Institution: The Glasgow School of Art

Unit of Assessment: 32 Art and Design; History, Practice and Theory

Title of case study: Using Participatory and Co-design Processes to Improve User Experiences for Health and Care Services across Scotland

Period when the underpinning research was undertaken: 2013 - 2020

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Gemma Teal	Research Fellow	2008 – present
Tara French	Research Fellow	2013 – present
Alastair Macdonald	Senior Researcher	1984 – present
Jay Bradley	Research Fellow	2015 – present
Sneha Raman	Research Fellow	2014 – present

Period when the claimed impact occurred: 2014 – 2020

Is this case study continued from a case study submitted in 2014? Yes

1. Summary of the impact (indicative maximum 100 words)

Participatory and co-design research carried out by the GSA team has enabled new ways to explore and understand complex health and care challenges, helping to innovate healthcare delivery. The research has created 3 new services supporting the Scottish Government's response to Covid-19, the methodology enabling a reduction in development time from 1 year to 6 weeks. It has helped to shape the successful implementation of SCOTCAP, a new ground-breaking technology to detect bowel cancer, in health boards across Scotland. Research has validated existing and created new evidence, underpinning decisions and interventions in Scotland, and has changed approaches to undergraduate teaching. Through Scotland's Digital Health & Care Innovation Centre, with GBP8,500,000 allocated funding, GSA research has transformed expectations about how health and care services could and should be designed.

2. Underpinning research (indicative maximum 500 words)

Creating effective and efficient health and care services, that meet the needs of current and future populations, has long been a significant challenge. Health and care services have historically been procured and/or designed by healthcare managers with a biomedical and technological driven approach to innovation and improvement. However, this often fails to effectively elicit the actual needs of healthcare recipients and staff. Similarly, behavioural, social and organisational factors are frequently the greatest barriers to successful innovation adoption in health and care, but these aspects are often de-emphasised in many traditional improvement initiatives. To address these challenges, building on Macdonald's earlier work (see REF2014, 'Design Research for Healthcare Service Delivery Improvement'), research at the Glasgow School of Art applies participatory and co-design research methodologies within challenging health and care settings, tailoring the approach to the people, context and topic involved, and enabling multi-party engagement.

The GSA approach uses participatory and co-design methods – including experience and system mapping, pop-up public engagement, co-design activities and tools, storyboarding and experience prototyping – to meaningfully involve people who use health and care services, carers and health and care professionals in understanding a particular challenge and collectively exploring future innovations, not just responding to current needs. The approach enables 'genuine' participation, including those not usually involved in innovating care – such as those with learning disabilities or marginalised groups – eliciting and visualising professional and lived experience to empower and support creative and conceptual decision-making. GSA's formulation of participatory and co-design processes advances research for health and care challenges by harnessing the experiences of patients, carers, health and care professionals and managers and involving them throughout the design process. By doing so, it reimagines and redesigns forms of care, considering social, behavioural and experiential dimensions in

conjunction with technological and clinical issues. The design-led approach is focused on: a) creating forums for co-design activities which neutralise traditional healthcare hierarchies and provide a level playing field; b) developing materials which everyone (regardless of their 'design' skill) can engage, and use to design, with; and c) 'bringing-into-being,' by iteratively prototyping, testing and refining innovations. As such, the research uncovers how to frame and create the 'spaces' for collaborative engagement, bringing together participants' experience to reimagine and co-design implementable solutions. [R1,2,3] Through this design-led, multi-perspective approach, GSA research has both supported the innovation of health and care services and enhanced processes for their scaling and successful adoption. This has been realised through a wide range of collaborative projects, working with patients, health and care professionals, carers and other stakeholders across the health and care system.

As one of the founding partners of Scotland's Digital Health & Care Innovation Centre (DHI), GSA has focused on understanding and improving health and care experiences. Research projects – including developing responses to Covid, the SCOTCAP service evaluation (a new NHS Scotland service for delivering video capsule endoscopy to replace or complement existing colonoscopy services), the Modern Outpatient Programme (developing a person-centred vision for the future of outpatient services), and using creative engagement approaches to map the frailty system of care within Midlothian Health and Care Partnership – have all employed different participatory and co-design tools to explore, develop and evaluate solutions. Such tools include: system mapping using bespoke printed and 3D materials to uncover ways of working and information flows, and to identify challenges, opportunities and recommendations; in-depth interviews and co-design workshops using mapping and visualisation to identify pinch points and reimagine the patient journey; and involving participants in collaborative sense-making and analysis, to synthesise and identify key issues, ideas and concepts. The participatory design approach within DHI underwent a gradual methodological shift, moving from a fixed/ structured approach to a more fluid/ open process, and translating tools and methods for online and remote engagement. These different combinations of tools – tailored and applied according to each specific project – have enabled genuine healthcare user and stakeholder involvement and participation, exploring problems and solutions in-depth, to ensure recommended innovations are workable and implementable. [R4,5]

