

HEIDI

O4A1: Framework for digital skills acquired in digital action contexts

Component of Intellectual Output 4 “Report on digital skills development by HE staff, HE students and community stakeholders through Digital Actions (DAs)”

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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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**Digital action at HEIs as a catalyst for social change
in the COVID-19 crisis**

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List of Abbreviations

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

Abbreviations	Description
DA	Digital Action
EU	European Union
HE	Higher Education
HEIs	Higher Education Institutions
ICT	Information Communication Technology
IO	Intellectual Output



Executive Summary

The *O4A1: Framework for digital skills acquired in digital action contexts* responds to the growing awareness among HEIs that the acquisition of digital skills can be better served by digital actions aiming to enhance the participation and involvement of students in solving real life problems identified by community groups. Through active participation, civic engagement, and citizen science activities, HEIs will be able to achieve the upskilling of their students and staff while setting the example for the rest of community members to follow and engage in digital action (DA) projects (Zourou, 2020).

The research process, on which this report is based, includes the collection of several European frameworks relevant to digital competencies and digital action, and subsequently, the identification of the specific frameworks that are closer to the scope of the IO4 of the project. Specifically, we identify three particular frameworks of reference, the [European Digital Competence Framework for citizens 2.0](#), the [European Framework for the Digital Competence of Educators](#), and the [Jisc digital capabilities framework](#).

The current publication contains six sections. Section 1 introduces the scope of the study and section 2 defines and analyzes the notion of “digital skills” and how it can be connected to DA. In section 3, we showcase the large pool of possible relevant frameworks (stage 1 of the research) and in section 4, we critically assess and depict the frameworks having a direct link to digital skills development through forms of DA. In section 5, we present in detail the three selected frameworks, and finally, in section 6, we “decompose” the frameworks to present digital skills and competence areas that can be connected to forms of digital action.



1 Introduction

This publication aims to identify the recognised and widely used frameworks referring to digital skills and to explore whether these digital skills can be conveyed through digital actions in which higher education staff and students participate. This scope will be expanded within our HEIDI project to embrace citizen communities and individuals as well. O4A1 will thus serve to help HEIs and communities to adopt methodologies on digital skills and ways they can be fostered through civic engagement in digital action.

Specifically, the O4A1 report is part of the Intellectual Output (IO) 4 of the HEIDI project which points to the development of digital skills among HE students and staff with regard to responsiveness to crisis situations, like the Covid-19 pandemic. In order to do so, it is indispensable to acquire knowledge and insights on the topic of digital skills and civic engagement through a desktop analysis of the most relevant frameworks. This way, we will identify and select, among various digital skills, the most appropriate ones to be adopted by HE students and staff in their quest to enhance citizens-led digital actions.

As the digital upskilling of HEIs students and staff becomes a critical task and a number one priority in our societies, we strongly hold that this upskilling should be shared and paired with citizens' communities engagement in bottom-up DA to address pressing societal needs. This is our project's ultimate goal, but prior to arriving there, we need to clarify among digital skills that are deemed crucial in embracing grassroots digital action in HE practices and daily research activities.

Consequently, this report's scope is to provide a brief analysis of frameworks of digital skills and to generate useful conclusions as to which digital skills are beneficial to HE students and staff in order to enhance bottom-up DA and therefore, establish HEIs as key social partners at local, national and transnational levels.



2 Digital Skills developed in civic participation contexts

Digital skills include the ability to use knowledge and know-how to carry out tasks and solve problems (DigComp 2.0, 2016). In the same context, the confident use of Information and Communication Technology (ICT) is deemed critical in assessing the level of digital skills developed by users. Our goal is to identify the development of digital skills of Higher Education (HE) students and staff through digital action and its many forms (active citizenship, civic engagement and citizen science). Realising the potential of digitally upskilling HE students and staff through DA, we expect to enhance DA projects within HEIs.

3 Screening of frameworks for digital skills and competencies

In the following table, we proceeded in a literature review consisting of the identification of frameworks referring to digital skills. We collected 13 frameworks, ranging from EU guidelines to specific national plans that focus on how to improve digital competencies.

