DCitizens Roles Unveiled: SIG Navigating Identities in Digital Civics and the Spectrum of Societal Impact

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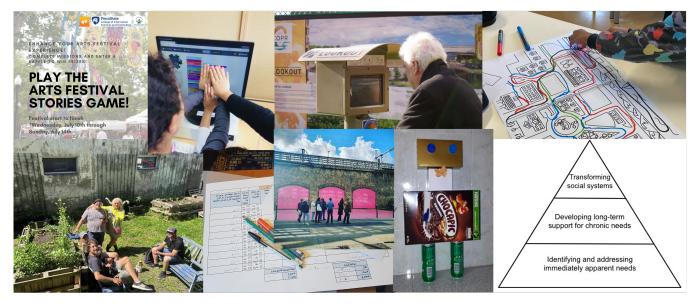**Tiffany Knearem**
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Figure 1: A montage of digital civics work completed by the authors. From top left to bottom right: 1) An arts festival scavenger hunt mobile app study on community engagement and reflection [19]; 2) Come In Computer Clubs in Siegen [1]; 3) A tangible embedded interface designed for the Covid Era to enhance topophilia in a changing city space [4, 5]; 4) PartiPlay: A Participatory Game Design Kit for Neurodiverse Classrooms [28]; 5) Urban/Community Gardening in Siegen [35]; 6) Fieldwork surrounding food insecurity for refugees [39]; 7) MEMEX project, a new open-source knowledge graph that facilitated assisted storytelling for Barcelona's migrant women [25]; 8) Community-Based Robot Design for Classrooms with Mixed Visual Abilities Children [24]; 9) Hierarchy of community needs pyramid [17].

ABSTRACT

The DCitizens SIG aims to navigate ethical dimensions in forthcoming Digital Civics projects, ensuring enduring benefits and community resilience. Additionally, it seeks to shape the future landscape of digital civics for ethical and sustainable interventions. As we dive into these interactive processes, a challenge arises of discerning authentic intentions and validating perspectives. This exploration extends to evaluating the sustainability of future interactions and scrutinising biases impacting engaged communities. The commitment is to ensure future outcomes align with genuine community

needs and address the ethical imperative of a considerate departure strategy. This dialogue encourages future researchers and practitioners to integrate ethical considerations and community-centric principles, fostering a more sustainable and responsible approach to technology-driven interventions in future urban regeneration and beyond.

CCS CONCEPTS

• **Human-centred computing → Participatory Design**; • **Digital Civics → Digital Citizenship**.

KEYWORDS

Digital Civics, Citizen Engagement, Participatory Design

1 MOTIVATION AND BACKGROUND

Digital Civics is a cross-disciplinary field that advocates the use of technology to empower citizens and non-state actors to cocreate, take an active role in shaping agendas, make decisions about service provision, and make such provisions sustainable and resilient [42]. In particular, our focus here is on how digital technologies can encourage the move from transactional to relational service models and the potential of such models to reconfigure power relations between citizens, communities, and institutions [27]. Digital civics aims to take an inclusive, participatory approach to the design and evaluation of new technologies and services that support 'smart'; 'data-rich' living across a range of communities.

The search for 'Digital Civics' in the ACM DL for CHI uncovered 190 papers that explore a range of projects within the realm of digital civics. Since the first paper within this field to be presented at CHI in 1996 ([7]), the number of papers has steadily risen, with a surge of over 500% observed from the 2010s to the 2020s, indicating a continuous acceleration in research output. Whilst there was a SIG on the subject of digital civics in 2016 there have been 120 papers presented at CHI alone since then, with surely many more across other conferences. This consistent pattern highlights the growing significance and sustained interest in digital civics, presenting new challenges and methods for discussion to shape this expanding field.