GSA's work has also extended to addressing the growing concerns of antimicrobial resistance by raising awareness and perception of the risks of infection-related behaviours in human and animal health settings. The AMRSim project team tested the hypothesis that 'making visible the invisible' pathogens during veterinary surgical procedures would change practitioner perception of risk of contamination and infection. Adopting a co-design led process, the multi-disciplinary team explored different approaches to visualisation techniques to engage vet practitioners – including sketch annotation and interactive digital models – to build and test a prototype training intervention comprising a virtual interactive 3D digital model of the surgery. [R6]

3. References to the research (indicative maximum of six references)

R1. Brian Dixon and Tara French (2020), 'Processing the method: Linking Deweyan logic and design-in-research.' *Design Studies*, 70. Article 100962. [Journal article]
R2. Gemma Teal and Tara French (2020), 'Spaces for Participatory Design Innovation.' In: 16th Participatory Design Conference, 2020 - Participation(s) Otherwise, 15-19 June 2020, Manizales, Columbia. [Conference contribution]
R3. Sneha Raman and Tara French (2021), 'Enabling Genuine Participation in Co-design with Young People with Learning Disabilities,' *CoDesign.* ISSN 1571-0882. [Journal]
R4. Gemma Teal (2018), *A person-centred vision of care for people living with multiple long-term conditions for the modern outpatient programme: Final Report*, The Glasgow School of Art. [Research report]
R5. Jay Bradley, Megan Palmer-Abbs, Gabriele Rossi and Michelle Brogen (2020), *SCOTCAP Service Model Evaluation*, The Glasgow School of Art. [Research report]
R6. A. Macdonald, M. Chambers, R. La Ragione, K. Wyles, M. Poyade, A. Wales, N. Klepacz, T. Kupfer, F. Watson and S. Noble (2020), 'Addressing Infection Risk in Veterinary Practice through the Innovative Application of Interactive 3D Animation Methods.' *The Design Journal*, 24 (1), pp. 51-72. ISSN 1460-6925. [Journal article]

4. Details of the impact (indicative maximum 750 words)

Participatory and co-design research carried out by GSA researchers has created a novel way for complex health and care challenges to be explored. The research has created new services to support health and care responses – including for Covid-19 – and has supported health and care professionals to engage more effectively with stakeholders. It has validated existing and generated new evidence to underpin decisions and interventions. Specific tools have also influenced undergraduate teaching. Most significantly, through the co-founding of DHI, GSA research has transformed expectations about how health and care services are designed.

Supporting the development of new services and technologies for health and care
As part of a 2020 DHI project, GSA researchers collaborated with Public Health Scotland, NHS National Services Scotland, NHS Greater Glasgow & Clyde, NHS Lothian, Storm ID and Sitekit to co-design and develop ***3 new Covid-19 services*** vital in supporting the NHS Scotland response to the pandemic and helping local Health Boards and national agencies to identify and manage outbreaks. Services included: a National Notification Service that aggregates test results and sends them out to the public through text and email; Simple Tracing Tools, that allow positive test results to flow down to each Scottish Health Board, automatically creating index cases, and allowing them to be assigned to contact tracers; and a Clinical Assessment Tool, enabling front-line staff in NHS Greater Glasgow and Clyde to undertake structured assessment and examination of people presenting with Covid-19 symptoms.

The GSA team was instrumental in creating a simulation stage between concept design and live deployment of digital services and, by doing so, development time was reduced to a 6-week turnaround compared with nearly a year for NHS service development. Alongside this significant time saving, benefits of the tools include: relieving front-line NHS staff of the administrative burden of managing test results, enabling them to focus on higher impact health protection duties; equipping all 14 Scottish health boards with the digital means to capture contact tracing data; and, in Glasgow, undertaking over 3,000 patient assessments. DHI's Chief Technology Officer has said of the GSA contribution: 'The participatory design and group sense-making methods, converted for online collaboration, were crucial in binding together public health professionals to communally take managed risks in response to the crisis.' Kate Mark, Public Health Scotland, confirms the uniqueness and value of the approach: 'To the best of our knowledge, national public health services have not been co-designed by participants from across the health and technology professions [and] specifically, not in response to a national pandemic. Without the participatory design leadership from The Glasgow School of Art the services may not have been designed as quickly, may not have been satisfactory and could have cost more to design and develop. The Simple Tracing Tools service supported the easing of the first Scottish lockdown and informed the design of the national Test and Protect [content management system].' [S1]

