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Learn, Connect, Engage, Thrive Together! Digital Citizenship Education in European Universities. A qualitative analysis

Magda-Elena SAMOILĂ[1], Nicoleta Laura POPA* [2]

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Abstract

Learn, Connect, Engage, Thrive Together is the Council of Europe's motto declaring 2025 as the Year of Digital Citizenship Education (DCE) to provide young citizens with innovative opportunities to develop the values, attitudes, skills, and knowledge needed to participate fully and take responsibility in society. This study uses a qualitative research design to explore the integration of DCE in curricula and institutional strategies at eight European universities. The dimensions around which this paper is structured correspond to the three pillars through which the Council of Europe defines DCE: being online, well-being, and rights online. The qualitative analysis indicates that European universities included in the study address most of the competencies central to DCE, but there are gaps in some domains, as depicted in the online communication materials examined. The study emphasizes the need for a comprehensive approach taking into account all dimensions corresponding to digital citizenship education to better prepare students to participate ethically and responsibly in today's digital age.

Keywords: being online; digital citizenship competencies; digital citizenship education; rights online; well-being online

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[1] Lecturer PhD, Alexandru Ioan Cuza University of Iasi, Romania, E-mail: magda.samoila@uaic.ro
[2] Prof. PhD, Alexandru Ioan Cuza University of Iasi, E-mail: nicoleta.laura.popa@uaic.ro
* Corresponding author

1. Introduction

Digital citizenship education (DCE) in European universities is becoming increasingly important, as digital literacy is essential for graduates in the 21st century. While students generally have high digital skills, they lack critical approaches and political activism in their online engagement (Lozano-Díaz & Fernández-Prados, 2019). This need was further endorsed by the Council of Europe since it has set 2025 to be the European Year of Digital Citizenship Education (Council of Europe, 2023). The initiative is geared towards goal setting in the common interests of the member states together with the exchange of good practices for the future strategy of digital citizenship education. This involves developing the knowledge and abilities required to navigate the online world with care and responsibility, understanding digital rights, participating in online communities, and protecting one's digital identity.

Investing in digital skills and education infrastructure is at the frontline of the Digital Education Action Plan for Europe 2021-2027, which will seal more collaboration of Member States towards quality digital education (European Commission, 2020). European initiatives aim to promote the acquisition of basic digital skills, emphasizing responsible digital citizenship practices based on human rights (Mesquita et al., 2022). However, there is a need to move away from a protective approach to developing participation, reflection, and responsibility in media education (Frau-Meigs et al., 2017). Adopting a holistic "onlife" perspective and promoting comprehensive DCE competencies are essential to meet the challenges of the digital revolution (Zadra & Ceretti, 2020).

2. Literature Review

Integrating DCE in higher education mirrors the thoughtful understanding of technology's impact on the social and professional lives of future graduates. Studies have examined its implementation and effects across different contexts. One of the main challenges is the risk of perpetuating prejudices, inequalities, and social discrimination. Being trained to use large volumes of data and lacking the resources to interpret, select, and determine their contextual relevance, the results of online browsing become biased and discriminatory (Atlas, 2023). Another challenge lies in the potential for online search results to be in line with users' values and beliefs, due to their increased predictive capabilities. A third challenge is the potential for technology to be used to limit individual rights and freedoms, and lack of understanding of human emotions, intentions, and moral reasoning (Atlas, 2023). Learners can be easily exposed to violence, racism, lack of information security, and identity theft (Van Fossen & Berson, 2008). This is because digital tools "present unrestricted distributed content, making it very difficult to control" (Richards, 2010, p. 520).

2.1. Digital citizenship education (DCE)

One concept that covers the challenges of familiarizing individuals with online identity, well-being, rights, and responsibilities in the online environment is that of DCE. According to Ribble (2014), DCE has three main themes - respect, educate and protect, and the factors affecting DCE are computer experience, daily average technology use, students' attitudes toward the Internet, and computer self-efficacy. Students with higher levels of computer experience are more involved in activities related to educating oneself and connecting with others online compared with students with less experience (Al-Zahrani, 2015). A quantitative study coordinated by Sandoval (2019) found significant differences in higher education students' perceptions of DCE according to factors such as age, gender, and time spent online. Research has investigated the relationship between digital competencies and DCE among higher education students, finding that problem-solving, communication, collaboration, and digital content creation skills positively influence digital citizenship, while the competency associated with safe online navigation is not

significantly associated with responsible technology use (Arkorful et al., 2024). Other studies have shown a negative correlation between online activism and Internet use for academic tasks, suggesting the emergence of a new digital divide (Fernández-Prados & Lozano-Díaz, 2021). Therefore, DCE depends on multiple variables, like technology experience, internet self-efficacy, digital competencies, and time spent online. Scientific evidence shows that students with a high level of digital literacy are likely to show more interest in educational activities and online interaction. Abilities in problem-solving, communication, and collaboration added positively to digital citizenship. However, online safety does not predict responsible use of technology, which means that indeed digital literacy can be broadened in a more expanded way. These findings emphasize the need for educational strategies that promote a balance between the three different dimensions of digital citizenship (being online, well-being online, and rights online), ensuring effective and responsible use of technology in academic and social settings.

