing Citizen Science projects on a crowdsourcing level – they just had not fully realised it.

At the end of the training activity all participants were handed over the questionnaires to evaluate the workshop.

All 20 participants answered the two questionnaires.

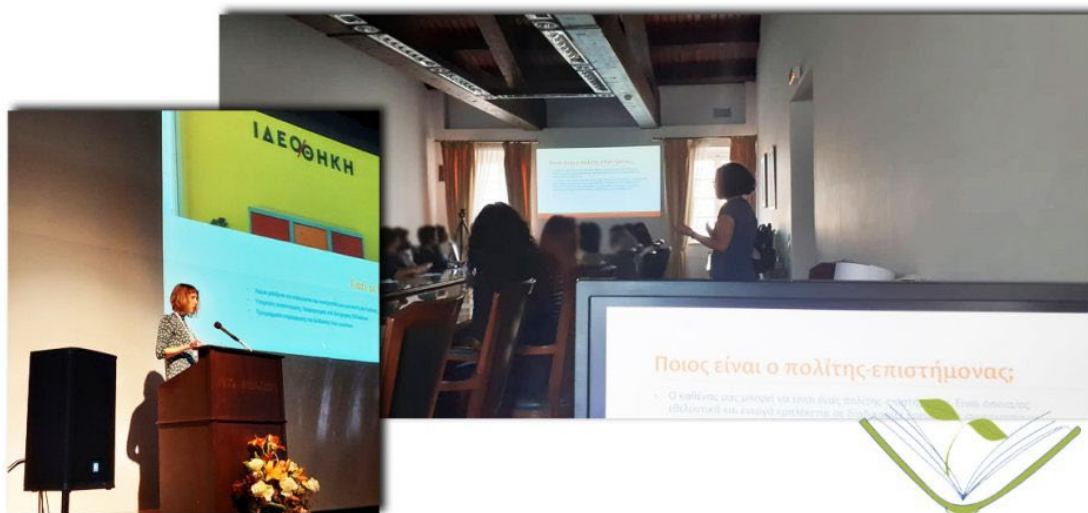


Figure 7 - UP Train the Trainers activity at 28th Panhellenic Academic Library Conference, in Corfu, 19 October 2022

4.2.3 Train the Trainers - UCY

Title: Active citizenship: the role of librarians in citizen science

Summary of the activity			
Date: 25 October 2022	Duration: 2 h	Targeted audience: academic librarians	Number of participants: 60
Organisational partner: Web2Learn, Municipality of Strovolos		Speakers/lecturers: Katerina Zourou Stefania Oikonomou (Web2Learn)	Number of speakers/lecturers: 2
Training material availability: <ul style="list-style-type: none"> • https://gnosis.library.ucy.ac.cy/handle/7/65434 		Location: Online, during the International Open Access Week 2022. Platform: Zoom.	Language: Greek
Topics			
<ul style="list-style-type: none"> • OS and CS • CS definitions and core concepts • CS projects in Europe 			

<ul style="list-style-type: none"> ● CS platforms in Europe ● Role of libraries in promoting CS ● Forms of citizen engagement in promoting CS 	
Data analysed	
Ex-ante questionnaire for the participants	Yes
Ex-post questionnaire for the participants	Yes
Lesson learned	Yes

Overview and Description

On the 25th of October 2022 the Library - Information Center Stelios Ioannou of the University of Cyprus within the framework of the project "Citizen-enhanced Open Science in Southeastern Europe Higher Education Knowledge hubs", organised the webinar: "Active citizenship: The role of librarians in citizen science". 60 participants joined the webinar.

The event was held during the International Open Access Week 2022 and the presenters were: Katerina Zourou and Stefania Oikonomou (Web2Learn).

The aim of the webinar was to highlight the role of librarians in fostering research and OS and focused on libraries as hubs of active citizenship enhancement in their communities.

The participants in this discussion addressed various forms of citizen engagement and collaborative activities to advance OS and CS.

The presentation was conducted in the style of an interactive workshop, where opportunities for raising citizens' awareness on OS and CS and for increasing citizens' participation in local and global issues (i.e. social inequalities, climate change and biodiversity loss) were discussed.

The role of librarians was set at the centre of this discussion, as they are the connecting link between citizens, researchers and civil society actors.

The event was successful: presenters informed and inspired the participating librarians and introduced them in an interactive way to the topic of citizen science.

9 out of 60 participants completed the questionnaires.

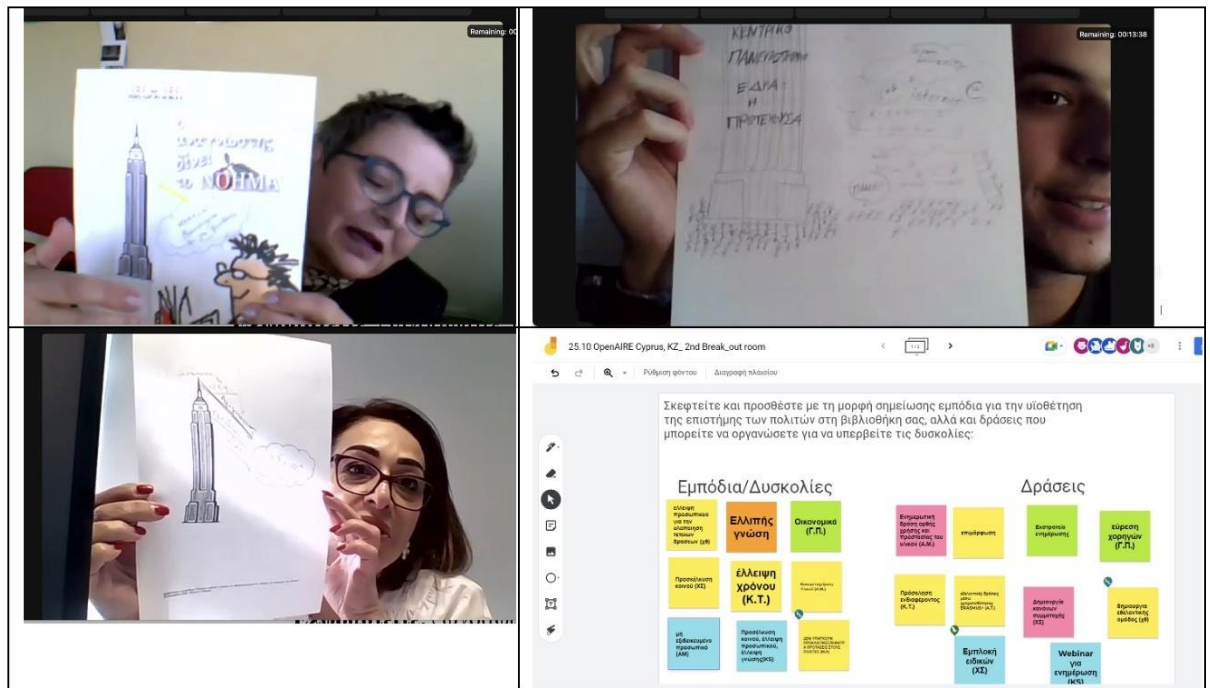


Figure 8 - Participants at the online UCY Train the Trainers event show the results of the interactive activity, 25 October, 2022

4.2.4. Train the Trainers - UniLIB

Title: Citizen Science.Train the Trainers

Summary of the activity			
Date: 16 November 2022	Duration: 3 hours	Targeted audience: Researchers from the University of Belgrade, academic librarians, librarians of the National Library of Serbia	Number of participants: 32

Organisational partner: National Library of Serbia	Speakers/lecturers: Aleksandra Trtovac (UNILIB) Nataša Dakić (UNILIB)	Number of speakers/lecturers: 2
Training material availability: <ul style="list-style-type: none"> • https://admin.unilib.rs/wp-content/uploads/2022/11/gradjanska-nauka-16.11.pdf 	Location: University Library “Svetozar Marković”, Belgrade, Serbia	Language: Serbian
Topics		
<ul style="list-style-type: none"> • CS why and how • CS definition and projects • Main principles of Citizen Science • CS evaluation • How to motivate volunteers • CS and libraries • CS and libraries: case studies • How to become part of the CS community • Models of cooperation 		
Data analysed		
Ex-ante questionnaire for the participants	Yes	
Ex-post questionnaire for the participants	Yes	
Lesson learned	Yes	

Overview and Description

The CS activity *Citizen Science. Train the Trainers* was held on November 16, 2022 under the premises of the University Library “Svetozar Marković” in Belgrade.

The workshop was organised in the format of Open Knowledge Café.

The two speakers were members of the UNILIB CeOS_SE team, i. e. Aleksandra Trtovac and Nataša Dakić.

32 participants attended the workshop: 25 academic librarians, 2 librarians from the national library and 4 researchers from the University of Belgrade.

The workshop's goal was to improve the general level of knowledge about CS and to raise awareness on the role of academic and public libraries in supporting CS and OS projects in Serbia. Main topics of the workshop were:

- CS why and how
- CS definition and projects
- Main principles of Citizen Science
- CS evaluation
- How to motivate volunteers
- CS and libraries
- CS and libraries: case studies
- How to become part of the CS community
- Models of cooperation

The training was really interactive. Presentations were followed by a brainstorming and a fruitful discussion among participants. The workshop attendees were proactive during the discussion and offered several ideas for new activities and for actively involving citizenship in CS projects.

Both researchers and librarians could benefit from the different perspectives and respective know-how on OS and CS.

All participants completed the 2 questionnaires.



Figure 9



Figure 10 - Participants at UNILIB Train the Trainers activity, Belgrade, Serbia, 17 November 2022

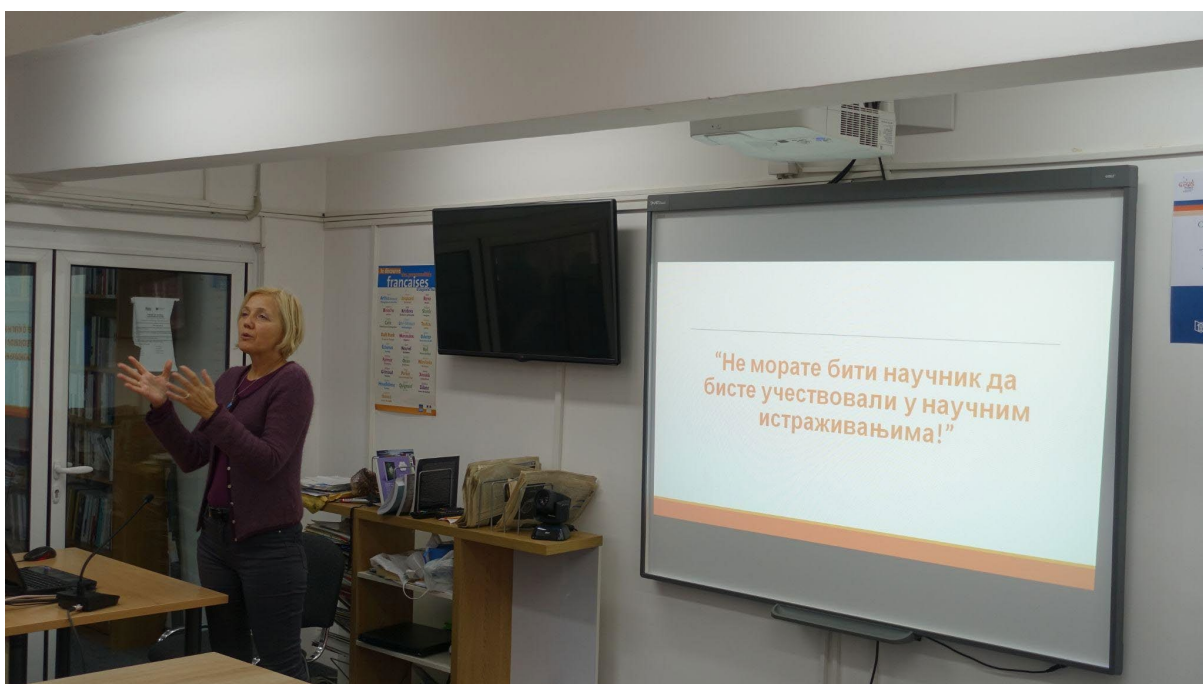


Figure 11 - Nataša Dakić presenting at UNILIB Train the Trainers activity, Belgrade, Serbia, 17 November 2022

4.2.5 Train the Trainers. NSK

Title: Citizen Science and libraries

Summary of the activity			
Date: 21 November 2022	Duration: 4 h	Targeted audience: 32	Number of participants: 32
Organisational partner: University of Zagreb, Croatian Natural History Museum, and the Institute for Youth Development and Innovation		Speakers/lecturers: Alisa Martek (NSK) Dolores Mumelaš (NSK) Goran Zlodi (University of Zagreb) Tomislav Ivanjko (University of Zagreb, CeOS Advisory Committee) Rujana Bakić (IRIM) Draško Holcer (Croatian Natural History Museum and Blue World Institute)	Number of speakers/lecturers: 6
Training material availability: <ul style="list-style-type: none"> • https://zenodo.org/record/7599830#Y_9hBXbMJD9 		Location: National and University Library in Zagreb, Croatia	Language: Croatian
Topics			
<ul style="list-style-type: none"> • CeOS_SE • Citizen Science and libraries 			

<ul style="list-style-type: none"> ● Citizen Science projects in Europe ● Enrich Europeana ● Citizen Science projects in Croatia ● Croatian Markers ● Transcribathon Zagreb 2022 	
Data analysed	
Ex-ante questionnaire for the participants	Yes
Ex-post questionnaire for the participants	Yes
Lesson learned	Yes

Overview and Description

On 21 November 2022, the National and University Library in Zagreb (NSK) organised and hosted a train-the-trainer programme as part of *Citizen-Enhanced Open Science in Southeastern Europe Higher Education Knowledge Hubs (CeOS_SE project)*, an Erasmus+ research project aimed at including European citizens in pan-European efforts focusing on Open Science. The presentations and workshop held as part of the programme were led by the Library's staff and the representatives of the Department of Information and Communication Sciences of the Zagreb Faculty of Humanities and Social Sciences, Croatian Natural History Museum and the Institute for Youth Development and Innovation (IRIM).

Twenty library professionals attended the session. They were welcomed by the Head of the CeOS_SE project in Croatia, Alisa Martek, who presented the project and the role of the National and University Library in Zagreb. Dolores Mumelaš, member of the project team, presented how to organise Citizen Science activities in libraries, exemplifying both advantages and challenges in this context.

Associate Professor at the Department of Information and Communication Sciences of the Zagreb Faculty of Humanities and Social Sciences, Goran Zlodi, presented the Faculty's research project focusing on Citizen Science (*Initiative for Citizen Science in Heritage and Educational Context*), while the Department's Assistant Professor Tomislav

Ivanjko presented the *EnrichEuropeana+* project (*Enriching Europeana through citizen science and artificial intelligence – Unlocking the 19th century*), aimed at the development of innovative AI solutions for the automation of the transcription of manuscripts and relying on CS for providing content for the manuscripts' semantic enrichment.

Unlocking the potential of CS and AI to enhance Europeana, Ivanjko also provided a summary of the *Transcribathon Zagreb 2022* initiative, which involved students from the Faculty transcribing digital content from the collections on the Europeana website, which serves as Europe's digital library for libraries, museums, and archives.

The co-founder and chief secretary of the Institute for Youth Development and Innovation (IRIM), Rujana Bakić, presented the Institute's CS activities, particularly emphasising the importance of its *Croatian Makers* initiative and its platforms and projects aimed at the popularisation of STEM, the wider introduction into various institutions of programming, etc.

The last speaker was Draško Holcer, Senior Curator at the Croatian Natural History Museum. Holcer introduced the attendees with the activities of the *Blue World Institute*, which being part of the *Life DELFI* project participated in the development of *Marine Ranger*, a citizen science app for collecting data on marine mammals.

The programme's second part included a workshop the focus of which was a step-by-step presentation of how to set up citizen science activities in libraries, as ideal places for the dissemination of knowledge and collection of data required for gaining new scientific insights. Led by the members of the *CeOS_SE* project team, the workshop attendees were split into three groups to go through all the details in the preparation of CS library activities.

They were acquainted with all the organisational aspects of such activities, ranging from decisions concerning the location and targeted citizen group, through those related to participating researchers and a particular activity's desired outcome, to those regarding the promotion of citizen science, ways to overcome organisational obstacles and ensure the benefits of such activities for libraries.

25 out of 32 participants completed the questionnaires.



