DIGITAL ACTION AT HIGHER EDUCATION INSTITUTIONS AS A CATALYST FOR SOCIAL CHANGE IN THE COVID-19 CRISIS

HEIDI

Digital Actions for the Upskilling of Grassroot communities

Author:	Natasha Andronikou
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Authors(s):	Natasha Andronikou (CIP)
Contributor(s):	University College London (UCL), University of Paris (UP), Web2Learn (W2L)
Reviewer(s):	Artemis Skarlatidou (UCL), Alice Sheppard (UCL), Eugenia Covernton (UP), Constantina Stavrou (CIP), Stefania Oikonomou (W2L)
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Abstract:	This report aims to summarise the activities and events that took place in the context of Intellectual Output 3 of the HEIDI project and provide

insights into the process of HEIs involvement in communities' needs for a better future.

Keyword list: Digital Action, Grassroot communities, Digital Upskilling, Higher Education Institutions, Citizen Science, Maker movement, Activism, Civic Engagement

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Factsheet

Partnership

	Name	Short Name	Country
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2	Citizens in Power	CIP	Cyprus
3	Web2Learn	W2L	Greece
4	University of Malta	UM	Malta
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Table 2 – Consortium

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List of Abbreviations

The following table presents the acronyms used in this deliverable.

Abbreviations	Description
DA	Digital Action
HE	Higher Education
HEI	Higher Education Institution
NGO	Non-governmental organization
IO	Intellectual Output
SDG	Sustainable Development Goals
NEET	Not in Employment, Education of Training
ESL	Early School Leaver
TCN	Third Country National
AMIF	Asylum, Migration and Integration Fund

Executive Summary

The report entitled “Digital Actions for the Upskilling of Grassroot communities” provides a descriptive account of the activities that took place in the context of HEIDI’s Intellectual Output 3 (IO3). The main aim of IO3 is to join HEIs and communities, which consist of individuals experiencing fewer opportunities and significant barriers to participation, in their efforts to achieve their goals and interests, by extending knowledge of Digital Actions and providing digital upskilling opportunities and technical support. As such, HEIDI organised and facilitated the participation of communities and individuals in six (6) Roundtable events, nine (9) Webinars and six (6) Grassroot DA events, in the United Kingdom, France, Greece and Cyprus. Throughout the report the methodology applied and results from these activities are described and discussed to demonstrate the challenges and impact that HEIs’ involvement has in societal digital transformation.

1. Introduction

Scope: the HEIDI project and grassroot communities

Project HEIDI "Digital Action at HEIs as a catalyst for social change in the COVID-19 crisis" is an Erasmus+ two-year project, which aspires to reposition Higher Education Institutions (HEIs) with respect to society and enable them to become co-creators of solutions to problems that surface in crisis situations, such as the COVID-19 pandemic, environmental or other crises. Thus, the project's main objective is to not only improve the ability of Higher Education Institutions (HEIs) to support community driven knowledge development and action, but also promote Higher Education Institutions' role in matters of social significance. The three forms of Digital Action (DA) that are investigated by HEIDI are: Maker Culture or the Maker Movement, Citizen Science and Hacktivism.

Within this setting, HEIDI's Intellectual Output 3 (IO3) sees HEIs joining communities in their efforts to achieve their goals and interests, by extending knowledge of Digital Actions and providing digital upskilling opportunities and technical support. The focus is on bottom-up innovation, driven by the communities themselves in relation to their communicated needs and targets. At large the focus is on communities comprised of individuals experiencing fewer opportunities and significant barriers to participation. In an attempt to co-conduct grassroot DAs with communities and HEI's, as well as provide insights on the challenges and possibilities for HEIs' involvement in societal digital transformation, HEIDI organized and facilitated the participation of communities and individuals in six (6) Roundtable events, nine (9) Webinars and six (6) Grassroot DA events, in the United Kingdom, France, Greece and Cyprus.

- Roundtables offered an opportunity to various communities to voice their environmental, social, and other concerns.
- Webinars offered participants of various citizen groups, including those with fewer opportunities, informative sessions better explaining DAs such as Citizen Science and the Makers Movement.
- Grassroot DAs encouraged co-creation activities between communities, and HE staff and students, facilitating the exchange of information, know-how and support so that

communities can find scientifically backed solutions and state-of-the-art technology (where relevant, to societal and individual concerns.

All twenty-one (21) events and activities saw HEIs alongside NGOs and non-for-profit organisations, act in a supportive capacity and respond to the needs of communities. Whilst citizen groups were encouraged to voice their concerns, aiding HEIs understandings of barriers faced and opportunities needed for people with different backgrounds, communities were provided with pathways towards greater future involvement in DAs. This publication aims to report on this process in terms of HEIs change, fuelled by HE involvement in communities' needs for a better future.

1.2. Audiences

The HEIDI project, under IO3 targeted the involvement of grassroot communities, including participants with fewer opportunities. Events included marginalised individuals and communities with no or little knowledge of how DAs can address the challenges they face in their daily lives or the way their engagement with DAs can provide individual and community upskilling opportunities. Equally, groups and individuals that might be aware of DAs, with or no previous participation experience, were also involved in various activities, providing the grounds for their further engagement with DAs for the sake of local interests and community development. In total 512 people were engaged in IO3's events and activities. Table 1 provides a breakdown of the profile of those participants.

The HEIDI consortium recruited participants by either using their network of organisations working with community groups to provide support and upskilling opportunities or social media networks. UCL, working on the topic of Citizen Science, approached ECSA and organisations such as Spotteron (2023) to further recruit participants. For the purposes of the "Conservation Action: Our River Lea" relevant organisations were also approached, such as Thames21 (2023), London Wildlife Trust (2023), the Conservation Volunteers (2023) and others. The UP worked in association with the Learning Planet Institute (2023) and invited the participation of several organisations and individuals, such as NSDOs. W2L recruited d/Deaf students and Deaf-and-Hard-Of-Hearing trainers from the Deaf Institute of Turin (2023). CIP working on the topic of Maker Movement and targeting significantly marginalised communities (primarily comprised of vulnerable individuals with fewer opportunities), made use of

their existing collaborations in other EU funded projects, such as the AMIF project DREAMM (2021) and Erasmus+ Code4SP (2022). Such projects aim at the provision of both integration opportunities for TCN (see DREAMM) and digital skills training (see Code4SP) for people with fewer opportunities. Lead integration mentors, as well as, migrants, asylum seekers, TCNs and unemployed individuals participated in these activities. In addition, the University of Nicosia (UNIC, 2023), and the VET school at Avgorou (2023), acted as makerspaces for disadvantaged populations.

Table 1. Breakdown of participants' profile in IO3's Roundtables, Webinars and Grassroot DA.

IO3 Events and Activities

Event Title	Facilitator	Target Group
Roundtables		
Online Roundtable with communities in the UK	UCL	HEI staff and students, representatives from bottom-up citizen science projects.
Online Roundtable with participants not in employment of education (NEETs) or early school leavers (ESL)	CIP	Community engagement practitioners, training providers, Individuals not in employment or education, early school leavers and asylum seekers.
Roundtable with refugees and asylum seekers	CIP	Community engagement practitioners, training providers, refugees, asylum seekers, Third Country Nationals (TCNs) and students.
Roundtable with unemployed women	CIP	Community engagement practitioners, training providers, women not in employment and asylum seekers.
Roundtable with participants not in education, employment or training (NEETs) or at risk of early school leaving	CIP	Community engagement practitioners, training providers, individuals not in education, employment or training and early school leavers.

Roundtable with participants not in education or training (NEETs)	UP	HEI staff and students, individuals not in employment or education and early school leavers.
Webinars and Seminars		
Digital activism: scope, methodology, tools and practices	W2L	Community engagement practitioners, Deaf and Hard of Hearing trainers and Sign Language interpreters and d/Deaf individuals.
Maker movement: methodology, scope and practices	CIP	Community engagement practitioners, training providers, asylum seekers, individuals facing socio-economic and educational barriers.
Datathons, hackathons and digital hacktivism Critical data, Arts & Science: Introduction to creative coding workshop	UP	HEI staff and students and public.
Community engagement in achieving the Sustainable Development Goals (SDGs)	UP	HEI staff and students, researchers, teachers, and educators.
Introduction to Citizen Science: scope, methodology, tools and practices	UCL	HEI staff and students, researchers, representatives of bottom-up DAs, environmental workers, and the public.
Create your own Zooniverse project	UCL	HEI staff and students, representatives of research institutes and the public
Create your own nQuire project	UCL	HEI staff and students, representatives of research institutes and the public.
Introduction to City Nature Challenge	UCL	HEI staff and students, representatives of research institutes and the public.

