#### **ORIGINAL ARTICLES**



# Reimagining Citizen Research: a Postdigital Arts-Based Approach to Inclusive Research Methods

Amy Spencer<sup>1</sup>

Accepted: 10 February 2025 © The Author(s) 2025

#### **Abstract**

Left feeling isolated by the Covid-19 pandemic, artists working within Art in Motion (AIM), a participatory contemporary arts organisation operating as a collective of learning-disabled and neurodiverse artists and non-learning-disabled and non-neurodiverse artists, based at Spike Island, an international centre for the production and exhibition of contemporary art in Bristol, UK, wanted to reach out to similar UKbased arts organisations. Their goal was to understand the challenges these organisations were also facing and to build a sense of community. A citizen research project, taking an arts-based, practice-led, and participatory approach, was developed by artists working within AIM to challenge assumptions about learning-disabled and neurodiverse artists engaging in research and inform the inclusive development of the visual arts sector in the UK within a postdigital landscape. The project's approach followed the recent expansion of longstanding notions of citizen science into the social science and humanities. The project involved the co-development of accessible, practice-led, creative research tools that built on the creative practice of artists working within AIM, bridged the digital and the physical, and took an overarching postdigital perspective. Visual metaphors were drawn on and a 'suitcase' of practiceled research tools was developed, where researchers could select tools needed for a series of both virtual and in-person research trips. Such tools included reflective practice, questionnaires, interviews, visual scribing, and mapping. This article charts the development of the project as artists took on the collective role of researchers in a postdigital context. It reflects on the positionality and experience of a collective of artists working as citizen researchers, while expanding upon the concept and the value of research for a diverse art collective in a hybrid virtual-physical art context. It concludes that citizen research can be made more inclusive and accessible through arts-based, imaginative methods, particularly when researchers hold multiple identities and active roles in the research process.

**Keywords** Citizen research  $\cdot$  Research tools  $\cdot$  Contemporary art  $\cdot$  Accessibility  $\cdot$  Inclusion  $\cdot$  Disability  $\cdot$  Neurodiversity  $\cdot$  Postdigital

Extended author information available on the last page of the article

Published online: 13 March 2025



#### Introduction

This article documents and reflects upon the development of a citizen research project by contemporary arts organisation Art in Motion (AIM) with the aim of challenging assumptions about disability, research, and the position of the researcher. Drawing on aspects of citizen science while following an arts-led approach rooted in a postdigital research context, which connects to elements of participatory research practices, the project draws on the recent expansion of longstanding notions of citizen science into social science and humanities (Jandrić et al. 2023a, b) and the arts (Jopling et al. 2024). The relationship between citizen research, citizen science, and participatory research requires careful examination to reach an understanding of what it means to be a citizen researcher engaging in arts-based research in an inclusive context and to recognise how this project extends and reimagines these approaches. While citizen science typically involves non-professionals collecting data for scientific research, citizen research in the humanities and arts represents a broader approach where community members actively shape research questions, methodologies, and interpretation processes. The distinction between citizen research and participatory research in the context of this research project centres on the nature of engagement. This approach aligns with research (Jopling and Albert 2024) that recognises the overlap between citizen and participatory approaches while emphasising collective knowledge creation. While participatory research often involves community members as subjects or co-researchers, the approach adopted by this research project positions a collective of artists as researchers, drawing on their artistic practice as a research methodology. This distinction is particularly important in the context of arts-based research, where artistic practice becomes both the method and the subject of inquiry.

#### **Background**

AIM is a participatory contemporary arts organisation operating as a collective of learning-disabled and neurodiverse artists and non-learning-disabled and non-neurodiverse artists based at Spike Island, an international centre for the production and exhibition of contemporary art in Bristol, UK. For over a decade, AIM has offered opportunities for a growing collective of learning-disabled and neurodiverse artists while promoting the development of contemporary arts practice and public engagement through a range of artist-led projects. The organisation provides a supported studio environment where artists can develop their practice and artist development programmes designed to enhance skills and foster professional and personal growth. AIM also creates exhibition opportunities, showcasing the work of artists to wider audiences internationally and helping to raise the profile of learning-disabled and neurodiverse artists in the contemporary art world. In addition to these ongoing activities, AIM has also supported artist residencies, enabling opportunities for periods of creative development for artists. The organisation is also committed to the promotion of artists' work, helping to increase visibility and recognition for learning-disabled and neurodiverse artists in the broader cultural landscape.



AIM operates as a collaborative community where a group of learning-disabled and neurodiverse and non-learning-disabled and non-neurodiverse artists work collectively. This approach challenges traditional hierarchies in the art world and advocates for the specific inclusion of learning-disabled and neurodiverse artists within the broader arts community. The organisation places a strong emphasis on collaborative projects, encouraging artists to work together and learn from one another's perspectives and experiences. As Colin Higginson (2024), AIM's director, emphasises in an interview undertaken as part of this research: 'We are collaborating with artists rather than supporting. We are doing it together. It's a more inclusive way.'

This approach has included developing practice-based citizen research projects, designed through a collaborative process, involving AIM's collective of artists as researchers. Key examples include projects such as 'Somewhere in the City', a participatory arts and heritage project that explored an overlooked, historic area of Bristol, and a commission for We the Curious, a science centre and educational charity in Bristol, UK. The latter project, which explored the question 'Can science see the soul?', exemplifies AIM's ambition to engage with complex concepts through collaborative artistic inquiry.

## The Challenge

The onset of the Covid-19 pandemic in early 2020 brought unprecedented challenges to the global arts sector. As public spaces shuttered and social distancing measures were implemented, artists found themselves abruptly disconnected from their physical creative communities and usual modes of practice. This isolation was particularly acute for artists working as part of AIM, many of whom relied on the organisation's structured support and collaborative environment to develop their artistic practice.

The pandemic's impact on the arts sector, and on organisations such as AIM, has been well-documented with Jandrić et al. (2021) drawing parallels between the disruptions faced in the education sector and those experienced in the arts. Their research highlights the shared challenges of adapting to remote working and maintaining community connections where the boundaries between digital and physical spaces were increasingly blurred. For organisations such as AIM, which thrive on in-person collaboration, the pandemic posed questions about how best to support artists in a socially distanced world, particularly those experiencing the 'digital divide' (Braverman 2016) and led to challenges and opportunities in the development of individual arts practice as well as wider organisational development as the collective operated remotely. Inequalities in access to digital tools and skills were recognised as needing to be addressed, similar to how young people grappled with the challenges of remote learning (Collier and Perry 2023). It was widely acknowledged that the pandemic made clear the 'need to improve "digital inclusion" among disadvantaged groups and individuals in communities across the globe' (Hayes et al. 2023: xiv). However, Hayes et al. (2023) also recognise that the wider focus in such issues has been on aspects of human computer interaction whereas '[h]ow individuals are positioned in their human data interactions, as these intersect in complex



ways with various forms of disadvantage in postdigital contexts, has been less researched' (Jopling et al. 2024). This article will partly address the complex nature of these interactions with digital technology in a project including those experiencing aspects of the digital divide from an arts-based perspective.