Table 1: First screening of frameworks on digital skills and competencies

Frameworks	links	Main points	Connection to digital action at large
1. Digital Competence Framework for citizens 2.0	https://ec.europa.eu/jrc/en/digital-competence-framework	It identifies the key elements of digital competence for EU citizens in five areas: a)Information and data literacy; b)communication and collaboration; c)digital content creation; d)safety, e) problem solving.	The Framework specifies: <ul style="list-style-type: none"> • Sharing through digital technologies; • Engaging in citizenship through digital technologies; • Collaborating through digital technologies; • Programming; • Protect health and well being; • Creatively using digital technologies. <p>These elements of digital competence are possibly connected to the idea of citizen science, social participation and activism as they give everyday citizens the opportunity to acquire skills that may help them in different types of DA projects.</p>
2. Digital	https://ec.europa.eu/jrc/en/digital-competence-framework	It refers to teaching professions and the	The framework highlights the importance of engaging



<p>Competence Framework for Educators</p>	<p>a.eu/jrc/en/digital-competence-framework-educators</p>	<p>digital competences they need to develop.</p>	<p>citizens in research through digital technologies. Precisely:</p> <p>3.2. Guidance: foster interaction with learners;</p> <p>3.3. Collaborative learning: enhance learner collaboration and collaborative knowledge creation;</p> <p>3.4. Self-regulated learning: enable learners to plan, monitor and reflect on their own learning;</p> <p>4.2. Analysing evidence;</p> <p>5.3. Actively engaging learners;</p> <p>6.2. Digital communication and collaboration;</p> <p>6.5. Digital problem solving.</p> <p>These recommended digital skills can enhance citizen science and civic engagement leading to DA if applied accordingly by HE staff and educators.</p>
<p>3. Essential Digital Skills Framework- UK</p>	<p>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data</p>	<p>It defines the digital skills needed to navigate the digital world. They are skills to be developed by everyone.</p>	<p>The framework presents important digital skills that citizens should acquire but it doesn't correlate with citizen science or some form of digital action as it focuses on more general and basic digital skills that UK citizens should acquire.</p>



	a/file/738922/Essential_digital_skills_framework_k.pdf		
4. Strategia Nazionale per le competenze digitali- IT	https://repubblica.digitale.innovazione.gov.it/assets/docs/Piano-Operativo-Infografica.pdf	It sets the actions needed to be implemented in order to advance digital skills of students, workers and citizens.	The framework highlights the actions needed to be taken in order to upskill citizens' digital competencies but it doesn't clearly mention digital action/activism or citizen science.
5. Joint Information Systems Committee-Jisc digital capabilities framework: The six elements defined	https://digitalcapability.jisc.ac.uk/what-is-digital-capability/	It identifies the important components of achieving ICT Proficiency.	The framework outlines the aspects of digital collaboration, participation and learning.



<p>6. Europe's digital decade: digital target for 2030</p>	<p>https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en#digital-citizenship-rights-and-principles-for-europeans</p>	<p>It sets the goals of a digital EU community for 2030.</p>	<p>The vision for 2030 talks discusses citizen empowerment and mentions in its goals that a digitally skilled population is needed; it further refers to the notion of “digital citizen”.</p>
<p>7. ENISA- Cybersecurity Skills development in the EU.- December 2019</p>	<p>https://www.enisa.europa.eu/publications/the-status-of-cybersecurity-education-in-the-european-union</p>	<p>This report focuses on the status of the cybersecurity education system.</p>	<p>It mentions the competences needed to be developed by students and education systems in cybersecurity. It refers to digital competencies but it is a report that deals with a very specific topic (cybersecurity) that doesn't relate to our research purpose.</p>
<p>8. EU Digital Action Plan</p>	<p>https://education.ec.europa.eu/focus-topics/digital</p>	<p>It highlights three priorities to follow in order to build a digitally competent EU</p>	<p>The plan states clearly the notion of “open and citizen science”, the importance of the EU Code Week and the</p>