City Nature Challenge: Event Planning	UCL	HEI staff and students, representatives of research institutes and the public.
Grassroot DAs		
Cyprus: Municipalities as makerspaces for disadvantaged groups	CIP	Community engagement practitioners, training providers
Cyprus: Engaging migrants and asylum seekers in DAs	CIP	Community engagement practitioners, training providers, migrants and asylum seekers.
Cyprus: HEIs as makerspaces for disadvantaged and unemployed groups	CIP	Community engagement practitioners, training providers and unemployed individuals
Cyprus: VET Schools as makerspaces for disadvantaged groups.	CIP	Community engagement practitioners, training providers, individuals not in employment or education and early school leavers
France: Covid-19 Digital Actions	UP	HEI staff and students, training providers, individuals not in employment or education and early school leavers.
United Kingdom: Co-creation Citizen Science event with marginalised communities in East London – My River Lea	UCL	HEI staff and students, River Lea community members including environmental consultants, market data managers, writers, artists, film makers and people in retirement.

1.3. Structure

To showcase, all those events that took place in the context of IO3 aims and objectives, provide information on the methodological guidelines that informed the approach followed, and provide insights as to the process of HEIs involvement to support communities in their efforts to provide solutions to their needs, this report is divided into four main chapters.

Chapter 2 outlines the methodological approach used in IO3 to identify needs and provide awareness-raising and upskilling opportunities for DA participation in grassroots communities. It includes a breakdown of the different strategies used in Roundtables, Webinars, and Grassroots DA to collect information, facilitate the different events, recruit marginalized participants, and the evaluation questionnaires used in the Grassroots DA.

Chapter 3 describes the six (6) Roundtables with grassroots communities, split with respect to participants' prior awareness of DA. Whilst it provides information on the communicated needs of communities, interests in, and ideas for DA, it also mentions the barriers participants with fewer opportunities face in getting involved. Finally, by viewing these roundtables as drivers of HEI responses to community "voices", this section outlines those key take-away points from HEIs, and NGOs involved.

Chapter 4 is a descriptive account of the webinars and in-person seminars that were created and customized according to both the wider target audience of HEIDI, the communities without any previous knowledge, and participants with fewer opportunities or barriers. Whilst online webinars offered both an introduction to DA and examples of how to get involved, in-person seminars took a more practical approach providing hands-on training opportunities.

Chapter 5 outlines those DA grassroots events organized by the HEIDI consortium as a response to the needs and challenges expressed by communities and individuals in Roundtable discussions. It provides information on each DA in the form of an infographic (that is also disseminated to local grassroots groups) synopsizing the activities, providing a brief analysis, outlining the methodology used and key findings deduced.

In conclusion, the report provides a synopsis of the activities undertaken in IO3 and a reflection on the process of HEIs and partner organizations' adaptations to better adjust to community needs. The focus in this section is on the manner of engagement, the approach taken or altered to facilitate both

activities and knowledge exchange, the usefulness of roundtables in structuring training events, and suggestions for planning and executing future community-driven DA.

2. Methodology

2.1. Rationale

In order for HEIs and communities to join efforts in DAs, to achieve community identified interests and wider goals, three (3) types of events were organised: Roundtables, Webinars and Grassroots DAs. Whilst Roundtables enabled HEIs and partner organisations to collect information in regards to community identified needs and concerns, webinars raised awareness of DAs and provided informal educational opportunities for any knowledge gaps identified in Roundtable sessions. Finally, Grassroots DAs, responding to the needs identified in Roundtables and upskilling opportunities offered in Webinars, offered a productive space for communities and HEIs to come together. A set of methodological approaches were set in place to:

- Best identify the needs of participating individuals and adjust HEIs processes to the "voices" of communities with limited background, knowledge, or engagement to DAs and/or facing barriers in participation.
- Customise upskilling opportunities for all communities, irrespective of background and knowledge level.
- Offer DA co-creation opportunities whilst reflecting on the process of HEI's involvement.

2.2. Roundtables, Webinars and Digital Actions with Grassroot Communities

The IO2 publication "Methodological guidelines for the design, implementation and assessment of Digital Action", available on the HEIDI's project website offered the methodological guidelines that were followed in the implementation of the activities in IO3.

2.2.1 Roundtables

To systematically create a record of participants' identified needs, drive discussion and enable the active engagement of all, a set of predefined questions were used throughout roundtable events. These questions were structured along three key areas with the main objective of collecting information from participants in terms of:

1. Their background involvement with or awareness of Digital Actions (if any) and skills.
2. Insights of their perceptions of DA and how they could help (or not) their communities.
3. The types of skills, training and support required, to be provided by HEIs and organisations to enable their participation.

This information was instrumental in shaping both the Webinars and Grassroot DAs that followed.

Roundtables were either held online or in person, and the mode of participation depended on the target groups' needs and accessibility requirements. For example, whilst online access presented the best viable option for participants in the UK, in Cyprus community groups were primarily invited to participate in roundtables held in-person so that provisions in terms of access to the internet, equipment and support in the format of language and community support workers (ie. lead integration mentors) were made available.

Introductory PowerPoint presentations were prepared prior to the start of any Roundtable event, introducing Citizen Science, the Maker Movement and Hackathons, with tangible examples of how these movements can be beneficials towards societal change and development.

Online events used the help of Padlets , Miro boards, Jamboards and in-person events used flipcharts and colourful post-it notes to collect and record participant responses. The use of this mechanism, in contrast to online surveys and individual or group interviews, was based on the understanding that it would create an interactive space, whether online or offline, allowing participants to report their thoughts in an informal group setting, with their chosen level of anonymity and interaction. For example, at in-person roundtables, as is in the Cypriot examples where participants faced language, socio-economic barriers and either personal or communal circumstances that would affect their level of interaction at the event, post-it notes were distributed to each attendee individually at the start of the roundtable event, prior to the introductory presentation on the project. Participants were

encouraged to collect their thoughts throughout rather than solely at the end of the event, allowing them extra time to familiarise themselves with the context and format of the Roundtable. The common flipchart with questions, where participants responded to questions, was made available from the beginning, and positioned at the end of the room allowing those involved to report at their own time and with their chosen degree of anonymity.

2.2.2. Webinars and in-person information sessions (Seminars)

In the planning sessions of research activities for IO3 partner organisations planned information sessions to be provided in the form of online seminars (webinars). Although the majority took the format of webinars, three (3) out of the nine (9) were facilitated in-person. The profile of participants necessitated the provision of in-person support, for example Sign Language interpreters in the "Digital activism: scope, methodology, tools and practices" (W2L). Equally, participation of asylum seekers and migrants at the "Maker movement: methodology, scope, practices" (CIP) necessitated in-person attendances so that support from community support experts was on offer (lead integration mentors). Equally, a more hands-on approach to raising awareness of the Maker movement was important for target groups often facing additional educational or language barriers. Thus, for example the in-house 3D-printing equipment was used to demonstrate the application of this technology to Digital Actions.

2.2.3. Grassroots DAs

IO3 Grassroots DA events, following the IO2 published methodology (Hurtado, Coverton, Hannibal, & Misevic, 2022), assessed the level of participants' previous knowledge of DAs, their interest or motivation in participating, the skills they consider necessary for successful participation, as well as whether their expectations were met, the likelihood of participating in future DAs and the roles they would like to have in DA.

Questionnaires followed the questions' format and context that was pre-defined and tested in IO2 . They were "aimed at understanding the impact and change at the individual level in the participants of the DA and identifying actions to strengthen their dynamics (motivation and roles) and performance (skills and level of engagement)" (Covernton , 2022). Although most questions proposed under IO2 were also used in the implementation of IO3's DAs, given that IO3 aimed to widen participation to include people with little to no experience in DAs and those with fewer opportunities or that face significant barriers, minor amendments to the questionnaires were deemed necessary. Roundtables conducted at the initial stage of IO3 identified that participants were largely unaware of DA and requiring both introductory sessions raising awareness of the different forms of DA and ways of

implementations, as well as hands-on training sessions in various digital skills and methods, to be able to find scientifically based solutions to community needs. Thus, whilst webinars, following the addressed needs provided in Roundtable discussions addressed the lack of knowledge of DA, in the events that followed, aiming at co-creating activities with communities, an additional question requesting participants-perceived skills needed for DAs was also incorporated. In addition, the question on whether the latter were "familiar with the concept of the theory of change" was also removed.

Figure 2. Engaging migrants and asylum seekers in DAs at the University of Nicosia (UNIC), Cyprus.

Figure 1. HEIs as makerspaces for disadvantaged and unemployed groups.