It was in the context of isolation, uncertainty, and a grappling with digital technologies following the Covid-19 lockdowns mandated in the UK, that AIM conceived of a research project that would not only address their immediate need for reconnection with other artists and arts organisations but also contribute to the broader resilience and inclusivity of the UK arts sector. The genesis of the research project developed by AIM stemmed from a question posed by AIM's director, Colin Higginson, 'Could a group of learning-disabled and neurodiverse artists conduct research together in a more accessible way?' and expanded to question how a research team of learning-disabled and neurodiverse artists and non-learning-disabled and non-neurodiverse artists could work together collaboratively. The research project designed in response to this question was intended to challenge conventional ideas about who can be a researcher, how researchers can collaborate, and what constitutes valid research methodologies, particularly in arts-based research that reimagine the role of the researcher, while seeking to understand the position of the citizen researcher in a postdigital context and searching for a more collaborative and accessible way to conduct research that draws on artistic practice.

## **Navigating Research Practices**

The approach taken by the project challenged traditional research paradigms by positioning community members, in this context those engaged in AIM's community of artists, not as subjects of study but as active participants in the research process who co-designed research methods and tools, drawing on aspects of citizen science while following an arts-led approach rooted in a postdigital research context that connects to elements of participatory research practices. This lead to the recognition a crucial distinction, outlined in the introduction of this article, between citizen science, in which individuals collect data, and aspects of participatory research, which will now both be examined through a consideration of existing research, to reach an understanding of what it means to be a citizen researcher engaging in arts-based research before reflecting on the project in depth. The notion of reimagining citizen research, which is the focus of this article, emerged from the specific context of the Covid-19 pandemic, which highlighted both the potential and limitations of both digital and physical connectivity.

#### Citizen Science

A shared characteristic of most of what we might call 'citizen science' is the participation of community members, 'citizens' or 'citizen scientists', in research that extends beyond researchers employed by research institutions (Tolbert et al. 2024). This perspective aligns closely with AIM's approach where artists, part of a wider



artistic community and members of the AIM collective, were not subjects of study but, rather, active researchers shaping the project's direction, designing methods and tools, and engaging in the research process and which built on their artistic practices.

The emergence, and resulting ubiquity, of new digital technologies since the late twentieth century has led to the increased accessibility of science. As a result, this has increased the recognition and participation of non-specialist researchers (Vohland et al. 2021), although concerns remain about lack of diversity among citizen scientists (Waugh et al. 2023) due to who has access to digital technologies. This development in the increased use of digital technology across populations requires citizen science to address issues relating to how data are used and who collects them. When considering citizen science in a postdigital context, we can see that it is 'not just a theoretical construct, but a dynamic methodological prism, revealing the complex entanglement of the postdigital realm and citizen science through innovative sociotechnical methods and approaches' (Tolbert et al. 2024).

The theoretical relationship between citizen science and citizen research requires examination to understand how this project extends existing methodological frameworks. While citizen science, traditionally focused on public participation in scientific data collection and analysis (Vohland et al. 2021), provides foundational principles of democratised knowledge production and public engagement in research processes, citizen research in the humanities and arts represents an evolution of these principles. Where citizen science typically maintains a distinction between professional researchers who design studies and citizens who collect data, citizen research in the humanities often involves participants in all stages of the research process, from developing research questions to data analysis. This shift reflects different epistemological assumptions about knowledge creation in the humanities and arts, where personal experience and interpretation play crucial roles in understanding social and cultural phenomena.

#### Citizen Humanities and the Postdigital

The hybrid, inclusive nature of the postdigital (Jandrić et al. 2018, 2023a, b) also encourages us to extend the focus from citizen science to encompass social science and humanities, both conceptually and methodologically. This project addresses this development and focuses its attention specifically on a practice-led approach to arts-based research. The postdigital context is crucial for understanding this research approach as Jopling et al. (2024) recognise that postdigital transformations are changing citizen science and humanities. They argue that both postdigital and citizen research are founded on collaboration, dialogue, and co-creation, which challenge traditional academic approaches. Hayes (2021, 2023) emphasises that research questions can often arise when researchers, whether inside or outside universities, engage as equals to address postdigital research challenges. The concept of citizen humanities (Heinisch et al. 2021) provides a bridge between citizen science and participatory arts-based research.



### **Participatory Research Practices**

This project is rooted in an acknowledgement of the importance of a participatory approach to research. Cornwall and Jewkes (1995) provide a foundational understanding of participatory research as creating knowledge with people rather than about them, aligning with AIM's approach where artists were active researchers shaping the project's direction. In the wider context of disability studies, Nind and Vinha (2013) argue for inclusive research methods that recognise the expertise of people with disabilities. This echoes AIM's approach to this project as Higginson points out, 'We were challenging who can do research', a perspective supported by Fals-Borda and Rahman (1991) who argue for the democratisation of research.

However, this project expands the understanding of participatory research as AIM's collective of artists are positioned in the research process as experts in their field with professional identities in the arts, the subject they are researching. This offers a more nuanced perspective to participatory research as its participants hold multiple, often fluid, identities, understood through an examination of positionality in relation to research. Hayes (2021) exalts the importance of Torres-Olave and Lee's (2019) recognition that identities within research are complex and fluid, embedded in power dynamics, and contextually bound. For Hayes (2021), positionality is a process and a consideration of it may reveal tensions. In this research project, while addressing positionality we are considering issues of equity but are also concerned with not claiming to represent the voices of others.