2.2. Being online

Being online illustrates the contextual preconditions for digital citizenship (DC): access to digital technology, basic functional and digital literacy skills, and a secure technical infrastructure (Richardson & Milovidov, 2019). The development of online education has a rich history, with roots in correspondence courses and radio-based learning, and has been influenced by factors such as increased student demand and technological progress (Nehru, 2004). Online learning in higher education has evolved from early distance education methods to become a prevalent approach in modern academia. It offers flexibility and enhances the student experience through innovative technologies (Bach et al., 2006). The transition from traditional to virtual classroom learning has been driven by advancements in educational new media and online hypermedia (Uys, 1998). This shift has prompted a critical evaluation of online learning theories and practices, including considerations of quality, course design, and teaching strategies (Bach et al., 2006). As online education becomes more widespread, it also raises questions about student behaviour in virtual environments (Bolch, 2014), highlighting the need for ongoing research and adaptation in this rapidly changing field. Donelan & Kear (2024) present the findings of a systematic literature review identifying the following key challenges of online group projects, together with strategies to address them: low and uneven participation by students, lack of clarity and preparation for students, and poor relationships. The strategies identified to overcome the challenges were: rigorous design of project tasks for students' access and inclusion, particularly in terms of accurate assessment; clear guidance and preparation for students; emotional support throughout the learning process to encourage confidence and participation. Some studies have offered solutions or recommendations (e.g. Roberts & McInnerney, 2007), to improve student engagement, student satisfaction, performance achievement, and skills development (Donelan & Kear, 2024).

Access and inclusion aim at participation in the digital environment and includes the probing of competencies ((Borg et al., 2019; Walton et al., 2013) that relate not only to overcoming different forms of digital exclusion but also to those necessary for future citizens to creatively participate in digital spaces, open to all types of minorities and diversity of views. Media and information literacy, defined as a series of survival tactics, conceives the imperative development of protection, evaluation, and participation skills to face the challenges and phenomena that emerge from this new media ecosystem (García-Ruiz, 2014; Rojas-Estrada et al., 2024). However, many of these strategies are not translated into education systems, even though one of the factors that promote curricular change is the obligation to satisfy the needs of those who are to be educated. For fundamental elements such as media and creativity to become important in the prescribed curricula, the effective coordination between research, policy, and practice is indispensable (Henriksen et al., 2016).

2.3. Well-being online

Well-being online refers to how one feels online, comprising another three digital domains: ethics and empathy, health and well-being, and e-presence and communications (Richardson & Milovidov, 2019)**.** Recent research highlights the importance of ethics and empathy in online interactions. Digital ethics is crucial for creating a safer and more inclusive Internet, emphasizing collective efforts to combat online harassment and foster positive online culture (Shlyapnikov, 2024). Empathy plays a significant role in developing online interpersonal trust, with empathic accuracy and response type influencing trust formation (Feng et al., 2004). The connection between ethics and empathy is fundamental in healthcare, where ethical practice is considered synonymous with empathic care (Nadelson, 1993). Phenomenological research suggests that empathy, traditionally associated with face-to-face interactions, can also occur in online environments. This is possible because the expressive, lived body can enter online spaces through technologically-mediated video interactions, and even through text as a form of speech (Osler, 2021). These findings underscore the importance of cultivating empathy and ethical behaviour in digital spaces to enhance online communication and trust.

The result suggests both empathic accuracy and response type to have a significant influence on online interpersonal trust. The interaction between empathic accuracy and response type also significantly influences online trust. Interestingly, the results imply a relationship between daily trust attitude and online interpersonal trust. People who are more trusting in their daily lives may experience more difficulty in developing trust online ((Feng et al., 2004). Empathy can have positive effects on students' satisfaction and increase students' outcomes. The shift from a physical environment to a digital one brought significant challenges that most students and teachers were not ready for. The digital environment influences how empathy is expressed. The research found evidence of a relationship between exposure to technology usage, emotional contagion, and gender, suggesting that understanding the emotions of others might be inhibited during digital education (Duarte et al., 2023).

2.4. Rights on line

Rights online relate to being accountable online, comprising the final four digital domains: active participation, rights and responsibilities, privacy and security, and consumer awareness (Richardson & Milovidov, 2019)**.** Online learning in higher education presents both opportunities and challenges, necessitating clear policies and responsibilities for all stakeholders. Students must adhere to ethical standards, while faculty and administrators should enforce codes of conduct and utilize technology to detect academic dishonesty (Coleman, 2012). An online learning model comprising independent, collaborative, and formative inquiries can facilitate learners' rights to education when supported by appropriate technologies (Lin, 2008). Universities must adapt their policies to accommodate the shift towards online teaching, addressing issues such as instructor workload, course evaluation, student privacy, copyright clearance, and intellectual property ownership (Wallace, 2007). These policy updates range from simple clarifications to complex negotiations but are crucial for providing direction at both micro and macro levels in the evolving landscape of online higher education.

The present study aims to identify whether European universities explicitly reference the concept of DCE in their online presentation (website), analyse the textual content associated with it, and assess how these references align with the core components of DCE and digital citizenship frameworks, such as those proposed by Council of Europe: being online (competencies related to access, digital inclusion, and responsible participation in the digital environment); well-being online (digital health, psychological resilience, and the safe use of digital technologies); rights online (understanding and advocating for digital rights, including privacy, security, and freedom of expression) (Richardson & Milovidov, 2019).

The study focuses on European universities, selected based on institutional prominence in international university rankings (i.e., Times Higher Education World University Rankings) and geographic diversity, aiming to answer the following questions:

- Are European universities addressing the concepts of digital citizenship (DC) and digital citizenship education (DCE)? In which sections of their websites do they appear?
- To what extent do the texts identified on university websites correlate with the three domains of DCE: being online, well-being online, and rights online?
- What are the variations in the approach to DCE between different European universities?

3. Method

This study employs a qualitative research design to explore how European leading universities integrate and conceptualize DCE on their institutional websites. Given the complexity of DCE dimensions and the associated ten competencies, a qualitative thematic analysis approach is employed, allowing for an in-depth examination of how universities frame and present the topic within their public communications.