Table 2. Questionnaires distributed before and after participation in IO3 Grassroot DAs.

Pre- and Post Grassroots DA participation Questionnaires		
Number	Question	Metric
Pre-event Questionnaire		
1	Have you ever participated in Digital Action that addresses community needs?	1. Not at all 2. Occasionally 3. On a regular basis 4. Deeply involved in DAs
2	If you have previously participated in digital action, what was your role(s)?	1. Participant 2. Designer 3. Manager 4. I have not participated
3	Are you motivated or interested in engaging with Digital Actions that address community needs?	1. Yes 2. No 3. Other
4	What are your expectations for the event you are planning to attend?	Open question
5	What skills do you consider necessary to successfully participate in a Digital Action?	1. Digital communication 2. Digital creation 3. Problem solving and innovation. 4. Digital research 5. Other

Post-event Questionnaire		
1	Has the training you participated in met your expectations?	1. Not at all 2. I am not sure 3. Yes, it met my expectations
2	How likely are you to participate in a Digital Action project that tackles community needs in the future?	- Scale 1 to 5 - 1 Very unlikely - 5 Very likely
3	Digital Action can address the needs of different stakeholders. Which stakeholders from those listed below, do you think should be involved?	1. Companies 2. Researchers 3. Community 4. Government 5. Education staff
4	Are you motivated or interested in engaging with Digital Action that addresses community needs?	- Open question
5	Do you think the event or activity you have participated in increased your motivation or interest in participating in Digital Action that addresses community needs?	1. Not at all 2. Slightly 3. Very much
6	Based on what you have learned about Digital Action during the event you participated in, is there anything you would do differently in any future DA you will be participating in?	- Open question
7	In a future Digital Action project, what is the role you would like to have?	1. Design 2. Management 3. Participant 4. I am not sure 5. I am not interested
8	Would you recommend participating in Digital Action that addresses community needs to a friend or colleague?	1. Definitely not 2. Probably not 3. Not sure

		4. Probably 5. Definitely
9	On a scale from 1 to 10, please rate your satisfaction from attending the event.	- Scale 1 to 10 - 1 not satisfied at all - 10 very satisfied

3. Roundtables with Grassroots Communities

The HEIDI project run a total of six (6) Roundtables with grassroots communities, including marginalised individuals and participants with fewer opportunities, out of which four (4) took place in Cyprus and facilitated by CIP, one (1) in the UK by UCL and one (1) in France by the UP. Their overarching aim was to offer an opportunity to all included to "voice" their environmental, social, or other concerns, so as to help structure the subsequent Webinars and Grassroots DA events. They also offered an opportunity for HEIs to gain first hand-knowledge of real citizens' needs and adjust their approach in public participation in DAs that widens participation beyond solely data collection and reporting. This section is aimed as a reflection of the processes taken by organisers to adjust to those needs and by association fuel change in HEI's involvement in communities' upskilling needs for future participation. It is split into 2 (two) sections based on the profile of participants involved; grassroot communities with some previous experience in DAs and participants with no previous experience as well as from communities with limited opportunities.

3.1. Roundtables: Grassroots communities with some previous experience with DA's

The first roundtable for IO3, "Citizen Science and Digital Action with Communities in the UK", facilitated by UCL, although addressing all three DAs encompassed by the HEIDI project, focused primarily on Citizen Science. Invited participants included general members of the public, including representatives of Spotteron (2023)(a Citizen Science App), the **Restart Project (2023)** (an

organisation that documents built-in obsolescence of electronic devices and teaches members of the public to repair these), the **Indigenous Navigator** (2014-2023) (which builds representations for indigenous people) and **Stall Catchers** (2023) (a Citizen Science project). Moderated and instructed by UCL's Extreme Citizen Science Community Manager, all attendees engaged in fruitful discussions by following a set of pre-defined questions inviting their thoughts on citizen science and stories of bottom-up initiatives and social, environmental concerns they would like to share and/or require support in.

Questions included:

Part I

- Have you participated in co-created bottom-up activities to address any local issues? What led them? Can you share some experiences?
- Are there any environmental, social or other concerns that you or your local community has?

Part II

- Are there any ways including Digital Action that could be used to solve environmental, social or other issues that your community faces?
- What kind of support would your community need to set up a Digital Action activity to tackle the issue you are facing?
- Are there any ways, including Digital Actions, that could be used to solve the environmental, social or other issues your community is facing?

Part III

- Are you aware of any citizen science initiatives in your area that are being carried out to address the concerns you described previously?
- If there are any citizen science projects in your local community how do people react to them? Are they involved? What kind of skills, incentives, knowledge or other support would they need to more actively participate?

Participants did not wish to address all the questions, focusing primarily on those that involved their experiences with stories of bottom-up initiatives, their social, environmental concerns or other needs and the types of support that would be most useful to them to further enable their engagement with

initiatives. As such, questions not related to initiatives or experiences they were actively engaged with, such as national policies in the UK or elsewhere that could tackle their concerns, were not addressed by attendees.

Attendees' stories of bottoms-up initiatives centred on concerns with the lack of organised and unsatisfactory responses to a problem that is significant to them, such as built-in obsolescence or fly-tipped rubbish, driving their mobilisation into action and decision to provide solutions. Solutions began with the design of an information collection system, for example interviews with indigenous people or photographs of fly-tipping, or with community action in, for example, the form of public events providing training on how people can repair devices as a way of reducing waste. What is significant is the level of investment and humble beginnings of individuals driving initiatives, with Spotteron and Restart representatives reflecting that the ideas was born "in a pub", showcasing both the value and extent to which bottom-up innovation can reach.

Data privacy, and a widespread lack of understanding of it, was a concern discussed at the roundtable, with community members mentioning its impact on the pursuit of DA especially with vulnerable communities. For example, indigenous communities living in rural areas, unfamiliar with online privacy and with little access to technology, cannot fully consent to a process of data upload as they are often unaware of online data tracking processes. Equally, according to roundtable participants, popular citizen science apps such as iNaturalist (2023), designed "with American standards of privacy" might not be suitable for the higher standards of privacy identified as needed by participants. These privacy concerns informed the HEIDI consortium that future DAs in any form (inclusive of citizen science) need to consider the issue of privacy. Further research on alternative options, steps to raise public awareness of privacy processes and online data tracking, as well as technical literacy are some of the steps that need to be taken to redress these concerns. According to Alice Sheppard, UCL's Community Manager and one of the facilitators of this roundtable, "This in itself demonstrates the importance of bringing together multiple perspectives in a shared space such as roundtables".

When asked what types of support to bottom-up initiatives communities would require from academia, representatives responded with suggestions reflecting both the type of DA they are currently operating and the underlying needs of certain communities. For example, the representative of the Restart Project would benefit from targeted data collection during their busy and multi-member events with the public arriving with various broken electronic devices. UCL's Volunteering team offered to provide a student responsible for data collecting, recording and follow up. Representatives of the Indigenous Navigator project reflected that communities participating in bottoms-ups initiatives

require consistency in interactions between academic researchers and the communities themselves. As such, because research grants might not allow for follow-up and ongoing interactions, the consequent lack of engagement leads to the gradual erosion of trust by communities and "research fatigue". Reflecting on these responses, Alice Sheppard states that "this seems to require that the academic research model itself makes some changes, rather than that some new aspect of DA be created".

3.2. Roundtables: communities with no or little experience with DA's including individuals with fewer opportunities

Out of a total of six (6) Roundtables, five (5) targeted communities and individuals facing significant barriers and marginalised communities with limited or no-knowledge of DAs. Four (4) were communities in Cyprus including refugees, asylum seekers, Third Country Nationals (TCNs), women not in employment, other individuals not in employment, education and training, early school leavers and students. These Roundtable discussions were facilitated by CIP, as a community engagement practitioner, whilst the 5th roundtable targeting the involvement only of NEETs was facilitated by UP as a HEI.

3.2.1. Communities: refugees, asylum seekers, Third Country Nationals (TCNs), unemployed individuals and early school leavers.

The engagement of vulnerable communities of migrants, asylum seekers and unemployed individuals was enabled through CIP's participation in activities, events and projects aimed at the integration of TCN's, for example, the AMIF project DREAMM. The latter provided the foundations and safe spaces for TCNs in Cyprus to form grassroot communities to affect change in their lives. The formation of these grassroot communities was supported via the upskilling of lead integration mentors. Affected by the legal constraints and restraints of their migration status, individuals are restricted in terms of employability opportunities and further engagement in community actions. Thus, although a significant number of asylum seekers might be Higher Education graduates, with degrees of high value for the labour market, their employability is legally restricted to the agricultural sector and domestic labour market. Within this setting, HEIDI roundtables sought to engage the participation of both TCN communities and lead integration mentors, to identify digital upskilling needs and provide

opportunities for participation in Digital Actions, as a way of responding to the lack of opportunities for community development.