#### **Inclusive Arts-Based Research**

This project's starting point was an arts-based approach, as understood by Eisner (2004: 98) as forms that may have 'aesthetic features' as part of the processes of perception and imagination inherent in research, and Barone and Eisner (2011: xii) as 'an effort to employ the expressive qualities of form in order to enable a reader of that research to participate in the experience of the author' of the research or 'a process that uses the expressive qualities of form to convey meaning'. Arts-based researchers distinguish themselves from other qualitative researchers on the grounds that they use artistic processes and practices in their inquiries and in the communication of their research outcomes (Leavy 2020). Leavy argues that arts-based research methods can democratise the research process, making it more accessible to those traditionally excluded from academic inquiry, as is evident in AIM's approach to research.

Barone and Eisner (2011) operate out of a particular community of practice, with its own distinctive history of emergence, set of responsibilities, and criteria for evaluation. However, through recognising that AIM is a collective of artists working outside of an educational context and that due to their position as artists, an aesthetic approach to research was taken, which addresses the way artistic processes and ways of knowing were integrated into the research methodology. This went beyond simply using artistic methods to document or represent research findings. Instead, artistic practice became a way of thinking through research questions, developing methods,



and interpreting findings. The arts offered a postdigital method in the sense that artistic practices provided ways to bridge and transcend the digital-physical divide, allowing researchers to work between virtual and physical spaces.

In addition, the arts enabled a postdigital method for engaging with research, interpreting experiences and operating collectively as well as creating new perspectives, rather than an in-depth interpretation of the images that were produced. Specific methods will be described later in this article, such as how virtual interviews were transformed into physical images, bridging digital and non-digital realms by turning digital conversations into artistic documentation, and visual mapping techniques to convert data into physical representations, helping researchers make abstract relationships more concrete and visually accessible.

Adding to this understanding of arts-based research, we must also reach an understanding of the concept of inclusive arts practice, which is central to AIM's work as it is this field that its artists operate within. Fox and Macpherson (2015) explore this concept in depth, emphasising the importance of collaboration between disabled and non-disabled artists in inclusive arts practices. They argue that such practice should not just provide access to the arts for disabled people but, also, recognise and valuing the unique contributions that all artists can make to contemporary art practice. This value of a diverse range of contributions made by artists is evident in this research project as a collaborative approach to inclusive arts practice guided the development of research methods and tools. The 'suitcase' of tools developed by AIM artists, which will be discussed further in the methodology section of this article, draws on the artist's creative practice and aligns with what Kara (2015) describes as a 'bricolage' approach, creatively combining different methods, both digital and physical, to suit specific project and participant needs. In addition, we can look to O'Donoghue (2009) who discusses the potential of arts-informed inquiry to engage participants in ways that traditional research methods may not. However, although the AIM artists used artistic processes and practices in their research as a way to think through issues and communicate ideas, these were not used as a research output but rather as part of the research process.

### **Postdigital Practices**

The concept of the postdigital, as articulated by Jandrić et al. (2018), provides a crucial context for understanding the changing landscape of contemporary art practices and their relation to research, crucial for this research project. A postdigital perspective recognises that the digital has become so embedded in our daily lives and practices that the distinction between digital and non-digital has become increasingly blurred. However, we must recognise that this blurring may not exist for everyone in the same way due to the 'digital divide' (Braverman 2016) as a lack of access to digital technologies means that the blurring may not be as obvious or experienced in the same way. It is crucial to connect this to an understanding of postdigital art in the context of this research project as its methodological approach spans the digital and non-digital, while acknowledging the challenges of this approach. Berry and Dieter (2015) discuss 'postdigital aesthetics' as a critical approach to digital technologies



in art, emphasising the need to consider broader cultural implications. Pepperell and Punt (2000) argue that the postdigital aesthetic acknowledges the materiality of digital technologies and their integration into artistic processes, which is recognised in this project following Pink's (2021) view images produced throughout the research process often blurred the digital and non-digital.

## The Project

From its early stages, the aims of AIM's research project were to challenge assumptions about who can engage in research, understand the inclusive development of the UK's visual arts sector, identify a plan for AIM's development, and support AIM artists with opportunities for personal and professional development through research activities. As Higginson (2024) explained, the project aimed to 'put [AIM] on the map' and 'give us a sense of direction, understand how other organisations have got there and show us some route [we could] take'. This strategic organisational focus was balanced with the personal motivations of artists working within AIM. One of the participating artists expressed a sentiment shared by many: 'After being stuck at home for so long [during the Covid-19 restrictions] – we wanted to get out.' This desire to reconnect with the broader arts community became a driving force behind the research as well as the ambition to develop a piece of research.

The project was supported by a West of England Visual Arts Alliance (WEVAA) Research and Development Fellowship in 2022–2023. This support enabled me, a researcher employed by Bath Spa University who had worked on projects with AIM as a facilitator over the past decade, to partner with AIM, bringing an academic approach to the co-development of accessible, practice-led research methods suitable for the project and to support reflective practice. This approach not only challenged traditional notions of who can be a researcher, the concept of positionality in research, and what constitutes valid research methodologies, particularly in the context of arts-based inquiry, but also raised questions about how these research practices could adapt to and reflect the postdigital reality of contemporary art and research practices.

The focus of this article is to position this research within a postdigital context and understand how it contributes to an understanding of the position of the citizen scientist (Tolbert et al. 2024), typically associated with scientific inquiry. Informed by approaches evident in participatory research and with a focus on practice-led arts-based research, the project expands the understanding of the much broader concept of citizen researcher, which provides a bridge between citizen science and participatory arts-based research, as detailed in the Citizen Science section of this article, into engaging with research through artistic practice. This article builds on the understanding of the position of the citizen scientist, involving the participation of non-professionals in scientific research, to engage in 'research that extends beyond the parameters of those who are employed by research institutions' Tolbert et al., 2024) into forms of practice led research. It draws on wider debates about the post-digital approach to citizen research that asserts that such practices are 'founded on and committed to collaboration, dialogue, and co-creation, as well as challenging



the tenets and approaches of traditional academic research' (Jopling et al. 2024). In particular, it suggests that postdigital transformations in contemporary societies are both changing citizen science and its potential for use in the humanities and the arts and making it more important.

By the use of the term 'citizen' in this research context, it is not to say that the collective of AIM artists are not operating as professional artists within contemporary arts but, rather, that they are not professional researchers and were supported by me as a professional researcher employed by a university in this project. The wider concept of citizen research in a postdigital context has been selected for enquiry as, as Hayes (2021, 2023) asserts, when applied to humanities it can also be used to address unanswered questions alongside experts within communities. For research questions to be reached to address postdigital challenges, all researchers must engage as equals with acknowledge and recognise each other's positionalities (Hayes 2021, 2023), which this project strived to achieve.