3.1. Research procedure

The university websites serve as the primary data source, as they represent the official institutional discourse and public-facing narratives on digital education. In the selection of the European universities, the initial criterion was their prominence, as reflected by their ranking within the 1–50 range in the Times Higher Education Rankings. It is relevant to note that, according to the Times Higher Education Rankings, in 2025, out of the top 50 universities, 17 are located in Europe, distributed as follows: United Kingdom (7 universities); Germany (4 universities); Switzerland (2 universities); France (1 university); Belgium (1 university); Sweden (1 university). Considering the need for balanced geographical coverage and diversity, we decided to extend the selection of institutions, adding one beyond, thus entering the range 51-55. In the subsequent stage, the restriction of the analysis to the eight institutions was based on the fundamental criterion of identifying the concepts of digital citizenship and DCE on their consulted websites. Thus, in the final stage of the analysis, we considered the websites of the following eight universities: University of Manchester, University of Edinburgh, Karolinska Institute, ETH Zurich, University of Oxford, École Polytechnique Fédérale de Lausanne, University College of London (UCL), Technical University of Munich (TUM). The data collection process follows these steps: systematic website review; textual data extraction to identify information from unstructured vast collections of textual materials to capture the key concepts – digital citizenship and DCE; qualitative thematic analysis to categorize text sections based on thematic relevance to the study's questions.

3.2. Data Analysis

The investigation conducted between December 2024 and February 2025 on the websites of the eight universities identified more than 30,000 pages containing references to the two concepts. For example, the University of Oxford's website alone reports 10,000 pages that mention the concept of DC or DCE.

The subsequent stages of analysis were challenging, as we aimed to exclusively examine results that contained explicit references to the two concepts. Consequently, the selection of texts that formed the basis for the next stage of qualitative analysis was narrowed down to 200 web pages from the eight universities. The texts identified on the websites of the eight universities were distributed to each author to perform a preliminary analysis, using a coding table (Table 1)

that included the categories according to the Council of Europe, that structure DCE around the following three main domains and ten competencies areas (Richardson & Milovidov, 2019).

Table 1. Digital Citizenship Education Categories

Domain of Digital Citizenship (themes)	Competencies (codes)
Being Online	Access and Inclusion, Learning and Creativity, Media and Information Literacy
Well-being Online	Ethics and Empathy, Health and Well-being, ePresence and Communications
Rights Online	Active Participation, Rights and Responsibilities, Privacy and Security, Consumer Awareness

For the next stage of the thematic qualitative analysis, the text was coded according to the categories defined in the preliminary analysis. The outcome of the process was a more nuanced and trustworthy analysis, as the authors collaboratively coded the data by discussing their individual classifications and reached a shared understanding.

The qualitative content analysis in NVivo 15 follows a thematic coding approach, aligning collected data with the three DCE competencies. Thematic patterns are identified, highlighting commonalities and variations in how universities address DCE. Relationships between the three components are examined to determine whether and how universities integrate DCE within their structure. Differences across universities (e.g., emphasis on digital skills vs. ethical dimensions of digital engagement) are explored to uncover potential trends in regional or institutional approaches. In the final stage, NVivo's Explore Social Network Analysis (SNA) function is employed to understand the relationships and connections between the primary data source and the codes corresponding to being online, well-being online, and rights online. The results provide insights into whether universities are embedding DCE holistically or addressing only selective aspects, offering a multifaceted understanding of how higher education institutions in Europe conceptualize and promote DCE.

4. Result

Following the analysis of the results provided by the eight websites based on searches for the two concepts (digital citizenship and digital citizenship education), and 200 web pages sections accessed, we found the following:

a. the concepts of DC and DCE are identified in the pages and sections dedicated to the activity of research and teaching centers operating within universities (eg: Center for Digital Trust and Society (University of Manchester), Technology and Society Group (ETH Zurich); Competence Center for Digital Education, Digital Center for Digital Education Scholarship (University of Oxford), Digital Citizens Center (CDC) (University College London)

b. the two concepts appear on the pages of universities in sections that disseminate events, workshops, and webinars intended for the academic community; for example, the Digital Ethics and Research Integrity Event takes place at ETH Zurich within the 2025 conferences, the ETHix SERIES, while the University of Oxford hosted key events to explore the power of citizens dynamics in the digital age.

c. the search identified the two concepts in a range of resources made available by universities to the academic community; for example, the University of Manchester provides valuable insight into the evolving role of digital technologies in politics and civic life through its Digital Futures Platform, which focuses on citizens and democracy, looking at how digital tools shape public perceptions and interactions with democratic institutions, while at the University of Edinburgh, digital safety and responsible online behaviour are at the forefront of student support

through the web hub designed for digital safety, well-being, and citizenship that serves as a key resource for encouraging inclusive and ethical digital participation.

The following section presents a detailed examination of how each university positions DC and DCE within its structure, the relationships between the texts identified on university websites, and the three indicators of DCE (being online, well-being online, rights online).

4.1. Digital Citizenship Education within European Universities Research and Teaching Centres

We conducted a detailed website analysis for eight European universities to determine how the concept of DCE was integrated into academic and institutional frameworks. Our results indicate that DCE relates very directly to the particular research and teaching centers at the universities under investigation. These centers, which cover interdepartmental work on policy development and pedagogy, show the place that digital literacy, ethics, and civic participation have in each institution. DC and DCE are identified in the web site of the following research and teaching centers functioning within universities:

- University of Manchester - Centre for Digital Trust and Society (https://www.socialsciences.manchester.ac.uk/dts/) ;
- ETH Zurich - Ethics, Technology and Society Group (https://ets.ethz.ch/the-group.html);
- University of Oxford - Centre for Digital Scholarship (https://digitalscholarship.web.ox.ac.uk/);
- École Polytechnique Fédérale de Lausanne - Competence Center for Digital Education (https://www.epfl.ch/education/educational-initiatives/cede/);
- University College of London (UCL) - Centre for Digital Citizens (CDC) (https://www.ucl.ac.uk/bartlett/casa/research/current-projects/centre-digital-citizens)

