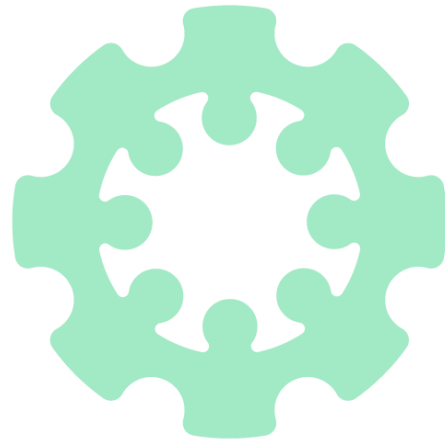


DIGITAL ACTION AT HIGHER EDUCATION INSTITUTIONS AS A CATALYST FOR
SOCIAL CHANGE IN THE COVID-19 CRISIS



HEIDI

**Drivers and barriers of higher
education engagement in digital
action: case studies from Cyprus,
France, Greece, Malta and UK**



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Abstract: **As an assessment of a series of events held in 2021 at the start of the HEIDI project, the aim of this report is to provide a platform for staff and students within Higher Education Institutions to pinpoint and discuss the drivers and barriers of digital action, and their role in addressing societal needs during the COVID-19 pandemic. The report shall form the basis for further studies which shall be held until 2023 across Europe.**

Keyword list:	Higher education institutions, digital action, drivers, barriers, social change, communication, digital divide, social inequality
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Partnership

	Name	Short Name	Country
1	University College London	UCL	UK
2	Citizens in Power	CIP	Cyprus
3	Web2Learn	W2L	Greece
4	University of Malta	UM	Malta
5	University of Paris	UP	France



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List of Abbreviations

The following table presents the acronyms used in the deliverable in alphabetical order.

Abbreviations	Description
CS	Citizen science
DA	Digital action
HEI	Higher education institution



Executive Summary

The COVID-19 pandemic has shed light onto the social disparity and needs of communities worldwide in terms of access to technology. Innovation and research into improving living situations of those positioned on the periphery of society due to ill-health, poverty or accessibility has never been more important, and through digital action (DA) such as citizen science (CS), maker movements and hackathons, new technologies seek to improve social equality. The purpose of this report is to show the efficacy of DA carried out within higher education institutions (HEIs), how HEIs interact with the wider community, and to understand the perception HEI stakeholders have regarding their influence on social change.

The report construes an analysis of the content ensuing from the discussions held across fifteen roundtable events and two webinars and consider the functionality of DA in terms of opportunities and hurdles that were encountered by the participants. It is an example of how to create a foundational form of cohesive collaboration between interdisciplinary HE groups and members of society by ensuring that there is equitable participation. The events involved discussions on how research programs and projects can be successfully implemented and circulated beyond HEIs, how civil society participation can be increased, how to foster better relations, and how to encourage members of the community to get involved.

Common themes that have emerged from both the round tables and the webinars are the importance of good communication in virtual environments and that it cannot be assumed that English is universally understood when organising DA. Also, the digital divide is a real phenomenon that has affected many sectors of society and thus many stakeholders of HEIs. Equity is something that must be designed for within DA, in order to provide contextual approaches to achieving social change. Thus, by allowing all social actors within HEIs to identify the drivers and barriers of DA and reflect on the social needs of local and global communities during a crisis situation, the culmination of their reflections provides us with a next-step approach to improvements in social change. Learning from the results of the discussions we can move towards a more hybrid system of learning and up-skilling.

