

Title	Design probes in a pandemic: Two tales of hybrid radical placemaking from Ireland and Australia
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Publication date	2022
Original Citation	Slingerland, G., Gonsalves, K. and Murray, M. (2022) 'Design probes in a pandemic: Two tales of hybrid radical placemaking from Ireland and Australia', OzCHI 2022, Canberra, Australia, 29 November - 2 December.
Type of publication	Conference item
Link to publisher's version	http://www.ozchi.org/2022/
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Download date	2025-08-22 23:35:36
Item downloaded from	https://hdl.handle.net/10468/14030



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Design Probes in a Pandemic: Two Tales of Hybrid Radical Placemaking from Ireland and Australia

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Design probes, an essential research tool during the COVID-19 pandemic, are ancillary "personal" data gathering tools that enable researchers to enter the private world of research participants. This paper compares two case studies of design probes used during the pandemic for radical placemaking in hybrid digital-physical environments: Digital Art Summer School in Northrock, Ireland, with eleven participants, and Chatty Bench Project in Brisbane, Australia, with sixteen participants. The paper further expands on the design methodology of the probes and their deployment during the online radical placemaking projects. From the participant responses to the probes' activities and interviews, both studies demonstrated that the probes fostered placemaking in digital environments during the pandemic. The paper concludes with three lessons on the potential of probes as a critical research instrument to enable creativity, build social capital and create bonds between people and places during uncertain and turbulent times.

CCS Concepts: • **Human-centered computing** → **Participatory design**.

Additional Key Words and Phrases: Radical placemaking, design probes, participatory design, communities, COVID-19 pandemic, hybrid places

ACM Reference Format:

Geertje Slingerland, Kavita Gonsalves, and Maria Murray. 2022. Design Probes in a Pandemic: Two Tales of Hybrid Radical Placemaking from Ireland and Australia. In . ACM, New York, NY, USA, 34 pages. <https://doi.org/xxxxxxx>

1 INTRODUCTION

The physical environment plays a key role in human well-being as it holds meaning in the memories and experiences of humans. The meaning-making of places, i.e. placemaking, is often used as an approach by institutions and communities to enhance citizens' relationship with their living environment [32, 51]. Conventional placemaking practices involve a physical intervention in place, such as the design of parks or a street festival [66]. With an emphasis on local and/or marginalised communities engaging in the social production of place [45, 46], radical placemaking is offered as a new paradigm of placemaking [12]. For those without access to physical interventions, particularly the marginalised, radical placemaking evolves into an extension of digital placemaking, i.e. the use of digital infrastructure [25], where social-justice narratives are embedded into creative digital experiences [32]. The core value of radical placemaking is that it is the local community that creates the place-based intervention with the support of facilitators [33]. It adopts a

*Geertje Slingerland & Kavita Gonsalves: Paper Conceptualisation, Paper Methodology, Data collection (Slingerland: Northrock project; Gonsalves: Brisbane project), Analysis (Slingerland: Northrock project & comparative analysis of probes; Gonsalves: Brisbane project & comparative analysis of probes), Writing, Visualisation, Reviewing, Editing & Review Response. Maria Murray: Data collection (Northrock project), Analysis (Northrock project), Writing, Reviewing & Editing

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Manuscript submitted to ACM

democratic and participatory ethos to ensure that participants are co-creators in the design process to impact their sense of "right to the city", their creative agency and experience of belonging in a community [41, 48].

In order to build trust and connection within communities, participatory design and placemaking methods and activities typically rely on face-to-face workshop settings. However, the COVID-19 pandemic has spurred the research community to conduct such inquiries online. Current studies (e.g. [35, 62]) have just started to understand the dynamics of doing participatory placemaking online and what kind of design materials best suit such settings [61]. Particularly during the pandemic, researchers used digital and analogue tools such as Zoom (teleconferencing platform), Google Classroom (online learning platform), and design probes. Little is known about the use of design probes for placemaking, particularly when public places became inaccessible, as seen during the pandemic and placemaking activities moved into digital places of online discussion forums and chat rooms.