## **Practice-Led Design**

The project adopted a distinctly practice-led approach to arts-based research within a postdigital context. Practice-led research, as defined by Smith and Dean (2009), is research initiated in practice, where questions, problems, and challenges are identified and formed by the needs of practice and practitioners. In the context of this research project, the practice of inclusive, collaborative art-making informed every aspect of the research process, from the development of research questions to the selection and implementation of research methods. Although not always visual, the research was framed as an extension of the AIM artists' existing artistic practice.

The postdigital framework embedded within the project aligns with Bishop et al.'s (2017: 13) conceptualisation, which describes the postdigital as encompassing a set of 'speculative strategies and poetics' that do not consider a past digital age but rather look towards the development of alternative and overlapping practices. The project's postdigital nature was evident in its use of materials and methodologies that bridged both digital and physical realms and operated outside them. Virtual interviews were transformed into visual images, reflecting Sarah Pink's (2021: 2) understanding of visual ethnography as 'an invitation to engage with images, technologies and ways of seeing, experiencing and imagining as part of the ethnographic process'. Such images produced throughout the research process often crossed 'digital and material worlds' (Pink 2021: 3). It is crucial to note that while operating in digital spaces, the project maintained an awareness that, 'the digital is also material, constructed from 'earthly raw materials' (Jandrić et al. 2019: 3). This understanding helped ground the research in both virtual and physical realities and those outside, acknowledging the inherent materiality of digital processes. This approach embraces the inherent messiness and unpredictability of postdigital research, acknowledging that 'the postdigital is hard to define; messy; unpredictable; digital and analog; technological and non-technological; biological and informational' (Jandrić et al. 2018: 895).



This article examines and offers reflections on the research project that developed through a collaborative process, positioning it as a form of arts-based research, where all researchers involved in the process held multiple positions, particularly as artists and researchers, learning-disabled and neurodiverse artists, and non-learning-disabled and non-neurodiverse artists, and the research crossed multiple thresholds, including digital and physical. It will not reflect specifically on the findings of the research project undertaken by AIM artists, as that is not the focus of the article, but on the research process and the research tools it developed, situating them in a postdigital context.

The research team followed an iterative, collaborative approach that drew on each researchers' creative practice and involved hybrid research methods. Although the focus of the research was on data collection from arts organisations by AIM researchers, the focus of this article is to understand the research process, the approach taken to developing hybrid and inclusive research methods and the adopted reflection process. This enables me to address the key focus of this research article to understand the position of the citizen researcher in a postdigital context while reaching towards a more collaborative, accessible way to conduct research.

## Methodology

The methodological approach developed for this research required consideration of how to integrate artistic practice with research methods while maintaining accessibility. Its methodology emerged from the intersection of arts-based research practices, inclusive research approaches and postdigital methods. This integration created opportunities for developing research tools that could operate effectively across different modes of engagement while remaining accessible and inclusive. The following sections detail how these elements came together in practice, beginning with outlining an arts-based approach and moving through the development of specific research tools and processes.

### **Arts-Based Approach**

The research project employed a collaborative, arts-based approach to qualitative research, which engaged elements of creative practice. Knowles and Cole (2012: 59) suggest that the benefit of engaging in qualitative research within the arts is that it can combine 'systematic and rigorous qualities of conventional qualitative methodologies with the artistic, disciplined, and imaginative qualities of the arts'. Similarly, Jewitt et al. (2017) propose using arts-based approaches in new, disruptive ways to conduct qualitative research. The approach adopted in this research project also drew on the tradition of arts-based research methods as described by Leavy (2020), which recognise the potential of artistic practices to generate and represent knowledge.

The research team consisted of five artists, two AIM members of staff, who are also artists, and me as an academic researcher. Following discussion of positionality in the literature review of this article, it is important to note that all members of



the team were positioned as researchers to address potential positional power imbalances and all are referred to as 'researchers' and as the 'research team' in this article. As noted by Higginson (2024), this is the way in which AIM as an organisation operates; 'The group actively works together. This has become the way we do everything. We try to avoid the imbalance in power of a director making decisions.' However, it must also be acknowledged the power imbalance of including a professional researcher in the project as potential research methods were introduced to the rest of the team through a series of facilitated workshops.

Following these workshops, the research team took an approach to research design that was collaborative and arts-based, which also follows Peter Goodyear et al.'s (2023) more general view that 'collaborative design activity, underpinned by design knowledge, is a way for a group of people to come to a shared understanding of complex issues arising in their collective work and to shape and agree on plans for better ways of working' (Goodyear et al. 2023). The approach led to the development of accessible research tools that were a cornerstone of this project, reflecting AIM's commitment to inclusive practice and the recognition of the diverse capabilities of the researchers. It was guided by the principles of universal design in research, as outlined by Williams and Moore (2011), which emphasises the importance of creating research methods that are usable by people with the widest possible range of abilities. This aligns with what Nind (2014) describes as 'inclusive research', where people with learning disabilities are involved in shaping the research agenda, carrying out the research and making sense of the findings.

#### **Research Questions**

The development of research questions was an iterative process undertaken in group workshops that involved all members of the research team. The approach is aligned with the principles of participatory action research as described by Reason and Bradbury (2008) where research questions emerge from the lived experiences and concerns of participants. The process involved initial brainstorming sessions where all researchers shared their interests and curiosities about other arts organisations, group discussions to refine and prioritise potential research questions and to test the clarity and relevance of questions and the revision of questions. Higginson (2024) noted: 'We needed to understand what words we were using' and this focus on language and shared understanding was crucial in ensuring that the research questions were meaningful and accessible to all team members.

The collectively developed research questions guided the research project but, as this article is interested in the process of the research project rather than its findings, its focus is on Higginson's question: 'Could a group of learning-disabled and neurodiverse artists conduct research together in a more accessible way?' (Higginson 2024). In this article, this question has been expanded to ask how a research team of learning-disabled and neurodiverse artists and non-learning-disabled and non-neurodiverse artists could work together collaboratively using an arts-based approach.



#### The Suitcase

The 'suitcase', developed by the research team, emerged as a central metaphor within the project and a set of practical research tools. I introduced the idea of the suitcase in a group workshop, after discussions with Higginson in previous meetings, as a concrete, visual representation of the research process, suitable to be carried on a research journey and the researchers initially discussed what research tools they would pack, aligning with their collectively expressed ambition to travel to connect with others after the isolation of the lockdowns of the Covid-19 pandemic. The selection and refinement of tools for the suitcase emerged through the iterative process of group discussion as well as practical testing. During workshops, researchers discussed which aspects of their artistic practice could inform research methods, how these methods could be made accessible to all team members, and how they could function effectively in both digital and physical contexts.