Figure 12 - Participants at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022



Figure 13 - Alisa Martek and Goran Zloti presenting at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022



Figure 14 - Interactive work of groups of participants at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022



Figure 15 - Interactive work of groups of participants at NSK Train the Trainers activity, Zagreb, Croatia, 21 November 2022

4.2.6 Train the Trainers - UniBIT

Title: Citizen Science & Libraries in Bulgaria

Summary of the activity			
Date: 30 November 2022	Duration: 2 h	Targeted audience: Representatives from the National Library "St. St. Cyril and Methodius", academic libraries, public libraries and University staff from UniBIT	Number of participants: 23

Organisational partner: National Library “St. St. Cyril and Methodius”	Speakers/lecturers: Tereza Trencheva (UniBIT) Svetoslava Dimitrova (UniBIT)	Number of speakers/lecturers: 2
Training material availability: <ul style="list-style-type: none"> ● Material was shared internally 	Location: National Library “St. St. Cyril and Methodius”, Sofia, Bulgaria	Language: Bulgarian
Topics		
<ul style="list-style-type: none"> ● CeOS_SE ● LIBER ● LIBER projects ● CS and libraries ● Co-creation activity 		
Data analysed		
Ex ante questionnaire for the participants	Yes	
Ex-post questionnaire for the participants	Yes	
Lesson learned	Yes	

Overview and Description

The aim of the Train the Trainers UniBIT workshop, *Citizen Science & Libraries in Bulgaria*, was to raise awareness about the CeOS_SE project & Citizen Science in Bulgaria.

The main focus of the activity was on developing strategies for CS in Bulgarian libraries. Representatives from the National Library “St. Cyril and Methodius”, academic libraries, public libraries and University staff from UniBIT joined together to discuss these themes in late November 2022.

Prof. Tereza Trencheva, UniBIT, presented the “Citizen-Enhanced Open Science in Southeastern Europe Higher Education Knowledge Hubs (CeOS_SE)” (Erasmus+ Project). She opened the activity with the question, “What do you think Citizen Science is? Do you think there is a difference between Open Access and Open Science?”.

From the participants' answers it was evident that there was confusion on what CS is and where it fits within the OS movement.

Svetoslava Dimitrova, UniBIT, delivered all relevant information about the project coordinator (LIBER) and the other partners. The project's goals, its execution, and its outcomes were also discussed and analysed. The results from PR1, PR2, the first results from PR3, and all that was accomplished in the first year of the project were presented.

The event went on in a relaxed setting with group tasks for the participants. They were divided into four groups and asked to plan a strategy for organising a CS event.

Each group was made up of: researchers, funding institutions, citizens, business and NGOs representatives. Each group also included at least a librarian as representative from the school library in Ruse, the university library in Burgas, the community centre library in Vidin and the regional library in Blagoevgrad. They had to come up with an attractive name for their event (based on the target audience), think of suitable event speakers, make an implementation plan, choose a venue and a promotion strategy, and consider how to involve each of their partners.

The main question for the four groups was: What challenges did you face in managing the event?

As each team was presenting its marketing and communication strategy, advice was given. Domestic violence, processing of archaeological materials in Southwest Bulgaria, preserving biodiversity and the drying up of Danube river by creating a botanical corner of endangered plants, and a photo workshop dedicated to St. Anastasia Island through the amateur lens were among the themes of the events suggested by the four groups. Each team also presented a poster for their event.

The workshop was successful in highlighting the difficulties in planning a CS event and the multiple stakeholders involved. After the event participants showed a better understanding of what CS is, its benefits, and some best practices for implementation.

All 23 participants completed the questionnaires.



Figure 16 - UniBIT Train the Trainers activity, Sofia, Bulgaria, 30 November 2022



Figure 17 - Tereza Trencheva and Svetoslava Dimitrova presenting at the National Library “St. St. Cyril and Methodius” during the Train the Trainers activity, Sofia, Bulgaria, 30 November 2022

4.2.7 Train the Trainers - SDU

Title: Learnings from the SDU Library workshop on skills and strategy within Citizen-Enhanced Open Science

Summary of the activity			
Date: 3 November 2022	Duration: 2h	Targeted audience: SDU library staff	Number of participants: 15
Organisational partner: None		Speakers/lecturers: Thomas Kaarsted (SDU) AnneKathrine Overgaard (SDU) Pernille Tanggaard Andersen (SDU)	Number of speakers/lecturers: 3

Training material availability: <ul style="list-style-type: none"> ● Workshop material was shared internally 	Location: SDU Library, Odense, Denmark	Language: Danish
Topics		
<ul style="list-style-type: none"> ● SDU Citizen science strategy 2023-2025; ● Alignment of library OS/CS services with overall SDU strategy for and with society; ● OS/CS skills; ● OS/CS services ● Fair Data ● RDM 		
Data analysed		
Ex.ante questionnaire for the participants	No	
Ex-post questionnaire for the participants	Yes	
Lesson learned	Yes	

Overview and description

On 3 November 2022, SDU Library organised the internal workshop: *Learnings from the SDU Library workshop on skills and strategy within Citizen-Enhanced Open Science*. The workshop was solicited by SDU Citizen Science Committee (the library's steering committee).

Library management and library staff were to hatch a new Citizen Science strategy and skills practise for SDU 2023-2025. This aligned with the training and skills activities of the CEOS_SE project and was aimed at training library staff.

This was done as an internal workshop in order to receive maximum input from staff members. The program was built upon an introduction from management on the previous work and skills needed along with a presentation from Prof. Pernille Tanggaard Andersen who presented an audit done among SDU researchers on how

they perceive CS and OS. In connections a series of three brief interactive sessions - strategy, skills, and prioritisation – was facilitated.

All 15 members from SDU Library attended the internal workshop.

9 out of 15 participants completed the *ex-post* questionnaire. The *ex-ante* questionnaire was not handed out.

4.3 Learning by doing activities

From July to November 2022 the CeOS_SE partners carried out 8 different kinds of *Learning by doing* activities in their national languages.

The activities gathered in total 182 participants.

Each activity was followed by a questionnaire designed to evaluate it, as well as to determine how satisfied participants were with their experience and whether they would be likely to participate in additional CSA events in the future.

The questionnaire also offered the participants an occasion to reflect upon the activity. According to Klob (1984) reflection is an important component of the “Learning by doing” experience and of the Experiential Learning Cycle.²⁰

The Learning by doing questionnaire was answered in total by 121 out of 182 (66%) participants to the CeOS_SE Learning by doing events.

4.3.1 Learning by doing - UT

Title: Women in science

Summary of the activity			
Date:	Duration:	Targeted audience:	Number of
4 November 2022	7 hours	university students	participants: 12

²⁰ David A. Kolb, *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall, 1984.

Type of activity: Editathon Format replicable: Yes	Speakers/facilitators: Elena Giglia (UT) Camelia Boban (WikiDonne APS Project, Wikimedia Foundation)	Number of speakers/facilitators: 2
Training material availability: <ul style="list-style-type: none"> • https://unito.webex.com/webappng/sites/unito/recording/891323283e4b103bbf3900505681416f/playback 	Location: Campus Luigi Einaudi, UT, Turin online: Webex and Wikipedia	Language: Italian
Topics and activities		
<ul style="list-style-type: none"> • CeOS_SE • Wikimedia • WikiDonne APS Project 	<ul style="list-style-type: none"> • Participants, both in presence and online, edited or translated in Italian in Wikipedia records of famous women in science 	
Data analysed		
Questionnaire for the participants	No	

Overview and Description

On the 4th of November 2022, UT carried out an editathon in Wikipedia, the first one of UT planned learning by doing activities. The editathon - a marathon of editing voices in Wikipedia - was organised by UT in collaboration with Wikimedia Foundation. Presenter and editor of Wikimedia Foundation was Camelia Boban, also Chair of the WikiDonne APS project.

Aim of the activity was to edit Wikipedia records of famous women in science.

The editathon was open to all but mainly addressed to university students. Venue of the activity was the Campus Luigi Einaudi of the University of Turin; however the event was also supported by Facebook streaming. At the beginning, Elena Giglia (CeOS_SE)

and Camelia Boban (Wikimedia Foundation) held two presentations, respectively on CeOS_SE and on Wikipedia and Wikimedia Foundation.

As a result of the all-day long marathon 15 new records of women scientists were edited and 15 records were modified by 12 volunteers including 3 editors from the Wikimedia Foundation.

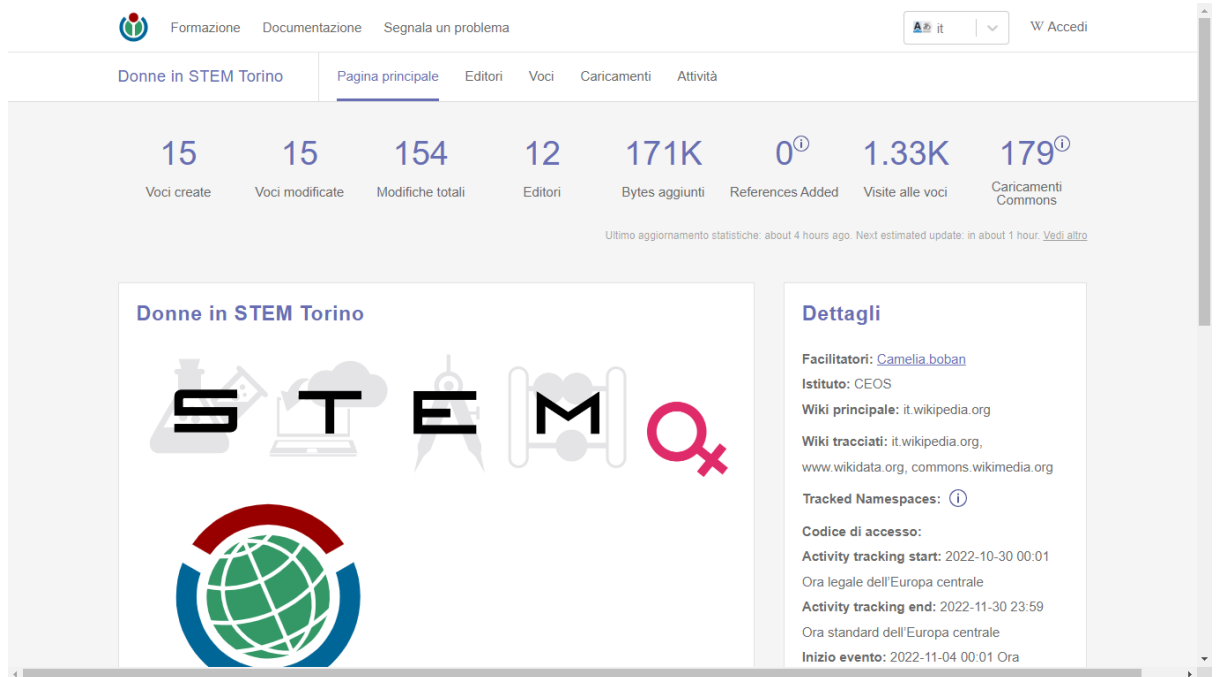


Figure 18 - WikiDonne APS project's page administrator showing the results of the all-day long editathon carried out in presence and online in Turin, Italy, 4 November 2022



Figure 19 - Camelia Boban, Elena Giglia and some of the participants at UT editathon event, Turin, Italy, 4 November 2022



Figure 20 - Camelia Boban presenting Wikipedia's edit page structure during editathon, Turin, Italy, 4 November 2022

Title: Citizen science, public engagement and academic libraries

Summary of the activity			
Date: 8 November 2022	Duration: 3h	Targeted audience: UT academic librarians and Staff of the UT Public Engagement Office	Number of participants: 19
Type of activity: Workshop		Speakers/facilitators: Elena Giglia (UT) Andrea De Bortoli (PE UT Office)	Number of speakers/facilitators: 2
Format replicable: Yes			
Training material availability: <ul style="list-style-type: none"> Slides were share internally 		Location: Arturo Graf Library, UT, Turin, Italy	Language: Italian
Topics and activities			
<ul style="list-style-type: none"> Public engagement (PE) at universities Role of libraries in PE CS projects at UT CS and libraries CeOS_SE 		<p>Interactive discussion and brainstorming on PE and CS.</p> <p>Participants discussed together a strategy for the future involvement of UT libraries in CS.</p>	
Data analysed			
Questionnaire for the participants		Yes	
Lesson learned		Yes	

Overview and Description

On November 8th 2022 UT carried out a second learning by doing activity: i.e. an internal workshop on citizen science addressed to UT librarians, internship students from the Universal Civil Service (Servizio Civile Universale) and administrative staff from the UT Public Engagement Office, including Andrea De Bortoli, the UT Public Engagement Office Manager.

The workshop's aim was to introduce the CeOS_SE project, examine all public engagement activities of the UT libraries, emphasise the value of CS for the academia and the society, highlight the role of academic libraries in supporting CS and, last but not least, to develop a strategy for the future involvement of UT libraries in CS.

The initial stages of the strategy include:

- tracking of all the manifold PE activities carried out by the UT libraries in order to coordinate their action with the PE Office;
- tracking of all CS projects UT is involved in.

8 out of 19 participants completed the questionnaire.



Figure 21 - Elena Giglia presenting CeOS_SE project at UT internal workshop, Turin, Italy, 8 November 2022



Figure 22 - Participants at UT internal workshop, Turin, Italy, 8 November 2022

4.3.2 Learning by doing - UP

Title: Protection of personal data on the Internet

Summary of the activity			
Date: 25 November 2022	Duration: 3 h	Targeted audience: University students	Number of participants: 33
Type of activity: Interactive workshop	Format replicable: Yes	Speakers/facilitators: Nantia Lantavou (CSI-COP) Aggeliki Karakonstanti (CSI-COP)	Number of speakers/facilitators: 2

Training material availability: <ul style="list-style-type: none"> MOOC available at https://csi-cop.eu/informal-education-mooc/ 	Location: Library & Information Center of University of Patras. Patras, Greece	Language: Greek
Topics and activities		
<ul style="list-style-type: none"> Privacy and GDPR 	Students carried out a survey on the compliance of selected websites and apps with the General Data Protection Regulation (GDPR)	
Data analysed		
Questionnaire for the participants	Yes	
Lesson learned	Yes	

Overview and Description

As part of advocating for Citizen Science, Library & Information Center of University of Patras in collaboration with the research team of the [CSI-COP](#) project, and the participation of EESTEC LC Patras organised on November 25, 2022 the workshop “Protection of personal data on the Internet”.

The workshop’s aim was to raise awareness among the participants regarding their rights to privacy and to give them the opportunity to join the research team, if desired.

The university students of Electrical Engineering Students European association (EESTEC LC)²¹ Patras were invited to conduct a survey about the General Data Protection Regulation (GDPR) compliance of websites and apps. The contribution of citizen scientists is crucial, as a bulk of information and large amounts of data can be collected in a short time. European citizens are not required to provide the personal or private information that various websites request from them. By recording the

²¹ <https://eestec.ece.upatras.gr/about-eestec/>

information they generate, users can contribute to the development of a safer Internet so that the researchers are able to extract useful information regarding the websites and apps' compliance with the GDPR. At the same time, the participants gained knowledge for safer browsing modes on the Internet and protection of their personal data.

CSI-COP (Horizon Europe) and CeOS SE (Erasmus+) work packages served as the framework for the workshop, which was shadowed by academic and research librarians from three libraries (University of Patras Library, Hellenic Open University Library, ICEHT/FORTH Library) in order to develop skills regarding CS.

20 out of 33 participants completed the questionnaire.



Figure 23- Interactive work of participants at UP Learning by doing activity, Patras, Greece, 25 November 2022

4.3.3 Learning by doing - UCY

Title: What's in my neighbourhood? Using citizen science to map social change in Strovolos

Summary of the activity

Date: 15 November 2022	Duration: 2 h	Targeted audience: Citizens of Strovolos	Number of participants: 22
Type of activity: Interactive workshop	Format replicable: Yes	Speakers/facilitators: Michalis Ktoris (Strovolos Library) Sylvia Koukounidou (UCY) Georgios Artopoulos (CYI) Iason Giraud (CYI)	Number of speakers/facilitators: 4
Training material availability: <ul style="list-style-type: none"> Material was shared internally 	Location: Municipal Library of Strovolos, Strovolos, Cyprus	Language: Greek	
Topics and activities			
<ul style="list-style-type: none"> CS and society CS projects in Europe CeOS_SE 	Interactive workshop. Participants discussed with speakers about solutions to the problems of Cyprus cities. Citizens of Strovolos who attended the event were able to provide some data in the experimental urban mapping tool developed by Giraud in the context of his PhD research, the NI4OS-Europe project and the Cyl's Virtual Environments Lab		
Data analysed			
Questionnaire for the participants	Yes		
Lesson learned	Yes		

Overview and Description

The Library of the University of Cyprus in cooperation with the Municipal Library of Strovolos and the Cyprus Institute, organised the event entitled *What's in my neighborhood? Using citizen science to map social change in Strovolos* within the framework of the project "Citizen-enhanced Open Science in Southeastern Europe Higher Education Knowledge hubs".

The event took place under the premises of the Municipal Library of Strovolos on November 15th, 2022, with the support of the H2020 NI4OS-Europe and ENI CBC MED U-SOLVE projects. It gathered 22 participants.

The event's main goal was to promote OS and CS. The major goal was to demonstrate the benefits of using digital channels and to profit from CS methods in order to study and organise the city according to citizens' needs.