In response to this gap and the OzCHI 2022's theme *Connected Creativity*, this paper reports on using probes in two radical placemaking projects that took place in hybrid digital-physical settings during COVID-19 restrictions. It specifically considers the inter-dependencies and interactions between **probes**, **places**, and **people** in supporting participation, creativity and social connection in hybrid digital-physical placemaking settings in a crisis, as demonstrated during the pandemic. The paper poses the research question: *How can design probes assist the radical placemaking process during a global crisis such as the COVID-19 pandemic?* Through a comparative case study [91], this paper identifies the role of probes in supporting radical placemaking, describes the participatory design ethos of the probes, evaluates participants' experiences, motivations and responses to the design probes, and expands the discourse on the use of design probes in distributed settings, particularly during times of crisis.

This article starts with a review of the literature on design probes, (radical) placemaking in hybrid settings and the significance of people's participation in placemaking. This is followed by an analysis of the two placemaking case studies presented in Section 3. The first case study is a digital socially engaged art summer school in Ireland (Northrock)¹, in which teenagers designed digital artworks during six design workshops exploring their lived experiences of their local community with a view toward imagining alternative futures. The second case is the Chatty Bench project in Australia (Brisbane), where community members joined design workshops to create geolocative digital stories. The paper ends with three lessons learnt for designing probes in crisis.

2 LITERATURE REVIEW

This section reviews the three key components: probes, places, and people. The **Probes** section expands on the tangible and digital materials that have been used by researchers in research activities during the COVID-19 pandemic. The **Places** section provides the context for designing and using the probes for radical placemaking activities. The **People** component relates to the intention of the design probes to have an impact beyond placemaking.

2.1 Probes in Design

Probes are key instruments that enable non-designers to participate in design research processes [20, 79]. They are used as self-reporting documentation tools to capture the research participants' everyday lives, needs and dreams. They take the form of tangible artefacts such as diaries, cameras, worksheets and supporting materials such as pens and are typically deployed for private settings of the research participant and in contexts where participant observations are not possible [49]. This allows for the richness of data where the probe can draw out a wide variety of information

¹Northrock is a fictive name, used for the purpose of anonymity, of an Irish community.

and expression of the participants utilising and experiencing the probe with little intrusion from the researcher [55]. Further, probes are known to benefit research participants in terms of mutual learning and reflection [70].

2.1.1 Using probes in design. The purpose of the probes has changed with various design paradigms. The first known documentation of probes, called cultural probes, was utilised to collect ambiguous and open-ended responses to inspire the design or research team in a particular problem [30]. In the user-centred design paradigm, now termed as ‘design probes’, they are used to include the user as a researcher in conceptual and design development stages [54]. In empathetic design, probes are used to gather experiential data in order for research teams to develop design empathy: to ‘walk in the shoes’ of the users in terms of the use and experience of design artefacts [56]. Both user-centred design and empathy design limit the user’s role in design as well as the ability of the designer/researcher to completely understand the user’s experiences [6, 72]. Participatory design shifts from designing for users to designing **with** ‘participants’ through sharing design control and expertise towards technological change [26]. Thus, probes can gain insights into their daily lives and enable equitable participation in the design process. In the case of radical placemaking, the application of probes shifts from being a means to support researchers in (co)designing solutions, to supporting participants in creating their own expressions of their specific issues.

2.1.2 Probes during other crises and now, COVID-19. Probes present opportunities to capture the user’s tacit knowledge and expertise while augmenting other data sources emerging from research activities [43, 72]. They have also been used to connect those separated by distance, such as children and grandparents, in play and connection [85]. However, COVID-19 brought new challenges to conducting research in a worldwide crisis: it spurred researchers to use a number of digital tools and cultural probes to support research and design at a distance [27, 60]. Probes became a key research tool during the pandemic as they can be used in a distributed context and provide participants with the flexibility to engage in research in their own time [50]. Researchers, thus, utilised probes in novel ways: they combined distributed, online, and in-person settings to suit their research needs. They also served as a counter to Zoom fatigue, a result of overuse of Zoom or online teleconferencing calls during the pandemic for work, entertainment, and social connection [89]. While the usefulness of probes for research was keenly felt during the pandemic, little is known about their design and use for online, distributed, or hybrid circumstances. Thus, this paper explores how design probes can be configured in hybrid contexts for placemaking in crisis.