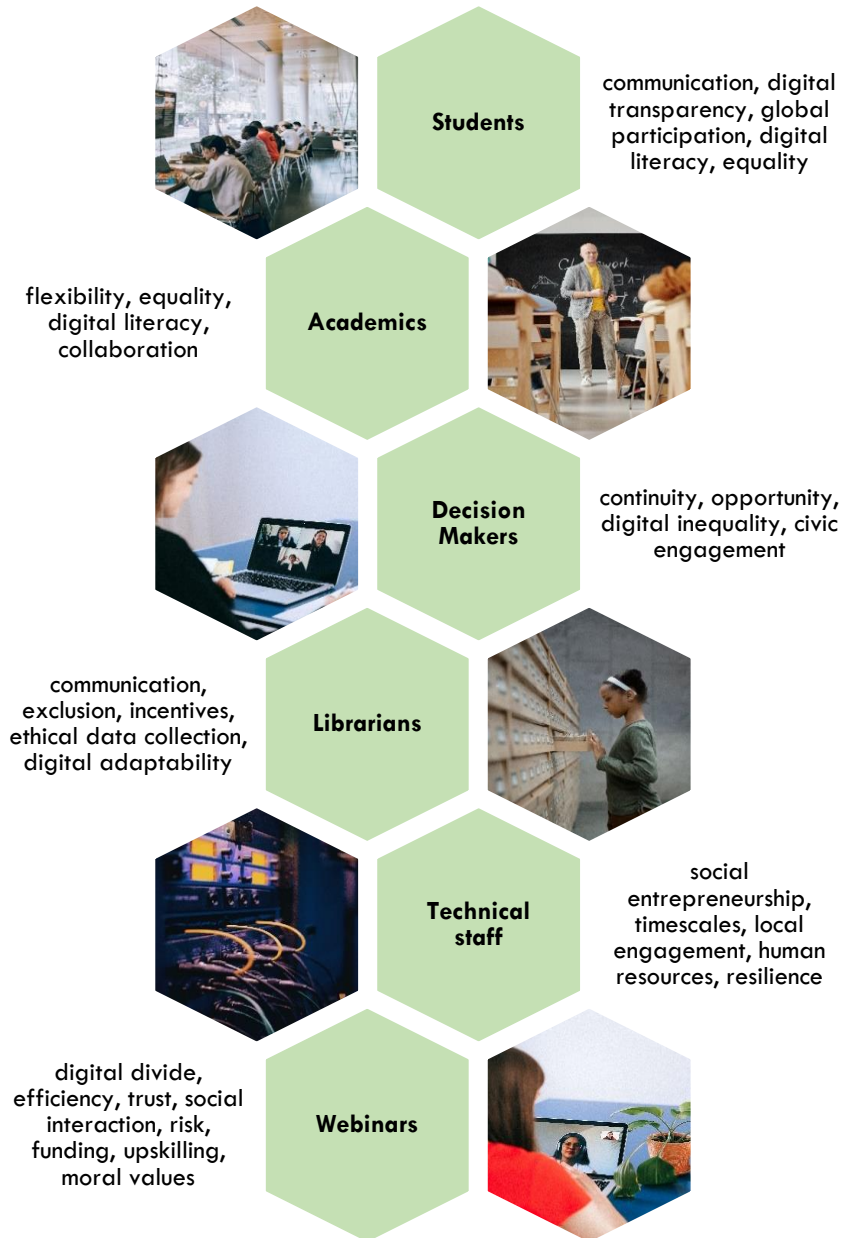


Figure 1 Keywords from roundtables and webinars that formed part of the HEIDI Project

1 Introduction

1.1. Scope

The scope of this publication is to disseminate the results of discussions held between HE staff and students regarding the drivers and barriers of DA. This report serves to investigate the discourse that has ensued from several roundtables and webinars on the perceptions and interpretations of drivers and barriers to DA that HE students and staff experience. Ultimately, the findings from the discursive events can encourage ongoing narratives that seek to limit such barriers. This has the potential to open up new avenues of opportunity for subsequent DA, so that future projects have better take-up rates of participation through the upskilling of the wider communities.

1.2. Audience

As the HEIDI Project seeks to tackle obstacles and identify opportunities for DA projects within HE, the findings of the events will be presented to the stakeholders within HEIs. This report clarifies aspects to assist in better functionality of projects, activities, and events, providing a better understanding of what is most appropriate to virtual environments. It also clarifies how to engage with local and global communities and how to collaborate with other institutions in an effective manner. Students, academic and research staff, decision makers, librarians and technical staff will benefit from this report and its findings as it seeks to offer a more efficient method of practice for DA.

1.3. Structure

The structure of the document is as follows:

1. Introduction
2. Methodology
3. Results of roundtables and webinars
4. Conclusion

2 Methodology

The academic partners of the HEIDI project (University College London, University of Paris, and University of Malta) held a series of fifteen roundtable events consisting of five groups of HE stakeholders - students, academic and research staff, decision makers, library staff and technical staff. During the roundtables, participants were asked to consider examples of DA and identify drivers and barriers to DA. The non-academic partners (Citizens in Power and Web2Learn) held two webinars in Greece and Cyprus, highlighting relevant examples of DA, followed with Q&As from the panel and guests. The roundtables and webinars provided a space in which stakeholders were able to offer insight into the process and functionality of DA throughout the pandemic. These roundtables and webinars were held during October and November 2021.

The events were informed by a document entitled 'Some examples of digital action inside and beyond universities during the pandemic'. The document was compiled prior to the organisation of the events so as to provide readable content for the organisers and the participants to familiarise themselves with the different forms of DA. A set of concise definitions is given, as well as a series of examples of DA that the project partner institutions had engaged with since the beginning of the pandemic. Finally, the document sets out a reading list for those who wish to familiarise themselves further with the subject matter.

Once the organisation of the roundtables and webinars could start, the first phase centred around drafting information sheets for participants, organising event content, sourcing participants, and issuing invites. Work-sharing software Slack was used as a method for consortium members to discuss ideas and procedures, and file sharing software, Google Drive, was used for members to upload and contribute to documents that allowed for collaborative work. Participants were recruited using existing academic connections and also through snowballing. Participants were not limited to the institution hosting the events, but extended to invite participants from different HEI institutions, with a focus on interdisciplinarity to encourage diversity. Each stakeholder group was interdisciplinary in terms of their field of study and research, with the exception of library staff.

The second phase was to hold the events, and this was done mostly online using Zoom, with one academic partner choosing a hybrid approach. The activities were recorded using in-app facilities with the permission of all participants. Questioning centred on interaction, experience, and participation in DA, and the impact of DA on society. The participants attending the roundtables were given an hour in which to discuss such matters in a semi-structured, qualitative method. Padlett and Miro were used by some partners for real-time interactive brainstorming during the sessions. A challenge common to all partners was the recruitment of participants. For

example, some members found that recruiting students was an easy task, while others found the student group the most difficult to connect with. It was noted that the sheer number of invitations sent did not match the rate of participation for most institutions. Other issues raised were that some participants found it difficult to register for the events using the ticketed system, the use of media and sharing of events could be at times an issue, and Padlet and Miro were not used by the participants as much as was originally anticipated.

The third phase was to collate the results from the roundtables and webinars to form this report. This was divided into six individual summaries. The first five concentrate upon each stakeholder group from the academic partners' roundtables in the following order: students, academic and research staff, decision makers, librarian staff and technical staff. The sixth summary is a collation of the results from the webinars held by the non-academic partners. Each summarise the findings, highlight drivers and barriers raised by the participants, and list any anomalies found in the data, these being issues that were not generally mentioned. Each of the sections is concluded with a summary of takeaway points. The final section is a conclusion of the findings of both roundtables and webinars.