The Centre for Digital Trust and Society (University of Manchester) promotes an interdisciplinary agenda focused on understanding and strengthening trust and security in the digital age. It examines the barriers and enablers to adopting digital technologies, integrating aspects of cybersecurity as well as broader issues related to trust, exploitation, and resilience. At ETH Zurich, the Ethics, Technology and Society Group (ETH Zurich) studies the complex interplay between science, technology, and society using methodologies from fields such as Science, Technology & Society (STS), history, philosophy, anthropology, critical theory, and the arts. The focus is on the role of scientific knowledge and technological innovations in both individual and collective life. Centre for Digital Scholarship (University of Oxford) serves as both a physical and virtual hub for discussions, research, and practices in digital and digital citizenship scholarship. It comprises four specialized teams – Sustainable Digital Scholarship, Electronic Enlightenment, Digital Scholarship Team, and Research Team – which provide data management services, training, and support for integrating digital technologies into research activities. The Competence Center for Digital Education (BeLEARN@EPFL) (École Polytechnique Fédérale de Lausanne) focuses on digital education and the science of learning, developing innovative training programs for educators. Among its achievements is its contribution to the "Oscar & Zoé" series of children's books, which addresses digital citizenship, as well as interactive activities (e.g., "photo safari" with iPads) designed to stimulate creativity and philosophical discussions. The Centre for Digital Citizens (CDC) (University College of London) addresses emerging challenges of digital citizenship through an inclusive and participatory approach. It focuses on incubating Digital Social Innovations that support active citizen engagement and contribute to the development of a sustainable digital economy. Thematic relationships within the analysed corpus are presented in Table 2.

Table 2. Thematic relationships between DCE and the texts identified on the websites of the research and teaching centers

University	Research and Teaching Centres	Focus Area	Thematic Connections
University of Manchester	Centre for Digital Trust and Society	Digital trust, security, adoption of technologies	Rights Online: Privacy and Security, Rights and Responsibilities
ETH Zurich	Ethics, Technology and Society Group	Digital ethics, societal impact of technologies	Well-being Online: Ethics and Empathy, Health and Well-being
University of Oxford	Centre for Digital Scholarship	Media literacy, integration of technology in research	Being Online: Media and Information Literacy, Learning and Creativity
École Polytechnique Fédérale de Lausanne	Competence Center for Digital Education (BeLEARN@EPFL)	Digital education, creativity in learning	Being Online: Learning and Creativity, Access and Inclusion
University College of London (UCL)	Centre for Digital Citizens (CDC)	Digital citizenship, digital social innovation	Rights Online: Active Participation, Consumer Awareness

This SNA analysis (see Figure 1) provides a representation of how research and teaching centers from European Universities align with the codes included within the three components of DCE: being online, well-being online, and rights.

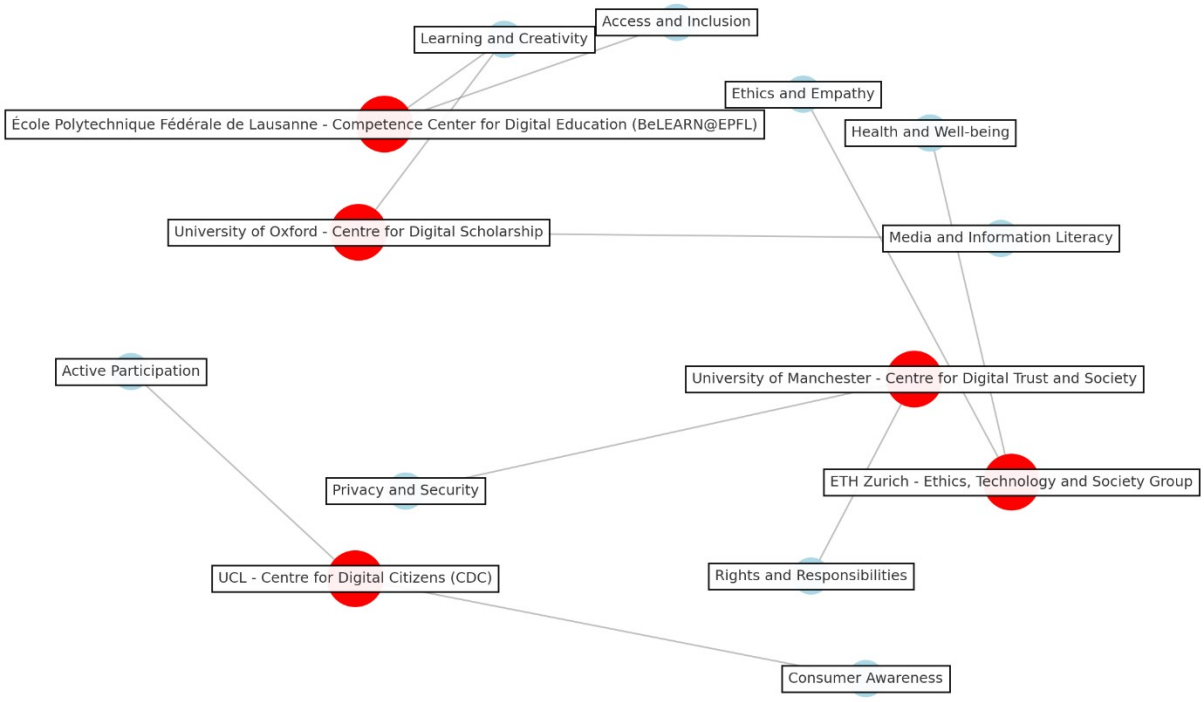

Figure 1. Social Network Analysis for Research and Teaching Centers

University of Manchester is strongly linked to Rights Online, focusing on digital security and privacy. ETH Zurich aligns with Well-being Online, exploring ethical and societal aspects of