2.2 Places and placemaking

The cases in this paper use probes in and during design and digital art workshops in the context of hybrid placemaking. Placemaking is about how people connect to places using their different senses to create memories or experiences that evolve into meaning for the space [15, 83]. Harrison and Tatar [40] theorise the construction of place to aid designers to create technologies that support placemaking: placemaking is constructed through value, attached meanings, viewpoints, and human activity [15, 40, 64]. Hence, places result of a complex process of multiple actors and practices [19].

2.2.1 Physical and virtual spaces in hybrid placemaking. Public spaces, as third places of connection away from places of home and work, are natural environments for placemaking to happen [63]. While traditional placemaking approaches often focus on the physical space, technology enables new opportunities in the placemaking of third places online [82], and new ways for people to appropriate the world around them [40]. When people meet and connect online in virtual environments, the digital spaces of online discussion forums provide an opportunity for engagement, connection and meaning, turning these spaces into hybrid spaces [39]. The importance of engaging residents in placemaking has only

grown since digital technology entered the placemaking arena. Digital placemaking utilises digital technology and infrastructure, such as social media and public WiFi, to create hybrid places [9, 25]. Examples include the pervasive game Pokémon Go [84] which augments physical space with virtual elements via a smartphone, Discussions in Space [76] where public displays engage communities on civic issues, and Matsuda's *everything everytime* [53] artwork which takes city data and converts it into poetry for split dot displays. The COVID-19 pandemic realised the criticality of digital environments as places for people to engage in when access to physical spaces is limited. Thus, it called for new ways of imagining placemaking processes considering questions around how people connect in these novel environments, where the power and agency lie in these connections, who has access to the digital, and who may be excluded in digital spaces [42, 59].

2.2.2 Moving towards radical placemaking. The term 'radical' emerges from Freire's critical pedagogy [28], which focuses on empowering communities to identify and articulate their own social justice issues to effect social change. This involves the repositioning of researchers and participants as equal partners in HCI design and research processes. This paper offers two ways to conceptualise radical placemaking: a) local communities co-design socially-conscious placemaking interventions in collaboration with experts in democratic processes [12] and with a focus on developing local agency and capacity in determining the future of a community, and b) where those who are marginalised with little access to physical interventions utilise digital technologies to creatively appropriate public place as an act of social justice activism [32]. Intersectional marginalisation [18], which is the confluence of discriminatory factors of age, gender, race, ability and sex, is considered a lens to understand the positionality of the community. Both pathways offer the radical placemaking participants the possibilities of immersing in Freirian critical consciousness through critical reflection and action on local social issues [28]. Further, it is a radical departure from conventional placemaking processes as the non-expert leads the place-based intervention. Thus, radical placemaking interventions must consider tools and technologies that enable the non-expert and (often marginalised) communities to engage in equitable and transformative ways. In the two radical placemaking cases of the paper, digital and tangible design probes were used as a facilitating tool to support inclusive and community-driven placemaking, which is expanded in the next section.

2.3 Impacting people's lives through placemaking

The design of the Indian post-colonial city Chandigarh by renowned architect Corbusier presents a dichotomy: a) a city envisioned in concrete with its institutional buildings making coffee book tables even today, and b) a city where roads designed for cars are left wide and empty when in reality most of India's middle class are on foot and bicycles. While Corbusier's accomplishments of Chandigarh are not to be ignored, his city design had little regard for local Chandigarh's culture or context [52]. If a city is not built for its people, who are the city's imaginings and futures for then? The 1970s began to answer this question by shifting away from the notorious 'designer as the expert' paradigm seen in urban design, architecture and other design fields. It moved towards the participatory mindset where those impacted by the eventual design would have a say in it [74].