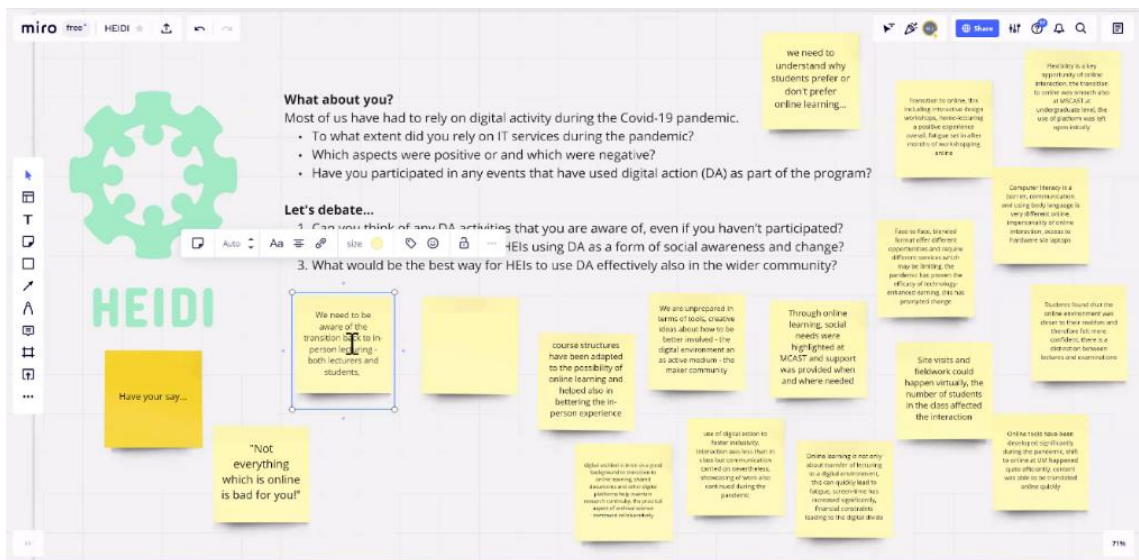


Figure 2 Using interactive brainstorming software helped participants visualise their discussions.

3 Results of Roundtables & Webinars

3.1. Student Group

Introduction

The main focus for the students, which was highlighted in each roundtable, was that the digitalisation of education has been an effective and efficient method of learning. Students found the shift to online learning both beneficial and rewarding, leading to a more inclusive learning environment. Students mentioned time and freedom that the shift to online allowed them, such as less time wasted in commuting. The students were aware of, and some took part in different forms of DA.

While some students discussed space and scale as an important issue to be developed, others brought up the issues surrounding the over-complication of processes, and that digital libertarianism hindered humanisation. Digital equality was also raised but overall, students felt that being online for the most part was effective in producing collective work quickly. Being able to access data made research easier but also could create an issue with how much information is available. Some students felt that the abundance of information available digitally meant that misinformation was rife, leading to sensationalism. They believed that some social media sites encourage arguments which lead to further misinformation and that this created division.



Figure 3 Keywords from the students' roundtables

Student Drivers

- While the students preferred face to face lectures, they agreed that being online had its value. Having local, national, and international support meant that barriers for students were reduced to a minimum, and that the digital divide was lessened. Partnerships between institutions made information sharing easier.
- The emphasis on good communication was highlighted by all groups and fostered a relationship of trust between students, HEIs and governmental organisations. It was believed that clear communication had a beneficial impact on the goals of online learning and DA.
- Having a better reach on a global level meant that there was more opportunity to participate in activities and lectures. This allowed students to gain experience, and build their CV and networking connections, especially those with an entrepreneurial initiative. Going online meant that there was a push to learn new skills which would have otherwise remained ignored.
- The sudden shift to online learning meant that there was “an opportunity for people to step out of their comfort zones”. Students noted the increase in digital transparency and that there was a clearer understanding of procedures.
- Through DA, the students were able to get hands-on experience in problem solving and community-building; this being an important aspect for strategies concerning DA at a local level.

Student Barriers

- Students taking vocational courses that involved placement-based learning and evaluation found that the shift to online hindered their progress. One student commented that they felt as though they were “being permanently online”, which led to a division amongst student groups. Some students did not have the necessary skills or equipment to join in with DA or online lectures.
- It was felt that, as students, they were not qualified to be active participants in DA, and that the analysis of data required experience. Skill was identified as a barrier, since the lack of skills meant that there was the possibility of exclusion.
- The digital divide was raised by all groups as an important barrier that needs to be addressed, and that inclusivity was of upmost importance. Good internet connection, appropriate equipment and access to software is necessary for participation.
- It was felt that the use of the ever-changing social media platforms meant that HEIs seemed to find it difficult to make their content relatable or be able to transmit their information clearly or effectively. For example, if a HEI uses social media, this does not mean that students follow or

acknowledge what is being shared. There cannot be a one-size-fits-all approach to the dissemination of events and activities as different people use social media for different purposes and have different attitudes to interaction.

- It was pointed out that there was an issue with collecting data from government organisations. This can be difficult in terms of corporate due diligence and non-disclosure agreements.
- It was noted that it was easier to create events and get people to accept invitations, but the actual turnout of participants is harder than an in-person events. It was noted that there is less accountability and commitment to online events.
- Ultimately, HEIs need to encourage students to be more entrepreneurial and this will encourage a visionary approach to problem solving.

Student Anomalies

- One student group found that language played an important role in creating inclusivity or exclusion, depending on the software used. This also applies in situations where English is not spoken fluently.
- Another group asserted that culture affects pandemic response. The example of online vaccination campaigns was used to show that if there is faith in the healthcare system and moral social responsibility, there is more likelihood of a high percentage of vaccination take-up. It is important to look at how the vaccination debate has been politicised to understand how online campaigns either for or against can have both a positive and negative impact on interaction.