The welcome speech was given by Michalis Ktoris, the Head of the Library of Strovolos. In his speech Ktoris referred to the new role of libraries as knowledge hubs and participatory environments.

The event began with the presentation by Sylvia Koukounidou, representative of the University of Cyprus Library and CeOS_SE project. She delivered an overview of the project and a brief introduction to CS and OS to the attendees.

The next speaker, Assistant Prof. Georgios Artopoulos, gave an introductory presentation on CS, its value in understanding our cities, the benefits and the steps of the procedure of citizens involvement in research and then an introduction to the next speaker with references to what is a smart city, why it is important and how this can be achieved with the provision of best practices.

The participants also had the great opportunity to enjoy an interesting lecture by Iason Giraud, PhD Candidate at the Cyprus Institute. Giraud presented some significant tools that citizens can use to record and provide data that can be further used for constructing more viable cities with services accessible within short distances.

By making data open to the public, the citizens can create on their own the map of a better structured city and the municipalities can understand in a quantified way the qualitatively expressed needs of their citizenships.

At the end of the presentation, there was a very constructive discussion between the participants and the speakers about finding solutions to the problems of cities in Cyprus. In addition, citizens of Strovolos who attended the event were able to upload some data in the experimental urban mapping tool developed by Giraud in the context of his PhD research, the NI4OS-Europe project, and the Cyl's Virtual Environments Lab.

At the end of the workshop participants also received a QR code for future information upload.

14 out of 22 participants answered the questionnaire.



Figure 24 - Georgios Artopoulos presenting at the interactive workshop in Strovolos, Cyprus, 15 November 2022



Figure 25 - Sylvia Koukounidou and Georgios Artopoulos presenting at the interactive workshop in Strovolos, Cyprus, 15 November 2022

4.3.4 Learning by doing - UniLIB

Title: Citizen science activities: best practices on the line

Summary of the activity			
Date: 16 November, 2022	Duration: 3 h	Targeted audience: academic librarians, researchers, administrative staff	Number of participants: 29

Type of activity: Open Knowledge Cafe/Interactive workshop Format replicable: Yes	Speakers/facilitators: Nataša Dakić (UNILIB) Aleksandra Trtovac (UNILIB)	Number of speakers/facilitators: 2
Training material availability: <ul style="list-style-type: none"> Material was shared internally 	Location: University Library “Svetozar Marković”, Belgrade, Serbia	Language: Serbian
Topics and activities		
<ul style="list-style-type: none"> CS definitions and concepts CS best practices in Europe 	Brainstorming and interactive discussion with participants on CS. Participants presented a number of proposals for launching new projects to foster the involvement of citizens in scientific research in Serbia	
Data analysed		
Questionnaire for the participants	Yes	
Lesson Learned	Yes	

Overview and Description

On November 16th 2022 the CS activity *Citizen science activities: best practices on the line* was held under the premises of the University Library “Svetozar Marković”, in Belgrade.

Open Knowledge Cafè leaders were: Nataša Dakić and Aleksandra Trtovac (UniLIB and CeOS_SE).

29 people, including 24 academic librarians, 4 researchers, and 1 member of the administrative library staff, attended the event.

Through the presentation of best practices in CS in Europe, but also at the University of Belgrade and at the University Library "Svetozar Marković", the concept of CS itself was presented to the attendees.

The presentations were followed by a lively discussion among attendees.

The Open Knowledge Café attendees offered several ideas for launching new projects and activities to encourage the participation of citizens in scientific research in Serbia.

All 29 participants completed the questionnaire.

4.3.5 Learning by doing - NSK

Title: Well-being and self-help in academic online environment

Summary of the activity			
Date: 14 November 2022	Duration: 2h	Targeted audience: university students	Number of participants: 20
Type of activity: Lecture and workshop	Format replicable: Yes	Speakers/lecturers: Dolores Mumelaš (National and University Library in Zagreb) Iva Žurić Jakovina (University of Rijeka)	Number of speakers/lecturers: 2
Training material availability: <ul style="list-style-type: none"> : https://www.youtube.com/watch?v=UWSZa5yJerk 	Location: Faculty of Humanities and Social Sciences of the University of Zagreb, Croatia	Language: Croatian	
Topics and activities			

<ul style="list-style-type: none"> Well-being and self-help. Definitions and main concepts 	Participants were asked to search the Portal of Croatian scientific and professional journals, Hrčak (the Hamster) in order to collect numerical data on the topic of well-being and self-help in Croatian scientific and professional journals.
Data analysed	
Questionnaire for the participants	Yes
Lesson learned	Yes

Overview and Description

On November 14th 2022, NSK carried out the CSA: *Well-being and self-help in academic online environment*.

In recent years, there has been an increase in public awareness of the significance of wellbeing and self-help, with a focus on young people. On these two subjects, a lot of scholarly books and articles have been written.

The Internet provides a wealth of such content in the shape of newspaper articles, posts, e-books, evaluation papers, professional and scientific articles, as well as other forms of content related to well-being and self-help.

The latter typologies of publications were the core of the activity: *Well-being and self-help in an academic online environment*.

In the first part of the activity, the attendees were addressed by Prof. Iva Žurić Jakovina from the Department of Cultural Studies, Faculty of Philosophy, University of Rijeka, whose primary area of interest is this topic.

Being the author of several scientific papers on the topic of self-help, she explained to the participants the concept, importance and purpose of well-being and self-help.

The second part of the activity involved a short instruction and some searches on Hrčak (the Hamster), the Portal of Croatian scientific and professional journals, in order to see

the representation of the topic of *well-being* and *self-help* in Croatian scientific and professional literature.

The participants were divided into groups based on topics and keywords. The groups collected numerical data on journals in which the main topic is represented, keywords that are most often associated with it, scientific areas and scientific fields in which it most often appears, etc. (we will elaborate with the professor).

The gathered data would be used by Prof. Iva Žurić Jakovina for her scientific studies so this activity could be characterised as a CSA.

During the activity emphasis was placed on the importance of Open Access, OS and CS.

The activity's main objective was to show libraries, particularly NSK, as places that provide access to professional and scientific literature on the topic of well-being and self-help.

Specific goals of the Learning by doing activity were:

- developing information literacy;
- promoting OS;
- emphasising the importance of open access;
- developing awareness of the importance of self-help;
- monitoring the scientific productivity of the Republic of Croatia on the subject of self-help;
- inclusion of NSK in the European Year of Youth;
- connecting activities with the UN goals for sustainable development (Goal 3: health and well-being).



Figure 26

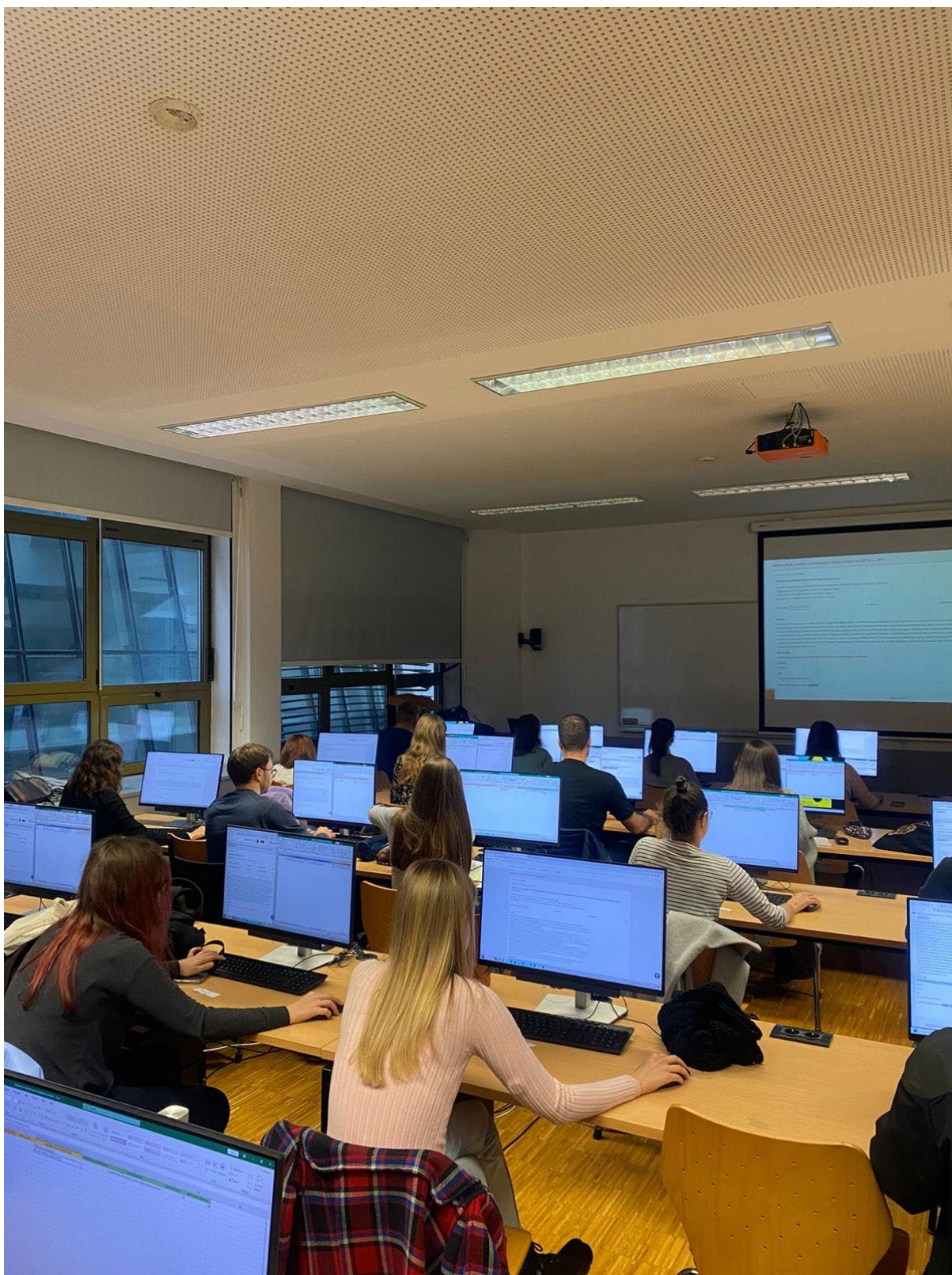


Figure 27 - Students of the University of Zagreb listening to Prof. Iva Žurić Jakovina (University of Rijeka) and collecting data during the NSK Learning by doing activity, Zagreb, 16 November 2022

4.3.6 Learning by doing - UniBIT

Title: Social Media & Citizen Science in Gen Z's Life

Summary of the activity			
Date: 28 July 2022	Duration:3 h	Targeted audience: Erasmus+ exchange, young scientists, specialists from UniBIT university library, pupils, and University staff	Number of participants: 30
Type of activity: Open Knowledge Café	Format replicable: Yes	Speakers/facilitators: Tereza Trencheva (UniBIT) Svetoslava Dimitrova (UniBIT)	Number of speakers/facilitators: 2
Training material availability: <ul style="list-style-type: none"> Material was shared internally 	Location: University of Library Studies and Information Technologies – Sofia, Bulgaria	Language: Bulgarian	
Topics and activities			
<ul style="list-style-type: none"> Social media analysis Meaning and role of the concepts EdgeRank, Social Graph, and Open Graph 	Divided in groups, participants received a product/service/app to design a campaign to promote it on social media. Each group had to present two posts for social media and one		

<ul style="list-style-type: none"> Hashtags and how to use reels 	influencer to build successful promotion strategies.
Data analysed	
Questionnaire for the participants	Yes
Lesson learned	Yes

Overview and Description

On July 28th 2022, the University of Library Studies and Information Technologies (UniBIT) in Sofia, Bulgaria held an Open Knowledge Café entitled *Social Media & Citizen Science in Gen Z's Life*.

The Open Knowledge Café's main goal was to increase public knowledge of the CeOS SE project and CS initiatives taking place in Europe. The activity examined social media and their capacity to build successful promotion strategies.

Participants at the Open Knowledge Café included university personnel, young scientists, experts from the UniBIT university library, and Erasmus+ exchange students.

The event was open to citizens, university lecturers, and pupils.

After a first presentation of the CeOS_SE project given by Prof. Tereza Trencheva (UniBIT), Svetoslava Dimitrova (UniBIT) presented the Facebook Algorithm and Facebook Insights.

Key indicators and signals that the Facebook Algorithm considers in order to prioritise different types of content in the News Feed were discussed. Questions were answered about the meaning and role of the concepts EdgeRank, Social Graph, and Open Graph and how to optimise and create content to be shown more prominently in the News Feed; platform specifics and how to create a personal and business profile were addressed.

Hashtags were defined and explained and how to use reels to our advantage. The history, current trends and benefits of TikTok for companies were also considered.

The event continued at the UniBIT University Library, one of the co-organisers of the event. In this informal environment, participants were divided into five groups to continue their activities.

Each group received a product/service/app and had to design a campaign to promote it on social media. New books, the Duolingo ABC app, the TV show "Only Murders in the Building," and skincare goods were among the promotional campaigns the participants were asked to create.

As each team presented their campaign, guidance was given, and all teams chose the best presentations.

The event was an opportunity for interested participants to learn about the usage of social media in an open way, while also contributing to the knowledge of how young people view the marketing potential of online platforms.



Figure 28 - Svetoslava Dimitrova presenting at the Open Knowledge Cafè, University of Library Studies and Information Technologies, Sofia, 28 July 2022



Figure 29 - Open Knowledge Cafè participants at the University of Library Studies and Information Technologies, Sofia, 28 July 2022



Figure 30 - Tereza Trencheva and all participants at the Open Knowledge Cafè of the University of Library Studies and Information Technologies, Sofia, 28 July 2022

4.3.7 Learning by doing - SDU

Title: Learning by doing: Citizen Science collaboration and European funding opportunities

Summary of the activity			
Date: 18 November, 2022	Duration: 5 h	Targeted audience: researchers	Number of participants: 30
Type of activity: Interactive workshop Format replicable: Yes		Speakers/facilitators: Thomas Kaarsted (SDU) Anne Kathrine Overgaard (SDU)	Number of speakers/facilitators: 2
Training material availability: workshop material was shared internally		Location: SDU Library, SDU, Odense, Denmark	Language: Danish
Topics and activities			
<ul style="list-style-type: none"> ● CS in Horizon Europe ● CS projects in Europe 		Knowledge sharing, training and a clinic together with SDU Research and Innovation Organization	
Data analysed			
Questionnaire for the participants		Yes	
Lesson learned		Yes	

Overview and Description

On 18 November 2022 SDU organised the Citizen-enhanced Open Science event: Learning by doing: Citizen Science collaboration and European funding opportunities.

The event was conceived as a knowledge sharing, training and clinic together with SDU Research and Innovation Organization (SDU RIO). It was aimed to researchers.

By focusing on the upcoming Horizon Europe calls with a strong Citizen Science component, participants were introduced to the calls and their objectives and discussed various CS methods and projects among themselves but facilitated by the SDU Library and SDU RIO.

The 5-hour event (clinic) proved to be a valuable learning outcome in terms of:

- a. Cross-collaboration within research with Citizen Science as a core component;
- b. New participants were onboarded;
- c. Internal partnerships were strengthened;
- d. Number of following project meetings.

5. Analysis of the questionnaires

5.1 The Train the Trainers questionnaires

In line with the *CeOS_SE Training design and implementation Framework, v1*, delivered at the end of the PR3A1 activity, UT shared with partners two questionnaires to assess the training activities: one *ex-ante* and one *ex-post* questionnaire. The two questionnaires were discussed with all partners during the LTTA event in September 2022 in Zagreb.

The first questionnaire was conceived to be handed out to participants before the training; the second one to be given immediately after the training. Partners were asked to translate the questionnaires in their mother tongue and to translate the answers in English.

Aims of the *ex- ante* questionnaire were:

- a) to explore the characteristics of the participants in order to assess the rate of inclusiveness, intention to remain engaged in CS activities, which is best predicted by their position, age, role held in library ecc., their OS and CS knowledge, and their motivations and expectations about the training. These

aims are in line with *CeOS_SE Training design and implementation Framework* which recommends to assess target audience motivation (p.8);

b) to assess the knowledge level of the classroom in order to provide the trainers with feedback to balance duration, content and in-depth level of content and to consider the best way to approach different target audiences (see *PR3A1 Training design and implementation Framework* , p. 9).

The objective of the *ex-post* questionnaire was to evaluate the success of CeOS_SE training courses by measuring the increased level of knowledge on the OS and CS topics and the level of satisfaction of the participants.

A total of 117 of the 213 (54%) participants in the CeOS_SE training events responded to the Train the trainers *ex-ante* questionnaire.

A total of 136 of the 213 (63%) participants in the CeOS_SE training events answered the Train the trainers *ex-post* questionnaire.

5.1.1 The *ex-ante* questionnaire results

The *ex- ante* questionnaire comprised 9 questions: 6 closed and 3 open questions.