2.3.1 Relation between placemaking and participation. From the 1990's, the definition of placemaking started to include human-scale [31], bottom-up initiatives [15], community participation [7, 29], and the value of democracy [83]. Designers realised that in order for places to have meaning for communities, the resident must be included in defining the placemaking brief [44]. Research recognises that through participation, citizens establish a sense of place [15, 16] and thus, there is a growing interest in participatory planning and placemaking approaches [7, 15, 44]. The underlying assumption of placemaking is now that resident communities have the right and capacity to participate in

placemaking [7, 44]. However, resident participation is often neglected in placemaking [15], its significance is debated [44] and contested by the increased use of technology in participation [1]. Set within this context, digital and paper probes are considered in placemaking efforts to enable residents to create alternative urban imaginations of cities [21] in turbulent times.

2.3.2 Redefining the expert in design. The user as the expert, i.e. resident communities in this paper, in the design process is known to bring rewards such as tacit knowledge to the process, user ownership of the process and outcome, participant increase in self-confidence, self-reliance and development of social networks [13, 36, 75, 78, 81]. Further, participation in placemaking contributes to well-being through an increased sense of agency, belonging, and connection to community, and an ability to imagine and advocate for creative urban futures [22, 69]. A sense of belonging enables citizens to address their needs through democratic participation, collaboration and increased respect for diverse views [90]. In the two case studies of the paper, design probes were used as participatory research tools to enable bottom-up participation in placemaking during the pandemic. The next section dives deeper into the methodology of the case studies and how they were analysed to acquire insights into the probes, places, and people in the placemaking studies.

3 METHODOLOGY

The aim of this paper is to expand on how design probes assisted radical placemaking processes and their impact on participants' creativity and well-being during the pandemic. A comparative case study [91] is used to fulfil this aim to derive learnings on how design probes can be adopted in times of crisis. This method involves the analysis of similarities, differences and patterns of two or more cases that share commonalities or goals [34]. Two radical placemaking case studies are selected based on their application of tangible and digital probes in design and digital art workshops during the COVID-19 pandemic (see Table 1): the Northrock digital probe of the Digital Arts Summer School (Ireland), and the Brisbane paper probe of Chatty Bench Project (Australia). Table 1 was created to support comparison between the cases: they differ in terms of the number of workshops, participant ages, and type of probes and software used throughout the workshops. What they share is the radical placemaking perspective: a) communities who are often excluded in placemaking processes (teenagers in Northrock and transient ethnoracial residents in Brisbane), and 2) the use of digital technologies to support local people in articulating their lived experiences with a view to critiquing social justice issues and imagining alternatives. The cases were first analysed separately, focusing on how the concepts of people, place, and probe worked together to engage in radical placemaking (or not). These results are then compared to identify further findings on using probes to support hybrid placemaking during a crisis. The next section provides a detailed description of the case studies, the design probes in each case, and data collection and analysis.

3.1 Northrock Probe

The Northrock study took the form of a two-week digital art summer school in which teenagers created digital artworks to express issues, concerns, and stories of their community. The summer school was originally intended to be delivered in a community resource centre, however, due to the COVID-19 pandemic, it was executed in a completely distributed fashion. Eleven teenagers participated from home and used a mobile phone, tablet, or computer to log into Zoom and take part in the online workshop sessions. Within two weeks, six workshops of 60-90 minute length were delivered where the teenagers learned about creating socially engaged digital art, worked on their individual artwork and discussed their ideas with peers and the summer school facilitators. The probes (see Fig 1) were used in the summer school to