Digital Civics is a broad umbrella term that includes a range of technological interventions from games [14, 20] to tangible interfaces [5, 9], and storytelling applications [3, 13], to name a few. As well as diverse interaction methods projects have spanned various themes, with activism [2, 22], health [33, 34], well-being [26, 44], gender [23, 40], and safety [6, 10] among some of the most common to be explored. Whilst the HCI field often works across a wide variety of communities we believe an intriguing aspect of digital civics research is its focus on providing spaces and opportunities for those less commonly considered within community landscapes.

For example, studying the experiences of refugees [15, 38], children [21, 41], children with disabilities [24, 29, 30], grassroots initiatives [12, 32], and the challenges faced in the developing world [11, 16]. Whilst the intricate aspects or backgrounds of these projects can be focused on certain themes, the overarching ethos and methods are broadly similar. This multifaceted exploration reflects the intricate nature of digital civics research, capturing a comprehensive and nuanced understanding of the interplay between societal issues, diverse communities, and cutting-edge technological advancements.

While the aforementioned papers focus on CHI, our considerations extend towards the broader community (i.e., beyond CHI and HCI), given that digital civics spans numerous domains. Looking further at the papers submitted within the wider ACM community, a total of 119 papers have been published since 2015 (amounting to 309 across the ACM), with the majority appearing in Designing Interactive Systems (DIS: 22), Computer-Supported Cooperative Work (CSCW: 27) and Interactions (17). However, an exploration into alternative domains reveals a limited amount of research. Despite strides in philosophy, social science, and education-based research since 2014, they have not expanded at the same rate as the HCI field, with engineering, design and psychology at an even lower rate. Therefore, we do not only aim to foster a community of growth within HCI but also aim to establish community events and hubs, such as this SIG, to generate increased interest and support for digital civics across diverse disciplines. Given that this research transcends specific domains and embodies a universal concept, it presents a compelling prospect for a SIG and future conference possibilities.

The expanding scope of the field has prompted a series of inquiries into our perceived roles within digital civics. Against the backdrop of heightened discussions on participatory design and increased emphasis on engagement with local communities from diverse perspectives, the following questions emerge: What motivates our involvement? Personal gain, a desire for heroism, or a genuine commitment to societal betterment? Or is it a strategy to achieve elevated academic visibility and recognition? Within these dynamic spaces, we find ourselves assuming various roles, be it as researchers, agents of change, activists, software engineers, or catalysts for positive transformation. These roles may appear clear to us as individuals but are not so black and white and may be completely different from the perceptions of the communities we aim to help.

Furthermore, as we delve deeper into these interactive processes, a necessity arises to scrutinise the authenticity of our intentions. Distinguishing whose intentions hold validity and whose perspectives carry weight becomes a nuanced challenge. This exploration naturally extends to considerations of the sustainability of these interactions. It compels us to assess how biases, particularly those acquired to advance professional trajectories, impact the communities we engage with. Striking a balance between meeting the authentic needs of the community and fulfilling the academic requirements to advance in an academic career can pose a significant challenge. Equally pressing is the question of how we cautiously conclude our involvement with these communities once our objectives have been met, e.g., if funding for a project is only available for one year. Therefore, the ethical imperative goes beyond the traditional model of intervention, emphasising the importance of

a thoughtful departure strategy. Discussing the sustainability of interactions prompts reflection on the long-term impact of our engagement, ensuring that the benefits are enduring and that the community is left in a position of strength rather than vulnerability. We hope this dialogue and discussion will encourage our attendees to incorporate ethical considerations and community-centred principles into their projects, fostering a more holistic and responsible approach to technology-driven interventions in urban regeneration and beyond.

In extending an invitation to fellow researchers and industry professionals in the realm of digital civics, we aspire to initiate a formal and comprehensive discourse on these topics. Our objective is to articulate perspectives, derive insights, and lay the groundwork for collaboratively creating a guiding framework that future participatory designers can draw upon when navigating the complexities of this domain.

2 SIG PROPOSAL AND GOALS

The DCitizens SIG has been designed to foster an inclusive discussion on crucial aspects of digital civics. We aim to explore diverse perspectives on (1) the motivations behind our engagement in digital civics and the alignment of our roles with community perceptions, (2) the ethical considerations involved in entering and exiting digital civics projects to ensure lasting benefits and community strength, and (3) the key considerations shaping the future of digital civics for ethical and sustainable interventions.