This approach encouraged researchers to select the methods that felt most comfortable and appropriate for them as artists and it allowed for flexibility in the research approach, with different combinations of methods being used for different aspects of data collection. The metaphorical suitcase also offered a hybrid approach as the tools it contained could be used in multiple ways and adapted for different contexts.

The following methods were selected by the researchers for inclusion in the suitcase. A questionnaire was designed with accessibility in mind, using simple language to gather structured information from arts organisations and artists. It was emailed to twelve arts organisations and the responses were followed up with a request for a virtual or in person interview with two members of the research team. Semi-structured interviews allowed for the more in-depth exploration of topics. The researchers took turns asking questions, an approach that aligns with what Booth and Booth (1996) describe as the 'guided conversation' approach to interviewing learning-disabled participants, as many interviewees were learning-disabled artists. This provided self-identified learning opportunities for the research team in terms of developing project management and communication skills.

The researchers were also artists so image-making was incorporated as a key research method and included in the suitcase. This aligns with the concept of 'graphic elicitation' discussed by Bagnoli (2009) as a means of accessing different levels of experience. Visual scribing, which involves creating visual representations of conversations and observations in real-time, proved to be a powerful method when used to document interviews. As one of the researchers noted, 'I had to think about what they were saying [in interviews] and pick the best pictures'. This approach not only captured information but also engaged the researcher's artistic practices. The value of this visual scribing extended beyond the moment of data collection. As Higginson noted, 'we went back over the scribing – we went back visually to remember'. This use of visual materials to prompt reflection and discussion aligns with the photo-elicitation techniques described by Harper (2002) in visual sociology. It was particularly interesting in a postdigital context as both virtual and in-person interviews were conceptualised and documented on paper through images.



Visual mapping techniques were also used to capture and represent relationships between different organisations and ideas, including personal and organisational histories. Again, this included turning the digital into the non-digital through the creative process, using data often gathered through virtual interviews. This aligns with the concept of 'cognitive mapping', discussed by Wheeldon and Faubert (2009) as a means of representing qualitative data in the form of maps. The mapping process helped the researchers to make abstract relationships more concrete and visually accessible. This also followed Engman, Ennser-Kananen and Cushing-Leubner's (2023) approach to mapping as being the use of visual representation instead of text to make meaning where they turned conversations and communication into maps and saw connections that may otherwise be overlooked. The mapping process helped the research team to visualise relationships between different organisations and to identify patterns and themes in their findings, which could be discussed through in-person research meetings.

To understand the context of the development of these tools, the relationship between inclusive arts practice and institutional contexts requires consideration, as art practices and institutions can themselves perpetuate exclusionary dynamics. The research team addressed these exclusionary practices through adopting the selected documentation methods and hybrid approaches that bridged digital and physical spaces. The postdigital context, while presenting challenges related to the 'digital divide' (Braverman 2016), also offered opportunities to reimagine how art practices could operate across different spaces.

#### In the Field

The selection criteria for organisations to include in the research were those led by or working with learning-disabled or neurodiverse artists who engaged with arts practices. These organisations were identified through group discussions and researched online by researchers to draw up a shortlist of approximately 20 to approach. A mix of more established and newer organisations were included. Ethical and safeguarding issues were addressed and it was established that all interviews would be carried out by two researchers and include a member of staff employed by AIM and research participants would only be interviewed in a group setting, both virtually and in person. All research participants could withdraw consent at any time. All research participants and organisations were anonymised in the data to ensure that vulnerable participants were safeguarded.

The study began by researchers approaching six organisations local to Bristol with an emailed questionnaire and the three who responded were asked to participate in a virtual or in-person interview. Although as one researcher observed, this proved challenging as, 'we couldn't find many local groups. We were more unusual than we thought.' This early finding shaped the subsequent research direction and wider geographic diversity within the UK was sought through the same approach of sending a questionnaire to organisations identified by the group followed by a request for an interview. In person interviews involved researchers travelling to Manchester, Leeds, and Brighton. Interviews were



conducted either virtually or in-person depending on each organisation's preference and the geographical or financial constraints of travel. In each interview, the 'suitcase' of research methods was metaphorically carried with researchers. From this suitcase, appropriate research tools were selected for use in each context. The process of selecting appropriate tools for each context involved careful consideration of power dynamics within the research team. Rather than having assigned tools, researchers were encouraged to draw on their own artistic practices and experiences to determine which methods would work best in each situation. This approach helped to distribute decision-making power more evenly across the research team while ensuring that the methods used were accessible and meaningful to all involved.

### Interpretation

The absence of a formal findings section in this article reflects a deliberate methodological choice. While the research generated significant insights into the landscape of inclusive arts organisations in the UK, our primary focus here is on the methodological innovations developed through the project. The images produced through visual scribing of interviews and mapping processes were not analysed through the process of developing this article as its interest is in the research process itself. In addition, images could not be compared reliably as they were undertaken by different researchers in response to different interviews. To examine the research process, reflective practice was integrated throughout the research process, drawing on Schön's (1983) concepts of both reflection-inaction and reflection-on-action, to ensure that researchers continually reflected on their experiences and observations throughout the research process. The team engaged in regular group meetings and post-interview reflections, leading to an ongoing refinement of research questions and methods. This reflective process created some challenges due to the group's weekly meeting schedule as it was sometimes difficult for researchers to recall specific details after such a long break. However, the visual materials produced through scribing and mapping helped to prompt memories and facilitate discussion.

To collect data to understand the process of the project, I held discussions with researchers during the project and group interviews were conducted afterwards. This ensured that views about the development and progress of the project were captured, using Schön's (1983) concept of reflection as a guide. To ensure consistency and reliability in our interpretation process, we developed several interconnected strategies. Researchers regularly shared their interpretations with the broader team, allowing for cross-checking and discussion of emerging themes. Visual documentation proved particularly valuable in these discussions, as it provided concrete reference points that helped bridge potential communication gaps between team members with different communication preferences. Regular group reflection sessions helped develop shared understanding while acknowledging and valuing different interpretative perspectives.