Characteristics	Northrock probe	Brisbane probe
<i>Project name</i>	Digital Arts summer school	Chatty Bench Project
<i>Location</i>	Northrock, Europe	Upsidedown Town (KGUV), Brisbane, Australia
<i>Kinds of probes</i>	Online digital whiteboard (Miro) and digital making websites	Five sheets of A3 size paper
<i>Radical placemaking approach</i>	Local communities are engaged in social-justice driven placemaking activities [12]	Marginalised communities engage in creative digital placemaking [33]
<i>No. of participants</i>	11 participants: aged 11-17	16 participants: all over 18 years of age.
<i>Time-frame</i>	Two weeks in July-August 2020	June-October 2020
<i>Global event/Social Issue</i>	Local urbanisation issues, e.g. diversity and inclusiveness; and COVID-19 Pandemic	Social Isolation, COVID-19 Pandemic Physical Distancing Restrictions
<i>Purpose of workshops</i>	To develop a digital artwork based on the experience of living in Northrock	To develop low-tech place-based situated digital stories of KGUV.
<i>No. of workshops</i>	6 workshops	10 workshops
<i>Relationship between workshops and probes</i>	The digital summer school was conducted online via Zoom and digital probes were both used synchronously in workshops and asynchronously in homework exercises.	The workshops were conducted online using the online conferencing platform Zoom and the probes were hard copy paper which was asynchronous to the workshops.
<i>Deployment of probes</i>	The URL link of the Miro board and digital making websites to be used synchronously was shared during the Zoom calls with the participants. For asynchronous probes, participants received a personal URL to their Miro board.	The paper probes with instructions, stationary and a sketchbook were sent to the participants via the postal system. The five sheets were planned for the first five weeks of the project. Participants opened one sheet per week in the stated order.
<i>Goal of Probes</i>	The probes were designed to help participants articulate and critique their experiences of living in the Northrock community with a view to developing digital art to express the issues, concerns, and stories of their community and imagine alternative futures.	The probes were developed to supplement the 10-week workshops on developing place-based digital stories as situated alternative urban imaginations. It contained exercises to aid the development of the digital stories, reflect on places of meaning to them and space to journal on their experiences of the pandemic.

Table 1. Summarised overview of the two case studies

help participants articulate their experiences of the Northrock community, and translate these experiences into a digital artwork that communicates a particular message.

3.1.1 Northrock Community and Participants. 'Northrock'² is a rapidly expanding rural community in the South of Ireland. Such communities are often called 'rurban' [58]. The 2016 census of Ireland reported that the community expanded from 2,782 people in 2006 to 5,090 people in 2016 [11]. Residents expressed their experience of the quick urban transition by recalling a time when there were around 400 people in the community. In terms of deprivation indices, there is a high level of affluence in the newer suburban locations around the village, with more marginal and disadvantaged locations in the core of the village [77]. 31% of the community have attained an education standard of an Ordinary Bachelor Degree / National Diploma or above [77]. Local area studies show the community has a large percentage of migrants (23%) and the dominant ethnic or cultural group is white Irish at 67.7% [77] with about 40 languages being spoken in the area.

Community working groups identified a need for extra resources for teenagers and sustained efforts towards the inclusion of new community demographics, and thus, this study focused on teenagers living in Northrock. Fifteen teenagers initially signed up for the Summer School, eleven showed up during the first workshop and completed the full study. They were recruited by disseminating posters and flyers at key locations in the community and communicating with schools and youth organisations. Participants were aged between 11-17 years; five identified as female and as six as male. Seven of the eleven summer school participants were from the dominant white Irish demographic. There were 13 respondents to the anonymised pre-workshop questionnaire which sought to understand topics of social inclusion and identity. Two respondents reported that nothing made them feel included in the community while the remaining respondents relied on sports, the youth club, school and their friends to feel included. Six respondents felt they identified with Irish culture, while the remaining respondents connected with Russian, Chinese, a mix of undisclosed cultures or no culture. All teenagers and their adult guardians provided informed consent for participation in the summer school and data collection. The study has approval from the University Ethics Committee (file number 0206202006).