The session aims to be an inclusive forum that will address a diverse array of concerns within the digital civics landscape. The session has been designed to cater to attendees with varying backgrounds and focus, ensuring that the discourse is accessible and relevant to all. The organisers belong to are from diverse institutions, industries and disciplines and, therefore, are well-equipped to accommodate and facilitate discussions across the theme of digital civics, fostering an environment where insights from different backgrounds converge and enrich the conversation. This session aims to brainstorm ideas, highlighting our dedication to creating a space that truly reflects the interdisciplinary nature of digital civics. The main goal of this SIG is to kick-start a community discussion surrounding digital civics and the roles we play, leading to an open and integrated group ready for collaboration.

3 AUDIENCE

Building upon the foundations laid by our previous work [17, 18, 31, 36, 37, 43], as well as the ongoing Horizon project [8] which brings together four institutions across Europe, as well as expanding our collaborations with industry and NGOs, we seek to attract researchers, practitioners, community members, and policymakers who share an interest in the human aspects of digital civics. DCitizens SIG also aims to foster greater discussion and networking. Within the field, bringing together diverse perspectives, i.e. What does digital civics mean across the globe in comparison to our local contexts?

4 FORMAT

The format of the SIG will be interactive to foster deep discussions and enable networking. It will consist of round table discussions with post-it notes for brainstorming and idea generation, with a Miro board provided as a virtual alternative. Each table will be provided with a laptop to host online participants to ensure they are integrated with the in-person attendees. An appointed author for each table will facilitate smooth discussions, generate post-it notes for accessibility and promote ease of interaction. This format allows for both physical and virtual collaboration. The schedule is planned as follows:

(1) **Welcome (5 minutes):** Introduction of the DCitizens SIG background/goals followed by the formation of groups, $4-6$ attendees per group, depending on numbers. Each group will have an author to prompt discussion.

(2) **Ice breaker (5 minutes):** Each attendee will introduce themselves to the group, including their name, institution and their research interests regarding digital civics.

(3) **Activity 1a (5 minutes):** The groups will discuss the motivations behind their engagement in digital civics. They will create post-it notes of each *role* mentioned, e.g., researcher, activist, etc. This will create an overall picture of the perception of the roles of academic research across digital civics.

(4) **Activity 1b (5 minutes):** The groups will discuss how these roles align with community perceptions. How do participants/NGOs/stakeholders perceive us? They will create post-it notes of each possible perceived *role* mentioned. e.g., software engineer, etc. This will create an overall picture of the perception of academic research across communities.

(5) **Discussion 1 (5 minutes):** The groups will discuss the comparisons and similarities between these two role types (i.e., Personal and Community perceived roles). What are the possibilities and challenges for these role perceptions within digital civics of the future?

(6) **Activity 2a (5 minutes):** The groups will discuss the ethical considerations they undertake when entering their projects in digital civics, in particular, related to any steps taken for expectation management for the exiting of projects. They will create post-it notes of each *step, challenge* mentioned. This will create an overall picture of the ethical considerations to be considered when entering digital civics projects.

(7) **Activity 2b (5 minutes):** The groups will discuss the ethical considerations they undertake when exiting their projects in digital civics; it is often difficult to pass over a project whilst ensuring lasting benefits for the community. Groups will create post-it notes for the *steps, suggestions and challenges* faced when exiting projects. This will create an overall picture of the ethical considerations to be considered when exiting digital civics projects.

(8) **Discussion 2 (5 minutes):** The groups will discuss the connections between these two project stages and possible steps that could be taken at the beginning of projects to aid the sustainable withdrawal from communities at the end of the project.

(9) **Digital Civics Moving Forward (15 minutes):** Bringing together the previous discussions, groups will discuss their three key considerations they believe could shape the future

of digital civics to create more ethical and sustainable interventions. They will write these onto three separate post-it notes ready for the next discussion.