Student Takeaways

DA is only part of the process. Since there are many stakeholders involved, issues are inherently complex and multi-faceted. Nevertheless, DA can be a tool used by decision makers to highlight and clarify the potential impact of initiatives held to sustain pandemic response. Communication is vital for the implementation of a successful DA strategy. One group suggested that having an internal calendar with open access could improve visibility and awareness of upcoming events, which would increase participation. Another group felt that having incentives would broaden the scope of DA both on a personal and financial level. Social recognition of those participating in DA would also encourage more interest.

In conclusion, providing better tools for older students that would allow them to become more digitally literate would be an important factor in moving towards a more inclusive learning environment. It is essential that changes are made to the outreach aspects of DA, especially when people who are socially marginalised are involved.

3.2. Academic Group

Introduction

For this group, the notion of scale was mentioned as representative of the efficacy of online versus in-person learning. Overall, DA dissemination was effective on large scale, such as through international webinars but less effective for close-hand involvement. Here, the academic group felt that local action required face to face participation. Nonetheless, DA can bring people together virtually, with the potential for real social impact even in global crisis situations such as a pandemic.



Figure 4 Keywords from the academics' roundtables

Academic Drivers

- One individual referred to the pandemic as a “blessing in disguise” since many stakeholders in HEIs had been advocating for hybrid learning prior to the pandemic.
- Participants said that there is the possibility of more production of research data and more participation with colleagues they might not have had the chance to work with, pre-COVID. And participants agreed that data collection and collaboration was made more accessible through online participation.
- The shift online allowed for more interactive engagement with smaller groups when it came to design workshops. One participant coordinated a course that supported IT services, and the digitalisation of education meant that there was more access to information. Shared documents and other digital platforms help maintain research continuity, and the practical aspect of archival science continued collaboratively.

Academic Barriers

- On a global scale, areas of concern that were raised were digital literacy and equality with a focus on social disparity creating a digital divide, and a lack of trust between different actors/sectors.
- The reliance on digital access in HEIs resulted in the exclusion of certain groups. DA can only be effective as a social catalyst if the objectives are relevant to other communities, thus DA needs to be easily transferable.
- Some participants highlighted that a lack of digital literacy could result in a lack of confidence and a sense of social vulnerability. While one group focused on the local relationship between academics and students, another looked at the disparity between different nations, referring to Mexico and Sierra Leone as examples of difficulties in ease of access to information and technology.
- Different software used in different HEIs meant that stakeholders had to have a working knowledge of several programs such as Microsoft Teams and Google Drive, to be able to communicate efficiently.
- There was a reduction in interaction and participation during online sessions, and the academic group found that body language was difficult to analyse without in-person meetings.
- An important issue that was raised was the notion of fatigue. One participant likened the shift to online learning to a tsunami, creating a virtual and non-virtual dichotomy.
- When asked about the efficacy of DA, it was suggested that efficacy is dependent on whether objectives are community specific or can be translated for use in other communities.
- DA was difficult for students collecting data door to door as they were treated suspiciously, as a spreaders of the virus. This was a barrier to the transmission of knowledge between academic entities and the community.
- Lack of participation can result when people are cut off from technical support. In addition, older students may find it hard to adapt.

Academic Anomalies

- One group felt unprepared in terms of tools and creative ideas about how to be better involved or transmit knowledge and information of DA, using the digital environment as an active medium in the maker community.
- Another said that a lack of funding meant that communities needed to be more innovative and use a collective cohesion to produce change.

Academic Takeaways

Some academics referred to the fact that time online was considered harmful but countered that “not everything online is bad for you”, and that there was a need to understand the preference of the people using the methods of digital education as a learning tool. The pros and cons are dependant of people’s realities and are therefore interchangeable. The academic group agreed that younger students found that the online environment was closer to their realities and therefore felt more confident whereas older students may find being online as a barrier.

Diversity needs to be recognised and there needs to be a focus on how hybridity can help or hinder, for example there needs to be reassessments of how HEIs can repurpose the spaces that we occupy. Overall, the academic group found that the transition to a digital environment for either learning or the dissemination of information within a community was based upon enthusiasm. Having instigators that encouraged others to get involved had a positive effect on social groups.

The academic group felt that there was a need to look at the situation from the student’s perspective and that better communication would help develop the relationship in the future by understanding the needs and emotions of all concerned. This was because the shift online was met with enthusiasm at the beginning but got tedious without in-person interaction. One lecturer believed that most students preferred having lectures in person but taking their exams online. Another highlighted that people’s awareness of Zoom before March 2020 was limited, which shows how quickly people needed to adapt to access information and services at the beginning of the pandemic.

It was mentioned that there is a need for flexibility and fluidity as the COVID-19 situation develops. Some interactions were already being held using the hybrid method, so it was a smooth transition but that interaction between students and lecturer during classes was dependant on the participants and the existing relationships.

How and why assessments happen must be evaluated and include discussions on issues such as digital transparency and disclosure, and address ethical issues related to data storage. Different HEIs have different experiences, depending on the social needs of the students. Those from lower income households required different approaches, and some HEIs have a higher proportion of marginalised students which leads to a need for better funding and more resources.

3.3. Decision Makers Group

Introduction

Participants were aware of DA between HEIs and the community at a local and global scale, with further examples of digital action that involved environmental research and documenting social needs provided in Annex 1. They suggested that DA created new pathways for good research practice and to reach different sectors of society. On the whole, it was agreed that benefits of increased digital literacy can contribute to better decision-making and that management meetings that were held online have proven to be a flexible and positive experience.