3.1.2 Approach. The summer school aimed to support Northrock teenagers in exploring and articulating the issues that come with fast growth and rapidly changing demographics. The Northrock probes were used to support placemaking by discussing issues and sharing stories about the local community. This was done with a view toward building participant agency in terms of imagining and communicating alternative futures through the creation and presentation of digital artworks. As the summer school took place under a strict lockdown situation in Ireland³, the workshops delivered moments of social contact and shared experiences that were limited at that time. Due to the distributed nature of the summer school, all probes were completely digital. A detailed explanation of the summer school setup, as well as a reflection on its distributed format, is provided in Slingerland et al. [80].

3.1.3 Design of Probes. The probes, designed by authors 1 and 3, were tailored towards teenagers with an interest in creating digital arts on local community issues. The probes aimed to help participants think critically, creatively, and explore and communicate different ideas. As such, sketchy, energetic designs and fonts were used, as well as a multitude of colours. The probes also contained a number of empty sticky notes, to stimulate participants in thinking beyond one idea to explore multiple options. Most probes were digitally created in Miro, the online collaborative whiteboard,⁴ and were either used during the design workshops with teenagers or suggested as a homework activity in between workshops. The supplementary materials contain an overview of the content of all probes. The probes supported three kinds of activities:

²The ethics approval includes that the Northrock community will remain anonymous in (academic) publications

³During the summer school, lockdown measures required the teenagers to stay at home, all social and sporting events were cancelled, and citizens were not allowed to travel beyond a 20km radius of their homes.

⁴see www.Miro.com

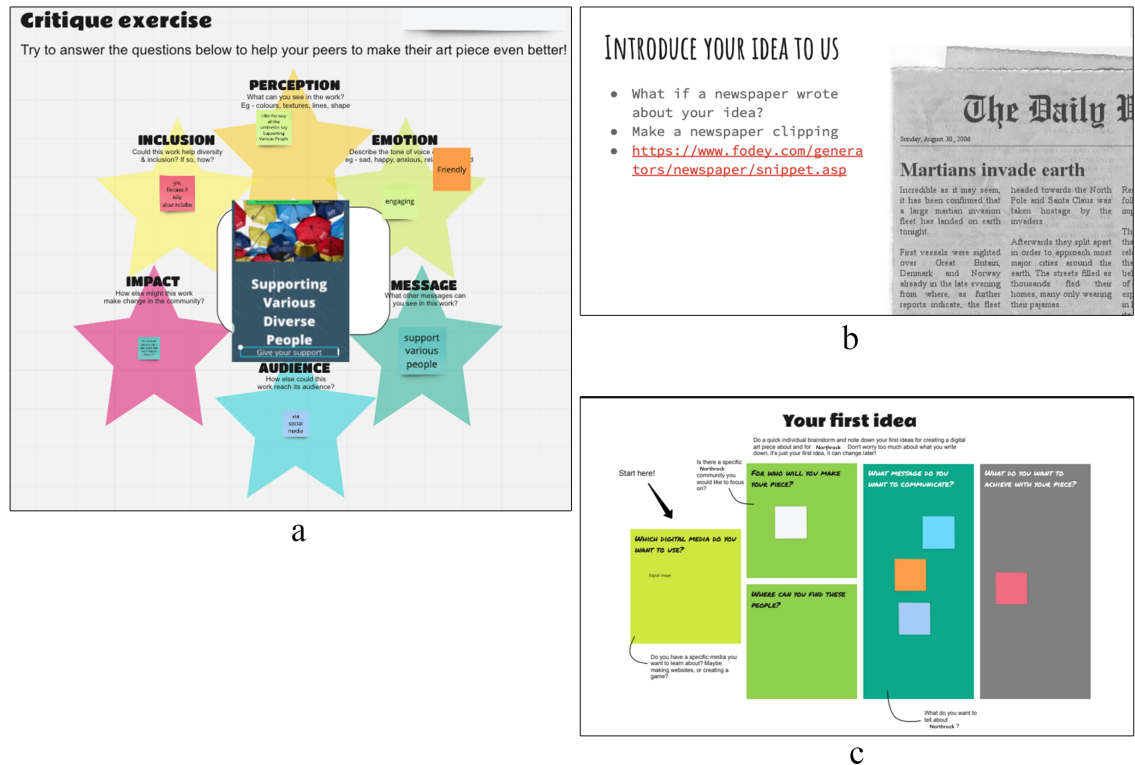


Fig. 1. Examples of probes supporting the three kinds of activities in the Northrock summer school (Slingerland and Murray 2020). An enlarged version is provided in supplementary materials.