The questionnaire was designed to support the trainers in their work and to evaluate the learning experience of the participants and the success of the course in combination with the results of the *ex-post* questionnaire. Closed questions number 1, 2 and 3 provided information on the participants' affiliation, their age and the type of libraries they worked in in order to assess the participants' inclusiveness rate. Question number 4 provided information on the participants' roles in their libraries.

Closed questions number 5 and 6 aimed to self-assess on a Likert scale the level of knowledge of OS and CS.

Closed question number 7 aimed to assess whether or not the participants were already involved in OS and CS activities.

The 3 open-ended questions (5, 8 and 9) provided descriptive data on the participants and explored their professional role, inside and outside the library, and their expectations of the training.

As indicated by Marzano and Pickering,²² a successful learning experience involves a complex system of interactive processes. In order to assess all aspects of this complex system, the 9 questions of the *ex-ante* questionnaire were classified according to 2 conceptual dimensions adapted from 2 of Marzano and Pickering's 5 dimensions of learning: attitude, adapted from the *attitudes and perceptions* dimension and learning adapted from the *extending knowledge* dimension.²³

In particular, we considered that the attitude dimension is strictly linked to both personal elements such as age and to professional elements such as affiliation, library community, and role and duties (questions 1-4). These measures are also important to rate the inclusiveness of the learning experience of CeOS_SE courses and to give a measure of the diversity of participants to the training activities.

Questions number 5, 6, 7, 8, and 9 belong to the learning dimension.

In particular, questions number 5 and 6 were introduced to measure the level of increase in participants' personal knowledge on OS and CS topics, providing a comparison between the results of the *ex-ante* questionnaire and the results of the *ex-post* questionnaire.

Questions 7, 8 and 9 consider that a successful learning experience is influenced by elements such as professional experience, personal expectations and motivation. The latter two are emotional elements and play an important role in the learning process.²⁴

²² Robert J. Marzano - Debra J. Pickering, *Dimensions of learning, Dimensions of learning: teacher's manual*, 2nd edition Aurora (Co) : McRel, 1997.

Marzano and Pickering's 5 learning dimensions are: 1) attitudes and perceptions, 2) Acquire and integrate knowledge; 3) Extend knowledge; 4) Use knowledge meaningfully; 5) Habits of mind.

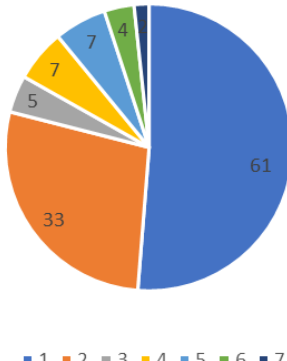
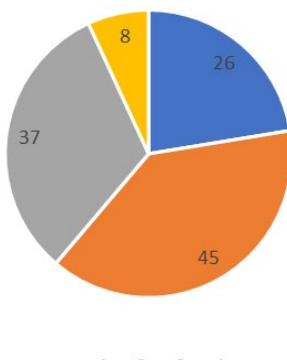
²³ Robert J. Marzano and Debra J. Pickering et al., cit. 1997.

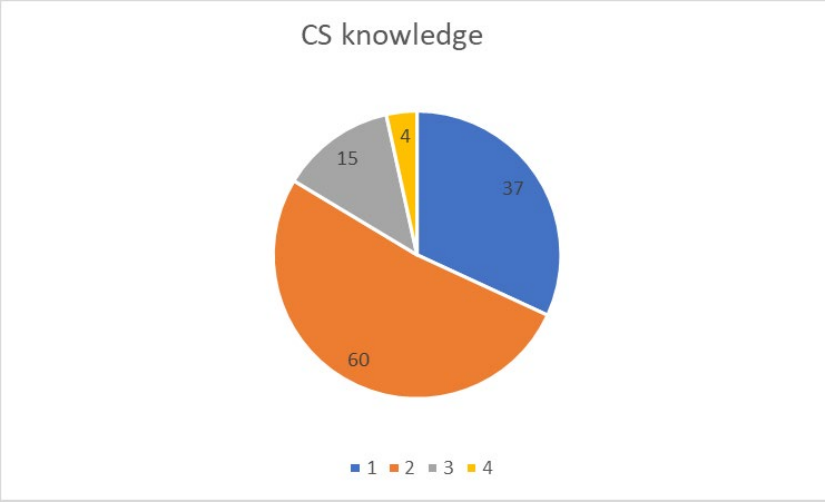
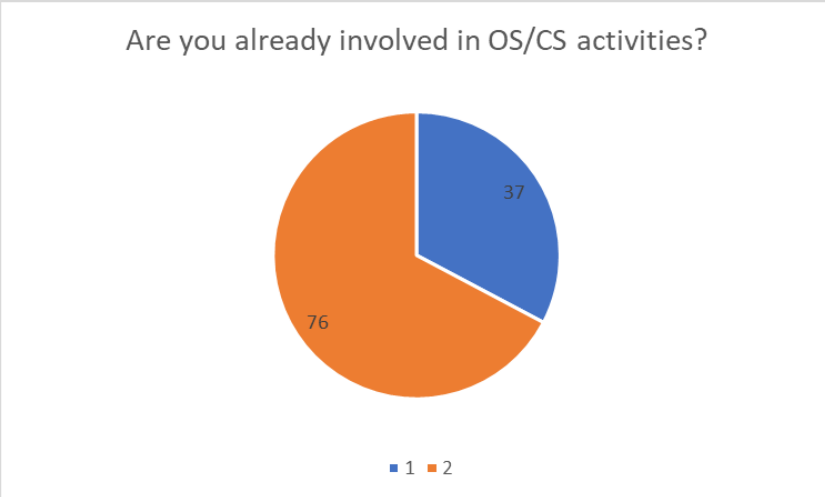
²⁴ See Robert J. Marzano and Debra J. Pickering et al., cit. 1997.

Table 3 - Ex-ante questionnaire results

Ex-ante questionnaire. General results

<p>1. Attitude.</p> <p>Variety of the affiliations</p> <p>University =74</p> <p>Ministry of education = 16</p> <p>Municipality = 2</p> <p>Library consortia = 2</p>	<p>Participants affiliations</p>  <table border="1"> <caption>Participants affiliations</caption> <thead> <tr> <th>Category</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>1 (University)</td> <td>74</td> </tr> <tr> <td>2 (Ministry of education)</td> <td>16</td> </tr> <tr> <td>3 (Municipality)</td> <td>2</td> </tr> <tr> <td>4 (Library consortia)</td> <td>2</td> </tr> </tbody> </table>	Category	Count	1 (University)	74	2 (Ministry of education)	16	3 (Municipality)	2	4 (Library consortia)	2
Category	Count										
1 (University)	74										
2 (Ministry of education)	16										
3 (Municipality)	2										
4 (Library consortia)	2										
<p>2. Attitude.</p> <p>Age of the participants</p> <p>46= 50-65</p> <p>33=40-50</p> <p>23=30-40</p> <p>14= 20-30</p>	<p>Age of the participants</p>  <table border="1"> <caption>Age of the participants</caption> <thead> <tr> <th>Category</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>1 (20-30)</td> <td>14</td> </tr> <tr> <td>2 (30-40)</td> <td>23</td> </tr> <tr> <td>3 (40-50)</td> <td>33</td> </tr> <tr> <td>4 (50-65)</td> <td>46</td> </tr> </tbody> </table>	Category	Count	1 (20-30)	14	2 (30-40)	23	3 (40-50)	33	4 (50-65)	46
Category	Count										
1 (20-30)	14										
2 (30-40)	23										
3 (40-50)	33										
4 (50-65)	46										

<p>3. Attitude.</p> <p>Library community/Community</p> <p>Academic library = 61</p> <p>National Library = 33</p> <p>Faculty= 7</p> <p>HE research staff= 7</p> <p>Public library=5</p> <p>Students=4</p> <p>School library =2</p>	<p style="text-align: center;">Library community</p>  <table border="1"> <caption>Data for Library community pie chart</caption> <thead> <tr> <th>Category</th> <th>Count</th> </tr> </thead> <tbody> <tr><td>1</td><td>61</td></tr> <tr><td>2</td><td>33</td></tr> <tr><td>3</td><td>7</td></tr> <tr><td>4</td><td>7</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>4</td></tr> <tr><td>7</td><td>2</td></tr> </tbody> </table>	Category	Count	1	61	2	33	3	7	4	7	5	5	6	4	7	2
Category	Count																
1	61																
2	33																
3	7																
4	7																
5	5																
6	4																
7	2																
<p>4. Attitude.</p> <p>Role held in the library and main duties</p>	<p>Open question. See 5.1.2</p>																
<p>5. Learning.</p> <p>How do you rate your personal knowledge of OS?</p> <p>Limited = 26</p> <p>Basic= 45</p> <p>Intermediate = 37</p> <p>Advanced = 8</p>	<p style="text-align: center;">OS knowledge</p>  <table border="1"> <caption>Data for OS knowledge pie chart</caption> <thead> <tr> <th>Category</th> <th>Count</th> </tr> </thead> <tbody> <tr><td>1</td><td>26</td></tr> <tr><td>2</td><td>45</td></tr> <tr><td>3</td><td>37</td></tr> <tr><td>4</td><td>8</td></tr> </tbody> </table>	Category	Count	1	26	2	45	3	37	4	8						
Category	Count																
1	26																
2	45																
3	37																
4	8																

<p>6. Learning.</p> <p>How do you rate your personal knowledge of CS?</p> <p>Limited = 37</p> <p>Basic = 60</p> <p>Intermediate = 15</p> <p>Advanced = 4</p>	<p>CS knowledge</p>  <table border="1"> <caption>CS knowledge data</caption> <thead> <tr> <th>Level</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>1 (Limited)</td> <td>37</td> </tr> <tr> <td>2 (Basic)</td> <td>60</td> </tr> <tr> <td>3 (Intermediate)</td> <td>15</td> </tr> <tr> <td>4 (Advanced)</td> <td>4</td> </tr> </tbody> </table>	Level	Count	1 (Limited)	37	2 (Basic)	60	3 (Intermediate)	15	4 (Advanced)	4
Level	Count										
1 (Limited)	37										
2 (Basic)	60										
3 (Intermediate)	15										
4 (Advanced)	4										
<p>7. Learning</p> <p>Involved or not in OS/CS activities</p> <p>No=76</p> <p>Yes=37</p>	<p>Are you already involved in OS/CS activities?</p>  <table border="1"> <caption>OS/CS activities data</caption> <thead> <tr> <th>Response</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>1 (No)</td> <td>76</td> </tr> <tr> <td>2 (Yes)</td> <td>37</td> </tr> </tbody> </table>	Response	Count	1 (No)	76	2 (Yes)	37				
Response	Count										
1 (No)	76										
2 (Yes)	37										
<p>8. Learning</p> <p>What are the topics you expect will be covered by this training activity?</p>	<p>Open question. See 5.1.2</p>										
<p>9. Learning</p> <p>What is your motivation in</p>	<p>Open question. See 5.1.2</p>										

attending this course?	
---------------------------	--

5.1.2 Analysis of the *ex-ante* questionnaire results

5.1.2.1 The Attitude dimension

Question number 1 was answered by 94 participants. Participants in the Train the Trainers' courses are mainly affiliated with the University (74), followed by the Ministry of Education (16), the Municipality (2), and Library consortia (2).

Age results from question number 2 show that 39 per cent of respondents (46/117) belong to the age range 50-65 and 28 per cent (33/117) belong to the age range 40-50.

The reason for this age division of the participants may be twofold:

- (a) professional role of the participants. A large proportion of them stated that they held the position of library director or deputy director;
- b) statistics on cultural employment in European countries, according to which the majority of employees in cultural services are between 40 and 65 years old.

25

23 participants belong to the 30-40 age group and 13 to the 20-30 age group.

Question number 3 shows that 61 participants were academic librarians.

This result is not surprising, academic libraries being the main target of the CeOS_SE project. A large majority of academic librarians were present at the UP, UNILIB and UCY events; the two UT Train the Trainers events recorded a significant presence of librarians (12) and a good participation of the Research Staff (7). The largest group of participants in the CeOS Train the Trainers activities were librarians from National Libraries (33). This result might be due to NSK's participation in the project.

²⁵ Eurostat, *Culture statistics. Culture employment*, 2021 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Culture_statistics_-_cultural_employment

The UniBIT Train the Trainers activity also drew the attention of 14 National Library librarians. It is interesting to highlight the presence of 7 faculty/researchers, 5 students, 5 public librarians, and 2 school librarians among the participants to the CeOS_SE courses; the last two participants attended the UNILIB event.

Only 53 participants answered question number 4. Regarding librarian professional roles, it must be stressed that, as stated in the BIBLIO mapping, one of the deliverables of the European Erasmus Plus project *BIBLIO*: “the title of librarian is not regulated at the EU level, no specific European qualification exists in relation to librarianship. Rather, each EU Member State has its own qualifications for this profession.”²⁶

However, from question’s number five results, we can identify 3 main areas of professional skills of participants:

1. Responsible roles as Director, Deputy Director or Project Manager;
2. Librarians roles involved in the digital transformation (for example: institutional repository manager, head of digital library department, metadata specialist, scholarly communication librarians).
3. Cataloguers.

The first two professional groups were expected to get a great interest in CS themes. CS to be developed in libraries in SE European countries needs a strategic plan, indeed. The presence of the first librarian group can be read as a positive signal of the willingness of the library leadership of SE European to adopt a strategy for the engagement of their libraries in CS projects. Not surprisingly, the group of librarians involved in the digital transformation has a strong professional interest in all innovative themes related to OS and CS. A bit surprising result was the participation of cataloguers at the CeOS_SE training activities. This result might be explained with a decision (and a personal desire!) of this group of participants to upskill and to become involved in more innovative activities. As highlighted by PR1A3 recommendations, CSA requires skills in different areas: i.e. project coordination, project management, evaluation,

²⁶ Tiana Zignani, et al. *Librarianship in Europe: mapping professional needs*, WP2, Del 2.2.1, Version 1.1. 20. 08.2020 https://www.biblio-project.eu/wp-content/uploads/2020/05/BIBLIO_WP2_Mapping-Professional-Needs_Report.pdf

research data management, publishing FAIR data, preservation of data and protocols, and GDPR.

Skills in advocacy, arranging events, facilitating workshops, teaching, and communications are also to be considered in devolving CSA.²⁷ All above mentioned skills rarely apply to cataloguers; however, CSA to be successful often require involvement of all library staff.²⁸ By modifying libraries priorities, CSA offers librarians the occasion to rethink library internal organisation.

Overall, the CeOS_SE training activities scored high in the attitude/inclusion dimension as they gathered the attention of a variety of library communities, professional roles and stakeholders like researchers and students. Participation of researchers at the training courses can be gauged as a recognition of the role of libraries and librarians in education and might foster active future collaborations between libraries and researchers.

On the contrary, it must be stressed the limited participation of public librarians to CeOS_SE Train the trainers events. This result highlights a necessity of closer collaboration between academic and public libraries in SE countries. As assessed in CeOS PR2A3 deliverable, public libraries “are a very important partner in the implementation of citizen science activities precisely because of their set of skills.”²⁹

School librarians were also very scarcely represented.

5.1.2.2 The Learning dimension

As shown in table number 3, questions number 5 to 9 belong to the learning dimension of the training experience, as they measure the participants' personal knowledge level

²⁷ See: LIBER Citizen Science Working Group, *Citizen Science for Research Libraries. A Guide*. Section 1. Citizen Science Skilling for Library Staff, Researchers and the Public, available at <https://cs4rl.github.io/guide/#/>.

²⁸ See: Maria Cassella, *Terza missione e biblioteche accademiche ... missione possibile?*, “Biblioteche oggi”, 36 (2018), April, available at <http://www.bibliotecheoggi.it/rivista/issue/view/58>

²⁹ Dolores Mumelas, Alisa Martek, Dorja Mucnjak, *Upscaling collaboration between academic and public libraries for CeOS in SE Europe*, Study, 2023 available at <https://zenodo.org/record/7414551#.Y77W5XbMJPY>

on OS/CS topics, providing a comparison between these results and the results of the ex-post questionnaire.

The data resulting from questions 5 and 6 highlight the difference between the levels of knowledge of OS and CS among the librarians. Regarding the former, 45 (38%) librarians self-assess that they have intermediate or advanced knowledge of the subject; on the contrary, only 19 librarians admit to having intermediate or advanced knowledge of the CS subject. 71 librarians self-assess a limited or basic knowledge of CS; referring to CS, the number of librarians with basic or limited knowledge rises to 97. These results show the need for an intensive training action in South-East European countries to develop CSA in South-East European libraries. It should be noted that the SDU participants did not complete the ex-ante questionnaire.

Questions 7, 8 and 9 explore the emotional dimension of the learning experience, which refers to previous involvement in OS and CS activities and motivations, which can be both personal and professional.

Not surprisingly, 76 participants declared not to be involved in OS/CS activities; 36 stated they were (question number 7).