(10) **Collaborating DCitizens (15 minutes):** The groups will come back together into one, presenting their three considerations to the room and placing the post-it notes together onto one wall. We will then ask participants to move next to the post-it notes that they believe they can best help to achieve (with one group member assigned to also move the online participants via laptop), enabling participants to identify future collaborations for enhancing the sustainability and future of digital civics.

(11) **Staying Connected (5 minutes):** The SIG will end by introducing the DCitizens community channel, Google Group and an invitation to attend and present at the DCitizens ongoing seminar series. Photographs of all the attendees' post-it notes will also be taken and uploaded onto an open access Miro board for the community. The in-person participants will also be invited to have dinner together to continue the discussions.

5 SIG OUTCOMES AND NEXT STEPS

Prior initiatives concentrated on the development and deployment of digital tools, platforms, and processes within a Digital Civics research agenda. This session shifts the focus towards probing questions, exploring motivations, ethical considerations, and the future trajectory of digital civics. DCitizens SIG will build upon the Discord group and seminar series already in motion and serve as an extension, not only expanding the community but also with aspirations to set up a SIGCHI chapter. Additionally, we plan to organise follow-on workshops at conferences, including Participatory Design Conference (PDC) 2024 and CHI 2025. This initiative seeks to enhance collaboration and foster knowledge exchange within the digital civics community. Our goal is to kickstart a continuous dialogue, expressing varied perspectives, extracting insights, and laying the groundwork for collaboratively creating a guiding framework that future participatory designers can draw upon when navigating the complexities of this domain.

ACKNOWLEDGMENTS

REFERENCES

[1] Konstantin Aal, A Weibert, K Schubert, M A Sprenger, and Thomas von Rekowski. 2018. come_NET: Connecting computer clubs with a community platform. *Socio-Informatics: A Practice-Based Perspective on the Design and Use of IT Artifacts* (2018), 391–419.

[2] Jeffrey Bardzell and Shaowen Bardzell. 2011. Pleasure is Your Birthright: Digitally Enabled Designer Sex Toys as a Case of Third-Wave HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '11)*. Association for Computing Machinery, 257–266.

[3] Nicola J. Bidwell, Thomas Reitmaier, Gary Marsden, and Susan Hansen. 2010. Designing with Mobile Digital Storytelling in Rural Africa. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*. Association for Computing Machinery, 1593–1602. https://doi.org/10.1145/1753326.1753564

[4] Anna R L Carter. 2021. Cocreation of the Lookout. https://www.swansea.ac.uk/media/Anna-Carter_Thesis_resized.pdf

[5] Anna Rose Lucy Carter, Gavin Bailey, Jennifer Pearson, Matt Jones, Simon Robinson, Dani Kalarikalayil Raju, Spencer Winter, and Jonathan Lloyd Hicks. 2022. Designing and Embedding a Tangible Public Interface in the COVID Era. In *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems (CHI EA '22)*. Association for Computing Machinery, Article 26. https://doi.org/10.1145/3491101.3503556

[6] Ishita Chordia, Lena-Phuong Tran, Tala June Tayebi, Emily Parrish, Sheena Erete, Jason Yip, and Alexis Hiniker. 2023. Deceptive Design Patterns in Safety Technologies: A Case Study of the Citizen App. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*. Association for Computing Machinery, Article 193. https://doi.org/10.1145/3544548.3581258

[7] Bruce Damer, Christina Kekenes, and Terrel Hoffman. 1996. Inhabited Digital Spaces. In *Conference Companion on Human Factors in Computing Systems (CHI '96)*. Association for Computing Machinery, 9–10. https://doi.org/10.1145/257089.257094

[8] DCitizens. 2022. Fostering Digital Civics Research and Innovation in Lisbon. https://doi.org/10.3030/101079116

[9] Thomas Dylan, Abigail Durrant, Sena Çerçi, Shaun Lawson, and John Vines. 2021. Lanterns: Configuring a Digital Resource to Inspire Preschool Children's Free Play Outdoors. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. Association for Computing Machinery, Article 635. https://doi.org/10.1145/3411764.3445745