technology. University of Oxford and École Polytechnique Fédérale de Lausanne are primarily connected to Being Online, emphasizing media literacy and digital inclusion. UCL – Centre for Digital Citizens is focused on Rights Online, with a particular emphasis on active participation and digital consumer awareness. Certain competencies are explicitly mentioned, while others remain absent. Within the Being Online category, the competencies of Media and Information Literacy and Digital Inclusion are referenced, however, Learning and Creativity, a fundamental element of digital engagement, is missing. For Well-being Online, the concept of Ethics is acknowledged, reflecting concerns regarding ethical behaviour and responsibility in digital interactions, however, aspects such as Health and Well-being and ePresence and Communications are absent. Regarding Rights Online, the text references Privacy and Security, Active Participation, and Consumer Awareness, nonetheless, Rights and Responsibilities competence is not mentioned. SNA gives an overview of the strengths and gaps in the current discussion on DCE within European universities. While some key competencies remain recognized, others stay unexplored and demand an integral approach to reveal all dimensions of DCE.

4.2. Digital Citizenship Education through events, webinars, workshops, and hackathons

Leading universities across Europe are actively engaging in initiatives that promote DC and DCE through a diverse range of educational programs, interactive events, and interdisciplinary discussions. Through webinars, workshops, and hackathons, the University of Edinburgh, ETH Zurich, the Technical University of Munich, the University of Manchester, and the University of Oxford provide students, lecturers, and professionals with opportunities to address critical challenges and opportunities in the digital citizenship field. DC and DCE are identified on the following websites of the events, webinars, workshops, and hackathons hosted by the universities:

- University of Edinburgh - Digital Safety & Citizenship – Digital Skills Webinar, Festival (https://media.ed.ac.uk/media/Digital+Safety+and+Citizenship+for+Students+%E2%80%93+Digital+Skills+Festival+Webinar/1_pol01zhr)
- ETH Zurich – Webinar, ETHix Series (https://bioethics.ethz.ch/Events.html)
- ETH Zurich – Workshop, Citizen Science – Harnessing the Power of Citizen-Generated Data (https://mypath.ethz.ch/en/activity/916/Citizen+science+E28093+harnessing+the+power+of+citizen-generated+data)
- Technical University of Munich (TUM) – Hackathon, Immersive Realities Hackathon (https://tumthinktank.de/event/immersive-realities-hackathon/)
- University of Manchester – Discussion and cross-sectoral collaborations, Connecting Through Culture as We Age. Digital Innovation for Healthy Aging https://connectingthroughcultureasweage.info/
- University of Oxford - Webinar, Empowering Digital Citizens (https://www.inet.ox.ac.uk/projects/empowering-digital-citizens)
- University of Oxford - online event (Building Digital Citizens) (https://digitalscholarship.web.ox.ac.uk/event/continued-professional-development-events-cds-bodleian-libraries)

At the University of Edinburgh, digital safety and responsible online behaviour are central concerns of student support. The Digital Safety and Citizenship Webinar, part of the Digital Skills Festival, introduced the concept of digital citizenship and emphasized the importance of owning one's digital presence, safeguarding personal data, and acting responsibly online. A focus on Digital Ethics and Research Integrity is taking place at ETH Zurich. Throughout 2025, the ETHix SERIES sets some of the most influential voices in Bioethics, Digital Policy, and Health Ethics together for discussions that reflect on pressing issues, like the implications of AI in healthcare and data privacy, and ethical dilemmas in an age of fast technological acceleration. Another event hosted by ETH University, Citizen Science - harnessing the power of citizen-generated data, will

be organized in April 2025, and will comprise sessions, that mainly focus on the support, services and infrastructure that exists at ETH Zurich, like: research data management; secure management of confidential and strictly confidential research data; open access and publication of data; citizen science - harnessing the power of citizen-generated data. The Technical University of Munich (TUM) hosted the Immersive Realities Hackathon in October 2024 where participants collaborated to develop solutions within three thematic tracks: AI and, games & learning (exploring how immersive realities can transform education and skills development), and virtual society (exploring the future of online communities, governance, and global citizenship). In October 2024, the University of Manchester hosted "Connecting Through Culture as We Age", a discussion that explores how digital creative citizenship allows individuals, particularly older adults, to stay connected and express themselves through technology. Also, the University of Oxford hosted The Empowering Digital Citizens webinar, in February 2023, discussing the issue of digital data control and how individuals can claim their right to data privacy and digital autonomy. Oxford University's program Building Digital Citizens provides continuing professional development opportunities for secondary school teachers. The February 2025 session considered various conceptions of digital citizenship, including digital literacy, and how this relates to issues like the climate crisis, colonialism, and social justice. Thematic relationships within the analysed corpus are presented in Table 3.

Table 3. Thematic relationships between DCE and the texts identified on the website of the events, webinars, workshops, and hackathons

Institution	Event Type	Focus Area	Thematic Connection
University of Edinburgh	Webinar (Digital Safety & Citizenship – Digital Skills Festival)	Digital Safety and Responsible Online Behavior	Being Online: Media and Information Literacy Well-being Online: ePresence and Communications
ETH Zurich	Webinar Series (ETHix SERIES)	Digital Ethics and Research Integrity	Well-being Online: Ethics and Empathy, Health and Well-being
ETH Zurich	Workshop (Citizen Science – Harnessing the Power of Citizen-Generated Data)	Digital Ethics and Research Integrity	Rights Online: Privacy and Security, Active Participation
Technical University of Munich (TUM)	Hackathon (Immersive Realities Hackathon)	Immersive Learning and AI Governance	Being Online: Learning and Creativity, Media and Information Literacy
University of Manchester	Discussion and cross sectorial collaborations (Connecting Through Culture as We Age)	Digital Creative Citizenship & Social Engagement	Being Online: Access and Inclusion Rights Online: Active Participation
University of Oxford	Webinar (Empowering Digital Citizens)	Power Dynamics of Digital Data & Professional Development	Rights Online: Privacy and Security, Consumer Awareness
University of Oxford	CPD Program and online event (Building Digital Citizens)	Power Dynamics of Digital Data & Professional Development	Being Online: Media and Information Literacy Well-being Online: Ethics and Empathy Rights Online: Active Participation

The SNA analysis (see Figure 2) provides a representation of how the texts on the website of the events, webinars, workshops, and hackathons hosted by the universities align with the codes included within the three components of DCE: being online, well-being online and rights.