#### Reflections

The focus of this article has been on addressing Higginson's (2024) question, 'Could a group of learning-disabled and neurodiverse artists conduct research together in a more accessible way?', and this was expanded to question how a research team of learning-disabled and neurodiverse artists and non-learning-disabled and non-neurodiverse artists could work together collaboratively using an arts-based approach. To do so, it has considered the process of the development and implementation of a research project, focusing on how artists can become citizen researchers within a postdigital context, informed by arts-based and participatory research. My following reflections were informed by group discussions and interviews conducted by me with the project's research team.

## **Hybrid Research Practices**

The project has identified that hybrid research, which involves both virtual and in person research methods, can be complex to conduct within citizen research. Assumptions were made in the planning process about how familiar individual researchers were with virtual platforms, such as Zoom, which highlighted the wider issues of the digital divide, including specific access needs and an unfamiliarity with engaging in virtual conversations. However, conducting some interviews virtually provided interesting opportunities for researchers to produce physical, paper-based visual scribing and mapping work in response to virtual conversations, irrespective of familiarity with the technology used. This both increased familiarity with digital technologies and produced hybrid forms of research output for analysis.

The translation of the virtual to the physical offered creative potential and connections and links were made. While the project made both in-person and virtual research visits to arts organisations, researchers reflected that in-person visits were particularly valuable. As Higginson (2024) explained: 'For this group, going and being physically there was important. Being there [in-person] gave us a sense of what it was like.' The in-person visits allowed the team to observe and experience the physical spaces in which other organisations worked to gain contextual information, pick up on non-verbal cues and atmospheres, and engage in more natural conversations as part of the interview process. As Higginson (2024) noted, 'we gained a lot of info from just being in a space. Even driving up to the place gave us information.' For example, he explained that whether an organisation was located in an art gallery, a council building, or a day centre, revealed information about how it had been established, its ethos, and the way it operated. This emphasis on embodied, contextual understanding aligns with phenomenological approaches to research as described by van Manen (2016). This preference for in-person research may have been influenced by the Covid-19 lockdowns and the expressed yearning by the research group to travel and meet other arts organisations and artists in person.

The concept of presence emerged as a crucial theme in this research, particularly in understanding how artists and organisations maintained meaningful connections during periods of physical separation. In a postdigital context, presence cannot be



reduced to simple physical or digital presence but must be understood as a complex interplay between different modes of being and creating together. This understanding of presence manifested in several ways throughout the research, such as in the development of research methods that allowed for interaction across digital and physical spaces. The visual scribing of virtual interviews, for example, created a form of material presence within digital conversations and the ways in which artists developed new forms of collaborative practice acknowledged both the possibilities and limitations of digital connectivity while maintaining the materiality of their artistic practice.

### **Positionality in Citizen Research**

The project was developed through a collaborative process, positioning it as a form of citizen practice-led arts-based research, informed by participatory research, where all researchers involved in the process were experts in their communities, important for citizen research in humanities contexts (Hayes 2021) and each held the position of researcher and artist as well as multiple and fluid identities of disabled and non-disabled. For research questions to be reached to address postdigital challenges, all researchers must engage as equals and recognise each other's positionalities (Hayes 2021). Through this approach to positionality, the project has expanded the concept of participatory research as its researchers working within AIM are positioned as experts in their field with professional identities in the arts, the subject that they are researching.

The project had a significant effect on the researchers involved. By taking on the role of researchers, artists reflected that they were able to develop new skills in research and communication, gained confidence in their ability to generate and share knowledge, and in the role of researcher and expanded their networks within the arts sector. These findings were grounded in multiple sources of evidence, including individual and group interviews with team members and documented instances of researchers taking on increasing leadership roles in the research process. This sense of personal development aligns with the goals of participatory action research as described by Reason and Bradbury (2008) where research questions emerge from the lived experiences and concerns of participants. In this project, the creative practice of the researchers was incorporated into the methodology, through the development of the metaphorical suitcase and the use of visual images and mapping as methods for data collection.

Through the project, we can reflect not only on the positionality of its researchers, following Hayes' (2021) notion of centring the human, but also Pallitt and Kramm's (2023) recognition that we can also broaden the understanding of positionality in postdigital research through reflecting on the relationship between humans and technologies. In this project, the encounter between human and technology was a creative one.

Although the benefits and disadvantages of using technology for interviews were considered by the researchers during the project, the transformation of virtual



meetings into visual images was not. The materiality of images was shared between researchers as data in group discussions shaped the development of the project.

#### **Creative Reflection**

In the project, a creative approach to reflection was used, involving reflecting on visual scribing and mapping within a group of fellow researchers. This drew on Schön's (1983) understanding of reflection and involved researchers continually reflecting on their experiences and observations throughout the research process. It was identified that this process of group reflection was particularly valuable for this group of learning-disabled, neurodiverse, non-learning disabled and non-neurodiverse researchers as each could share their own experiences to guide the research.

## Packing the 'Suitcase'

The metaphorical suitcase proved to be a valuable tool for making the research process tangible and engaging for the research team. Following Kara's (2015) 'bricolage' approach, it involved creatively combining a range of different methods, both digital and physical. These tools were accessible for this group of researchers as they built on elements of their individual art practices and drew on their own knowledge and skills. These were selected by individual researchers after the suitability of combinations of tools were assessed during group discussions.

However, the development of this suitcase did involve an introduction to research methods being delivered by a workshop that I led. Given additional time and resources, researchers could have developed more specific research methods but it was felt that the collaboration with a professional researcher would be of value in sharing initial knowledge about existing research methods at an early stage in the project. The process of developing the tools within the suitcase involved collaborative design activities (Goodyear et al. 2023) to enable the group to understand how they could best work together to address complex issues.

#### **Conclusions**

The research project, initiated by AIM in response to the isolating effects experienced by artists during the lockdowns of the Covid-19 pandemic, yielded significant insights into the landscape of inclusive arts organisations in the UK. The focus of this article has been to reflect on the experiences of the research team, the approach they took, and the tools they developed, rather than documenting the findings of the project. The article has focused on the question 'Could a group of learning-disabled and neurodiverse artists conduct research together in a more accessible way?', which was expanded to question how a research team of learning-disabled and neurodiverse artists and non-learning-disabled and non-neurodiverse artists could work together collaboratively using an arts-based approach. It recognises the importance of creating knowledge with people rather than about



people, aligning with AIM's approach where artists were active researchers but also drawing on the importance of postdigital positionality. This approach challenges traditional research paradigms by positioning community members, in this context those engaged in AIM's community of artists, not as subjects of study but as active participants in the research process who co-design research methods and tools, drawing on aspects of citizen science while following an arts-led approach rooted in a postdigital research context that connects to elements of participatory research practices. While acknowledging that all researchers hold multiple identities, such as those within a collective of learning disabled and neurodiverse and non-learning-disabled and non-neurodiverse artists, we can see how artistic practice created opportunities for exploring how the intersection of these multiple identities inform and enhance research processes. Rather than treating these identities as incidental to the research process, we positioned them as valuable sources of knowledge and insight that could inform both methodology and interpretation.