Although one (1) of the events was held online due to the COVID-19 restrictions, it was quickly realized that future roundtable events should have an in-person participation. A lack of awareness of DAs, coupled with language barriers, necessitated in-person participation. To better respond to the needs of individuals with fewer opportunities, registration forms at various in-person events asked participants to self-certify whether they experience any difficulties including, socio-economic, educational, or other. This allowed for adjusting the method of engagement and the provision of additional support. For example, where language difficulties or differences were identified, language interpreters and lead integration mentors were provided (ie: at roundtables with unemployed women and asylum seekers). CIP's roundtable organisers , following a brief introduction to the HEIDI project and the various forms of Digital Actions, focused on the Makers movement, and provided tangible examples of actions and participation events. A set of predefined questions guided participants to provide their insights and voice their needs. The latter were especially tailored to the context of the makers movement via one to two examples of a digital tool that can be used (ie: 3D printers and software or microcontrollers). The format of the questions was adapted based on each roundtable (to reflect the background and specific profile of participants), however the synopsized questions can be categorised as:

Part I

- Have you ever been involved in Digital Actions or aware of digital skills?
- Have you ever used 3D-printing software, coding software, microcontrollers, or 3D-printers?

Part II

- What are the benefits of using 3D-printing software, coding software, microcontrollers, and 3D-printers?
- How can this knowledge be used to help your community's needs?

Part III

- What digital skills would you like to develop?
- Could you share how these digital skills can help you and your community? In what ways?

Participants were largely unaware of what Digital Action is. However, following the initial introductory presentation they quickly started reflecting on various digital skills that could help with their own social or other concerns. For example, some participants discussed the lack of care they see as extended to animals in Cyprus, stating that once trained in the use of 3D printing software "we could use 3D printers to make houses for animals, such as dog shelters or bird feeders". Others raised both environmental and cost related issues of single-use plastic, arguing for the development of environmentally and cost-effective material for the creation of 3D printed cups. However, at large in all roundtables the discussion was centred around the potential of digital skills training and actions in agriculture and the possibilities it could offer for gainful employment and the sustainability of migrant and unemployed families and communities. For example, inspired by the ORGATEC (ORGATEC, n.d.) example from Paris, participants explained how the use of microcontrollers in combination with 3D printing software to produce cheaper equipment could potentially help them to create shared permaculture hot spots for their communities to use. Participants interested in pursuing community led-agricultural facilities, explained that "during the pandemic the cost of purchasing parts to various equipment and time needed to import them, stopped at its tracks any opportunity for developing our ideas".

When asked about what types of support and digital skills training participants would require, responses ranged from training in the use of 3D-printers, training in coding software and microcontrollers to the creation of websites. However, of importance was to all participants that such opportunities are disseminated at large to all community members and that such discussions do not stop at this "research level". At least one participant at every roundtable event organised by CIP stated that although digital skills training might be on offer based on their needs, of importance is that organisations and HEIs continue to provide support not only in terms of knowledge transfer of new technologies and movements but also in terms of troubleshooting and helping materialise the solutions to their needs. Equally, lead integration mentors present at Roundtable events stated that they too would benefit from digital skills training so that they can offer support to TCN

communities in materialising their involvement in Digital Actions in the long run.

Figure 3. Roundtable with communities with fewer opportunities for participation such as refugees and asylum seekers.

3.2.2. Communities: Not in Education, Employment or Training (NEETs) and Early School Leavers (ESLs).

UP, targeting individuals not in education, employment or training and early school leavers, followed a very similar methodology and approach to the one used in Roundtables in Cyprus. Participant unfamiliarity with DA, and the different methodologies presented, quickly morphed into a question-and-answer format. Those involved asked questions to better understand the information provided to them and their roles in DA. According to some participants, "these types of activities are completely out of reach for us" and "we do not have the materials or the time to get involved in such actions". However, for others, the event provided an interesting opportunity for the discovery of activities that they were not familiar with, but most importantly the realisation that

they have been involved in some types of DA without being necessarily aware of it. In this respect, although HEIs might consider academic terminologies of Digital Action a given, the public and especially those with fewer opportunities, might not. According to Eugenia Covernton, organiser of the event, "…one thing that I decided to change based on this roundtable was the opening presentation, which I found wasted a lot of time that could have been spent discussing, trying to present something that most of the participants didn't fully understand".

In order to translate this discomfort from participants into action, the last 15 minutes of the roundtable were devoted to identifying the actual needs of the attendees, with the aim of tailoring future training opportunities to these needs. The participants were encouraged to propose a need they identified themselves and/or "upvote" a need proposed by somebody else. The vast majority of the participants identified "coding skills" as a need that they perceived as important not only for their involvement in digital action but also, more generally, for their inclusion and career opportunities. Many of them also included "practical knowledge about how to help local challenges" and "general knowledge about new technologies" as topics they would be interested in learning more about. We therefore focused our efforts in providing training opportunities on those topics.

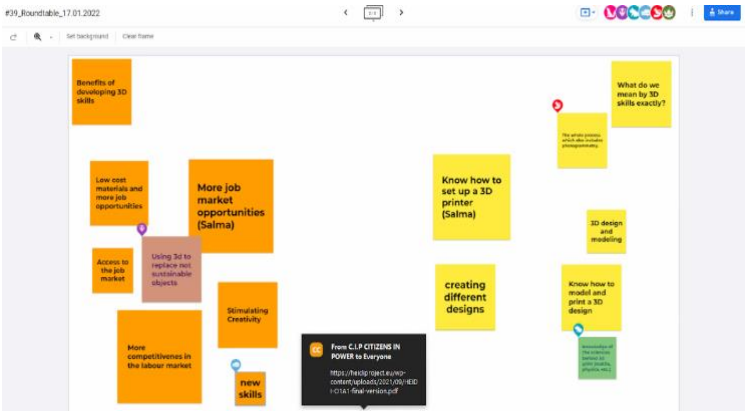


Figure 4. Attendees input in Jamboard in one of the online roundtable discussions facilitated by CIP.

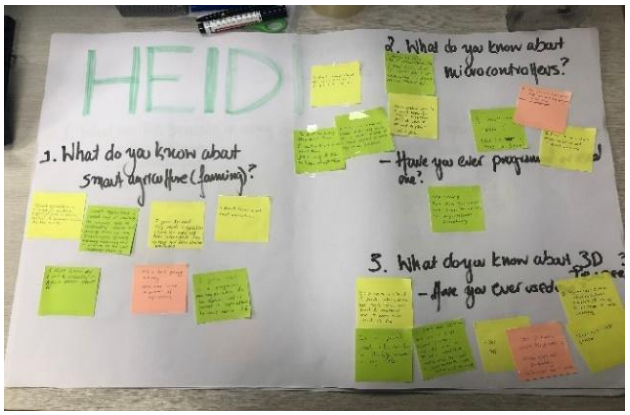


Figure 5. Participants' input in the form of sticky notes in one of the in-person Roundtables facilitated by CIP, attended by people of fewer opportunities, facing obstacles in participation such as unemployment and