Figure 5 Keywords from decision makers' roundtables

Decision Maker Drivers

- The crisis showed that IT services became an emergency service to support staff during the pandemic.
- New courses were developed and launched in a digital manner during the pandemic, and the participants agreed that this created opportunities for better outreach with potentially a larger audience at a global level. Also, participation increased and thus the potential for innovation through greater diversity was created.
- Hot desking and online meetings or lectures provide for environmental and economic opportunity costs as the need for buildings and the associated carbon footprint is reduced. Through this, there is a value-added experience, but it can only be made beneficial through better policymaking with digital literacy in mind.
- Technology has facilitated a flexible working environment, often leading to an increase in productivity - the difference between equity and equality in relation to internet availability, adequate space within the home was also discussed. Also, funding can have a vital impact on new breakthrough technologies.

Decision Maker Barriers

- There needs to be serious investment for all stakeholders to ensure accessibility. While diversity was mentioned as a driver, social exclusion was a barrier to diversity. This included the use of language, especially an awareness about the difficulties of using only English, which has the potential to cause division, especially when translations are poor.
- The digital divide was understood as a class issue, and that created friction or hesitancy in participation as some DA was seen as being class-bound. The digital divide also formed a barrier to knowledge regarding potential DA activities.
- Decision makers found recruitment difficult, especially foreign applicants, which hindered research projects. Also, although interviews could be held online, body language and other indicators of character were difficult to read. This was also the case during management meetings.
- Digital inequality was highlighted as a concern for institutions as well. There was a struggle to equip all staff who would not normally require laptops, printers, and other hardware. Different faculties required different support.

Decision Maker Anomalies

- One group believed that students preferred online learning, a reason being the value attributed to commuting travel time especially for evening courses. It was recognised however, that online participation was not as interactive.
- One of the partner institutions converted its main lecture halls into a vaccination centre during the pandemic. This allowed the general people to visit the campus for the first time. This provided the university with more social visibility and this decision was believed to have shown the institution in a different light to the wider community.



Decision Maker Takeaways

Emergency learning structures were needed to respond immediately to the crisis created by the pandemic, in many cases within a 24-hour period. There should be insight into how people reacted to such an immediate and long-lasting change, and the pros and cons of returning to in-person interactions. A possible challenge to overcome in the near future would be the creation of better learning tools that can be digitalised to support online learning. Different people have different needs and there needs to a more holistic approach to how we address them. Each process had its positives and negatives and indeed, there were challenges to each step.

While COVID-19 decimated certain sectors of the economy, Zoom and Netflix stock exploded which shows that online technology plays an important part in both work and social life, and we need to make sure that these technologies are available and accessible for all. Certain skills could be adopted online such as group projects and sketching but technology needs to be family friendly. Finding effective methods of achieving intimacy within a flexible space of online webinars and lectures is important, while one-to-one meetings should take place as well.

Research into the equity of the whole situation is required. It would not be prudent to abandon what we have learned through the pandemic and return to the old practices for the sake of doing so. The provision of better tools, the redesign of IT support, and essentially understanding the specificities of the people involved, rather than making general assumptions on needs will enable HEIs to support and facilitate online participation through an interdisciplinary, hybrid functionality.

3.4. Librarian Group

Introduction

This group was made up of individuals employed within the library services. It was found that there is a need to assess the efficiency of the tasks and activities in relation to the scale of DA. Larger DA activities operated better on a larger scale, offering participation in the global community, however it was commented that this was only effective with global digital equality. It was agreed that participation and uptake of skill-building courses and workshops increased during the pandemic and that the first challenge was the implementation of strategies to maintain library services available remotely.

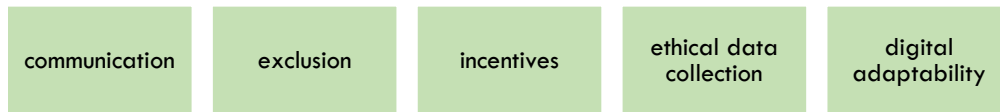


Figure 6 Keywords from the librarians' roundtables

Librarian Drivers

- Online activities opened the door to overseas participants. The increase in the use of Zoom made things a lot easier. It had an impact on travel, time, and budgets. Those with difficulties with in-person access were able to participate and contribute. One group mentioned *asynchronous learning* whereby people can learn through digital means at times that suit their schedule.
- Library staff created online campaigns using social media to promote the use of the library's online services. They struck deals with publishers so that open access was available for all during the pandemic. They digitalised publications that would have otherwise remained in hard copy. Also, they became mediators between the hard copies and the students by catering for a collection/drop off service where the books and papers were quarantined between use.
- Training workshops went online to highlight the continued use of the library and its online services. This meant that work could continue and there was greater flexibility in schedules, leading to an increase in attendance.

- Restrictions and lockdowns meant that people needed access and those who would not normally use the online library services were now seeking to learn new skills that enabled access. Screen sharing technology helped guide students who were struggling due to a lack of digital literacy.
- Free trials of digital databases helped at the start of the pandemic, whilst pre-COVID plans to digitise collections were put into action, which helped the process as some of the groundwork had already been done.

Librarian Barriers

- Being online made it hard to monitor whether information was being understood and it was harder to form cohesive bonds with newcomers. Access to technology was a barrier that prohibited equal participation. Also, some library contexts were not digitally appropriate.
- Online training sessions for library services can be more time-consuming and tiring.
- There were occasions where in-person sessions were offered once these were allowed, but were delayed due to equipment being double-booked, or because of an assumption that all students had suitable devices.
- The lack of direct contact meant that there was little personal feedback. Demonstrations were hard to deliver as a lot of the workshops that were done pre-COVID were activities such as library tours. These were difficult to conduct virtually but were held nevertheless, with less practical input and thus requiring more clarification.
- Difficulties in institutions which cater for multi-level learning and not just tertiary level found that some students were not able to access the library services as they did not have the relevant digital skills. Age was a barrier for some students who were not digitally literate. The lower-level students had to be instructed on the use of social media as they tended not to use their email accounts. Facebook and Instagram were used to promote the library services and encourage students without such skills to reach out and seek help. MS teams was used for training purposes and meetings, but it was a challenge to reach students who lacked digital skills.