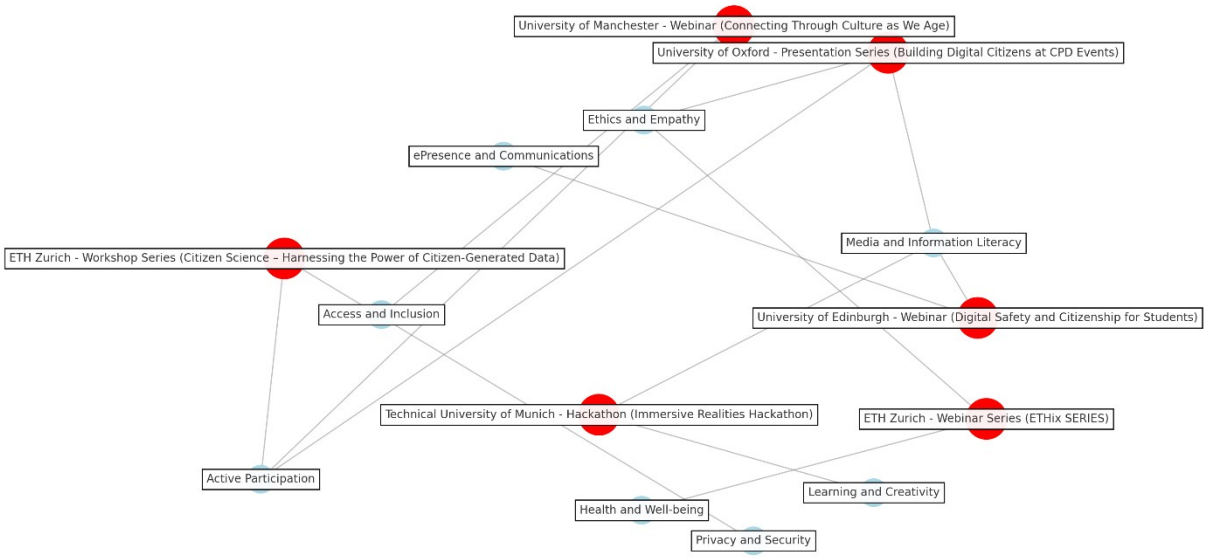

Figure 2. Social Network Analysis for events, webinars, workshops, and hackathons

The University of Edinburgh is linked to Being Online through its Digital Safety & Citizenship webinar, which promotes Media and Information Literacy. It also connects to Well-being Online by addressing ePresence and Communications. ETH Zurich aligns with Well-being Online, focusing on Ethics, Empathy, and Health. Additionally, the Citizen Science Workshop contributes to Rights Online, emphasizing Privacy, Security, and Active Participation. The Technical University of Munich (TUM) is strongly connected to Being Online, fostering Learning, Creativity, and Media Literacy. The University of Manchester bridges Being Online and Rights Online, focusing on Access, Inclusion, and Active Participation. The University of Oxford engages with Rights Online, addressing Privacy, Security, and Consumer Awareness. These initiatives also connect to Being and Well-being Online through Media Literacy and Ethics. Most of the competencies related to Being Online, Well-being Online, and Rights Online are explicitly referenced. The Being Online category is represented with mentions of Media and Information Literacy, Learning and Creativity, and Access and Inclusion. Similarly, within Well-being Online, the mentioned events include references to Ethics and Empathy, Health and Well-being, and ePresence and Communications. For Rights Online, competencies such as Privacy and Security, Active Participation, and Consumer Awareness are present, indicating an awareness of online safety, digital engagement, and consumer rights in the digital space. However, one competency remains unmentioned: Rights and Responsibilities. This aspect of Rights Online pertains to understanding digital rights while also acknowledging the ethical responsibilities associated with online interactions.

4.3. Digital Citizenship Education. Resources for teachers, students, and staff

Through dedicated platforms, webinars, hubs, and strategic commitments, universities are working to equip students, faculty, and society at large with the skills necessary to navigate the complexities of the digital world.

Texts identified on the following web site of the platforms, webinars, hubs are related to the two concepts, DC and DCE:

- University of Manchester - Digital Futures Platform (https://www.digitalfutures.manchester.ac.uk/)
- University of Edinburgh - Digital Safety, Well-being, and Citizenship Web Hub (https://equality-diversity.ed.ac.uk/students/digital-citizenship)
- Karolinska Institute - Web Site Article. Consequences of Digital Exclusion (https://ki.se/en/nvs/consequences-of-digital-exclusion)
- ETH Zurich - Digital Literacy Guide (https://ethz.ch/en/the-eth-zurich/organisation/boards-university-groups-commissions/digitaltransformationcommittee/digital-literacy.html)