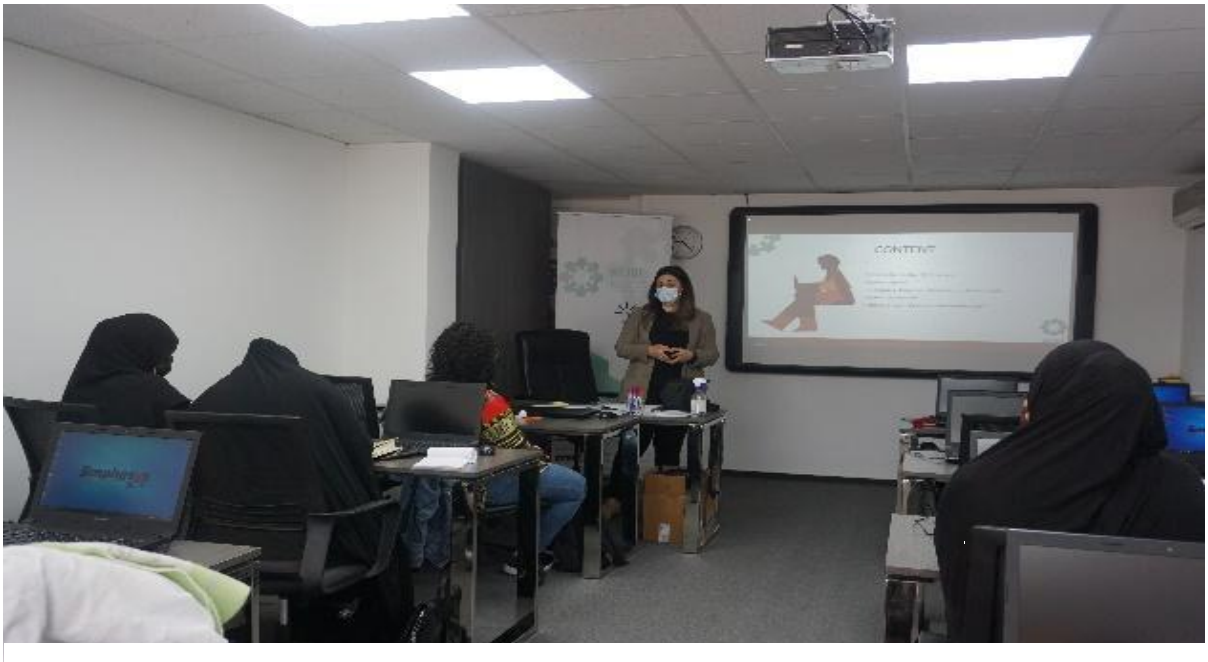


Figure 6. Roundtable facilitated by CIP with unemployed women.

Figure 7. Roundtable by UP with participants not in education, training or employment (NEETs).

3.3 Roundtables as drivers of HEI responses to community "voices"

All Roundtables, irrespective of target group or organisations involved presented a unique insight into various perspectives and community needs. The key take-away points from Roundtables were as follows:

- Participants did not wish to address all the questions posed to them and seemed to want to focus on those areas that they can relate to. Whilst those with previous DA experience wished to elaborate on the initiatives that they are actively engaged in, those with no experience wished to see how new knowledge of digital skills can help them in not only participating in DAs but providing solutions to both their individual and collective problems.
- Attendees' stories of bottom-up initiatives centred on concerns with the lack of satisfactory responses to a problem significant to them. Equally, participants with no involvement in Digital Actions presented ideas of how Digital Actions can help provide solutions to their concerns. However, lack of digital skills training and resources hinders the development of their bottom-up initiatives.
- Additional concerns regarding data privacy are one of the aspects that needs to be addressed by HEIs in order to raise wider- awareness for informed consent and where possible provide alternative solutions to digital data gathering.
- Support from HEIs and organisations needs to come in different formats. Whilst communities already invested in bottom-up activities might require additional support in terms of systematic data collection and reporting, communities with fewer opportunities require a longer time investment in their efforts.

Although lack of awareness of Digital Actions and individual socio-economic circumstances might hinder some participants in envisioning active participation, communities are largely interested in receiving the skills and knowledge needed to affect change in their day-to-day experiences. The environmental and socio-economic concerns raised at these roundtables, the digital skills training requests of participants and experience in the mode of interaction between HEIs, organizations and communities with fewer opportunities, were instrumental in shaping the activities provided in subsequent events in IO3.

4. Webinars to upskill communities and HE staff supporting these communities.

The HEIDI project provided a total of nine (9) Webinars and Seminars as a way of responding to the identified needs of the various citizen groups in EU countries. In this respect, IO3 provided nine (9) customised upskilling opportunities to both communities and those HE staff or organisations who support them but lack the DA methodology or digital skills to do so. Four (4) out of nine (9) events specifically targeted communities with fewer opportunities and no previous experience in DAs, whilst all webinars made adequate provisions for the participation of all. Section 4 of this report provides a brief description of these awareness-raising and upskilling sessions.

4.1. Webinars and in-person Seminars: upskilling opportunities for people with no previous knowledge of DAs.

In response to the expressed needs of communities with fewer opportunities, in the previously held Roundtables, a set of digital upskilling sessions were provided. In-person seminars were the preferred method of attendance to most attendees in roundtable sessions and for this reason, those events targeting marginalised communities were held in-person. Widening participation to d/Deaf participants and Deaf-and-Hard-of-Hearing Trainers necessitated that in-person provisions were made to respond to the accessibility requirements for the better participation of those involved. Equally, the inclusion of asylum seekers, migrants and other communities facing significant socio-economic barriers necessitated the participation of lead integration mentors, provision of digital equipment, hands-on interactive activities, and transportation support. The following in-person seminars and training workshops were offered:

- “Digital activism: scope, methodology, tools and practices” (by W2L)
- Maker movement, methodology, scope and practices: “Introductory Training to 3D Printing” (by CIP)

- Datathons, hackathons and digital hacktivism: “Critical data, Arts & Science: Introduction to creative coding workshop” (by UP)
- Community engagement in achieving the Sustainable Development Goals (SDGs) (by UP)

4.1.1. “Digital activism: scope, methodology, tools and practices” (by W2L)

W2L provided a seminar for d/Deaf students and Deaf-and-Hard-of-Hearing Trainers at the Institute of the Deaf of Torino, introducing attendees to the concept of Citizen Science in order to facilitate the engagement of this grassroot community with the tools and practices of Digital Activism. Facilitators, trainers, and students explored digitally enhanced ways of engaging in climate action. The material presented was customised to adapt to the accessibility needs of attendees and relied heavily on visuals and imagery to convey the information, rather than by creating training material that is based on long and hard-to-perceive textual information. Participants expressed their interest in learning more about Citizen Science and the ways through which it can be performed, by drawing on paper “What Climate Actions Means for You”. They equally exchanged ideas on important socio-environmental topics and the ways these can be addressed via digitally enhanced Citizen Science projects.

Figure 8. The event, Digital Actions: Scope, methodology, tools and practices" with d/Deaf and DHH trainers at the Institute of the Deaf in Turin, Italy facilitated by W2L.

4.1.2. "Maker movement, methodology, scope, and practices: Introductory Training on 3D Printing" (by CIP)

CIP, in response to both the interest and expressed need of roundtable participants organised and facilitated the interactive hands-on workshop "Introductory Training to 3D printing" after a short introduction to the Maker movement, its methodology, scope and practices. Participants included asylum seekers, individuals facing socio-economic and educational barriers, as well as community engagement practitioners, training providers and lead integration mentors. The workshop included amongst other a discussion on the benefits of 3D printing, raising awareness of its value in fewer parts needing outsourcing for manufacturing, the reduction of waste material, recycling potential and avoidance of supply chain issues. Grassroot communities alongside lead integration mentors, engaged in a 45-minute hands-on training with two (2) in-house 3D printers, including set-up, functions, and programming options. In this respect, organisers, and facilitators, responding to the requests for digital skills training events on the use of 3D printing technologies that could potentially assist communities in their pursuit of sustainable community agricultural practices, created customised training material and activities. By growing familiarity with maker movement actions and 3D printing technologies, towards the end of the workshop community members engaged in discussions with trainers and lead integration mentors of other potential applications of 3D-printed material.

Figure 9. The event, "Maker movement, methodology, scope, and practices: Introductory Training on 3D Printing" organised by CIP in Nicosia, Cyprus.

4.1.3. Datathons, hackathons and digital hacktivism: “Critical data, Arts & Science: Introduction to creative coding workshop” (by UP)

UP, as part of its series of training events on digital hacktivism, organized a workshop on “Critical data, Arts & Science: Introduction to creative coding”. Whilst the idea of the training pre-existed its implementation for the purposes of IO3, the topic of the training and its hands-on methodology were highly influenced by the roundtable discussions from IO1 and IO2s. The event was open to the public, engaging the wider community without any requirement for background knowledge or experience in DAs.

The focus was placed on the interaction between Art and Science by looking at the aesthetic qualities of data. This two-part event, consisting of a seminar followed by a hands-on workshop, was derived from the works of NSDOs, an interdisciplinary musician, dancer, and technologist. NSDOS’s work allows artists to connect with technology whilst offering scientists unconventional means to perceive data. Participants, inclusive of the public and grassroot communities, were introduced to ORCA, an esoteric programming language taking the shape of a 2D canvas designed to develop real-time interactive applications. The latter is used by NSDOS in his projects and its application to control custom robotic hardware, both for artistic and scientific purposes.

Figure 10. The "Critical Data, Arts and Science" flyer inviting the participation of all to the conference, Roundtable and Workshop on Creative Coding with an introduction to ORCA, by the University of Paris and the Learning Planet Institute, for the purposes of HEIDI.

Figure 11. Snapshots from the event "Critical Data, Arts and Science" organised by the University of Paris and the Learning Planet Institute for the purposes of HEIDI.