Librarian Anomalies

There were no DA observations relating to library staff specific to any institution.



Librarian Takeaways

Different people have different needs when accessing library services. One group suggested that it was important to understand the needs of the group in flux and to identify new ways of communicating new information. While up-skilling through webinars and virtual tours provided a continuation of the library services, it was believed that there was a difficulty in ensuring that all participants had understood the aims of the sessions and were able to use the services efficiently as a result. Contextual learning however helped students to find their own way of understanding concepts and information.

Staff employed within the library services believed that they were minimally affected since the virtual environment was familiar and already an effective tool. Libraries have an existing online facility and therefore focusing on creating processes for safe collection, retention and depositing of hard copies. Although the workflow changed, students still had to submit and sit for exams, resulting in an increase in use in the repository services. Coming out of the lockdown, the library staff helped create safe spaces for students to visit in person.

3.5. Technical Staff Group

Introduction

The scale of the DA was an important factor for this group, in relation to how local production of DA is received at a global scale. However, this requires follow-up analysis to find the value in international outreach. Local engagement in DA meant that a snowballing effect could take place leading to greater international participation. Most roundtable participants had some experience with DA, online training, webinars, and virtual tele-conferencing.

DA can be seen as creating a more heterogenous community, with a focus on diversity and departing from an echo chamber of repetitive discussion. By opening the arena to more different opinions, stakeholders can create a more inclusive framework for social change.



Figure 7 Keywords from the technical staff's roundtables

Technical Staff Drivers

- The push to online DA and learning meant that the technical staff could quickly identify social needs and potential obstacles. Proper funding, policy, access to digital infrastructure, and digital proficiency are necessary for successful organisation and participation.
- The provisions of spaces whereby older participants were able to upskill to enable participation is essential. Using non-tech language that was understandable and identifying goals and aims of students was a driver for better communication. IT staff created better how-to guides to help people get the most out of the software and services available.
- Social needs drive DA in the pursuance of inclusivity. To this end, there needs to be a connection between the DA project and the social relevance for motivated involvement.



- Collaborations between HEIs increased and there was a greater reliance on establishing and maintaining partnerships. Sharing with other English-speaking institutions helped, with ad hoc sharing and collective wisdom, staff were able to provide a better service. Social media provided a bridging facility that allowed information to be conveyed to those who would not normally be aware of DAs.
- Through the cooperation with academic staff, there was a general uptake in the use of online services. Staff who had previously refused to use online services were actively seeking workshops and webinars that aided online teaching and open access to information.
- The removal of bureaucracy that normally hindered getting projects off the ground made the whole process much easier. This was described as a breath of fresh air.
- Certain administrative functions have been permanently transferred online and carried out in a more efficient manner.

Technical Staff Barriers

- There is a disconnection between HEIs and civil society which leads to a lack of collaboration as certain forms of DA may not be relevant to the wider community. There is a sentiment that projects are not interdisciplinary, and it is assumed that only those within HEIs are able to participate.
- While everyone acted swiftly at the onset of the pandemic, the digital shift from an IT perspective was something that needed time and funding to implement. Bureaucracy meant that processes that needed a speedy conclusion were hindered.
- Even though the digitalisation of the services was made as user-friendly as possible, use was only effective if there was a high degree of digitally literacy.
- Tools, equipment, and software were not yet suitable to cope with such a sudden and large-scale shift to online learning and thus, local resources were pushed to the limit. A good WIFI and internet service were vital for maintaining an effective service and this was sometimes lacking.
- The pandemic brought about the issue of how to equip all staff with the hardware and software that would usually be available through desktop computers in offices. Lack of availability from the suppliers meant that continuity was difficult.
- Certain software licenses are expensive to purchase, so staff and students found the online shift problematic at first. IT services acted as mediators to make sure that everyone had the necessary software.
- The hybrid mode has been found to be a distraction in certain cases, for meetings, conferencing, and lectures and it was suggested that we look to other industries for best practice examples.

Technical Staff Anomalies

- One group believed that financial incentives were required to continue the development of digital tools. Before there had been limited funding and unlimited bureaucracy.
- One group said that there was not enough entrepreneurial initiative to produce sustainable business models which contributed to the issue of digital inequality.
- One group felt that DA initiatives are aimed at younger students who are already involved in the creative fields of study. Initiatives should be inclusive to reach those who might not be aware of DA events or activities.

Technical Staff Takeaways

Overall, technical support grew in skill and experience. Despite this, financial incentives and better grants would benefit further IT development. People are waiting for social change so being able to show them that they can be a part of the movement is important in involving both local and global communities. In fact, there was a high demand for IT services, especially from people seeking to learn new digital skills. However, there is a need for greater flexibility.

Because it was originally believed that the crisis situation would not last, IT services found that they had to approach the situation with learning first/assessment second approach. Despite this, there is a hope that the skills that were adopted through learning on the ground will be continued and maintained. Being online and conducting meetings virtually has led to more efficiency but in-person activity still needs to continue as there is a need for human interaction as well as virtual. In this regard, though conferences were hard-hit, but the pandemic gave IT services the opportunity to update venues with appropriate digital equipment to support hybrid events.

Assessments were an IT challenge but sharing information between HEIs with experiences with how to guides and video support helped. Staff must be flexible and efficient in learning digital tools to maintain working processes. The availability of training needs to be visible and open to all. This can bridge the digital divide and upskill both students and members of the community.

3.6. Webinars

Throughout the webinars held in Cyprus and Greece, it was reported that engagement affects motivation to participate in CS. While all citizens are invited to participate, there is a section of society which is demotivated to participate due to previous marginalised experiences and accessibility. Insightful groundwork needs to be conducted, including risk assessments and other administrative procedures, to analyse the possible barriers to those that would be excluded. This would minimise the exclusion experienced by some sectors of society. Re-appropriation of funding to incentivise participation could be a suitable method to raise DA awareness and clear policy is needed for efficiency.