	tal/education-action-plan	community.	changes needed to be adopted in the education sector.
9. UNESCO- Global media and information literacy assessment framework: country readiness and competencies	https://unesdoc.unesco.org/in/documentView.r.html?v=2.1.1.96&id=p::usmarcdef_0000224655&file=/in/rest/annotationSVC/DownloadWatermarkedAttachment/attach_image/61bd07e4-5df9-4729-a8d0-51083a23a9e5%3F%3D224655eng.pdf&locale=en&multi=true&ark=/ark:/48223/pf0000224655/PDF/224655	Media and Information Literacy (MIL) brings together Information Literacy and Media Literacy, along with ICT and Digital Literacy. As a new literacy is built, people, communities and nations are empowered to participate in and contribute to global knowledge societies. The MIL Framework is defined as a set of competencies that encourage citizens to access, retrieve, understand, evaluate, as well as share information and media content in all formats, using various tools, in a critical, ethical and effective way.	The MIL Competency Matrix highlights the major digital competencies and it particularly refers to: 3.2. Creation of knowledge and creative expression and; 3.3. Participating in societal-public activities as active citizen



	<p>eng.pdf#%5B%7B%22num%22%3A165%2C%22genre%22%3A%22XYZ%22%7D%2Cnull%2Cnull%2C0%5D</p>		
<p>10. Développement des compétences numériques dans l'enseignement scolaire, dans l'enseignement supérieur et par la formation</p>	<p>https://www.education.gouv.fr/bo/19/Hebdo37/MENE1915146D.htm</p>	<p>This framework is based on the European Digital Competence Framework (DigComp).</p>	<p>This is the framework of digital skills and competencies adopted by France. It follows the recommendations of the European Digital Competence Framework, and so it can be associated with the encouragement of citizens-led DA activities.</p>



continue			
11. Vitae Researcher Development Framework	https://www.vitae.ac.uk/vitae-publications/rdf-related/information-literacy-lens-on-the-vitae-researcher-development-framework-rdf-apr-2012.pdf	The Vitae Researcher Development Framework (RDF) has been developed by and for researchers working in higher education as an aid to planning, promoting and enhancing professional and career development.	The framework discusses a very specific topic, i.e. “researchers in HE” and elaborates on issues around their information literacy.
12. Skills and Competency Framework	https://www.cdbb.cam.ac.uk/files/010321cdbb_skills_capability_framework_vf_inal.pdf	It aims to identify the skills and competencies needed across a range of relevant roles, while setting out a learning pathway for people involved in developing and implementing the Information Management Framework (IMF).	It is a more industry-oriented report.
13. Council of Europe- Digital	https://rm.coe.int/168093586f#	It identifies three aspects of online life—being online, well-being online and	It mentions active participation and citizen activism online.



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Citizenship Education Handbook	page=33	rights online. It promotes the Council of Europe's fundamental principles of democracy, human rights and the rule of law. These principles apply just as much to human relations and behaviour in the digital environment as they do in the physical world.	
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4 Identification of frameworks related to digital skills likely to be acquired in digital actions

The next step consists of selecting the appropriate frameworks that are most relevant to digital skills acquisition through forms of digital action. As it is already pointed out (see *Introduction*), not every digital skill leads automatically to the empowerment of bottom-up DA for social purposes. In order to understand which digital skills-to be acquired by HE students and staff-are suitable to the aforementioned goal, we should critically assess which of the above-stated frameworks are better positioned to nurture the necessary digital skills.

For this purpose, we first proceeded with the exclusion of some of the items presented above, for the following reasons. First, the UK-Essentials Digital Skills (No3 in Table 1) and the Italian Strategy for Digital Competencies (No 4 in Table 1) are describing general digital skills needed to be developed by the population and thus, they do not fully and directly address issues of citizen activism and engagement.