- *Articulating experiences.* The starting point for participant artworks was their experiences in the Northrock community. The research team designed probes to help participants articulate and share these experiences in the group. Participants were invited to use a probe in breakout sessions in a smaller group. The Miro-based design probe included prompts to support sharing, reflecting, and articulating community experiences and important places in the community. Miro, further, allowed participants to collaborate on probes while not being in the same room and made probes accessible for the researchers. Some of the probes were used in a group setting, for example, to give feedback on each other's ideas (see Fig 1a).
- *Digital making.* To help participants translate their experience to the making of the digital artwork, the research team designed probes that included digital-making exercises. For example, teenagers were invited to create a simple artefact (such as a newspaper headline, see Fig 1b) that represents the message they want to convey. These activities supported teenagers to further articulate their message, and to think about visual ways to represent their idea. While the Miro exercises mainly required textual input, the digital probes were focused on visualising the teenagers' experiences of Northrock.
- *Reflection.* Following exercises to support articulation and visualisation of the teenagers' experiences, homework activities were designed for reflection. The research team designed individual Miro-based design probes to

support teenagers to continue working on their idea in-between workshops. Each individual board had homework exercises that would help teenagers further shape their ideas in the making of the digital artwork (see an example Fig 1c). Only the research team and the individual participant had access to these individual boards. It was optional for the participants to use these individual boards.

3.1.4 Radical character of probes. The Northrock probes were specifically tailored towards teenagers. Young people in the rapidly expanding rural community face a unique set of challenges around identity and inclusion as their built and social environment is evolving at a heightened pace. Previous work with this demographic indicated personal and political issues unique to this experience, often focusing on experiences of belonging and the configuration of public space. Teenagers do not typically have access to discussions or decision-making around the community's public spaces. For this reason, the design workshops and probes focused on the demographic of young people. The radical nature of the probes, as well as the design workshops, emphasises the voice of teenagers to articulate their lived experiences and personal local issues in the Northrock community with the intention of influencing social change. The probes also encouraged the teenagers to share their final digital artwork with the wider community-both in the virtual and public space. The next section now describes the Brisbane probe.

3.2 Brisbane Probe

The Brisbane probe, also known as the Chatty Bench Project probe, was developed for the participants of the Chatty Bench Project. Chatty Bench Project involved community members creating geolocative digital stories using Twine, the web-based textual game development tool, in Kelvin Grove Urban Village (KGUV), Brisbane, Australia as a radical placemaking tactic [33]. It was envisioned as a workshop to be done in the university computer labs. However, due to the COVID-19 pandemic, the project ran completely online from July-October 2020, with sixteen participants of diverse backgrounds using an online conferencing calls tool (Zoom), a virtual environment (Mozilla Hubs), a digital education tool (Google Classroom), and a digital collaboration tool (Slack) [32]. As it was not possible for the project's lead researcher to guide and observe the participants in the project during pandemic restrictions, the exercises in the A3 paper probes included concept mapping for Twine and selecting digital media for their stories, creative writing, and personal reflections. To support the use of the probes, tutorial videos were created where the lead researcher filled the probe as an example.