The University of Manchester offers insight into the evolving role of digital technologies in politics and civic life through its Digital Futures platform. With over 1700 researchers from 30 disciplines, the platform focuses, among other things, on Citizens and Democracy, looking at how digital tools shape public perceptions and interactions with democratic institutions. While these technologies encourage political engagement and government responsiveness, they also introduce serious challenges, including fake news, online extremism, and data privacy concerns. At the University of Edinburgh, digital safety and responsible online behaviour are at the forefront of student support. The Digital Safety, Well-being, and Citizenship Web Hub serves as a key resource for encouraging inclusive and ethical digital participation. The "Making the Internet a Safer Place" video provides an introduction to the concept of cyber hate and how you can do your part to make our online community safer for everyone. The University's Strategy 2030 states "We will be an example to others by behaving with integrity, transparency, honesty and clarity at all times. We will always value and protect freedom of expression while respecting the boundaries dictated by law, decency, ethics, and respect for others." The university's website features the idea that creating a sense of DC is key to improving student satisfaction and well-being. The platform also includes a definition of DC as the responsible use of technology to learn, create and participate online. The members of the University of Edinburgh community, have the social responsibility to be a good digital citizen, which means treating others with dignity and respect in both physical and virtual spaces. The Karolinska Institute raises awareness about a critical aspect of digital inclusion – the consequences of digital exclusion. The article published on the Institute's website, Consequences of Digital Exclusion, states that the right to participate in society is fundamental and even stated in our laws. The situation with older adults being isolated shows how vulnerable this right is for those people in society who have no access to interaction through digital technology. The phenomenon known as digital exclusion can in the current situation simply be described as exclusion. The article explores possible avenues to support older adults in their use of those everyday technologies that they want and need to use in their everyday lives. Without such efforts, digital exclusion remains a pressing societal issue that threatens the fundamental right to participation and connection. At ETH Zurich University, digital literacy is considered to be an essential skill for work in today's academic and professional settings. In response, the university has developed and implemented a Digital Literacy Guide for the systematic training of administrative staff. The guide highlights six main areas: Digital Proficiency and Productivity, Communication and Collaboration, Security and Compliance, Leading Digital Transformation, Data Analytics, Content Management, Digital Workplace and Tools. Thematic relationships within the analysed corpus are presented in Table 4.

Table 4. Thematic relationships between DCE and the texts identified on the website of the resources for teachers, students, and staff

Institution Resources	Type of resource	Focus Area	Thematic Connections

Institution Resources	Type of resource	Focus Area	Thematic Connections
University of Manchester	Digital Futures Platform	Citizens and Democracy	Rights Online: Active Participation, Rights and Responsibilities, Privacy and Security
University of Edinburgh	Digital Safety, Well-being, and Citizenship Web Hub	Digital Safety & Citizenship	Well-being Online: Ethics and Empathy, Health and Well-being, ePresence and Communications
Karolinska Institute	Web Site Article. Consequences of Digital Exclusion	Digital Exclusion & Inclusion	Being Online: Access and Inclusion, Media and Information Literacy
ETH Zurich	Digital Literacy Guide	Digital Literacy and Competencies	Being Online: Learning and Creativity, Media and Information Literacy, Privacy and Security

The SNA analysis (see Figure 3) provides a representation of how the texts on the dedicated websites of platforms, webinars, and hubs hosted by the universities align with the codes included within the three components of DCE: being online, well-being online and rights online.

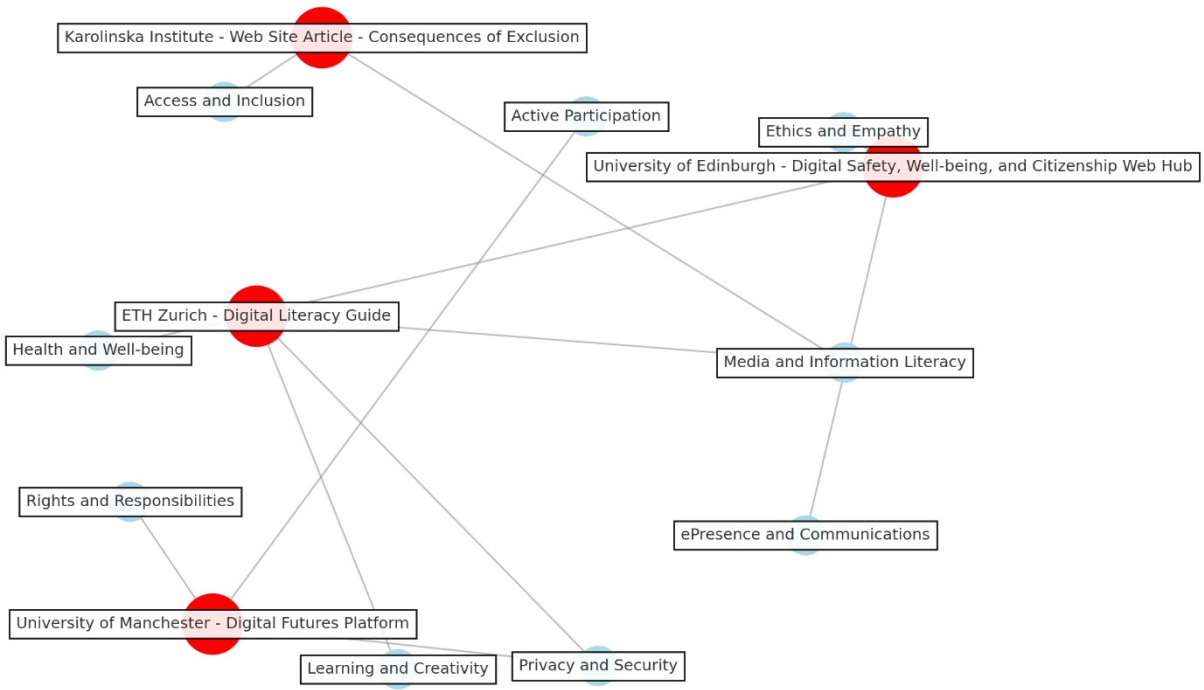

Figure 3. Social Network Analysis for Resources for teachers, students, and staff