Groups were aware of DA, but the efficacy of DA is relative to personal interest, topic, and scale of project and interaction is often based on the availability of digital skills. Community based projects are usually locally based whereas science-based projects are set on a global scale. DA needs to be locally relevant such as beach clean ups in Cyprus but have the capability to be translated to a global audience as an example of potential DA in other locations.

Sometimes, gathering data can be risky. This raises ethical issues concerning age and exposure to dangerous situations, and a lack of trust between HEIs and society can be a barrier to DA. Trust can be built by nurturing an appreciation for research and gathering data in younger children which has the potential to create an environment in which DA is better understood. This can also be done by finding a way that communicates the results of collaboration between society and HEIs to promote trust and participation.

HEIs can be seen as catalysts of social change because of the reach they have, but this is dependent on social interaction. It was suggested that students could be a bridge between HEIs and society, allowing them to produce information that is understandable to the public. HEI need to recognise the potential impact of DA on society in a long-term basis and not just within their own immediate environment.

Positive aspects of DA were that the pandemic pushed students to improve their digital skills. Financial benefits of online events and activities meant that there were fewer costs for hosting and attendance. It also meant that there was more flexibility for attendance and that resulted in greater participation. Drivers of DA were acquiring new skills which allowed more in-depth digital participation, reassessing curriculums to include DA, to understand social problems such as digital inequality, and allowing more people to experience different technologies, such as 3D printing.



A draw back of the pandemic was that practical hands-on experience could not be carried out. Social distancing and COVID-19 restrictions meant that participation was limited. Barriers of DA included delays in shipments and therefore material, and funding for projects that bridged two programs.

During the webinars, it was noted that HEIs can raise awareness of DA by improving communication, highlighting the moral value of DA for the wider community in terms of environmental action or employment opportunities, encouraging the students to get involved with promoting projects, and building trusted relationships with marginalised groups such as refugees to encourage inclusivity.

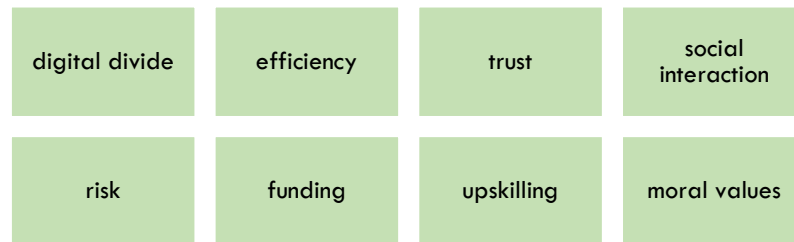


Figure 8 Keywords from the webinars

4 Conclusion

Throughout the discussions that ensued from the events carried out as part of Intellectual Output 1, the key drivers that were identified are better use of space, access to funding, social entrepreneurship, and civic engagement. Barriers were the digital divide, communication, and trust between HEIs and the community, and equality. Therefore, DA can only be effective if the following measures are addressed:

- Fostering trust between HEIs and the community to encourage appropriate participation and dissemination.
- Narrowing the digital divide for equality in participation through upskilling those without digital skills as well as seeing the relationship between stakeholders as a global working relationship.
- Appreciating people's realities and expectations of social change by understanding the needs and aspirations of individuals who will be directly impacted and the long-term effects of DA that can help develop better methods of project organisation.

Promoting the importance of research and data collection within younger students was suggested as a method of building better relationships for civic participation. This may help people understand how HEIs operate, and this could improve community participation in the future as people who occupy space outside of HEIs will have a working knowledge of why research is conducted. To understand how information is received, we need a serious investigation into how HEIs and community communicate. Each group mentioned communication as an important factor for successful performance. Therefore, better communication would indeed raise awareness of DA.

The groups participating in the roundtable events organised by UCL and UP referred to global incidents and examples of DA and the results thereof. Whereas the groups from UM's roundtables felt comfortable discussing the impact of the COVID-19 pandemic on their own small island state experiences with a more internalised opinion. This reflects the importance of understanding the social needs of different groups, and how information should be produced for a global audience but have the flexibility to be translated into a way that can be understood locally.