4.1.4. Community engagement in achieving the Sustainable Development Goals (SDGs) (by UP)

UP, in collaboration with the NGO Lecturers Without Borders, organised a training workshop on how to involve the community, particularly young students, in participatory action towards achieving the Sustainable Development Goals (SDGs). This workshop presented an opportunity for both parents and teachers to learn how to address an identified problem with the children and adolescents they are interacting and guiding. Students, teachers, and parents reported that the younger generations are experiencing a feeling of hopelessness and paralysis in the face of climate change, inequalities, and global pandemics. Although initially planned with the aim of targeting only students, responses received at roundtables with students at IO1 influenced the decision to extend participation to teachers, educators, and parents. Students explained repeatedly that for them to engage in Digital Actions, support must be on offer, from the people they identified as authority figures (ie. teachers). The workshop provided engagement strategies for collective participation in projects, from inception to completion. In addition, participants were offered tips on how to aid young students to transition from helplessness to action in the face of the global challenges in the 21st century. Emphasis was placed on the need for humility and active listening to give voice and agency. That teachers from different geographic locations joined added a further layer to cultural discussions and enriched the interactions between participants and organisers.

Figure 12. The vent, "Community Engagement in achieving the Sustainable Development Goals" facilitated by UP.

4.2. Webinars: Introductory sessions for grassroots communities

UCL ran a series of webinars introducing Citizen Science to both grassroot communities, researchers, HEI staff and students with some experience or background in DAs and Citizen Science who wished to further both their understanding and application of Citizen Science practices (for example starting their own projects). Attendees included members of conservation trusts, social enterprises, and art and science collaborators. The scope of these webinars, in addition to an overall introduction to Citizen Science, was to guide attendees in thinking about the ways to set-up a project, familiarise them with those ready-to use platforms, on the ways volunteers can be recruited and engaged in activities, the format and manner of communication between volunteers and the research team, as well as, how to run events in public spaces with safety measures in mind. In recognition of the insights collected from roundtable discussions and the lack of participants' knowledge of DAs, it aimed at providing short introductions with step-by-step guidance on how to pursue a Citizen Science project. The following webinars were provided:

- "Introduction to Citizen Science: Scope, methodology, tools, and practices".
- "Create your own Zooniverse project".
- "Create your own nQuire project".
- "Introduction to City Nature Challenge".
- "City Nature Challenge: Event Planning".

Due to varying participation rates at different events and in the interest of providing the widest possible engagement opportunities to participants not able to participate at a given date, each webinar was repeated on two (2) different occasions, apart from the "Introduction to Citizen Science" webinar that was offered 3 (three) times.

4.2.1. "Introduction to Citizen Science: Scope, methodology, tools, and practices"

This webinar introduced the basic principles, scope, tools, practices, and methodologies of Citizen Science projects. Although taking the form of a short talk, it provided the space for attendees to address their questions and engage in discussion on the value of citizen science on community or voluntary organisations. This introductory session was also offered as an optional talk prior to the start of UCL's Roundtable discussion (see Chapter 3.1). Attendees could attend the Webinar, the

Roundtable or both. This flexibility was offered as a way of both making provisions for those without prior knowledge of DA to attend and as a way of gradually introducing the roundtable, so as to build the grounds for attendees to be able to engage in discussion

4.2.2. "Create your own Zooniverse project & "Create your own nQuire project"

Webinars "Create your own Zooniverse project" and "Create your own nQuire project", included a small optional "assignment" with a series of steps to make a dummy project. It should be stated that neither the HEIDI project nor UCL representatives presenting in these webinars are in any way financially affiliated with either one of these two platforms. Their presentation in these webinars was used as an interactive and example-based approach to build confidence in participants wishing to start their own project but do not necessarily have either the financial means or the ICT expertise required to create an e-platform. Participants reflecting on their experience at these webinars reported that they "felt much more confident about using these platforms even after this short informal introduction".

4.2.3. "Introduction to City Nature Challenge"

City Nature Challenge_(2023) is a yearly BioBlitz involving cities across the world. It is a friendly competition to see which city can record the highest number of species, involve the highest number of participants and gain the highest number of observations. Anyone can take part in the City Nature Challenge by recording any wildlife identified during the 4-day duration of the event. This talk was intended as an introduction to the available Citizen Science events and the ease with which individuals with no previous experience or scientific research skills can get involved. Events like this one offer individuals and communities an opportunity to work together towards a common goal.

Figure 13. Snapshots from the webinar "Introduction to City Nature Challenge" delivered by UCL online.

4.2.4. "City Nature Challenge: Event Planning"

Following the "Introduction to City Nature Challenge" webinar, the "City Nature Challenge: Event Planning" was aimed at upskilling attendees in the planning and facilitation of Citizen Science events. In this context, Citizen Science events are regarded as public events in outdoor spaces in which residents of all demographics participate in a set of predesigned activities to record some data on for example, wildlife, light, water, or fly-tipping pollution. In so doing, participants would benefit from a day of family or communal activities, to learn more about and contribute to science. Suggestions for types of events from both the organiser and attendees included, birdwatching, bat walks, pond dipping, children's challenges of "find this" type of activities, tree tours and family days out. In addition, expert tips for overcoming potential limitations included, early planning, involvement of local community organisations, familiarity with the area, backup and sharing of plans in case of drop-outs and creating formal or informal roles within teams such as a basecamp runner, food supplier, technical support guru, talk-giver and publicity person.

In this respect, these series of webinars had the effect of providing an element of community "control" over the creation and management of bottom-up DAs. With step-by-step instructions, expert guidelines and tips, as well as provision of ready-to-use resources that do not require advanced digital skills in platform design or management, communities can both create, run and manage their own citizen science projects to address their own needs. This is one way of avoiding the "research fatigue" identified as a need in the previously held roundtable by UCL. Equally, collaborations with organisations and research institutes that for example run their own Citizen Science events, will significantly increase the level of ongoing interactions and support between communities and researchers.

Finally, these Citizen Science focused events provided significant upskilling opportunities to both the wider-target groups participating in the talks, as well as, to those HEIDI partner organisations that did not at the time had any lengthy engagement with this form of DA. This provided a valuable tool for community engagement practitioners more precisely to provide further awareness-raising opportunities to the marginalised communities and participants with fewer opportunities that they engaged in Roundtable discussions. Although not part of the formal events under IO3, CIP has, for example, been sharing these webinars and their information to those participants that expressed interest and concerns over environmental issues in roundtable discussions.

5. Digital Action with Grassroot Communities.

5.1. Co-creation activities between HEIs, NGO and communities

In the final section of activities and events organised as part of HEIDI's IO3 report, HEIs and CIP were invited to understand and tackle the collected needs and challenges expressed by the various communities and individuals involved in Roundtable discussion and facilitate six (6) Grassroot DAs. In total four (4) co-creation activities took place in Cyprus with a focus on the maker movement, one (1) in France addressing the COVID-19 Digital Actions and one (1) with a focus on Citizen Science took place in the UK. In this section, the primary results of the pre-event and post-event questionnaires are presented and followed by a description of the all the Grassroot DAs that took place, in the form of infographics. Finally, a synopsis of the response by HEIs to communities' needs and challenges is outlined.

5.1.1. Questionnaire results

The use of pre- and post- Grassroot DA event questionnaires, in line with the general approach followed in the HEIDI methodology, were aimed at providing a way of comparing different digital action events (Covernton , 2022). The results are described here as a way of providing further understanding of participants' level of knowledge of DAs, motivation and expectations of events, the skills they consider necessary for successful participation, as well as the extent to which DAs provided successfully met participants expectations and future engagement.

It should be stated that the results are not reflective of the totality of the individuals that participated in all IO3 activities, nor in all Grassroot DA events. As expected, and in unison with IO2 questionnaire response rates, not all participants wished to uniformly reply to a pre- and post- event questionnaire. Thus, out of a total of 97 participants, 40% replied to the pre-event questionnaire and 37% in the post-event questionnaire.

The pre-event questionnaires indicated that in total, 66.3% of participants had never participated in DA that addresses community needs whilst only 25.7% participated occasionally. However, 89% of respondents stated that they are motivated to engage in DA. The post-event surveys indicated that 80.2% of participants had their expectations met at these events, with a range of satisfaction rate from "extremely" to "satisfied" combined at 92%. In fact, a combined 86% stated that it is equally either "very likely" or "likely" that they participate in a future Digital Action project. In this respect, the implementation of DA activities with Grassroot communities is considered a success, with both HEIs and participating organisations effectively adapting to community needs for both DA awareness-raising and engagement.