The University of Manchester is connected to Rights Online, focusing on Active Participation, Privacy and Security, and Rights and Responsibilities. The University of Edinburgh

aligns with Well-being Online, addressing Ethics and Empathy, Health and Well-being, and ePresence and Communications. Karolinska Institute relates to Being Online, emphasizing Access and Inclusion and Media and Information Literacy. ETH Zurich connects to Being Online, covering Learning and Creativity, Media and Information Literacy, and Privacy and Security.
The Being Online category is covered through references to Access and Inclusion, Learning and Creativity, and Media and Information Literacy. Similarly, the Well-being Online domain is comprehensively addressed, with mentions of Ethics and Empathy, Health and Well-being, and ePresence and Communications. Within Rights Online, the text references Active Participation, Privacy and Security, and Rights and Responsibilities. This discussion has so far lacked one competence. Consumer Awareness of Rights Online would reflect the capacity of individuals to learn about their rights and obligations as digital consumers when online transactions, digital marketing, and data collection practices highlight digital experiences. The absence of Consumer Awareness from the analysis indicates a gap in explaining the challenges and risks related to digital consumption.

5. Discussion and conclusion

The qualitative analysis of DCE approaches on the websites of the eight universities surveyed indicates the coverage of most DCE competencies, but there are gaps in some domains. Within the Being Online domain, Access and Inclusion and Media and Information Literacy are represented prominently, with Learning and Creativity being less addressed. This absence indicates a gap in embedding creativity as a fundamental element of digital engagement, which may limit innovation and the development of more flexible educational approaches. For the domain Well-being Online, the analysis shows that the competencies Ethics and Empathy, Health and Well-being, and ePresence and Communications are mentioned with priority, but in particular, 'Empathy' is not explicitly mentioned, while 'Health and Well-being' and 'ePresence and Communications' are completely missing from this category. These shortcomings suggest a limited focus on the impact of Health, Well-being, and Communications in DCE, which could affect the formation of a balanced and responsible digital culture in academia. Concerning the third domain, Rights Online, the competencies of Active Participation and Privacy and Security are frequently invoked. However, the Consumer Awareness competency is the least represented, indicating a lack of focus on digital consumer rights education.

Based on this analysis, we found that although European universities cover most of the competencies relevant to DCE, there are significant disparities in certain areas. Increased attention must be paid to creativity, health, and mental health in the digital environment, as well as online responsibility, essential aspects for a full integration of DCE competencies. Education on digital consumer rights should also be expanded to fully include digital citizenship skills.
The results of this study align with the DCE literature, emphasizing the need for a more systematic and extensive approach to DCE in universities (Al-Zahrani, 2015; Arkorful et., 2024; Cooney et. al, 2018; Sandoval, 2019). Referring to the domains proposed by the Council of Europe (being, well-being, rights), DCE is covered in a fragmented manner, with no systematic approach to all competencies.

Numerous studies correlate the development of digital citizenship competencies with aspects included in the category of online rights, such as digital identity, online security, and privacy (Torres-Gastelú, 2021; Gleason & von Gillern, 2018; Jones et al., 2024; Cortés-Campos, 2021; Örtegren, A., 2022). However, DCE is not limited to the understanding and responsible use of digital technologies, but also includes skills such as critical thinking, communication, active participation in online communities, and a deep understanding of digital responsibility. Other studies highlight the importance of digital and media literacy, competencies integrated into the Being online domain (von Gillern et al., 2024; Milenkova & Lendzhova, 2021; Pangrazio & Sefton-Green, 2021). Media and digital literacy serve as prerequisites not only for developing

social skills and ensuring social inclusion but also for understanding and interpreting social events and even adapting to social crises, such as the COVID-19 pandemic.

Some studies prioritize the role of health and well-being in the online environment, analysing the implications of community involvement in fostering user responsibility for digital content (Mattson, 2024; Peng et al., 2024; Deady et al., 2021; Zhou & Zhang, 2024; Smith, 2023; Lanfer et al., 2024). Shifting the focus from traditional modes of empathy, the digital realm requires a new arena of empathy research (Lanfer et al., 2024). Digital empathy encapsulates the understanding of emotional states and the ability to communicate and act upon this understanding through digital media and technologies (Powell, 2017). Digital empathy goes beyond face-to-face interactions, shedding light on how empathy needs to be recalibrated when technology comes into play.

On the one hand, the literature review highlights the need for a more systematic and coordinated approach to developing DCE competencies, emphasizing that "digital citizenship encompasses a much broader set of skills than computer or media literacy" (Hawamdeh & Hamayel, 2022). The fact that the eight analysed universities cover most of the competencies associated with digital citizenship confirms the increasing trend of integrating this concept into university programs, albeit with significant variations depending on geographical and cultural contexts (Frau-Meigs et al.2017; Turner et al., 2024; Chen et al., 2021). This suggests that higher education institutions perceive digital citizenship not as an isolated element, but as an integral part of a broader set of competencies necessary for full social participation in the 21st century (Turner et al., 2024). Additionally, it is observed that the adoption of DCE in universities takes various forms, ranging from dedicated courses to the cross-disciplinary integration of these competencies through events, workshops, or other resources designed for educators. A relevant solution is the development and evaluation of a comprehensive curriculum for DCE for university-level students (Bal & Akcil, 2024).

Research also suggests that implementing solutions to develop digital citizenship competencies has proven challenging, with difficulties attributed to factors such as limited digital resources, insufficient teacher training, or resistance to change within traditional university structures (Hawamdeh & Hamayel, 2022). In this regard, future studies should explore the impact of various pedagogical strategies and develop implementation models tailored to diverse cultural and institutional contexts.

Universities have an important mission in developing DCE competencies and should enable students to face the challenges of a digital society. By better incorporating media and information literacy, creativity, digital health, and online responsibility, academic institutions can contribute to the education of better-prepared digital citizens who can navigate the digital environment safely and ethically.

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