This result is consistent with the PR1A2 results and could be related to:

- a) the strong desire of librarians not involved in OS/CS activities to be updated;
- b) the need for the leadership of Southeast Europe libraries to accelerate the transition of their libraries towards more innovative themes and topics such as open science and citizen science.

Referring to the topics that the participants expected to be covered (question number 8), most of the respondents expressed the desire to have a basic introduction to CS, to better understand the relationship between OS and CS, but also to receive explanations on how to actively connect libraries and society and to be involved in CS projects. Some participants linked the concepts of OS and CS to a proactive and leading role of academic libraries in academic communication. Two respondents expressed a desire to learn more about the CeOS_SE project.

Regarding the motivation of the participants (question number 9), most of them stated that they wanted to acquire new skills, wanted to update themselves; 11 respondents

stated that they participated in the training course in order to get new ideas, to carry out new projects, to promote their library's role in CS projects and to develop new strategies for involving the public.

Overall, the answers to the last two questions show that OS and CS are considered innovative topics closely linked to innovative strategic library planning.

5.1.3 Ex-post questionnaire results

The objective of the ex-post questionnaire was to evaluate the success of the CeOS_SE training courses by measuring the increase in the level of knowledge of the topics and the level of satisfaction of the participants.

The questionnaire comprised 14 questions: 8 closed and 6 open.

As we did for the ex-ante questionnaire and inspired by Marzano and Pickering, the 14 questions of the ex-post questionnaire were classified into 4 conceptual domains: learning, satisfaction, impact and vision.

The questionnaire was designed in two parts: the first included 9 questions and was designed to assess the training activity; the second part included 5 more general questions and aimed to explore the participants' ideas about the role of academic libraries in CS projects and their views on the future of academic libraries. CS is indeed an innovative topic for libraries and its consolidation in the libraries' agenda is closely linked to the participants' vision of the future of their libraries.

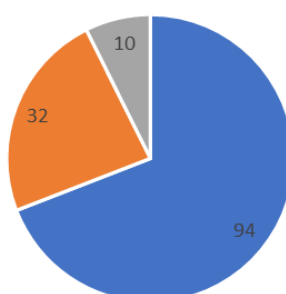
Questions number 2, 4, 5, 6 and 7 were introduced in the questionnaire to measure the content and level of success of the training courses by assessing the increase in the level of knowledge and awareness of OS and CS among the participants. These questions belong to the learning dimension.

Questions 1 and 9 were introduced to assess the level of personal satisfaction of the participants and the usefulness of the training activities. These two questions belong to the satisfaction dimension.

Questions 3 and 8 were introduced in order to assess the real impact of training courses on participants' work. They belong to the impact dimension.

The second part of the questionnaire comprised five questions and was designed to assess the participants' vision of library involvement in CS activities and projects. These last five questions belong to the vision dimension.

Table 4 - Ex-post questionnaire results

Ex-post questionnaire. General results									
Part A.									
<p>1. Satisfaction. From 1 to 5 how do you evaluate this training course? (1= not useful- 5= extremely useful)</p> <p>94 =5 32= 4 10 =3</p>	<p>General course evaluation</p>  <table border="1" style="margin: 10px auto;"> <caption>General course evaluation data</caption> <thead> <tr> <th>Rating</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>94</td> </tr> <tr> <td>2</td> <td>32</td> </tr> <tr> <td>3</td> <td>10</td> </tr> </tbody> </table>	Rating	Percentage	1	94	2	32	3	10
Rating	Percentage								
1	94								
2	32								
3	10								

2. Learning.

From 1 to 5 how much do you think your knowledge on OS/CS issues increased? (1= I don't think I learned something new 5= I think I acquired new and relevant competencies)

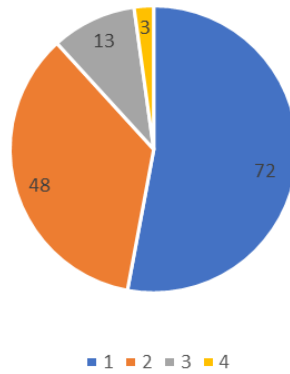
72=5

48=4

13=3

3=2

OS/CS increased knowledge



3. Impact.

From 1 to 5 how much of what you have learned will you be able to apply in your work? (1-I will not be able to apply these competencies in my work; 5= I will use these competencies in my daily activity)

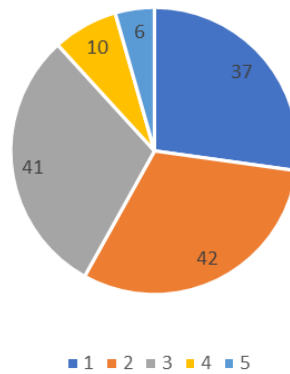
37=5

42=4

41=3

10=2

Impact on work



6=1

4. Learning.

Do you think the level of the course was: (a. adequate; b. too difficult; c. too easy d. too theoretical e. too practical; f. uneven; g. other)

113=adequate

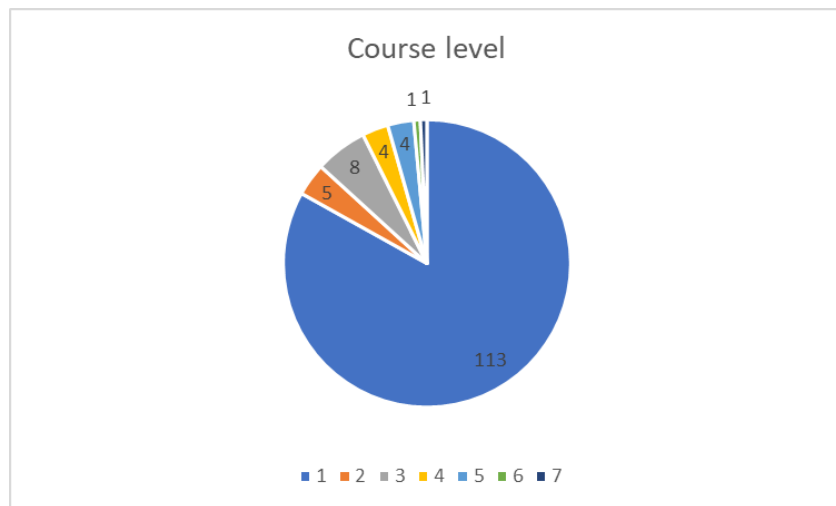
8= too theoretical

5 = too difficult

5 = other

4 = too practical

1 = uneven

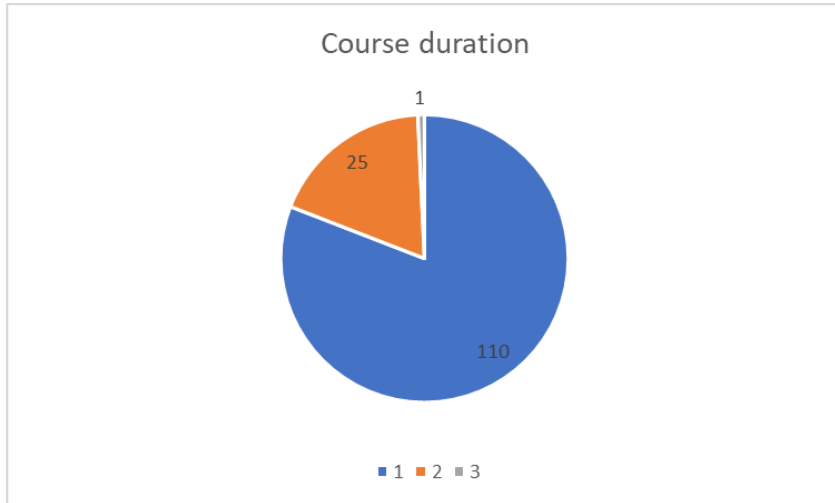


5. Learning.
 Do you think the duration of the course was: (a. adequate; b. too long; c. too short; d. other)?

110 = adequate

25 = too short

1 = other



6. Learning.
 What arguments/themes do you think should have been treated more in-depth?

Open question. See 5.1.4

7. Learning.
 According to you, what arguments/themes were superfluous?

Open question. See 5.1.4

8. Impact.

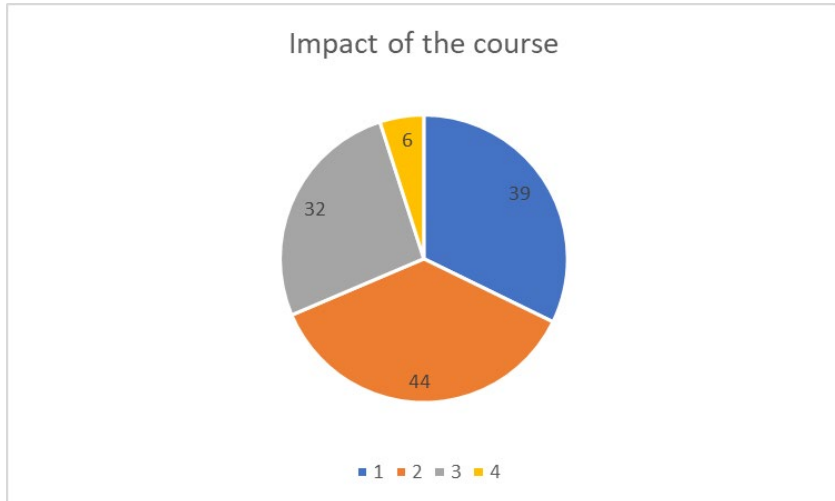
In general, from 1 to 5 how much do you rate the course and its impact on your work? (1= I think the course was neither useful nor interesting 5= I found the course extremely useful for my work and interesting)

39 =5

44 =4

32 =3

6 =2



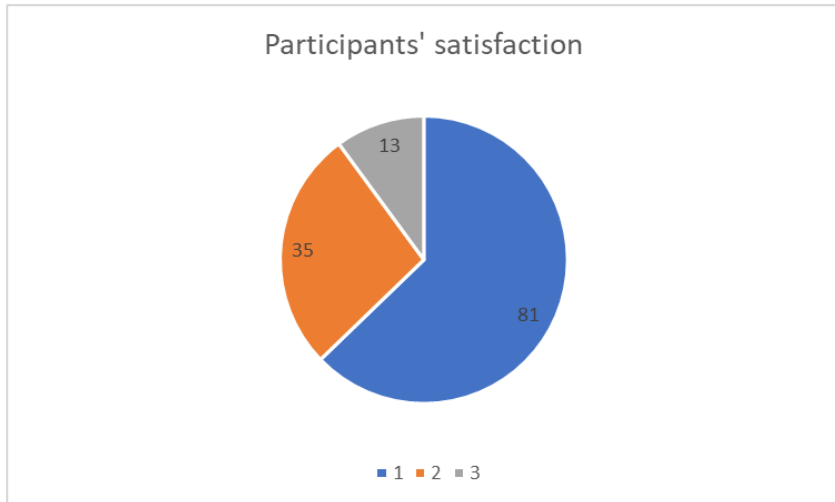
9. Satisfaction

From 1 to 5 how much were your expectations about this course satisfied? (1= I was disappointed 5 = I was completely satisfied)

81=5

35=4

13=3



Part B.

10. Vision

What do you think about academic libraries becoming involved in citizen science projects and activities?

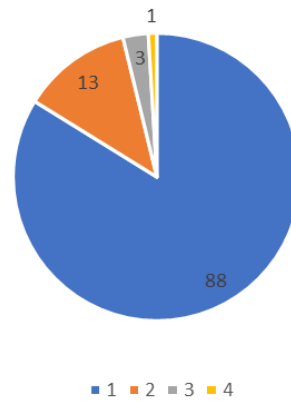
88 = enthusiast

13 = convinced but cautious

3 = don't know

1 = contrary

Should academic libraries be involved in CS?



11. Vision

Do you think your library should become more involved in CS projects and activities?

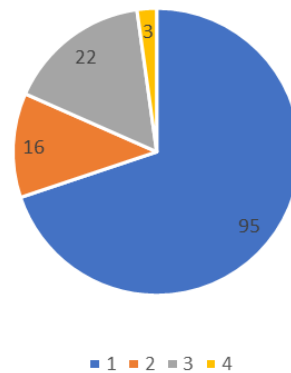
95 = yes

16 = no

22 = no answer

3 = don't know

Libraries and CS



12. Vision

If yes, why?

Open question. See 5.1.4

13. Vision

Does your leadership support the idea of your library becoming

Open question. See 5.1.4

involved in public engagement activities?	
14. Vision. How do you envisage the future role of academic/public/national libraries in your country?	Open question. See 5.1.4

5.1.4 Analysis of the *ex-post* questionnaire results

5.1.4.1 The Learning dimension

Overall, the CeOS_SE Train the Trainers activities scored very high on a Likert scale from 1= not useful to 5 =extremely useful: 95 participants out of 136 scored 5; 32 =4 and 10 =3 (question number 1). None scored 2 or 1.

These extremely positive results are confirmed by the results of question number 2.

On a Likert scale from 1 to 5 (1= I don't think I learnt anything new 5= I think I acquired new and relevant skills), 72 participants scored 5, rating that they acquired new and relevant skills on OS and CS; 48 scored 4; 13 participants scored 3 and only 3 scored 2 (1 for UniBIT, 1 for NSK and 1 for the UP course).

In general, all CeOS_SE trainers' training activities can be considered very successful and educational.

Questions number 4, 5, 6 and 7 were introduced to assess the content and duration of the training activities.

The level of the courses (question number 4) was considered adequate by 113 out of 136 respondents, too theoretical by 8, too difficult by 5, too practical by 4, uneven by one. 5 participants answered 'other': 3 of them specified that the course was a) interesting; b) extremely comprehensive; c) extremely comprehensive and timely. All these 3 answers came from UniBIT training course participants.

The duration of the courses ranged from 2 to 4 hours. The duration (question 5) was considered adequate by 110 participants out of 136 and too short by 25 participants. 1 person gave the answer = other, without specifying what she/he meant.

Question 6 was completed by 64 respondents.

Among the topics that should have been covered in more depth, most respondents stated that they would have appreciated more case studies and examples of libraries involved in CS projects; they also expressed a wish for practical suggestions on how to involve citizens in CS projects and how to motivate volunteers (UNILIB). The latter two are crucial issues for CS projects, as often highlighted in the literature.³⁰

One Croatian respondent (NSK) emphasised the need for expertise on funding and another on Citizen Humanities as a new area of interest for libraries, citizen scientists and researchers.³¹ Funding and strategy were also two topics mentioned by a Danish SDU participant: the answers to the SDU questionnaire show a high level of awareness of CS issues and challenges, the SDU library being a best practice in Europe in relation to CS issues and activities, as demonstrated by both PR1A3 and PR2A3 results.

Among the UniBIT group participants, one respondent emphasised the importance of addressing stakeholder arguments, another strategic issue for the development of OS and CS activities.

Table 5 shows the most relevant answers to question 6.

³⁰ Katrine Vohland et al., *The science of citizen science*, Springer, 2021
<https://link.springer.com/book/10.1007/978-3-030-58278-4>

Rosanna Morriello, *Citizen science. One of the eight pillars of open science identified by the European Union*, "JLIS.It", 12 (2021), 3, pp. 33–52. <https://doi.org/10.4403/jlis.it-12761>

³¹ Barbara Heinisch, et al. *Citizen Humanities*, in Katrine Vohland et al., *The science of citizen science*, Springer, 2021 <https://link.springer.com/book/10.1007/978-3-030-58278-4>

Table 5 - Ex-post questionnaire. Selection of answers to question n. 6

Question number	CeOS_SE Partner	Comments of the participants
6	UT	<ol style="list-style-type: none"> 1. More case studies on CS projects
6	UP	<ol style="list-style-type: none"> 2. Examples of activities in other places 3. Role of libraries in CS more specifically 4. Maybe the exercises needed more time for brainstorming 5. How could an individual citizen involve himself in the process
6	UNILIB	<ol style="list-style-type: none"> 6. how a library in general could influence the growth of CS; 7. how to approach CS to the citizens; 8. how to approach citizens to CS; 9. motivation of the possible volunteers and availability of tools, information, applications and projects; 10. structure of projects; 11. more examples of inclusion libraries in CS;

6	UCY	<p>12. More examples</p> <p>13. More practical implementations</p>
6	NSK	<p>14. The relationship between citizen science and other common library activities, similarities and differences, the relationship between crowdsourcing and citizen science;</p> <p>15. Citizen Humanities,</p> <p>16. Financing;</p> <p>17. Examples in practice, activating groups that would participate.</p>
6	UNIBIT	<p>18. Why civil society would take part; -application of Open Science and Citizen Science; -stakeholders for development of OS and CS; -good examples for conducting initiatives in OS and CS; -participation of libraries in OS and CS initiatives;</p> <p>19. More practical examples; examples of successful practices in the field of CS as part of OS.</p>

		20. The subject for promotion of citizen and Open Science in Bulgaria
6	SDU	<ul style="list-style-type: none"> 21. Strategy and funding 22. How to start up projects 23. The spin-off values that arise in local environments and the anchoring in the concept of local citizen; 24. Actual implementation of new ideas; 25. How to engage external stakeholders

The answers to question 7 were less relevant than the answers to question 6, but consistent in their assessment of the success of CeOS_SE's training activities.