Second, “Europe’s digital decade vision for 2030” (No 6 in Table 1) is a policy paper highlighting broadly the need to develop digital skills in Europe. The same applies for the EU Digital Plan (No 8 in Table 1); it works great as a reference point but not as a mere digital skills framework. Thirdly, the French framework on digital competencies (No 10 in Table 1) is an extension of the DigComp Framework (No 1 in Table 1), and so it doesn’t provide any further insights on the topic. The Vitae Researcher Development Framework (No 11 in Table 1) is relevant but it is more oriented to information literacy skills needed for researchers only. Similarly, UNESCO’s Global media and information literacy assessment framework (No 9 in Table 1) is relevant but its methodology differs from the one adopted in our study. Our goal is to identify, test and evaluate digital skills for HE students and staff that will render HEIs agents of citizens-led DA for tackling pressing social issues. On the contrary, UNESCO’s framework is more suitable in testing situations of general educational scope, ranging from a paper-and-pencil test, or mixed computer and paper test to computer adaptive testing.

Fourth, the Skills and Competency Framework (No 12 in Table 1) was excluded on the basis that it involves skills applied in industry and business contexts. Finally, the Digital Citizenship Education Handbook issued by the Council of Europe (No 13 in Table 1) is a valuable source of information but it does not provide indicators or specific information related to the requirements of this study, as it aims to provide general guidelines and information on basic digital competencies and principles that characterise digital citizenship.

As we have assessed the relevance of the frameworks based on their connection to O4A1 goal, we have concluded that the three most relevant frameworks of digital skills to take into consideration are: The Digital Competence Framework for citizens 2.0, the Digital Competence Framework for Educators and the Jisc digital capabilities framework. Below, you can see a brief presentation of the frameworks:

Table 2: Frameworks for digital skills acquisition likely to occur in DAs

Frameworks	Links	Any connection to either citizen science or informal learning or social participation/ activism? please comment
1. Digital Competence Framework for citizens 2.0	https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework	The framework's goals are connected with the idea of citizen science, social participation and activism as they give everyday citizens the opportunity to acquire the necessary skills to actively contribute in the well being and advancement of their societies
2. Digital Competence Framework for Educators	https://ec.europa.eu/jrc/en/digcompe/du	This framework is educators-specific. However, it addresses issues like the active engagement of learners from the educators perspective.
3. Jisc digital	https://digitalcapab	This framework outlines the aspects of digital



capabilities framework: The six elements defined	http://jisc.ac.uk/what-is-digital-capability/	collaboration, participation and learning.
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5 Presentation of the selected frameworks

As a result of the critical identification of only those frameworks that map indispensable digital skills and competencies that can lead and enhance grassroots and HE-supported DA, we have distinguished these 3 frameworks. Precisely:

a. **The Digital Competence Framework for Citizens 2.0 (DigComp 2.0)** is a tool to enhance citizens' digital competence and assists policymakers in planning policies that lead to improving digital competency. The EU, realising the need to have a common reference framework in the fields of education, training, and employment, developed DigComp in collaboration with the Joint Research Centre (JRC) of the European Commission. It classifies five competence areas: Information and data literacy; Communication and collaboration; Digital content creation; Safety; and Problem solving. The framework was first published in 2013 and has since become a reference for the initiation and strategic outline of digital skills initiatives at both European and Member State levels. DigComp 2.0 is the updated version that presents the renovated conceptual reference model.

source: <https://publications.jrc.ec.europa.eu/repository/handle/JRC101254>

b. **The Digital Competence Framework for Educators (DigCompEdu)** aims to develop educators' digital competence in Europe by creating a common frame of reference. DigCompEdu was developed as European Member States realised that educators need a set of digital skills relevant to their profession's demands in order to fully benefit from the potential of digital technologies. The DigCompEdu Framework proposes 22 elementary competencies organised in six areas: Professional engagement; Digital resources; Teaching and learning; Assessment; Empowering learners; and Facilitating



learners' digital competence. The Framework also presents a progression model to assist educators evaluate and develop their digital competence. The framework originates from work implemented by the European Commission's Joint Research Centre (JRC), on behalf of the Directorate-General for Education, Youth, Sport and Culture (DG EAC).

source: <https://publications.jrc.ec.europa.eu/repository/handle/JRC107466>

c. **The Jisc digital capabilities framework** aims to develop specific 'role profiles' that focus on indispensable digital skills to adopt in order to meet the demands of diverse roles and needs. It is an adaptable framework that responds also to the necessity of education staff and students to grow the digital skills required to be effective in a digital organisation or in today's educational landscape. It categorises digital skills in six key areas: ICT Proficiency; Information, data, literacies; Digital creation, problem solving, innovation; Digital communication, collaboration, participation; Digital learning and development; Digital identity and wellbeing. The Jisc framework was made to generate fresh responses to the challenges we face in today's digitalised world as it is easily adaptable to new requirements and educational settings.