GSA research has also supported the ***implementation of a video capsule endoscopy technology*** which replaces or complements existing colonoscopy services, through the SCOTCAP Service Evaluation (May 2019 to March 2020). Working alongside the universities of Aberdeen and Strathclyde, who carried out a clinical trial and patient evaluation, GSA used the results of their participatory design process to develop recommendations for successful delivery and national implementation. For the final stage of the project, SCOTCAP Adoption (June to August 2020), GSA created a blueprint for a scaled version of SCOTCAP to support a national service model. Initially piloted in NHS Highland, Grampian and Western Isles, SCOTCAP has since been launched in NHS Greater Glasgow and Clyde and NHS Lanarkshire in December 2020. Benefits of successful implementation include patients being diagnosed much closer to home through early and effective community screening, as well as allowing clinical resource to focus on the most urgent cases. Consultant General and Colorectal Surgeon & Director of Research Development & Innovation, NHS Highland has said: 'With Scottish Government's backing, we are now rolling out the colon capsule service … We can make it so accessible. I really believe that we can change the incidence of bowel cancer in Scotland.' GSA's collaborative approach has also been recognised by the Innovative Procurement Partnership Winner of 2019 Scottish Digital Health and Care Innovation Award and the 2020 Holyrood Connect Industry Collaboration Award. [S2]

Providing a lived-experience evidence base for health and care decision making and intervention development

In a collaborative project to improve social marketing interventions to encourage gay and bisexual men who have sex with men (GBMSM) to undertake **regular HIV testing**, GSA's approach ensured the existing international evidence-base was validated with local lived experience from intended intervention recipients, and added new evidence around the needs, preferences and key messages generated through their involvement in co-design. This resulted in a more informed, evidence-based design brief, commissioned by NHS Greater Glasgow and Clyde. Health Improvement Lead at the Sandyford Sexual Health Service has said that the GSA research was 'instrumental in designing, developing and delivering co-production design workshops with a broad cross section of GBMSM,' and that it helped to 'strengthen local knowledge of the social environment in which testing decisions are being made and to elicit community generated ideas of what the local population would connect with,' including 'critical insights into GBMSM's testing patterns, alongside how best to promote the availability of testing.' [S3]

Supporting health and care professionals to engage more effectively with stakeholders

GSA's research methodology supports health and care professionals to understand the challenges for service design and shape solutions in new ways. Examples include:

- Work with **Midlothian Health and Social Care Partnership (MHSCP)** to innovate frailty services (2019), leading citizen engagement and providing tools to build engagement capacity within MHSCP, such as producing visualisations of the 'circles of care' for people living with frailty and their carers. MHSCP is now using these tools to engage health and care staff and third sector partners to identify the unmet needs of citizens and to build services around those needs and aspirations across other service improvement and innovation work. Digital Programme Lead at MHSCP has said that prior to the work with GSA, they lacked the 'design vocabulary' to engage effectively with their stakeholders. The approaches they learned from GSA, 'are such a clear way of engaging staff in reflective conversations during shared sense making and, most importantly, the citizens who co-created them valued the experience and validated the result so they have real worth.' [S4]
- Following a successful exploration of the national Modern Outpatients journey, Scottish Government engaged GSA researchers in the **Scottish Access Collaborative**, a Scotland-wide programme tackling improvements and redesign of multiple patient pathways. GSA researchers worked with stakeholders to map ways of working and best practice across health boards in Scotland. Recommendations from the collaborative process have been implemented nationally in Scotland and applied to 14 clinical specialisms, leading to improvements in patient experience and outcomes. As Alan Hunter, NHS Scotland Director of Performance and Delivery, has highlighted: 'The process for high level mapping of specialties has been innovative and effective … We may have been able to deliver the Specialty Groups without DHI's partnership but I don't think we would have been able to do it so well or at the same pace.' [S5]
- GSA design researchers worked with **NHS Grampian** (2017/2018) to co-design care and emotional support around miscarriage, working with women who have experienced miscarriage, health professionals and third sector organisations. Feedback from health professionals highlighted the value of working with women with lived experience to develop new insights and practice and found that the resulting interventions created a better understanding of patient needs and a better continuity of care. Improvements in intervention design have been implemented in Grampian and in NHS Greater Glasgow & Clyde and are being considered for national adoption through the National Bereavement Care Pathway (https://www.nbcpscotland.org.uk/updates/march-2021-update/). [S6]
- GSA research has also supported **Scottish Care** to explore the future of care at home, involving the perspectives of care at home providers and staff, to ensure that exploration of the future and opportunities to innovate were informed by lived experience. Following the work, a social care provider took forward the speculative design future workforce roles developed through the co-design process to shape 4 new roles within their organisation. As Karen Hedge, National Director of Scottish Care highlights, 'Critically, it was because of [the design methodology] and collaborative approach, that the project led to the creation of new