All but 2 respondents stated that all training topics were relevant.

One participant from the UP stated that the exercises were not clearly understandable and found them too difficult; one participant from the SDU stated that the introduction to CS was unnecessary for him.

Overall, the CeOS_SE training activities can be considered very successful: all trainers/speakers succeeded in sharing their knowledge and stimulating curiosity and a proactive approach to CS.

5.1.4.2 The Impact dimension

Questions 3 and 8 aimed at assessing the impact of CeOS_SE training activities on personal daily work. By impact is meant a change in habits, mind, way of thinking and/or working.

Concerning question number 3, on a Likert scale from 1 to 5 (1= I will not be able to apply these skills in my work; 5= I will use these skills in my daily work), 37 participants gave a score of 5; 42 gave a score of 4, 41 gave a score of 3, 10 gave a score of 2, and only 6 gave a score of 1.

Concerning question number 8, on a Likert scale from 1 to 5 (=I found the course extremely useful for my work and interesting), 39 participants gave a score of 5; 44 gave a score of 4, 32 gave a score of 3, and only 6 gave a score of 2. No participant gave a score of 1.

These results assess the usefulness of the CeOS_SE training activities, the practical application of the newly acquired knowledge and skills and the participants' desire to

- a) promote the library's participation in the CSA and/or
- b) to be actively involved in CS projects.

5.1.4.3 The Satisfaction dimension

Question number 9 aimed at assessing on a Lickert scale the level of satisfaction of participants at the CeOS_SE training activities.

81 participants gave a score of 5 (= I was completely satisfied), 35 gave a score of 4, and 13 =3.

No participant gave a score of 2 or 1.

Data show that satisfaction level about all the CeOS_SE training courses was very high.

5.1.4.4 The vision dimension

During the LTTA meeting in Zagreb it was decided to add a second relevant part to the ex-post questionnaire to highlight the participants' vision of the future of academic libraries, with the aim of supporting a strategic plan towards the involvement of libraries in CS planning and projects.

Questions number 10, 11, 12 and 13 belong to this vision dimension.

Question number 10 was answered by 105 participants.

Based on the answers to question number 10, the participants can be divided into 4 groups:

- The enthusiasts;
- The convinced but cautious;
- The uncertain (don't know);
- The not convinced.

88 participants were enthusiastic about the idea of involving academic libraries in CS projects and activities; 13 participants said they were convinced but cautious, 3 said they did not know, 1 participant was against and answered no.

While question 10 focused on academic libraries in general, questions 11 and 12 restricted the participants' view to the local area of their libraries.

All but 2 of the participants who answered this question (101) agreed that their library should be involved in the CSA.

Table 6 shows the most relevant reasons participants gave for supporting this idea (question 12).

Table 6 - Ex-post questionnaire. Selection of answers to question n. 12

Question number	CeOS_SE Partner	Comments of the participants
12	UT	<p>1. It is an inclusion issue and therefore I think it is important for my library to become involved;</p> <p>2. It is important both at professional and at personal level for a librarian;</p> <p>3. To foster the citizens' interaction with libraries;</p>
12	UP	<p>4. To improve library services;</p> <p>5. Even the smallest community or academic library can find a research or societal topic that could make good use of the citizens and make them part of scientific research;</p> <p>6. To strengthen our relationship with local community;</p>
12	UNILIB	<p>7. Academic libraries need to get out of their limited field of action and open up to the general audience;</p> <p>8. We will have more data for our researchers;</p> <p>9. It is mutually useful, citizen connected to their libraries and librarians are in close communication with them;</p>

12	UCY	<p>10. To support citizens;</p> <p>11. To support research;</p>
12	NSK	<p>12. Because of the greater presence in the community for which it is intended;</p> <p>13. To promote scientific way of thinking and knowledge, to include citizens and democratisation and transparency of science;</p> <p>14. Cooperation of citizens and scientists is crucial;</p>
12	UNIBIT	<p>15. To position my library in the society:</p> <p>16. Possibility to promote the library activity and attracting audiences and readers;</p> <p>17. Because it creates new horizons for both sides;</p>
12	SDU	<p>18. To build relevant triple helix partnerships:</p> <p>19. To promote research for and with society;</p> <p>20. Libraries have to keep up with developments and make themselves useful both to citizens but certainly also to society. Today, it is not enough just to have access to literature to develop civilizations and</p>

		societies and the individual human being; 22. It fits in with library DNA.
--	--	---

Question 13 broadens the evaluation perspective. It was introduced to highlight a challenge for libraries in taking an active role in CS: the lack of commitment on the part of governance.

Referring to this question, one can detect differences between the partners. In SDU and UCY all respondents, 9/9 respectively, stated that the governance of SDU and UCY is committed to the library and its involvement in CS projects and plans. In UniBIT 17/23 respondents stated that their governance is supportive of the idea. Also 12/25 participants in NSK's train-the-trainer activity, 12/32 in UNILIB's train-the-trainer activity and 10/20 participants in UP's workshop stated that their governance is committed to CS library activities.

UT is a negative exception, as all but 2 participants in question 13 responded that their governance did not support the active involvement of libraries in CSA or that they did not know what their governance's attitude towards libraries was. The questionnaire seems to have revealed a kind of mismatch between UT libraries and governance, which may not be very sensitive to Open Science issues.

Question 14 was answered by 69 participants: the data show different visions for the future of libraries, but all innovative and positive.

Table 7 shows the most relevant comments on the participants' future vision of libraries (question 14).

Table 7 - Ex-post questionnaire. Selection of answers to question n. 14

Question	CeOS_SE Partner	Comments of the participants
----------	-----------------	------------------------------

14	UT	No answers for this question
14	UP	No answers for this question
14	UNILIB	<ol style="list-style-type: none"> 1. As innovative hubs offering workshops, user engagement and participation activities and training courses, as well as access to various tools and technologies; 2. I think they will have great role in Open Science and in CS projects; 3. A role in OS and CS advocacy and information literacy among users and citizens; 4. The library will become a between science, scientists and users; . 5. This role is in direct relation to the priorities of Serbian society and government; for now, this future is not bright; 6. I think that librarians will become some kind of citizens, teachers, and leaders in their communities. No great country without a great library. No great country without science. Thank you for this workshop!

14	UCY	7. Libraries as Research centres
14	NSK	8. Inclusive; 9. They will be more and more involved in planning and projects;
14	UniBIT	10. To reassert themselves as leading knowledge hubs; 11. I hope that they will be able to return their previous importance to the society and have full reading rooms again. To be a factor in the cultural growth of each one; 12. To help people in creating a better society
14	SDU	13. Libraries should really be about open education, open knowledge and Open Science. CS plays a role into this; 14. I see their role as a facilitator of societal impact of new research knowledge giving libraries 'licence to exist' also in the future; 15. As active co-players and co-developers; 16. To help people in creating a better society. 17. The library will become a hybrid with different roles.

		Public libraries have already taken over various assignments such as handling passports and drivers licences. I think academic libraries will become more engaged in CS
--	--	---

5.2 The Learning by doing questionnaire

In order to evaluate the Learning by doing activities during the LTTA event in September 2022 in Zagreb, UT prepared and shared with the partners a third questionnaire to be handed out to the CeOS_SE training participants.

The purpose of the questionnaire was to assess the participants' motivation and level of satisfaction with the Learning by doing activity, their general attitude towards Citizen Science and the likelihood that they would take part in future CS projects and initiatives.

The questionnaire comprised 14 questions and was divided into two parts. In the first part, information was collected on the age, gender and community of the participants.

In the second part, the UT designed 11 questions to assess the participants' previous knowledge of CS concepts, their satisfaction and likelihood of participating in a CSA again.

As we did for the train-the-trainer activities and inspired by Marzano and Pickering's 5 dimensions,³² we adopted 4 reference dimensions to set up the third questionnaire and classify the 14 questions: the attitude dimension, the learning dimension, the satisfaction dimension and the vision dimension.

³² Robert J. Marzano and Debra J. Pickering et al, *Dimensions of learning: teacher's manual*, 2nd edition Aurora (Co) : McRel, 1997.

Questions number 1, 2, 3, 4, 5 and 7 belong to the attitude domain: age, gender, group affiliation, decision to participate in the CSA measure the participants' attitude towards the Learning by doing experience.

Question number 6 belongs to the Learning dimension.

Questions number 8, 9, 10, 11, 12 and 13 belong to the Satisfaction domain. The level of liking and profitability of the activities, but also elements of dissatisfaction and possible limitations of the organisation influence the perception of the participants and consequently the success of the activity itself and the possibility of repeating the experience.

Question 14 belongs to the Vision dimension.

The CeOS_SE partners were asked to translate the questionnaire into their mother tongue and to translate the answers into English. The questionnaire was handed over to the participants at the end of the activities.

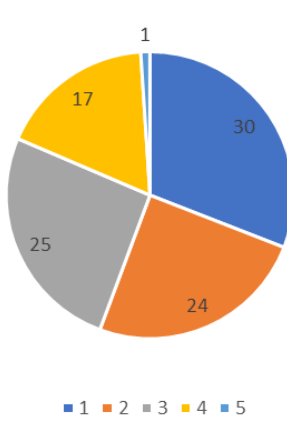
A total of 121 of the 195 (62%) participants in the CeOS_SE Learning by doing events answered the questionnaire.

5.2.2 Analysis of the Learning by doing questionnaire's results

Table 8 shows a summary of the results of the Learning by doing questionnaire.

Table 8 - Learning by doing questionnaire's results

Learning by doing questionnaire. General results

<p>1. Attitude.</p> <p>Age of the participants</p> <p>46 + =30;</p> <p>36-45=24;</p> <p>25-35=25;</p> <p>18-25=17;</p> <p>16-20=1</p>	<p style="text-align: center;">Age of participants</p>  <p style="text-align: center;">■ 1 ■ 2 ■ 3 ■ 4 ■ 5</p>
<p>2. Attitude.</p> <p>Gender of the participants</p> <p>70 = Female</p> <p>25 = Male</p>	<p style="text-align: center;">Gender</p>  <p style="text-align: center;">■ 1 ■ 2</p>

3. Attitude.

Stakeholders' group

48 = librarian

38 = university students

17 = administrative

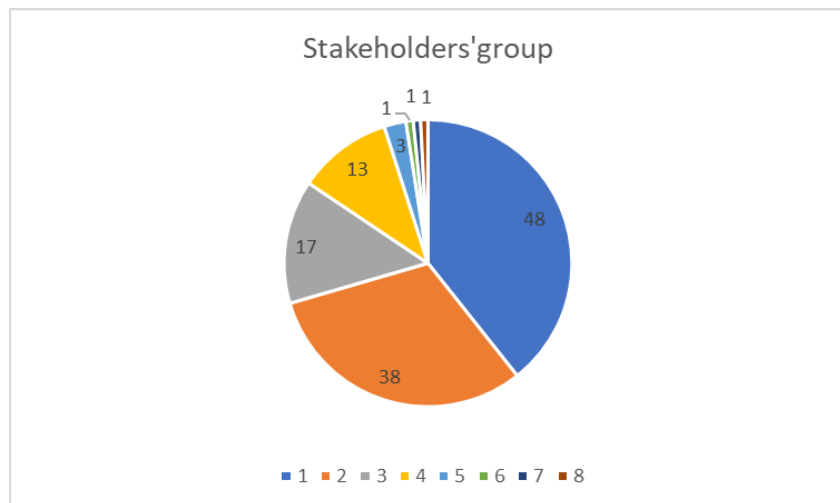
13 = researcher

3 = other

1 = policy maker

1 = school student

1 = teacher

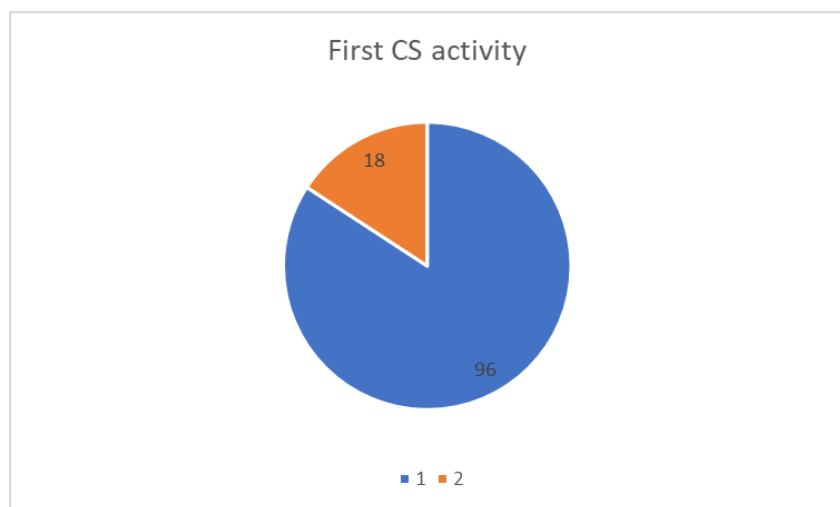


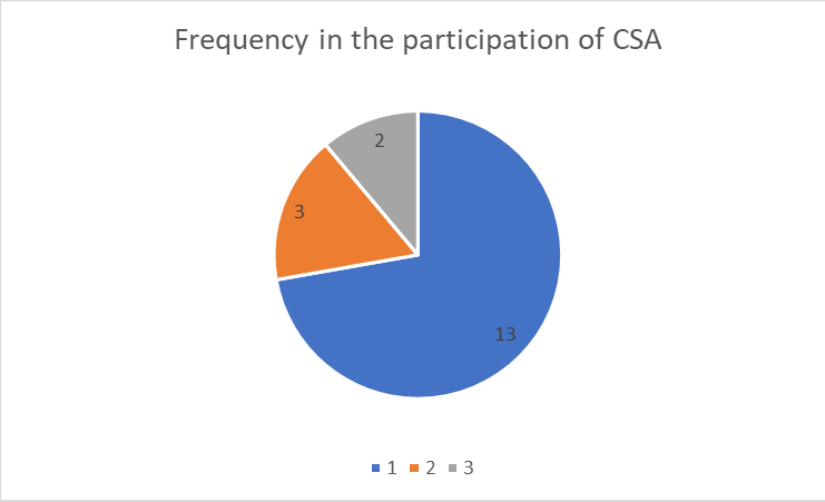
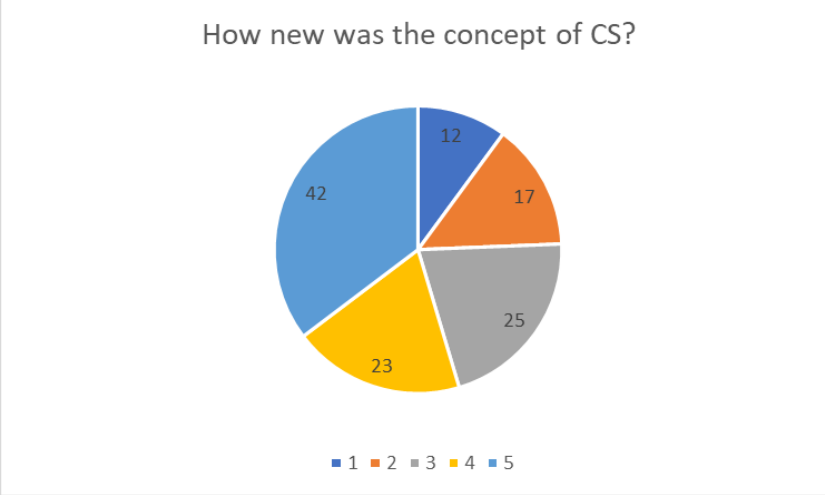
4. Attitude.

Is this the first time you took part in a citizen science activity?