[10] Diana Freed, Natalie N. Bazarova, Sunny Consolvo, Eunice J Han, Patrick Gage Kelley, Kurt Thomas, and Dan Cosley. 2023. Understanding Digital-Safety Experiences of Youth in the U.S.. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*. Association for Computing Machinery, Article 191. https://doi.org/10.1145/3544548.3581128

[11] David M. Frohlich, Dorothy Rachovides, Kiriaki Riga, Ramnath Bhat, Maxine Frank, Eran Edirisinghe, Dhammike Wickramanayaka, Matt Jones, and Will Harwood. 2009. StoryBank: Mobile Digital Storytelling in a Development Context. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '09)*. Association for Computing Machinery, 1761–1770. https://doi.org/10.1145/1518701.1518972

[12] David Philip Green, Simon J. Bowen, Christopher Newell, Guy Schofield, Tom Bartindale, Clara Crivellaro, Alia Sheikh, Peter Wright, and Patrick Olivier. 2015. Beyond Participatory Production: Digitally Supporting Grassroots Documentary. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. Association for Computing Machinery, 3157–3166. https://doi.org/10.1145/2702123.2702203

[13] Brett A. Halperin, Gary Hsieh, Erin McElroy, James Pierce, and Daniela K. Rosner. 2023. Probing a Community-Based Conversational Storytelling Agent to Document Digital Stories of Housing Insecurity. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*. Association for Computing Machinery, Article 304. https://doi.org/10.1145/3544548.3581109

[14] Tom Hitron, Idan David, Netta Ofer, Andrey Grishko, Iddo Yehoshua Wald, Hadas Erel, and Oren Zuckerman. 2018. Digital Outdoor Play: Benefits and Risks from an Interaction Design Perspective. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, 1–13. https://doi.org/10.1145/3173574.3173858

[15] Rikke Bjerg Jensen, Lizzie Coles-Kemp, and Reem Talhouk. 2020. When the Civic Turn Turns Digital: Designing Safe and Secure Refugee Resettlement. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. Association for Computing Machinery, 1–14. https://doi.org/10.1145/3313831.3376245

[16] Matthew Kam, Akhil Mathur, Anuj Kumar, and John Canny. 2009. Designing Digital Games for Rural Children: A Study of Traditional Village Games in India. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '09)*. Association for Computing Machinery, 31–40. https://doi.org/10.1145/1518701.1518707

[17] Tiffany Knearem. 2022. *Solidarity Not Charity! Empowering Local Communities for Disaster Relief During Covid-19 Through Grassroots Support*. Ph.D. Dissertation. https://www.proquest.com/dissertations-theses/solidarity-not-charity-empowering-local/docview/2700377548/se-2

[18] Tiffany Knearem, Jeongwon Jo, and John M. Carroll. 2021. Local Community Support for Tangible Food Aid During COVID-19. In *Companion Publication of the 2021 Conference on Computer Supported Cooperative Work and Social Computing (CSCW '21 Companion)*. Association for Computing Machinery. https://doi.org/10.1145/3462204.3481766

[19] Tiffany Knearem, Jeongwon Jo, Xiying Wang, and John Carroll. 2021. Seek and Reflect: A Mobile Scavenger Hunt to Develop Community Engagement. 212–223. https://doi.org/10.1145/3461564.3461573

[20] Shaimaa Lazem and Hussein Aly Jad. 2017. We Play We Learn: Exploring the Value of Digital Educational Games in Rural Egypt. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. Association

for Computing Machinery, 2782–2791. https://doi.org/10.1145/3025453.3025593

[21] Fei Lu, Feng Tian, Yingying Jiang, Xiang Cao, Wencan Luo, Guang Li, Xiaolong Zhang, Guozhong Dai, and Hongan Wang. 2011. ShadowStory: Creative and Collaborative Digital Storytelling Inspired by Cultural Heritage. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '11)*. Association for Computing Machinery, 1919–1928. https://doi.org/10.1145/1978942.1979221