source:

<https://repository.jisc.ac.uk/7278/1/BDCP-DC-Framework-Individual-6E-110319.pdf>

6 Skills likely to be developed during DAs

All three frameworks highlight competence areas which specify digital skills to be developed by users of the frameworks. These digital skills range from information and media literacy to more professional competencies like programming and digital problem solving. Below we indicate the framework, then the heading each skill belongs to, and then the specific skill that is likely to develop in a DA context.

The identification of the chosen skills was carried out by considering which, of all skills mentioned in the frameworks, are connected directly to citizens engagement and digital upskilling in connection with citizens empowerment to take collective DA. In this context, we did not consider primary digital skills that are deemed essential in the digital era, as most HE students, staff and citizens engaged in citizen science projects are familiar with them.



What strongly motivated us to choose among several digital skills was the way they can generate and multiply civic engagement and participation in DA activities to tackle social issues in crisis situations.

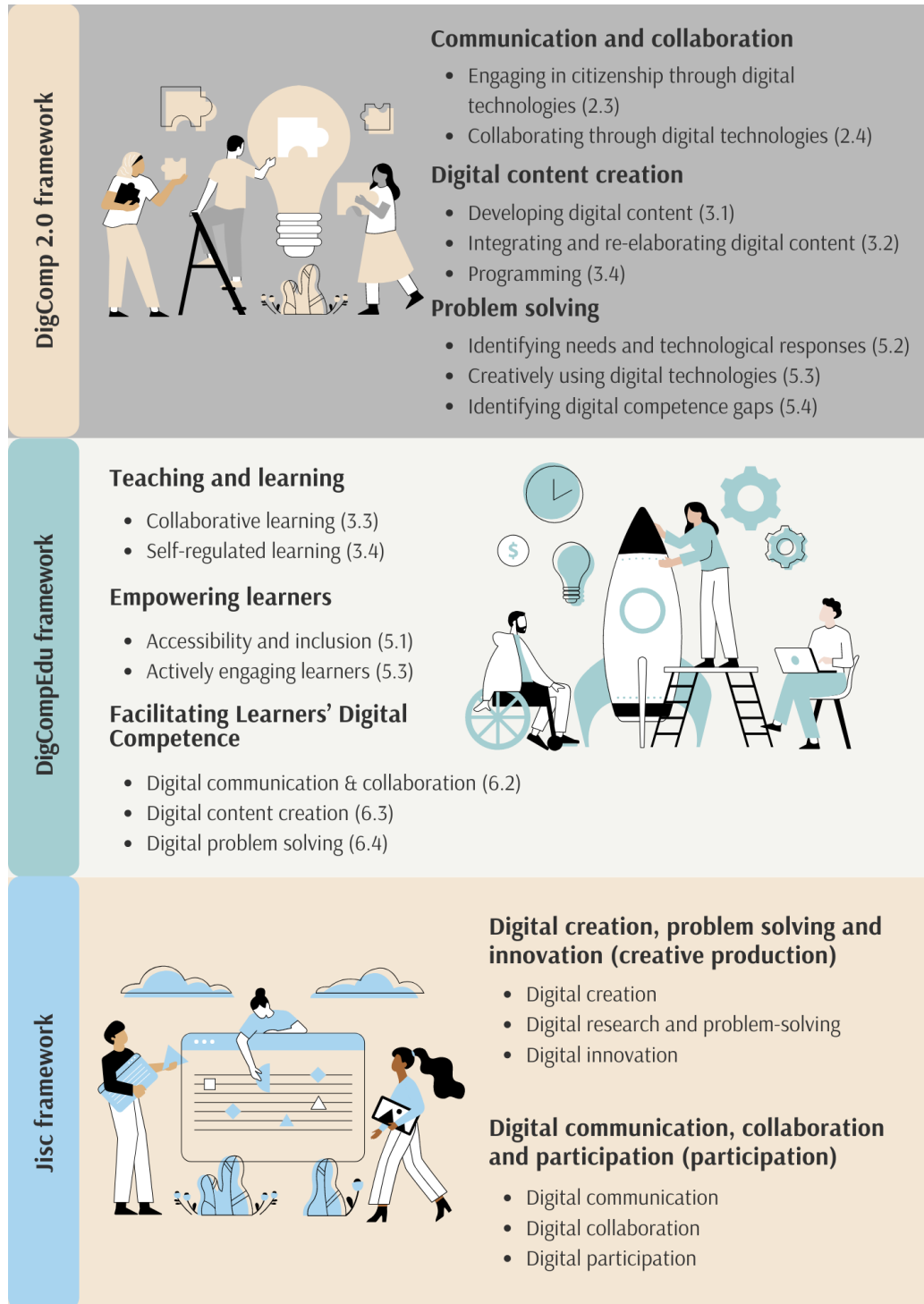
In particular:

DigComp 2.0: 2.Communication and collaboration: 2.3 Engaging in citizenship through digital technologies, 2.4 Collaborating through digital technologies, **3.Digital content creation:** 3.1 Developing digital content, 3.2 Integrating and re-elaborating digital content, 3.4 Programming, **5.Problem solving:** 5.2 Identifying needs and technological responses, 5.3 Creatively using digital technologies, 5.4 Identifying digital competence gaps

DigCompEdu: 3.Teaching and Learning: 3.3 Collaborative learning, 3.4 Self-regulated learning, **5.Empowering learners:** 5.1 Accessibility and inclusion, 5.3 Actively engaging learners, **6.Facilitating Learners' Digital Competence:** 6.2 Digital communication & collaboration, 6.3 Digital content creation, 6.5 Digital problem solving

Jisc digital capabilities framework:

- Digital creation, problem solving and innovation (creative production);
- Digital communication, collaboration and participation (participation)



Skills likely to be developed in DAs from the three frameworks

Table 3: Description of digital skills acquisition likely to occur in DAs, by framework

Frameworks	Competence areas (by skill)	Digital skills
1. Digital Competence Framework for citizens 2.0- DigComp	1. Communication and collaboration 3. Digital content creation 5. Problem solving	2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 3.1. Developing digital content 3.2. Integrating and re-elaborating digital content 3.4 Programming 5.2. Identifying needs and technological responses 5.3. Creatively using digital technologies 5.4. Identifying digital competence gaps
2. DigCompEdu	3. Teaching and learning	3.3. Collaborative learning 3.4. Self-regulated learning

	<ul style="list-style-type: none"> 5. Empowering learners 6. Facilitating Learners' Digital Competence 	<ul style="list-style-type: none"> 5.1. Accessibility and inclusion 5.3. Actively engaging learners 6.2. Digital communication & collaboration 6.3. Digital content creation 6.4. Digital problem solving
3. Jisc Framework	<ul style="list-style-type: none"> Digital creation, problem solving and innovation (creative production) Digital communication, collaboration and participation 	<ul style="list-style-type: none"> Digital creation Digital research and problem-solving Digital innovation Digital communication Digital collaboration Digital participation

7 Conclusion

Through the *O4A1 Framework for digital skills acquired in digital action contexts*, we aimed to create an overview of already existing frameworks on digital skills by focusing on the citizens-led, bottom-up DA dimension to be adopted by HEIs. Undoubtedly, what crisis situations-like the current pandemic-have shown us is the need to upskill HE students and staff in order to respond effectively to pressing societal needs. To do so, it was firstly indispensable to critically evaluate the most suitable digital skills and competencies among a plethora of frameworks, and finally decide which to highlight as the most relevant to our research scope.

The HEIDI project was overall built to improve the ability of HEIs to support community driven knowledge enhancement and action by empowering HE staff and students expertise in community problem solving during the pandemic. In this context, the *O4A1* report goes in the same direction by creating a first pool of evidence based on pan-European frameworks on digital skills that will assist HE staff and students in developing the necessary competencies through socially-driven digital action.

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