By reflecting on the project and its findings, I have recognised the value of broadening an approach to citizen research that draws on an understanding of citizen science in a postdigital context, a participatory approach and aspects of arts-based research to support an inclusive approach to research. The hybrid, inclusive nature of the postdigital (Jandrić et al. 2018, 2023a, b) supports the expansion of citizen science to encompass social science and humanities (Jopling and Albert 2024) and this article has taken this further to include an expanded participatory approach to research, in which participants hold multiple, and often fluid, identities and engage in creative, arts practice-led research methods.

By integrating artistic practice as a core research methodology rather than just as a subject of study, the research project demonstrated how creative practices can enhance research accessibility. The development of hybrid digital-physical research tools acknowledged both the researcher's arts practice and the need for flexible, accessible research methods specific to this group of researchers. Of particular significance as a research tool was the 'suitcase', which served to effectively organise hybrid research tools, allowing researchers to select methods matching their abilities, interests, and contexts. The project identified that postdigital research methods can bridge digital-physical divides through creative practices, for example transforming virtual interviews into physical research outputs. In addition, in-person research visits proved particularly valuable after the isolation of the Covid-19 lockdowns, offering contextual understanding beyond virtual interactions. This research demonstrates how arts-based citizen research methods can democratise knowledge creation while bridging digital and physical realms, offering an innovative model for inclusive, accessible research practices that challenges traditional academic paradigms while supporting individuals working within contemporary arts communities to conduct research.

This article has demonstrated how reimagining citizen research through an arts-based, postdigital lens can create more inclusive and effective research methodologies. The integration of artistic practice with research methods, the development of hybrid tools that bridge digital and physical spaces, and the recognition of researchers' multiple identities all contributed to this reimagining.



**Acknowledgements** UKRI funding for the project was provided by the Research England Quality Research Funding (HEQR) 2024/25 allocation to Bath Spa University.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <a href="http://creativecommons.org/licenses/by/4.0/">http://creativecommons.org/licenses/by/4.0/</a>.

### References

- Bagnoli, A. (2009). Beyond the standard interview: The use of graphic elicitation and arts-based methods. *Qualitative Research*, 9(5), 547–570. https://doi.org/10.1177/1468794109343625.
- Barone, T., & Eisner, E.W. (2011). Arts Based Research. London: SAGE Publications.
- Berry, D., & Dieter, M. (2015). Postdigital Aesthetics: Art, Computation and Design. London: Pal-grave Macmillan. https://doi.org/10.1057/9781137437204.
- Bishop, R., Gansing, K., Parikka, J., & Wilk, E. (Eds.). (2017). across and beyond: A transmediale Reader on Post-digital Practices, Concepts, and Institutions. Berlin: Sternberg Press.
- Booth, T., & Booth, W. (1996). Sounds of silence: Narrative research with inarticulate subjects. *Disability & Society*, 11(1), 55–69. https://doi.org/10.1080/09687599650023326.
- Braverman, B. (2016). The digital divide. Literacy Today, 33(4), 16-20.
- Collier, D., & Perry, M. (2023). Imagining research together and working across divides: Arts-informed research about young people's (post) digital lives. *Qualitative Research*, 23(1), 72–91. https://doi.org/10.1177/14687941211010.
- Cornwall, A., & Jewkes, R. (1995). What is participatory research? *Social Science & Medicine*, 41(12), 1667–1676. https://doi.org/10.1016/0277-9536(95)00127-S.
- Eisner, E. W. (2004). The Arts and the Creation of Mind. New Haven, CT: Yale University Press.
- Engman, M. M., Ennser-Kananen, J., & Cushing-Leubner, J. (2023). Mapping (Metaphorical) Journeys in and Against the Academy. In P. Jandrić, A. MacKenzie, & J. Knox (Eds.), Constructing Postdigital Research. Method and Emancipation (pp. 39–61). Cham: Springer. https://doi.org/10.1007/978-3-031-35411-3 3.
- Fals-Borda, O., & Rahman, M. A. (1991). Action and knowledge: Breaking the monopoly with participatory action research. New York/ London: Apex Press.
- Fox, A., & Macpherson, H. (2015). *Inclusive arts practice and research: A critical manifesto*. London: Routledge. https://doi.org/10.4324/9781315732558.
- Goodyear, P., Markauskaite, L., Wrigley, C., Spence, N., Mosely, G., & Swist, T. (2023). Constructing Design Knowledge for Postdigital Science and Education. In P. Jandrić, A. MacKenzie, & J. Knox (Eds.), Constructing Postdigital Research: Method and Emancipation (pp. 65–83). Cham: Springer. https://doi.org/10.1007/978-3-031-35411-3\_4.
- Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies, 17*(1), 13–26. https://doi.org/10.1080/14725860220137345.
- Hayes, S. (2021). Postdigital Positionality: developing powerful inclusive narratives for learning, teaching, research and policy in higher education. Leiden: Brill.
- Hayes, S., Connor, S., Johnson, M., & Jopling, M. (Eds.). (2023). Human Data Interaction, Disadvantage and Skills in the Community: Enabling Cross-Sector Environments for Postdigital Inclusion. Cham: Springer. https://doi.org/10.1007/978-3-031-31875-7.
- Heinisch, B., Oswald, K., Weißpflug, M., Shuttleworth, S., & Belknap, G. (2021). Citizen humanities. In K. Vohland, A. Land-Zandstra, L. Ceccaroni, R. Lemmens, J. Perelló, M. Ponti, R. Samson, & K. Wagenknecht (Eds.), *The Science of Citizen Science* (pp. 97–118). Cham: Springer. https://doi.org/10.1007/978-3-030-58278-4\_6.
- Higginson, C. (2024). Interview with Amy Spencer. Bristol.