[22] Lydia Michie, Madeline Balaam, John McCarthy, Timur Osadchiy, and Kellie Morrissey. 2018. From Her Story, to Our Story: Digital Storytelling as Public Engagement around Abortion Rights Advocacy in Ireland. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, New York, NY, USA, 1–15. https://doi.org/10.1145/3173574.3173931

[23] Maryam Mustafa, Noor Mazhar, Ayesha Asghar, Maryem Zafar Usmani, Lubna Razaq, and Richard Anderson. 2019. Digital Financial Needs of Micro-Entrepreneur Women in Pakistan: Is Mobile Money The Answer?. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, 1–12. https://doi.org/10.1145/3290605.3300490

[24] Isabel Neto, Hugo Nicolau, and Ana Paiva. 2021. Community Based Robot Design for Classrooms with Mixed Visual Abilities Children. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. Association for Computing Machinery, Article 31. https://doi.org/10.1145/3411764.3445135

[25] Valentina Nisi, Paulo Bala, Vanessa Cesário, Stuart James, Alessio Del Bue, and Nuno Jardim Nunes. 2023. "Connected to the People": Social Inclusion & Cohesion in Action through a Cultural Heritage Digital Tool. *Proc. ACM Hum.-Comput. Interact.* 7, CSCW2, Article 319 (2023). https://doi.org/10.1145/3610168

[26] Vanessa O. Oguamanam, Natalie Hernandez, Rasheeta Chandler, Dominique Guillaume, Kai Mckeever, Morgan Allen, Sabreen Mohammed, and Andrea G Parker. 2023. An Intersectional Look at Use of and Satisfaction with Digital Mental Health Platforms: A Survey of Perinatal Black Women. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*. Association for Computing Machinery, Article 486. https://doi.org/10.1145/3544548.3581475

[27] Patrick Olivier and Peter Wright. 2015. Digital Civics: Taking a Local Turn. *Interactions* 22, 4 (jun 2015), 61–63. https://doi.org/10.1145/2776885

[28] Patricia Piedade, Isabel Neto, Ana Cristina Pires, Rui Prada, and Hugo Nicolau. 2023. PartiPlay: A Participatory Game Design Kit for Neurodiverse Classrooms. In *Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '23)*. Association for Computing Machinery. https://doi.org/10.1145/3597638.3614496

[29] Ana Cristina Pires, Lúcia Verónica Abreu, Filipa Rocha, Hugo Simão, João Guerreiro, Hugo Nicolau, and Tiago Guerreiro. 2023. TACTOPI: Exploring Play with an Inclusive Multisensory Environment for Children with Mixed-Visual Abilities. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (Chicago, IL, USA) *(IDC '23)*. Association for Computing Machinery, New York, NY, USA, 411–422. https://doi.org/10.1145/3585088.3589389

[30] Ana Cristina Pires, Ewelina Bakala, Fernando González-Perilli, Gustavo Sansone, Bruno Fleischer, Sebastián Marichal, and Tiago Guerreiro. 2022. Learning maths with a tangible user interface: Lessons learned through participatory design with children with visual impairments and their educators. *International Journal of Child-Computer Interaction* 32 (2022), 100382. https://doi.org/10.1016/j.ijcci.2021.100382

[31] Aare Puussaar, Kyle Montague, Sean Peacock, Thomas Nappey, Robert Anderson, Jennine Jonczyk, Peter Wright, and Philip James. 2022. SenseMyStreet: Sensor Commissioning Toolkit for Communities. *Proc. ACM Hum.-Comput. Interact.* 6, CSCW2 (2022). https://doi.org/10.1145/3555215

[32] Mohammad Rashidujjaman Rifat, Hasan Mahmud Prottoy, and Syed Ishtiaque Ahmed. 2022. Putting the Waz on Social Media: Infrastructuring Online Islamic Counterpublic through Digital Sermons in Bangladesh. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*. Association for Computing Machinery, Article 576. https://doi.org/10.1145/3491102.3502006