96 = Yes

18 = No



<p>5. Attitude.</p> <p>(optional) If not, how many times have you taken part in a citizen science activity or volunteered in a CS project?</p> <p>13= 1-3 times; 3= 3-10 times; 2= more than 10 times;</p>	<p>Frequency in the participation of CSA</p>  <table border="1"> <caption>Data for Frequency in the participation of CSA</caption> <thead> <tr> <th>Frequency</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13</td> </tr> <tr> <td>2</td> <td>3</td> </tr> <tr> <td>3</td> <td>2</td> </tr> </tbody> </table>	Frequency	Count	1	13	2	3	3	2				
Frequency	Count												
1	13												
2	3												
3	2												
<p>6. Learning.</p> <p>How new was the concept of citizen science to you? (1=Unknown - 5=I know it well)</p> <p>12=5 17=4 25=3 23=2 42=1</p>	<p>How new was the concept of CS?</p>  <table border="1"> <caption>Data for How new was the concept of CS?</caption> <thead> <tr> <th>Rating</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>42</td> </tr> <tr> <td>2</td> <td>12</td> </tr> <tr> <td>3</td> <td>17</td> </tr> <tr> <td>4</td> <td>25</td> </tr> <tr> <td>5</td> <td>23</td> </tr> </tbody> </table>	Rating	Count	1	42	2	12	3	17	4	25	5	23
Rating	Count												
1	42												
2	12												
3	17												
4	25												
5	23												
<p>7. Attitude.</p> <p>Why did you decide to take part/volunteer in the ---[insert the denomination of your planned activity] ?</p>	<p>Open question. See 5.2.3</p>												

8. Satisfaction.

From 1 to 5 how much did you like taking part in [insert the denomination of your planned activity] ? (1= I didn't like it at all – 5 = I liked it a lot)

77 = 5

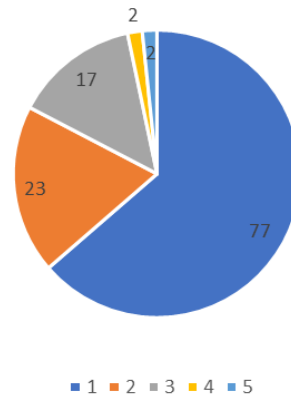
23=4

17=3

2=2

2=1

Participants activities' likeness



9. Satisfaction

Please explain in a few words what you liked most about -----
[insert the denomination of your planned activity]

Open question. See 5.2.3

10. Satisfaction.

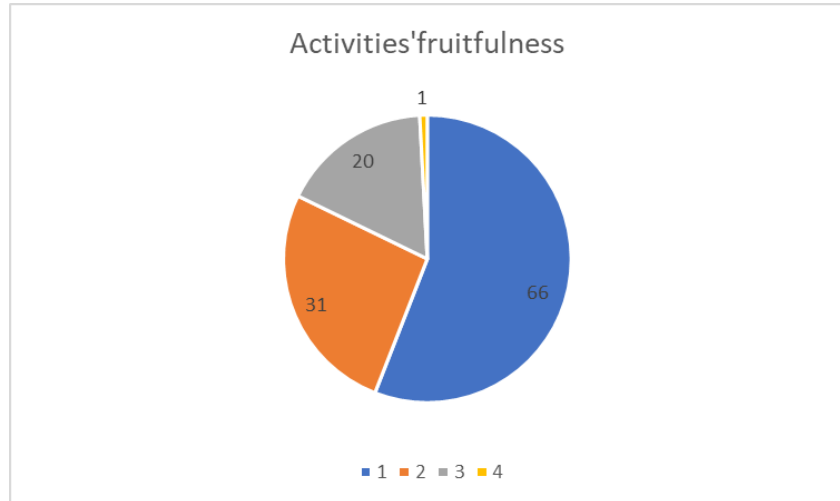
Was it fruitful taking part in [insert the denomination of your planned activity] ? (1= Absolutely not – 5 = Yes , at all)

66=5

31=4

20=3

1=2



11. Satisfaction.

What were the main difficulties in taking part in the -


----- [insert the denomination of your planned activity] , if any?

Open question. See 5.2.3

12. Satisfaction

Is there anything to be improved in the organisation and/or in the activity itself?

Open question. See 5.2.3

<p>13. Satisfaction</p> <p>If the library will organise citizen science activities in the future, will you be willing to take part in it?</p> <p>112 =Yes</p> <p>4= No</p> <p>3 = Don't know</p>	<p>In future will you be willing in taking part in CSA?</p>  <table border="1"> <caption>Data for Question 13: Willingness to participate in CSA</caption> <thead> <tr> <th>Response</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>1 (Yes)</td> <td>112</td> </tr> <tr> <td>2 (No)</td> <td>4</td> </tr> <tr> <td>3 (Don't know)</td> <td>3</td> </tr> </tbody> </table>	Response	Count	1 (Yes)	112	2 (No)	4	3 (Don't know)	3
Response	Count								
1 (Yes)	112								
2 (No)	4								
3 (Don't know)	3								
<p>14. Vision</p> <p>Please explain in few words why according to you citizen science is important for the society and for science</p>	<p>Open question. See 5.2.3</p>								

5.2.2.1 The Attitude dimension

The answers to questions 1, 2 and 3 show a wide variety of ages and stakeholder groups of the participants in the CeOS partners' Learning by doing activities.

The answers to question 1 show that 30 of the 97 respondents were older than 46; the group 36-45 and the group 25-35 were well balanced and comprised 24 and 25 respondents, respectively.

Extremely important is the participation of the two groups of young people in the CSA: 17 participants belonged to the 18-25 group and 1 (presumably a school student) belonged to the 16-20 group.

Young people are strategic for the future of OS and CS, as they can foster a real paradigm shift in the construction of science and the relationship between science and society.

Librarians (48) were the largest group of participants, followed by university students (38), administrative staff (17) and researchers (13). 1 policy maker, 1 student and 1 teacher also participated in CeOS_SE activities (question number 3).

The latter three groups are often considered extremely relevant for future OS and CS developments, as policy makers may adopt policies and plans to promote Open Science and Citizen Science, while students and teachers often participate as volunteers in CS projects.

Unfortunately, CeOS_SE only attracted the attention of three of them (one from each stakeholder group). This is not a positive result. On the other hand, the variety of participants in the stakeholder groups is positive. Overall, the learning by doing activities had a high rate of inclusiveness.

Not surprisingly, 70 participants were female and 25 male (question number 3).

The results of question 4 reveal that 96 of the participants were newcomers; only 18 respondents were not participating in a CSA for the first time. This is another positive result of the CSA organised by the CeOS_SE partners, as they were able to reach new audiences, to solicit the interest of non-experts and unqualified professionals.

According to the answers to question 5, among the non-expert participants 13 stated that they usually participate in the CSA 1 to 3 times a year, 3 stated that they participate in the CSA 3 to 10 times and 2 stated that they participate in the CSA more than 10 times. One of them specified that they work within a DARIAH project and also participate in Europeana's transcription activities.

Question 7 reveals a variety of motivations that drew the participants' attention to the CeOS_SE Learning by doing activities. The participants' answers are closely related to the activity carried out and differ slightly from partner to partner. Many participants declared their curiosity towards the CS topic, some declared a professional interest in the topic. One participant reported having fun while participating in the CSA. Fun is an extremely powerful element in attracting the attention of stakeholders and volunteers to the CSA and promotes successful activities.

Some participants stated that they did not feel comfortable because it was not clear what they were going to do. The uncertainty is related to lack of personal knowledge but could also be related to lack of adequate communication by the organisers.

Table 9 shows the most interesting comments made by participants to question 7.

Table 9 - Learning by doing questionnaire. Selection of answers to question number 7

Question number	CeOS_SE Partner	Comments of the participants
7	UT	<ol style="list-style-type: none"> 1. I am curious about these topics; 2. I have a personal interest in Citizen Science and Public Engagement
7	UP	<ol style="list-style-type: none"> 3. Knowledge on how to conduct a CS activity/workshop. Necessity for knowing more cookies on the Internet; 4. I am aware of the impact Citizen Science has on the libraries and I wanted to become part of it; 5. I would like to bring new ideas to my library
7	UNILIB	<ol style="list-style-type: none"> 6. to learn more and to teach new people about it; 7. because I'm interested in CS projects;

7	UCY	<p>8. Because I think that as citizens, we can offer a lot for our city;</p> <p>9. To participate in the commons and to improve my municipality;</p> <p>10. Because I am a citizen of Strovolos and a scientist with an interest in sustainability and innovation solutions and I really and truly desire a holistic solution to sustainable city issues</p>
7	NSK	<p>11. Because there was an opportunity to participate in the workshop as part of the lectures from the Digital Library 2 course.</p>
7	UniBIT	<p>12. I have been looking for information on the subject for a long time;</p> <p>13. I am a researcher, and this is an interesting topic for me;</p> <p>14. Because CS is funny.</p>

5.2.2.2 The Learning dimension

Question number 6 explores the learning dimension of the Learning by doing activities by rating on a Likert scale of 1 to 5 (1= unknown 5= I know it very well) the novelty of CS concept for participants.

42 participants stated that the CS concept was completely new to them; 23 gave a score of 2; 25 gave a score of 3; only 17 and 12 gave a score of 4 and 5, respectively.

As already mentioned, the high involvement of non-experts in CeOS_SE Learning by doing events is an indicator of the success of the activities for all partners.

In contrast to the Train the Trainers activity, participants were not asked whether their knowledge had increased as a result of the CSA they took part in. However, from the positive answers to the questions belonging to the satisfaction domain (questions number 8, 9, 10, 11, 12 and 13) we can draw the conclusion that the participants' knowledge of CS topics increased.

5.2.2.3 The Satisfaction dimension

Questions number 8, 9, 10, 11, 12, and 13 belong to the satisfaction domain.

As Cigarini et al. write in their article,³³ “engagement is a complex and multifaceted concept. It entails cognitive, affective, social, behavioural, and motivational dimensions.”

Therefore, we were interested in investigating the emotional sphere of Learning by doing activities, gathering participants' opinions on the positive and possibly negative aspects of the activities they took part in.

Question 8 was designed to assess the participants' enjoyment of the activities on a Likert scale of 1 to 5 (1 = I did not like it at all; 5 = I liked it a lot). All Learning-by-doing activities scored very high. 77 participants liked them very much and gave a rating of 5; 23 gave a rating of 4, 17 gave a rating of 3; only 2 participants gave a rating of 2 and 1.

In question 9, participants were asked why they liked the activities in which they participated.

Some participants appreciated the format and interaction with the facilitators, others were attracted by the innovative topics and format (e.g., editathon, open knowledge café), still others stated that they appreciated the communicative aspects of the

³³ Anna Cigarini et al., *Public libraries embrace citizen science: strengths and challenges*, “Library and Information Science Research”, 43 (2021), n. 2, open access, available at <https://doi.org/10.1016/j.lisr.2021.101090>

activities and the common sharing of knowledge, both nationally and internationally, and still others stated that they appreciated the atmosphere. The latter comments were collected respectively from 1 participant in the Learning by doing activity of UniBIT and 2 participants in the Learning by doing activity of UNILIB.

All the answers in the questionnaires emphasise the importance of interaction to achieve a successful CSA.

Some of the most interesting comments of the participants in question 9 are collected in table 10.

Table 10 - Learning by doing questionnaire. Selection of answers to question number 9

Question number	CeOS_SE Partner	Comments of the participants
9	UT	1. I liked the interaction and getting and brainstorming new ideas on libraries
9	UP	2. I gained knowledge on an issue that I did not know; 3. The cooperation and communication between the members of the team; 4. My active participation in it
9	UNILIB	5. Good atmosphere, learning by concrete examples, extremely professional guidances; 6. Relaxing atmosphere; 7. Democratisation of knowledge;

		8. The idea of working with something that could be helpful and can be used for developing good results in CS projects;
9	UCY	9. The Municipality's interest in the citizen's needs 10. The innovation and vision to make science more accessible;
9	NSK	11. I liked that as students we get the experience of participating in a citizen science activity; 12. Participatory work;
9	UniBIT	13. Challenge, novelty, interesting relationships; 14. Atmosphere and information; 15. The development and increasing accessibility of modern technologies allows more and more hobbyists to collect data and conduct observations through their computers, mobile

Question 10 analyses, on a Likert scale from 1 to 5 (1= Absolutely not - 5 = Yes, not at all), the fruitfulness of the learning by doing activities carried out by the CeOS_SE partners.

The results were extremely positive: 66 participants rated the fruitfulness of the activities with a score of 5, 31 with a score of 4, 20 with a score of 3 and only one participant with a score of 2. These results assess the impact of the learning by doing activities of the CeOS_SE partners.

These results assess the impact of the CSA carried out by the CeOS_SE partners, apart from the liking assessed by the answers to questions 8 and 9.

On the contrary, with question number 11 we were interested in knowing whether the participants had experienced any personal difficulties in participating in the CSA and carrying out the tasks.

The problems highlighted by the participants' answers mainly referred to organisational issues, such as, for example, the need for registration of the event (a participant from UP) or the too short time to carry out the tasks (a participant from NSK); at the CSA event organised by UCY, one participant perceived the participation of multiple stakeholders as a disadvantage; a participant at UNILIB's learning by doing event commented on the difficulty of carrying out CSA in libraries lacking budget and staff; another expressed concern about the lack of awareness of CS on the part of researchers and librarians.

Question number 12 was added to the questionnaire to highlight possible organisational problems of the CSA. A participant from UCY emphasised the need for better promotion of the activity. A participant at the NSK event pointed out a methodological problem and called for a better distribution of tasks and a more comprehensive presentation; at the UT event, a participant stated that a general brainstorming on CS and PE before the CSA would be necessary to make the event more fruitful; referring to the CSA event organisation in general, at UNILIB a participant called for financial support.

UniBIT CSA participants reported having no organisational problems to report.

Last but not least, question 13 explored the possibility of participants participating in a CSA again.

Like the previous results, the answers were overwhelmingly positive: 112 participants responded that they would participate in a CSA again, only 4 said no and 3 were uncertain. The results show the respondents' intention to continue participating in CS projects and CSA activities.

5.2.2.4 The Vision dimension

Question 14 aimed to explore participants' views on CS. In general, the completed answers show that, by taking part in the activities, participants gained a full awareness of what CS is, its importance for research and society, and the importance of being involved in CS projects.

In Table 11 UT collected some of the most interesting comments from the participants who answered question 14.

Table 11 - Learning by doing questionnaire. Selection of answers to question number 14

Question number	CeOS_SE Partner	Comments of the participants
14	UT	<ol style="list-style-type: none"> 1. Citizen participation fosters the process of growth, consciousness and awareness. Individual growth is also social growth 2. CS ia about inclusion and inclusion fosters social relationships and knowledge sharing
14	UP	<ol style="list-style-type: none"> 3. It helps the evolution of science with faster rhythms and helps bring citizens closer to science, by developing a stronger relationship with it.
14	UNILIB	<ol style="list-style-type: none"> 4. CS can make the difference; 5. Possibility to collect more data in a shorter period, positive social impact;

14	NSK	5. Because CS enables us to progress and improves our living conditions. 6. It brings mutual benefits;
14	UniBIT	7. Democratisation of science; 8. Inclusion.

6. Lessons learned from partners

At the end of the Train the Trainers courses and the Learning by doing activities, the UT asked the CeOS_SE partners to reflect on the challenges and outcomes of the training experience as a whole.

The reflections gathered from the partners are diverse. The diversity is mainly due to 3 variables:

- The experience gained (or not) in the organisation of CSA;
- The type of activity carried out;
- The context of the activity.

Table 12 lists the events organised by each CeOS_SE partner and the total number of participants.

Table 12 - List of the events by CeOS_SE partners

CeOS_SE Partner	Events Number and references to this document	Total Participants Number
SDU	2 events. References: 4.2.7; 4.3.7	45

UT	8 events. References: 4.1.1; 4.1.2; 4.2.1.1; 4.2.1.2; 4.2.1.3; 4.2.1.4; 4.3.1.1; 4.3.1.2	62
UP	2 events. References. 4.2.2; 4.3.2	53
UCY	2. events. References. 4.2.3; 4.3.3	82
UNILIB	2 events. References. 4.2.4; 4.3.4	61
NSK	2 events References. 4.2.5; 4.3.5	52
UniBIT	2 events References. 4.2.6; 4.3.6	53

6.1. SDU Library events' outcomes and challenges

The SDU Library held two events (references in this document: 4.2.7 and 4.3.7) in November 2022.

A total of 45 people attended the two events.

The SDU events reveal a mature attitude towards CSA.

The Train the Trainers event was aimed at all SDU library staff and was conducted in the form of a dialogue (i.e. an internal workshop).

The main outcomes of the workshop were:

- to highlight the contributions on CS of all staff members
- to reach a general consensus on the usefulness of OS/CS in the library environment
- to obtain valuable indications on which skills and services should be developed and worked on further
- to create a mutual understanding of skills, services and mission.

The Learning by doing event was aimed at researchers. Some relevant lessons were drawn from the event, the most important of which were:

- researchers who are new to the CcOS agenda could benefit from advocacy;
- researchers responded positively to a competency-based CS and clinical method, combined with information on Horizon Europe calls;
- researchers were able to discuss and engage in interdisciplinary research where CS is seen as a valuable method, component or field of research in itself;
- in a dialogue with other internal partners, the library could prove valuable in advocacy for CS and OS;
- internal partners could recognise the role of the SDU Library in disseminating and working on OS/CS.

Among the main challenges, the SDU Library reports a lack of time for both library members and researchers.

Finally, SDU and LIBER were both responsible for transferring the results of the training and CSA activities.

LIBER and UP, UNILIB and NSK reported the results and lessons learned from PR3A1 and PR3A2 to members of LIBER research libraries and, in particular, to LIBER working groups (including the LIBER Citizen Science working group) during the new LIBER winter event on 1-2 December 2022 in the Lightning talk and workshop section.