- Jandrić, P., Bozkurt, A., McKee, M., Hayes, S. (2021). Teaching in the Age of Covid-19 A Longitudinal Study. *Postdigital Science and Education*, 3(3), 743–770. https://doi.org/10.1007/s42438-021-00252-6.
- Jandrić, P., Knox, J., Besley, T., Ryberg, T., Suoranta, J., & Hayes, S. (2018). Postdigital Science and Education. Educational Philosophy and Theory, 50(10), 893–899. https://doi.org/10.1080/00131 857.2018.1454000.
- Jandrić, P., Tolbert, S., Hayes, S., & Jopling, M. (2023a). Postdigital Citizen Science: Mapping the Field. Postdigital Science and Education. https://doi.org/10.1007/s42438-023-00443-3.
- Jandrić, P., MacKenzie, A., & Knox, J. (Eds.). (2023b). Constructing Postdigital Research: Method and Emancipation. Cham: Springer. https://doi.org/10.1007/978-3-031-35411-3.
- Jandrić, P., Ryberg, T., Knox, J., Lacković, N., Hayes, S., Suoranta, J., Smith, M., Steketee, A., Peters, M. A., McLaren, P., Ford, D. R., Asher, G., McGregor, C., Stewart, G., Williamson, B., & Gibbons, A. (2019). Postdigital Dialogue. *Postdigital Science and Education*, 1(1), 163–189. https://doi.org/10.1007/s42438-018-0011-x.
- Jewitt, C., Price, S., & Xambo, S. A. (2017). Conceptualising and researching the body in digital contexts: towards new methodological conversations across the arts and social sciences. *Qualitative Research*, 17(1), 37–53. https://doi.org/10.1177/146879411665603.
- Jopling, M., & Albert, A. (2024). 'Doing it Together Science': Mobilising Citizen (Social) Science in Postdigital Contexts. Postdigital Science and Education. https://doi.org/10.1007/s42438-024-00525-w.
- Jopling, M., Stewart, G. T., Orchard, S., Suoranta, J., Tolbert, S., Cheilan, L., Yan, F., Price, C., Hayes, S., Scott, H., Latham, A., Bhatt, I., Dodonov, V., Matthews, A., Muhtaseb, R., MacKenzie, A., Owaineh, M., Earle, S., Simmons, B., Clarke, Z., la Velle, L., Green, B. J., Brown, C., Watermeyer, R., & Jandrić, P. (2024). Postdigital Citizen Science and Humanities: A Theoretical Kaleidoscope. *Postdigital Science and Education*. https://doi.org/10.1007/s42438-024-00481-5.
- Kara, H. (2015). Creative research methods in the social sciences: A practical guide. Bristol: Policy Press.
- Knowles, J. G., & Cole, A. L. (2012). Handbook of the Arts in Qualitative Research: Perspectives, Methodologies, Examples, and Issues. London: SAGE.
- Leavy, P. (2020). Method Meets Art: Arts-based Research Practice. New York: Guilford Publications.
- Nind, M. (2014). What is Inclusive Research? London: Bloomsbury Academic.
- Nind, M., & Vinha, H. (2013). Doing Research Inclusively: Bridges to Multiple Possibilities in Inclusive Research. *British Journal of Learning Disabilities*, 42(2), 102–109. https://doi.org/10.1111/bld. 12013.
- O'Donoghue, D. (2009). Are We Asking the Wrong Questions in Arts-Based Research? *Studies in Art Education*, 50(4), 352–368. https://doi.org/10.1080/00393541.2009.11518781.
- Pallitt, N., & Kramm, N. (2023): Beyond A 'Noticing Stance': Reflecting to Expand Postdigital Positionalities. In P. Jandrić, A. MacKenzie, & J. Knox (Eds.), Constructing Postdigital Research. Method and Emancipation (pp. 28–38). Cham: Springer. https://doi.org/10.1007/978-3-031-35411-3 2.
- Pepperell, R., & Punt, M. (2000). The Postdigital Membrane: Imagination, Technology and Desire. Bristol: Intellect.
- Pink, S. (2021). Doing Visual Ethnography. London: SAGE Publications.
- Reason, P., & Bradbury, H. (Eds.). (2008). The SAGE Handbook of Action Research: Participative Inquiry and Practice. London: SAGE Publications.
- Schön, D. A. (1983). The Reflective Practitioner: How Professionals Think in Action. New York: Basic Books.
- Smith, H., & Dean, R. T. (Eds.). (2009). *Practice-led Research, Research-led Practice in the Creative Arts.* Edinburgh: Edinburgh University Press.
- Tolbert, S., Olson, C., Haq, R. U., Evans, L., dos Santos, A. P. O., Alves Franco, A., Jager, I., Kovač, M., Orchard, S., Harris, S., Šrajer, F., Santos-Lang, C., Jandrić, P., Hayes, S., & Jopling, M. (2024). Citizen Scientists' on Citizen Science. *Postdigital Science and Education*. https://doi.org/10.1007/s42438-024-00494-0.
- Torres-Olave, B. M., & Lee, J. L. (2019). Shifting Positionalities Across International Locations: Embodied Knowledge, Time-Geography and the Polyvalence of Privilege. *Higher Education Quarterly*, 74(2), 115–217. https://doi.org/10.1111/hequ.12216.
- van Manen, M. (2016). Researching lived experience: Human science for an action sensitive pedagogy. Abingdon: Routledge. https://doi.org/10.4324/9781315421056.



- Vohland, K., Land-Zandstra, A., Ceccaroni, L., Lemmens, R., Perelló, J., Ponti, M., Samson, R., & Wagenknecht, K. (2021). The Science of Citizen Science. Cham: Springer. https://doi.org/10.1007/978-3-030-58278-4.
- Waugh, J. K., Lindsey, J. K., Stewart, M. Z., Winter, J. C., & Parrish, J. K. (2023). Demographics of Public Participation in Science: A Meta-Analytic Approach. Citizen Science: Theory and Practice, 8(1), 61. https://doi.org/10.5334/cstp.610.
- Wheeldon, J., & J., Faubert. (2009). Framing experience: Concept maps, mind maps, and data collection in qualitative research. *International Journal of Qualitative Methods*, 8(3), 68–83. https://doi.org/ 10.1177/160940690900800307.
- Williams, A. S., & Moore, S. M. (2011). Universal design of research: Inclusion of persons with disabilities in mainstream biomedical studies. *Science Translational Medicine*, *3*(82), 82cm12. https://doi.org/10.1126/scitranslmed.3002133.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

### **Authors and Affiliations**

## Amy Spencer<sup>1</sup>

- Amy Spencer a.spencer@bathspa.ac.uk
- Bath Spa University, Bath, UK