[33] John Rooksby, Alistair Morrison, and Dave Murray-Rust. 2019. Student Perspectives on Digital Phenotyping: The Acceptability of Using Smartphone Data to Assess Mental Health. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, 1–14. https://doi.org/10.1145/3290605.3300655

[34] Aneesha Singh, Jo Gibbs, and Ann Blandford. 2019. Emotion and Experience in Negotiating HIV-Related Digital Resources: "It's Not Just a Runny Nose!". In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, 1–14. https://doi.org/10.1145/3290605.3300829

[35] Oliver Stickel and Thomas Ludwig. 2014. Computer Supported Urban Gardening. *Proceedings of the Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques, DIS.* https://doi.org/10.1145/2598784.2602786

[36] Reem Talhouk and Sarah Armouch. 2022. Dialogues on Decolonial Participatory Design Praxis During a Revolution. In *Proceedings of the Participatory Design Conference 2022 - Volume 2 (PDC '22)*. Association for Computing Machinery, 52–57. https://doi.org/10.1145/3537797.3537808

[37] Reem Talhouk, Lizzie Coles-Kemp, Rikke Bjerg Jensen, Madeline Balaam, Andrew Garbett, Hala Ghattas, Vera Araujo-Soares, Balsam Ahmad, and Kyle Montague. 2020. Food Aid Technology: The Experience of a Syrian Refugee Community in Coping with Food Insecurity. *Proc. ACM Hum.-Comput. Interact.* 4 (2020). https://doi.org/10.1145/3415205

[38] Reem Talhouk, Sandra Mesmar, Anja Thieme, Madeline Balaam, Patrick Olivier, Chaza Akik, and Hala Ghattas. 2016. Syrian Refugees and Digital Health in Lebanon: Opportunities for Improving Antenatal Health. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, 331–342. https://doi.org/10.1145/2858036.2858331

[39] Reem Talhouk, Kyle Montague, Hala Ghattas, Vera Araújo-Soares, Balsam Ahmad, and Madeline Balaam. 2022. Refugee Food Insecurity and Technology: Surfacing Experiences of Adaptation, Navigation, Negotiation and Sharing. *Computer Supported Cooperative Work (CSCW)* 31 (06 2022), 1–32. https://doi.org/10.1007/s10606-022-09423-w

[40] Emily Tseng, Mehrnaz Sabet, Rosanna Bellini, Harkiran Kaur Sodhi, Thomas Ristenpart, and Nicola Dell. 2022. Care Infrastructures for Digital Security in Intimate Partner Violence. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*. Association for Computing Machinery, Article 123. https://doi.org/10.1145/3491102.3502038

[41] Karen Orr Vered. 1998. Schooling in the Digital Domain: Gendered Play and Work in the Classroom Context. In *CHI 98 Conference Summary on Human Factors in Computing Systems (CHI '98)*. Association for Computing Machinery, 72–73. https://doi.org/10.1145/286498.286535

[42] Vasillis Vlachokyriakos, Clara Crivellaro, Christopher A. Le Dantec, Eric Gordon, Pete Wright, and Patrick Olivier. 2016. Digital Civics: Citizen Empowerment With and Through Technology. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '16)*. Association for Computing Machinery, 1096–1099. https://doi.org/10.1145/2851581.2886436

[43] Gavin Wood, Kiel Long, Tom Feltwell, Scarlett Rowland, Phillip Brooker, Jamie Mahoney, John Vines, Julie Barnett, and Shaun Lawson. 2018. Rethinking Engagement with Online News through Social and Visual Co-Annotation. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, 1–12. https://doi.org/10.1145/3173574.3174150

[44] Bin Zhu, Anders Hedman, and Haibo Li. 2017. Designing Digital Mindfulness: Presence-In and Presence-With versus Presence-Through. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. Association for Computing Machinery. https://doi.org/10.1145/3025453.3025590