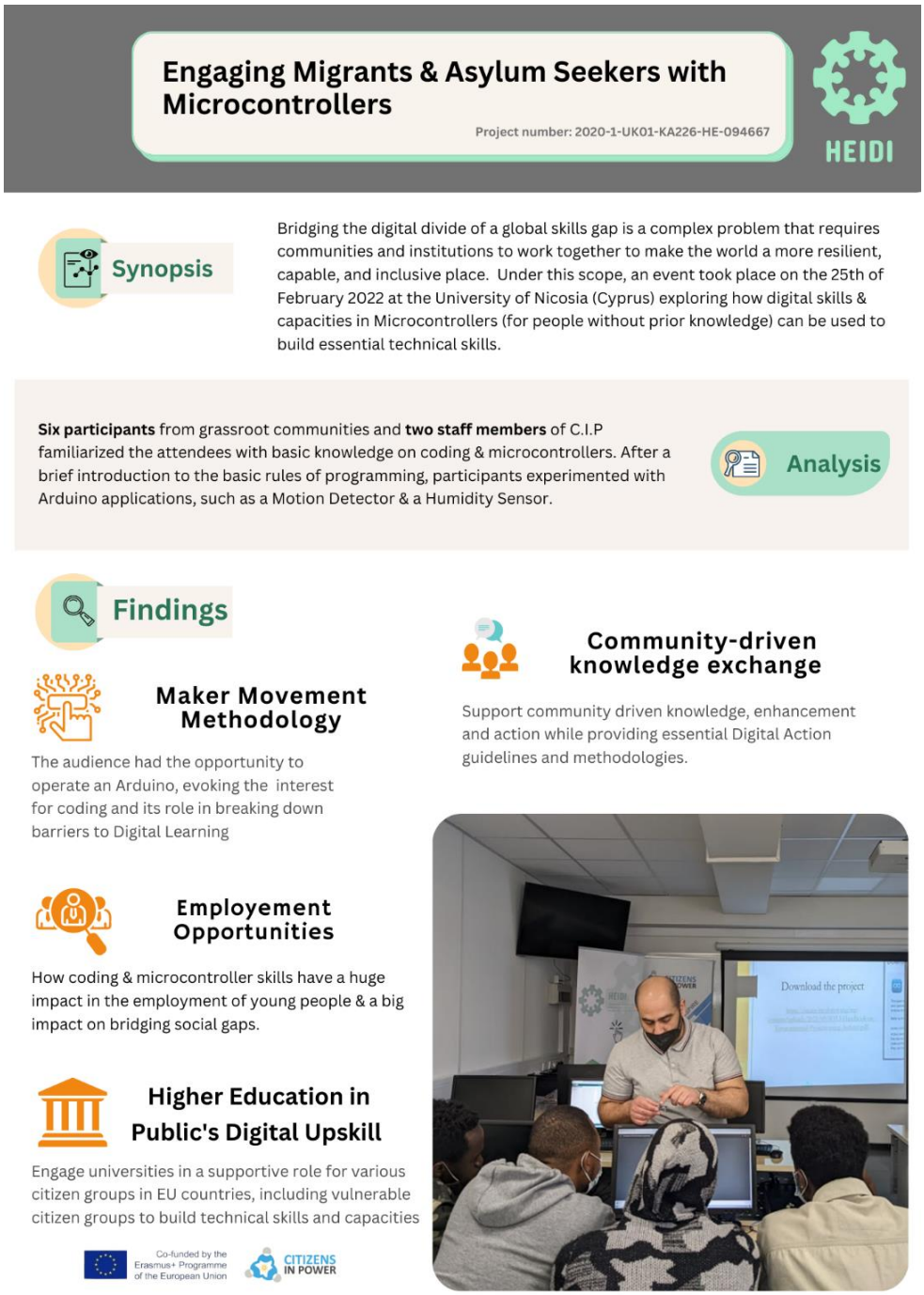
In the pre-event questionnaires, the skills that were considered necessary to successfully participate included "problem solving and innovation" at 30.7%, "digital creation" at 27.7%, "digital communication" at 25.7%, "digital research" at 3% and "non-specified" as 12.9%. Thus, the focus of upskilling opportunities offered at DAs was centred on both providing opportunities for individuals to identify issues and through a process of brainstorming provide relevant solutions (see for example, the roundtable session held by UCL for community groups protecting the River Lea), whilst equally providing further digital upskilling opportunities (see for example CIP's programming and coding workshops).

In terms of the participation role that they would like to take in DAs, participants responding in post-event questionnaires stated that at 52.2.% majority they wish to have the role of a "participant", whilst 21.8% wished to be a "designer" and 5.9% espouse a "management" role.

5.2. Digital Actions in Cyprus, France and the United Kingdom

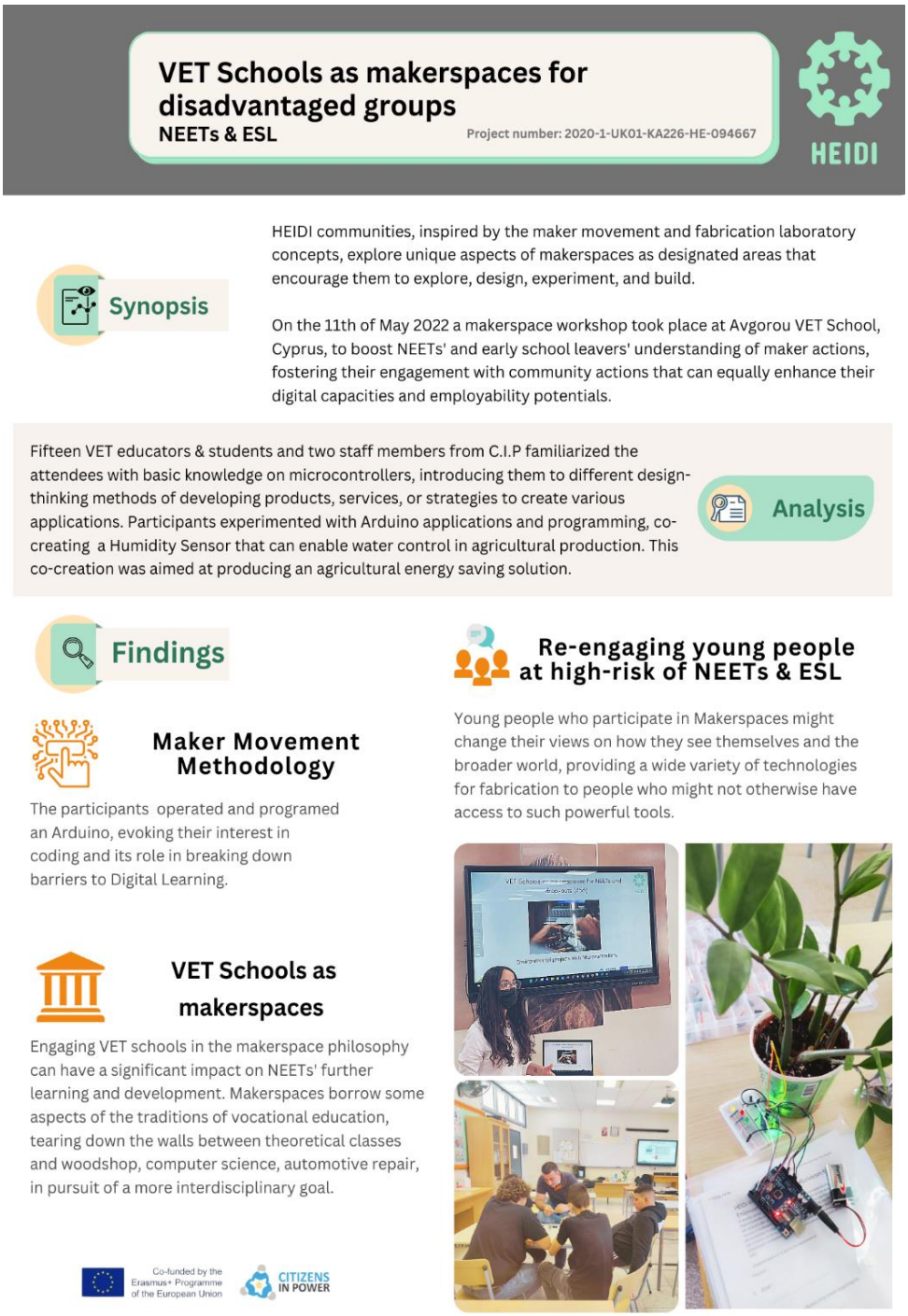
5.2.1. Cyprus: Municipalities as makerspaces for disadvantaged groups.