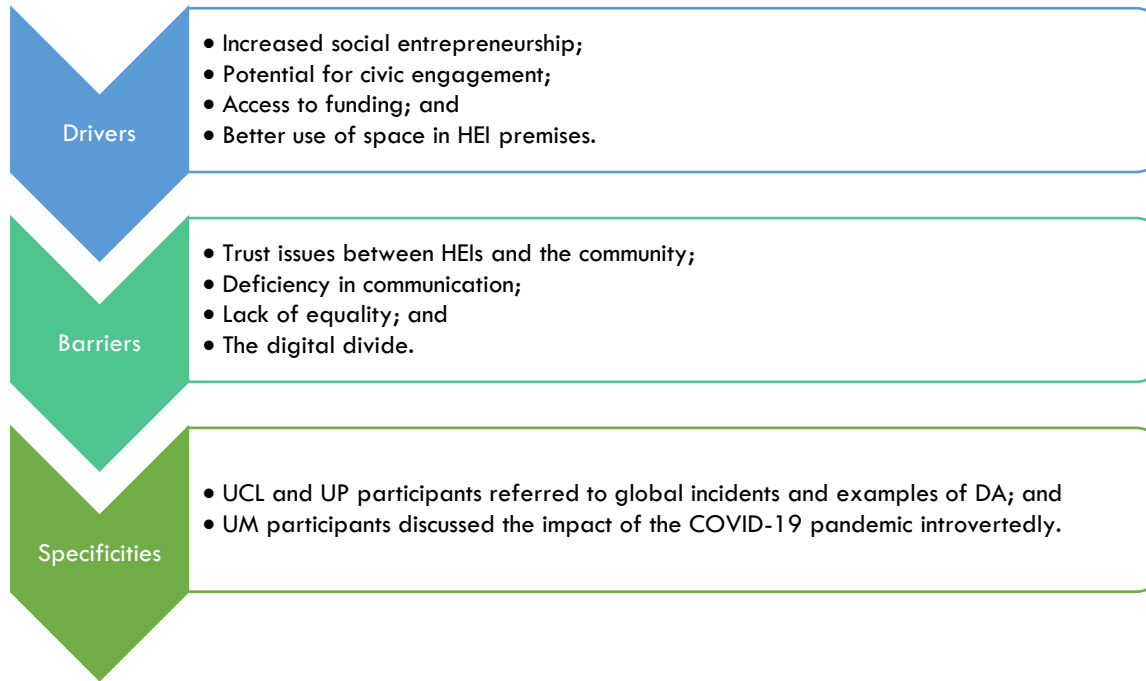


Figure 9 Findings on drivers, barriers and specificities

Digital transparency and ethical data collection were mentioned as both requirements to be elaborated upon and barriers to expedited process. These are important factors in the successful dissemination of DA results of any activity into society but also for building trusted relationships. The online shift has resulted in people having more flexibility and it is felt that hybridity in events and activities needs to continue. It allows more people to attend and reduces costs for both organiser and participant. Online events also increase the reach from local to global. As above, this can only be effective if there is digital equality. More work needs to be done to understand the impact of local DA on global communities.

The flexibility that was required for the shift online should be continued post-pandemic, and collaboration between HEIs, staff and students has proved to be an effective method of transmitting data and skills. Local governments are required to lessen the burden on HEIs by helping the wider communities to narrow the digital divide. However, these skills and benefits are only useful if they can be translated into a language that is understood by the wider community, and thus HEIs should be the mediators between policy makers and civil society.

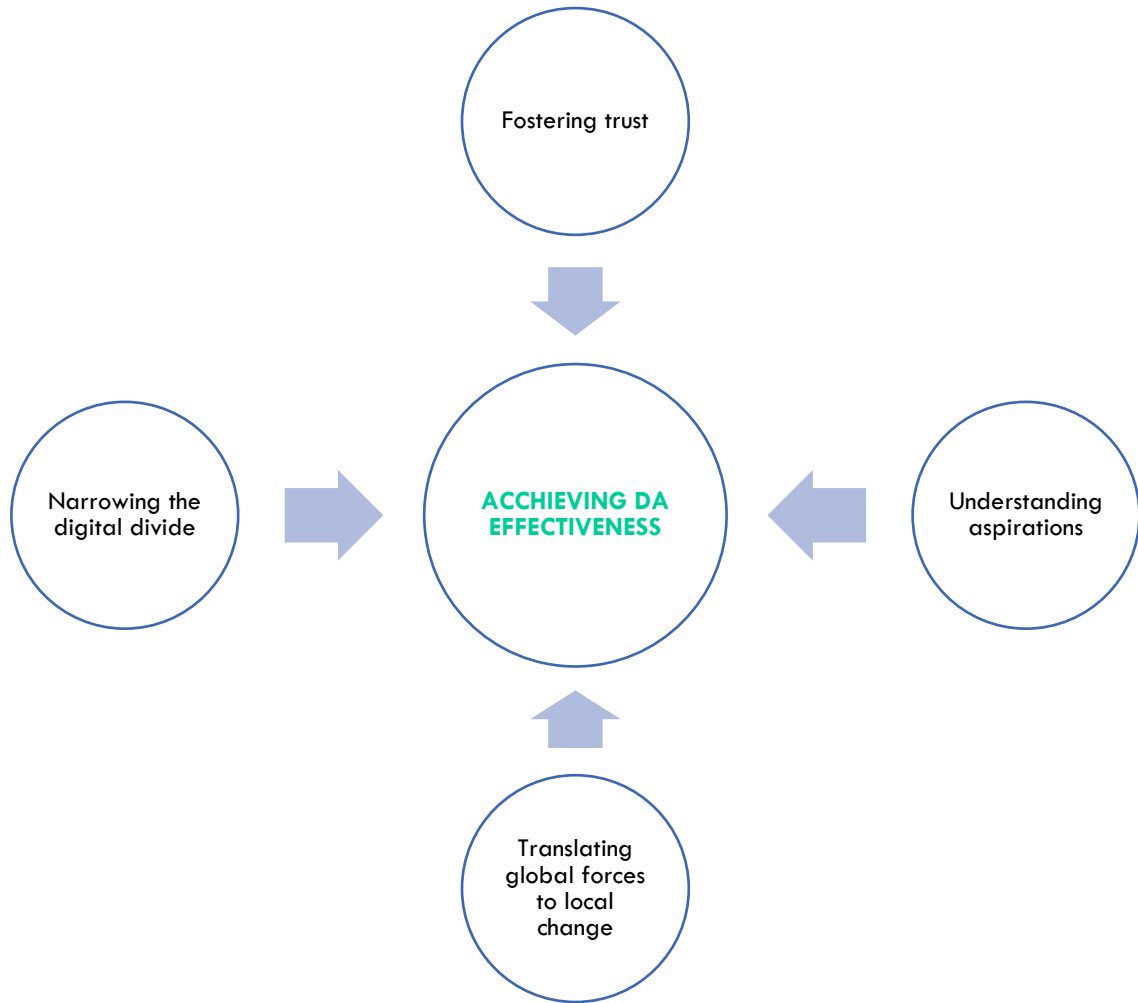


Figure 10 Recommendations on achieving DA effectiveness