job roles which whilst innovative, were grounded in reality and therefore implementable.' [S7] In addition, Scottish Care is hosting a one-year secondment for a GSA researcher (Dr Tara French) to embed the way of working into their service development.

Influencing the design of undergraduate Veterinary Science teaching

GSA's contribution to the AMRSim project has led to changes in the delivery of veterinary science teaching at the University of Surrey, through the incorporation of a 3D teaching intervention. Staff and students have benefitted from the collaboration. For staff in the Faculty of Health and Medical Sciences, 'Working in this way provided a fresh perspective and appreciation of infection risk and helped motivate changes in the behaviour of veterinary staff needed to reduce such risk.' Staff have also been able to use the tool as part of the online learning offer, so vital during the pandemic when students did not have access to a clinical setting. Feedback from students has been very positive, describing the tool as 'enjoyable' (100% of feedback) and 'engaging' (97%). 82.5% of participants reported a change in attitude towards asepsis and its role in antimicrobial resistance. The percentage of participants who felt 'very or extremely informed' about infection prevention control increased from 26% before the use of the teaching intervention to 79% after their engagement with the learning tool. Participants also agreed that they would be more likely to adhere to infection prevention control measures in clinical placements due to their learning. [S8]

Creating a new Digital Health & Care Innovation Centre

As part of a partnership (now with the University of Strathclyde), GSA was the first independent art school to receive funding to establish an innovation centre in digital health and care, marking a transformation in expectations of where health and care innovation should and could be delivered. DHI is part of Scottish Funding Council's Innovation Centre Programme, which aims 'to enhance innovation and entrepreneurship across Scotland's key economic sectors, create jobs and grow the economy.' The award was made on the basis of GSA's participatory and co-design research track record, demonstrating confidence in GSA's ability to create impact in this sector. Since the original award in 2013, first renewed in 2017 and then renewed and expanded to include funding from Scottish Government in 2019, GSA's contributions to DHI innovation projects have been awarded GBP8,500,000 (income in REF period GBP5,500,00) supporting 12 new posts. DHI's Chief Technology Officer has said, 'The GSA provide invaluable expertise in generating insight, helping teams to move beyond the more obvious technical factors and into the underlying, common innovation requirements necessary for whole system change.' [S1] GSA staff have been involved in a range of DHI projects – involving 3,000 citizens, 1,000 health and care professionals and 75 partners – helping DHI to build reputation and attract further funding. This activity includes a joint project with the NHS to procure data sharing infrastructure, specifications for which drew directly on the GSA design innovation. Contracts worth GBP2,500,000 have been commissioned for this infrastructure, which is now being used by 11 of the 14 Scottish Health Boards across 5 separate services: contact tracing, self-service contact tracing, test result communication, COPD remote monitoring and dermatology asynchronous clinics. [S9]

5. Sources to corroborate the impact (indicative maximum of 10 references)

S1. Evidence of Covid-19 services: testimonials from DHI and Public Health Scotland
S2. SCOTCAP evaluation and implementation pack and evidence of awards
S3. Testimonial from NHSGGC on social media campaign for HIV testing
S4. Testimonial from Midlothian Health and Social Care Digital Programme Lead
S5. Testimonial from Scottish Access Collaborative: NHS Scotland Director of Performance and Delivery
S6. NHS Grampian miscarriage project – testimonial and NBCP blog https://www.nbcpscotland.org.uk/updates/march-2021-update/
S7. Testimonial from Scottish Care National Director
S8. Testimonial from the University of Surrey: Faculty of Health and Medical Sciences
S9. Evidence on DHI and GSA research, including proposal, award, and funding.