5.2.2. Cyprus: Engaging migrants and asylum seekers in DAs.

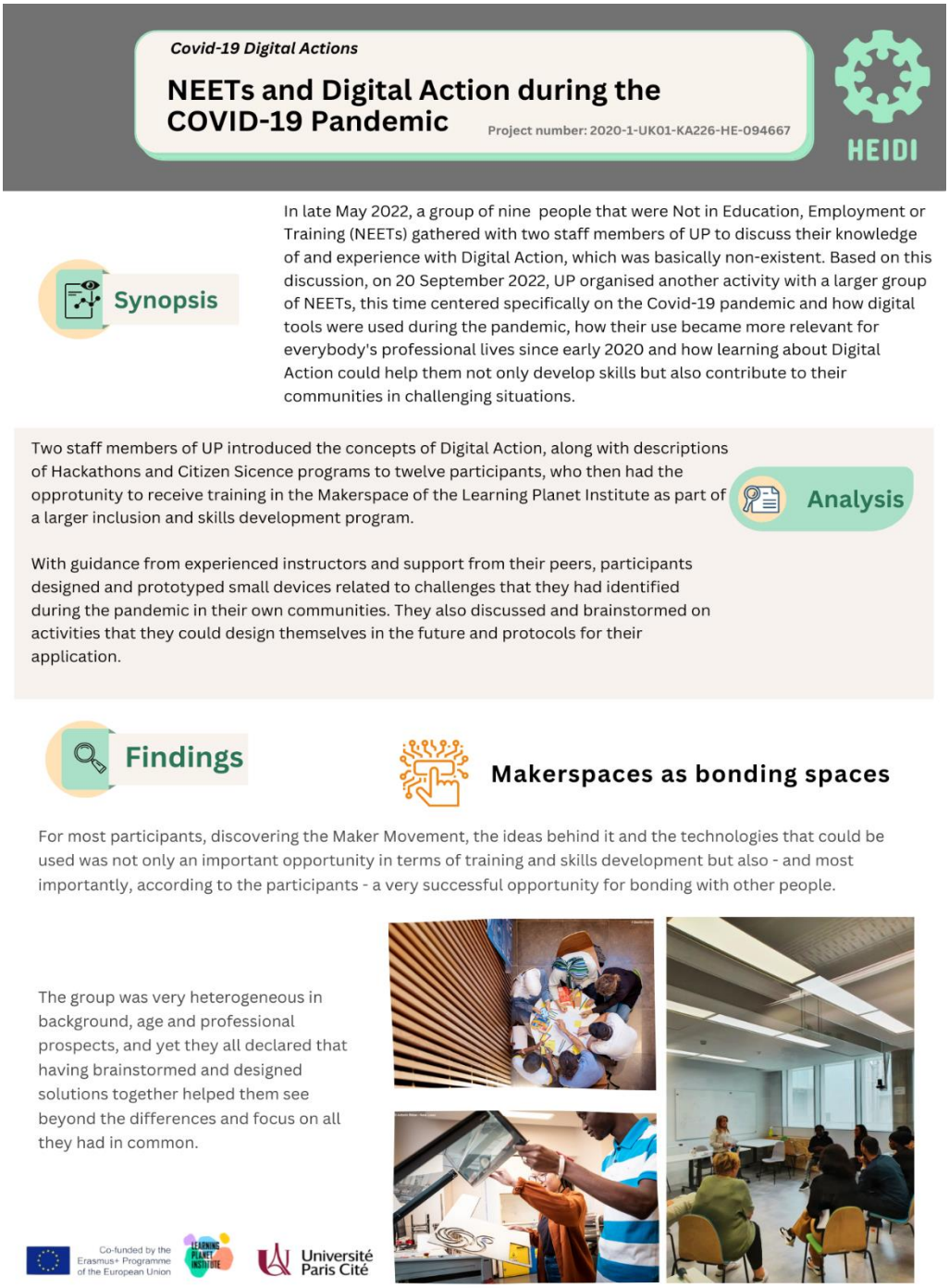


5.2.3. Cyprus: HEIs as makerspaces for disadvantaged and unemployed groups.

5.2.4. Cyprus: VET Schools as makerspaces for disadvantaged groups.



5.2.5. France: Covid-19 Digital Actions



5.2.6. United Kingdom: Co-creation Citizen Science event with marginalised communities in East London – My River Lea

5.3. Synopsis of the response by HEIs to communities' needs and challenges.

Roundtables in Cyprus largely informed facilitators of the disconnection between technological advancements and their use or knowledge by communities with fewer opportunities. Within this setting, the concept of DA or participation in them was initially perceived as completely foreign to their daily experiences and needs for gainful employability or future progression. Further, the various difficulties and/or barriers experienced by all individuals involved seemed to override any need for participation in DA. However, the gradual introduction to DAs and the various digital technologies that are used within that context enabled communities to explore the potential usefulness of those digital actions and skills for their communal and individual circumstances. This led to the brainstorming of ideas of how knowledge of, for example 3D-printing software, or microcontrollers can provide co-creation opportunities as solutions to agriculture sustainability and access to innovation for migrant communities. In this respect, the Grassroot DA activities that followed were largely focused on providing the necessary digital skills training that would enable community action. Cypriot DAs offered digital skills training in the use of Arduino or other programming and coding software, as well as microcontrollers and 3D-printing equipment. Following training and depending on the specificities of participating individuals, communities alongside trainers and facilitators engaged in a process of co-creation, by designing and creating for example, a remote-controlled door lock, a pseudo-theremin with a light sensor, a smart cooling fan, a motion detector and a humidity sensor enabling water control in agriculture as an energy saving solution.

In a similar vein, Roundtables in France with people not in employment, education or training (NEETs), explained that such actions and digital skills are out of reach for them, yet with customised digital skills training opportunities such action can be enabled. Designed on the lessons learned from that roundtable, the Grassroots DA event that followed was facilitated in-person, adhered to a relaxed and informal format without the need of introduction to the theories of DAs, and was made part of a larger program on inclusion for NEETs. By adjusting to the specificities of the participants, the UP team enabled the latter to identify and explore the possibilities for digital action in their own communities and in relation to Covid-19 problems. Participants engaged in brainstorming activities, thus beginning a process of designing protocols for their application. Of significance is that in addition to the various digital skills, problem identification and solving capacities that participants gained through this DA, the latter saw this event as a "bonding activity" that helped them identify "connections and common interests" and design actions that could be performed jointly.

Although the roundtable in the United Kingdom was largely attended by communities with some previous experience in DA, it identified communities' environmental concerns in terms of for example fly-tipping or pollution and the lack of organised solutions to problems that affect them. The Roundtable inspired the UCL team to offer their active support to the residents of the River Lea area, one of the most polluted rivers in the country. Via a workshop, based on the principles of participatory design, residents with limited to no experience in DAs were guided in identifying both issues and co-defining solutions, whilst shaping their local Citizen Science project. At UCL's roundtable event, concerns were raised over the intermittent nature of HEIs interaction with participating communities, and of the development of "research fatigue" by participants acting solely as data collectors. In response to those concerns, the UCL's People Nature Lab has established an on-going cooperation with the River Lea community, expanding their participation to the broader local community to design and run a Citizen Science project aiming to address some of the identified issues. In fact, according to the UCL team, "this approach was successful, and it will be used in the future in workshops with similar purpose".

6. Conclusions

Due to the nature of the COVID-19 pandemic, dependency on digital tools was reinforced and facilitated the acceleration of technological development. Nevertheless, this brought upon a series of challenges that highlighted the need for digital skills development and collective action in environmental and social issues. By inviting citizens to voice their concerns, IO3 did not only identify COVID-19 related concerns but touched upon the various challenges experienced by different grassroot communities, whether societal, economic, environmental, digital or issues of relevance of their current skills with the expected participation level.

As reflected in the roundtables conducted in the participating countries, individuals and communities, especially those with fewer opportunities, felt a disconnection between themselves and technology. Thus, their needs formed the basis of nine (9) Webinars and six (6) Grassroots DA events that took place in the United Kingdom, France, Greece and Cyprus. Individuals, with and without prior experience in DAs, had the opportunity to be actively engaged in digital actions and develop their skills further in a collaborative setting. In parallel, HE staff was able to gain a deeper understanding of how their actions can contribute to diverse communities and inform their future activities to widen their reach. As such, HEIDI's Intellectual Output 3 (IO3) has created room for dialogue and transformation between citizens and HEIs to tackle the remnant of the post-pandemic era and forge a new way forward. The extent to which these events and joint co-creation activities impacted HEI digital transformation is to be explored further in HEIDI's IO4 and IO5.

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