6.2 UT events' outcomes and challenges

UT Open Science Office and Norberto Bobbio Library carried out 6 events (references to this document: 4.2.1.1; 4.2.1.2; 4.2.1.3; 4.2.1.4; 4.3.1.1; 4.3.1.2) from July to November 2022.

A total of 62 participants took part in the 6 events.

The main outcomes of the UT Train the Trainers and Learning by doing activities were:

- To strengthen the relationship between UT library staffs and HE research staffs;
- To strengthen the relationship between UT library staffs and UT Public Engagement Office;
- To promote at UT libraries, especially at the Norberto Bobbio Library, a relevant role in the development of CS activities;
- To track all CS projects in which UT researchers are involved;
- To foster collaboration between UT librarians and researchers;
- To define a roadmap to implement CS activities in Piedmont among academic and public libraries;
- To strengthen collaboration between UT libraries and Turin public libraries.

Main challenges of the two activities were:

- To reach the target audience;
- To find a suitable time to carry out the activities. In particular, for the Learning by doing activity, the reason why the target audience could not be reached could be due to the Italian calendar, as 4 November 2022 was Friday and very close to the 1 November holiday, the bank holidays of All Saints in Italy.

- To involve the librarians of Turin's public libraries in training activities. In particular, the training course for public libraries was postponed twice and this may have created a misunderstanding and a communication problem.

6.3 UP Library events outcomes and challenges

UP Library carried out 2 events (references to this document: 4.2.2 and 4.3.2) in October and November 2022.

A total of 53 participants took part in the two events.

As for the Train the Trainers activity, it was a winning idea to carry out this activity during the Panhellenic Academic Libraries Conference which brings together librarians from all Greece. UP Library turned out to be a best practice in Greece and many libraries were interested to know how to practically build a CS project and a network of collaborations.

The Learning by doing activity was also successful. Students were motivated to participate in it because the topic matched the interests of their community.

Main outcomes of the two activities were:

- Raise the attention of Greek academic librarians communities on CS issues;
- Create a collaborative network among Greek academic libraries on CS topics;
- Strengthen the collaboration between the UP Library and university students;
- Strengthen the collaboration of the UP Library with other European projects: i. e. CSI-COP (Horizon Europe).

Main challenges of the two activities were:

- Preparing promotional material, i.e., professionally printed material, as no budget was available to do this;
- Finding a suitable time to carry out the Learning by doing activity, as it had to be run outside working hours;
- Regarding the Train the Trainers event, two hours proved to be too short time to explore all topics relevant to CS.

6.4 UCY events outcomes and challenges

UCY carried out 2 events (references to this document: 4.2.3 and 4.3.3) from October to November 2022.

A total of 82 participants took part in the two events.

The UCY events brought together different stakeholders:

- the Train the Trainers activity attracted the attention of the academic library community. It was a winning idea to organise it during Open Access Week 2022. The event gathered 60 participants. It took place online;
- the Learning by doing event was organised in cooperation with the Municipality of Strovolos: librarians, citizens and researchers participated.

The main outcomes of the two activities were:

- Raise awareness in academic librarian communities in Cyprus about their roles in OS and CS dissemination;
- Strengthen partnerships with the Municipality of Strovolos and the public library in Strovolos in promoting Open Science and Citizen Science;
- Create a network of citizens interested in CS projects;
- Collect data;
- Connect research communities with citizens;
- Create interest and commitment for future activities.

The main challenges of the two activities were:

- Finding a suitable time to carry out the activities. In particular, for the Learning by doing activity involving citizens, the working time was not suitable. It was necessary to schedule the event in the late afternoon;
- The participation of interested citizens was a challenge;
- The unexpected death of a minister forced the cancellation of all public events in Cyprus. The Learning by doing event in Strovolos had to be rescheduled and reorganised;
- Citizens of different ages participated in the Learning by doing activity;
- Lack of digital skills in the audience.

6.5 UNILIB events' outcomes and challenges

UNILIB Library carried out 2 events (references to this document: 4.2.4 and 4.3.4) from October to November 2022.

A total of 61 participants took part in the two events.

The UNILIB Train the Trainers activity gathered the attention of librarians and researchers.

The Learning by doing event was interactive and led to some concrete project proposals from the library community.

The main outcomes of the two activities were:

- Promoting OS and CS among Serbian library communities;
- Creating a network of academic librarians interested in CS in Serbia;
- Strengthen collaboration between librarians and researchers;
- Accrediting a new training course for Serbian librarians on the topic: *Citizens' Science: Librarians as a link between science and citizens.*

The main challenges of the two activities were:

- Finding the best way to balance the training activity to different target groups (academic librarians and researchers);
- Identify Serbian librarians who might be interested in the topic in question in order to maximise the impact of the training activity;
- The downsized staff of the UNILIB library. All CeOS_SE activities were conducted by internal UNILIB staff.

6.6 NSK events' outcomes and challenges

NSK Library carried out 2 events (references to this document: 4.2.5 and 4.3.5) in November 2022.

A total of 52 participants took part in the 2 events.

Both events were organised by NSK with the support of the University of Zagreb.

The main outcomes of the two activities were:

- The integration of CS activities into the national book fair: Croatian Book Month;
- Strengthening partnerships between NSK and the Faculty of Humanities and Social Sciences of the University of Zagreb;
- Develop awareness of the importance of self-help;
- Monitor the scientific productivity of the Republic of Croatia on the topic of self-help;
- Include NSK and the Faculty of Humanities and Social Sciences in the European Year of Youth;
- Linking CS activities with the UN Sustainable Development Goals (Goal 3: Good health and well-being).

The main challenges of the two activities were:

- Identify a target audience interested in CS activities;
- Define an appropriate time to carry out the activities. The time generally depends on the audience. In particular, it was difficult to decide on the ideal time to conduct the Learning by doing activity;
- Coordinating the time of the NSK facilitators, the timelapse of the teaching lesson (called "Digital Library 2") and the time of the scientist who collaborated in the activities (the problem was solved by recording a video in which the scientist explained the topic in the form of a lecture);
- The scaled-down staff who conducted the Learning by doing activity. The data collection activity required a lot of supervision. Supervision was important considering that the data collected were intended to be analysed and published.

6.7 UniBIT events' achievements and challenges

UniBIT Library carried out 2 events (references to this document: 4.2.6 and 4.3.6) from July to November 2022.

A total of 53 participants took part in the two events.

UniBIT events were addressed to a variety of stakeholders: academic, national and public library staff, UniBIT university students, citizens.

The main outcomes of the two activities were:

- Initiate a systemic change in the way research is carried out - the standard practice of publishing final results was replaced by sharing and using people's knowledge in the research process;
- Highlight the importance of OS for the society;
- Highlight the difference between OS, Open Access and CS;
- Spread awareness among librarians attending events that they can play an important role as mediators in Citizen Science;
- Strengthen relations between UniBIT and all event participants;
- Raise participants' awareness of the importance of knowledge sharing.

The main challenges of the two activities were:

- Gathering a target audience that might be interested in Citizen Science activities and profit from the CSA;
- Some participants were not sure if their knowledge of Open Science and Citizen Science was sufficient to profitably participate in the Learning by doing event;
- Coordinating both events in a timely and appropriate manner for all parties;
- Preparing appropriate presentation content, materials that would match the professional interests of the target audience;
- Selecting appropriate case studies and practical tasks;
- With regard to the Learning by doing event, some participants were unsure whether their scarce knowledge of OS and CS was sufficient to participate fruitfully.

Finally, among the Bulgarian participants, the need for a longer and deeper understanding of the issues of OS and CS emerged.

Bulgaria is taking the first steps in the process of developing OS and CS. This process is both curious and challenging.

7. Conclusions

From analysed data sources we can drive some conclusions and propose strategic planning for the future involvement of academic libraries in CS projects and activities in SE European countries.

All PR3 activities carried out by CeOS_SE partners were successful. The success can be assessed both in quantitative and qualitative terms.

In quantitative terms, the CEOS_SE project partners (UT, UP, UCY, UNILIB, NSK, UniBIT, and SDU)³⁴ organised from July to November 2022 20 among Train the Trainers activities (12, including 2 UT training events directed to CeOS_SE partners) and Learning by doing events (8).

A total of 408 stakeholders, including academic librarians, librarians from national libraries, public librarians, researchers, university students, citizens and some other CS stakeholders (1 policy maker, 1 teacher, 1 student), participated in 18 events organised by CeOS SE partners for institutional and external stakeholders.

There were 348 participants in presence and 60 online. Both the number of events and the number of participants exceeded the parameters set by the CeOS project, in particular the PR1 CeOS_SE quality assurance indicators set for PR3 events (at least 20 participants per event).

In qualitative terms, all CeOS_SE courses were aligned to the PR3 *Training Design and Implementation Framework* and were successful in terms of participant satisfaction and in terms of usefulness, impact on daily activities, generation of innovative ideas and future projects.

Impact

A positive impact of all training and CSA activities carried out by the CeOS partners can be expected for both organisers and participants.

³⁴ LIBER, in collaboration with SDU, is responsible for a knowledge transfer of the results from the training activities and CSA. LIBER and UP, UNILIB and NSK reported on the results and lessons learned from PR3A1-2 to LIBER research libraries members and specifically the LIBER Working groups (including the LIBER Citizen Science Working Group) during the new LIBER Winter event on 1-2 December 2022 in the Lightning talk and workshop section.

As far as organisers are concerned, the European SE CeOS partners developed a structured technique for training librarians on OS and CS topics and for planning CSA.

A more organised training activity was successfully introduced by three partners (UT, NSK and UNILIB):

4. UT set a roadmap to develop together with UT public engagement office CSA and CS events in Turin. The first CS activity will be held on 11 May 2023 at the Campus Luigi Einaudi, in Turin under the premises of the Norberto Bobbio Library. The event will bring together researchers involved in CS projects and will be addressed to a target audience of schools from Turin Municipality.
5. NSK accredited the webinar *Citizen Science in libraries* for all types of libraries of the Republic of Croatia as a part of the Training Center for Continuing Education of Librarians in the Republic of Croatia (CSSU). The first webinar module was carried out on 28 February 2023. The course was attended by 140 library specialists.³⁵ The second webinar module was held on 3 March and gathered 80 librarians.
6. UNILIB also succeeded in nationally accrediting a new CS training course in Serbia for librarians. The course was held on 8 March in Novi Sad and gathered around 200 participants including public, school, and academic librarians.

Collaborations

Both Train the Trainers and Learning by doing activities attracted the interest of various stakeholders and gave all CeOS members the opportunity to improve their connections, both internally and externally:

- To organise the Learning by doing activity, UP collaborated with the CSI-COP project;
- NSK collaborated with the University of Zagreb and organisations already conducting CS projects in Croatia.
- The UT training for partners was realised in cooperation with Alessia Smaniotto, Project Manager of COESO, and Andrea Sforzi, now President of the newly founded Italian Citizen Science Association,

³⁵ More information about training course can be found here (in Croatian): <http://cssu.nsk.hr/tecajevi/gradanska-znanost-u-knjiznicama/>

- UCY strengthened its partnership with the Municipality of Strovolos and Web2Learn;
- UniBIT strengthened its partnership with the Bulgarian National Library 'Sv. Cyril and Methodius' and with the public libraries in Sofia,
- UNILIB consolidated its position in Serbia among the various library communities and strengthened its collaboration with some Serbian researchers interested in CS,
- the SDU library consolidated its role among SDU researchers as a valuable partner in CS projects.

Given the above-mentioned premises, the CeOS partners can now claim a recognised role in the promotion of CS in their respective countries.

As for the participants, the librarians and administrative staff who took part in the CeOS training activities became aware of the importance of their role in the dissemination of CS and to acquire an active role as trainers. University students and other stakeholders became aware of what CS is and why it is important for society and science.

Challenges

- Nevertheless, by carrying out Train the Trainers and Learning by doing activities CEOS_SE partners faced some challenges:
- it was difficult to gather participants, especially citizens, to be actively involved. This is one of the most recurring challenges in CS activities and has been a shared problem among the partners, with the exception of SDU. It is hoped that the increased level of collaboration between the CeOS partners and their stakeholders and the experience gained in organising 18 events will lead the library partners from the SEE countries to find solutions to solve this problem.
- Lack of library staff is a second challenge among the Eastern European partners; if not solved in the coming years, this problem might negatively affect the future development of OS and CS activities in the Eastern European country libraries.

Conclusions and main findings

From the assessment of the PR3A2 events we can draw the following conclusions:

- Librarians like to be trained on innovative topics such as OS and CS; they are curious and proactive;
- Librarians in SE European countries are aware of the importance of CS for their libraries and society;
- Librarians from SE European countries feel they have a role in promoting SO and CS in their respective countries;
- Librarians from SE European countries are aware of the need to update themselves in the field of SO and CS, in particular;
- Libraries in SE European countries need adequate staff and funding to prioritise OS and CS courses in their agenda;
- To realise successful training, libraries should try to identify relevant case studies;
- To realise a successful CSA, libraries should:
 - try to involve different stakeholders;
 - balance training activities to different target groups;
- Gathering an interested audience for the CSA is a challenge;
- Communication plays a crucial role in the realisation of successful training events and CSAs. Librarians also need to improve their communication skills.

References

CASSELLA Maria, *Terza missione e biblioteche accademiche ... missione possibile?*, "Biblioteche oggi", 36 (2018), April, available at <http://www.bibliotecheoggi.it/rivista/issue/view/58> ; <http://dx.doi.org/10.3302/0392-8586-201803-62-1>

CIGARINI Anna et al., *Public libraries embrace citizen science: strengths and challenges*, "Library and Information Science Research", 43 (2021), n. 2, open access, available at <https://doi.org/10.1016/j.lisr.2021.101090>

EUROSTAT, *Culture statistics. Culture employment*, 2021 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Culture_statistics_-_cultural_employment

GARCIA Leyla et al., *Ten simple rules for making training material FAIR*, PLOS Computational Biology 16 (5): e1007854, available at <https://doi.org/10.1371/journal.pcbi.1007854>

HAKLAY Muki, *Participatory citizen science*, in Susanne Hecker, Muki Haklay, Anne Bowser, Zen Makuch, Johannes Vogel, Aletta Bonn, *Citizen science: innovation in Open Science, society and policy*, UCL Press, 2018

HEINISCH Barbara et al., *Citizen Humanities*, in Katrine Vohland et al., *The science of citizen science*, Springer, 2021 <https://link.springer.com/book/10.1007/978-3-030-58278-4>

Horizon Europe Programme Guide, Version 2.0, 11 April 2022, p. 53, available at https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

IGNAT Tiberius et al., *Merry work: libraries and Citizen Science*, "Insights", 31 (2018)
<https://insights.uksg.org/articles/10.1629/uksg.431> ; DOI: 10.1629/uksg.431

KOLB David A., *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall, 1984

LAVE Jane - Etienne Wenger, *Situated learning : Legitimate peripheral participation*.
New York: Cambridge University Press, 1991

LIBER Citizen Science Working Group, *Citizen Science for Research Libraries. A Guide*.
Section 1. Citizen Science Skilling for Library Staff, Researchers and the Public,
available at <https://cs4rl.github.io/guide/#/>.

MARZANO Robert J. - Debra J. Pickering, with Daisy E. Arredondo et al., *Dimensions of learning: teacher's manual*, 2nd edition Aurora (Co) : McRel, 1997

MORRIELLO Rosanna, *Citizen science. One of the eight pillars of Open Science identified by the European Union*, "JLIS.It", 12 (2021), 3, pp. 33–52.
<https://doi.org/10.4403/jlis.it-12761>

MUMELAS Dolores, Alisa Martek, Dorja Mucnjak, *Upscaling collaboration between academic and public libraries for CeOS in SE Europe*, Study, 2023, available at
<https://zenodo.org/record/7414551#.Y77W5XbMJPY>

ROMERO Liz - Maria Glass, *Learning by doing: creating, engaging online learning*, "Educational Technology", 55, (2015), No. 2, p. 35-39

SCHANK R. - T. Berman - K. Macpherson, *Learning by doing*. In C. M. Reigeluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory* (Volume II). Hillsdale, NJ: Lawrence Erlbaum Associate, 1999.

UNESCO Recommendations on Open Science, 2021,

<https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>

VOHLAND Katrine et al., *The science of citizen science*, Springer, 2021

<https://link.springer.com/book/10.1007/978-3-030-58278-4>

ZIGNANI Tiana et al. *Librarianship in Europe: mapping professional needs*, WP2, Del

2.2.1 Version 1.1. 20. 08.2020 [https://www.biblio-project.eu/wp-](https://www.biblio-project.eu/wp-content/uploads/2020/05/BIBLIO_WP2_Mapping-Professional-Needs_Report.pdf)

[content/uploads/2020/05/BIBLIO_WP2_Mapping-Professional-Needs_Report.pdf](https://www.biblio-project.eu/wp-content/uploads/2020/05/BIBLIO_WP2_Mapping-Professional-Needs_Report.pdf)