3.2.1 KGUV Community and Participants. KGUV, Brisbane, Australia, is a relatively new mixed-use development that includes residential, commercial, educational, and recreational uses built on an infill brownfield site in the early 2000s [87]. KGUV is a fairly ethnically diverse community, with approximately 50% of its residents being from overseas. Only 54.6% of KGUV residents spoke English at home, with other predominant languages being Mandarin, Arabic, and Cantonese. The median age of Kelvin Grove is 26 years: indicative of the student population residing there due to its proximity to the university [3]. Additionally, KGUV has affordable housing targeted at specific vulnerable groups such as people with disabilities, mental health issues and single parents. It makes for a transient and dynamic population experiencing education, social, and financial challenges. The local community organisation identified social isolation as a key problem in 2019 prior to the pandemic. As a response, Chatty Bench Project was formulated as a way for participants to build low-tech AR digital artefacts, learn new skills and build social capital to counter the growing isolation in the village. Participants learned low-tech immersive storytelling in this digital placemaking project where KGUV benches were nodes of the smartphone-based digital stories [32]. By 2020, social isolation became a part of

contemporary vocabulary thanks to the pandemic and social distancing measures which further stressed the need for projects such as Chatty Bench Project.

Twenty-eight persons expressed interest in the project via recruitment calls on social media and posters placed in key KGUV locations [32]. Participants in this study are called experience-designers as they engaged in creating a digital experience, and a detailed explanation of the study can be found in Gonsalves et al. [32]. Sixteen experience-designers joined the hybrid places of the project, used the probes and completed the project. They were over the age of 18 when the project was conducted. Four live in KGUV, six study there, and others have lived, studied, or visited KGUV. 62.5% of experience-designers are people of colour or non-white identities, while the rest have white Australian, European and North American descent or other white identities. 75% of experience-designers identified as female, 18.8% male and 6.3% non-binary. All participants provided informed consent for participation and data collection in Chatty Bench Project. The study was approved by the University Ethics Committee (file number 2000000374).

3.2.2 Approach. Chatty Bench Project is a case study of radical placemaking which involves participatory design approaches with the participants towards digital placemaking [33]. The probes (see Fig 2 and supplementary materials for a complete overview) were designed to support the wider goals of building the place-based digital stories of KGUV, as well as social isolation during COVID-19 pandemic restrictions and lockdown⁵. The project was planned for six weeks and then extended for another four weeks to accommodate participants creating the digital stories. The probes took the form of five A3 sheets to be filled for the first five weeks of the project. The participants received a package via postage with the A3 sheets in sealed envelopes with stationary, post-its and index cards. Weekly reminders to fill the sheets were sent via email, and video tutorials on filling the sheets were shared on Google Classroom with the participants.

3.2.3 Design of Probes. The probes' design focused on being approachable, fun and youthful in the choice of handwritten fonts and design of the probe. The probes were designed by the researcher (author 2) to cater to participants' different skills and interests where they could choose to engage with the probe through writing, drawing, mapping, sketching, and even collaging. The design of the probe had to cater to three aspects of the project:

- *Articulating Experiences.* As the project took place during a time of physical distancing as a requisite to deal with the pandemic, the project team wanted to provide a space for people to acknowledge how they were feeling during this time. In addition to this, it was a practice exercise to get participants comfortable with talking about themselves and their daily experiences with the intent of creating their geolocated digital Twine stories.
- *Reflection.* The project involved the participants developing stories of their memories of KGUV. To enable this, the exercises in this section had three intents: a) to have participants reflect and write on their life experiences and socio-cultural connections to KGUV (see Fig 2b), b) to explore the visual representation of those experiences in exercises such as 'Week 2. Draw your route from home to other places you go to most, for example, work, uni, a park etc,' and c) explore the potential of their reflections in the digital stories they were building through narrative exercises such as 'Creating a map of your story' which is based on re-authoring narrative practice [57].
- *Digital making.* The final goal of the probe was to familiarise the participants with the act of journaling and the place-based activities towards building their place-based digital stories of KGUV in Twine. This included

⁵During the project, Brisbane's COVID-19 pandemic restriction measures varied. For example, going to essential facilities (such as grocery shops) and non-essential activities (such as concerts and gyms) was permitted with a social distancing of 1.5 metres [68] with recommendations of wearing a surgical mask [71]. Lockdown measures involved that persons could not leave their house of residence except for essential needs such as work, food, medical and exercises and with varying outdoor gatherings restrictions [67]

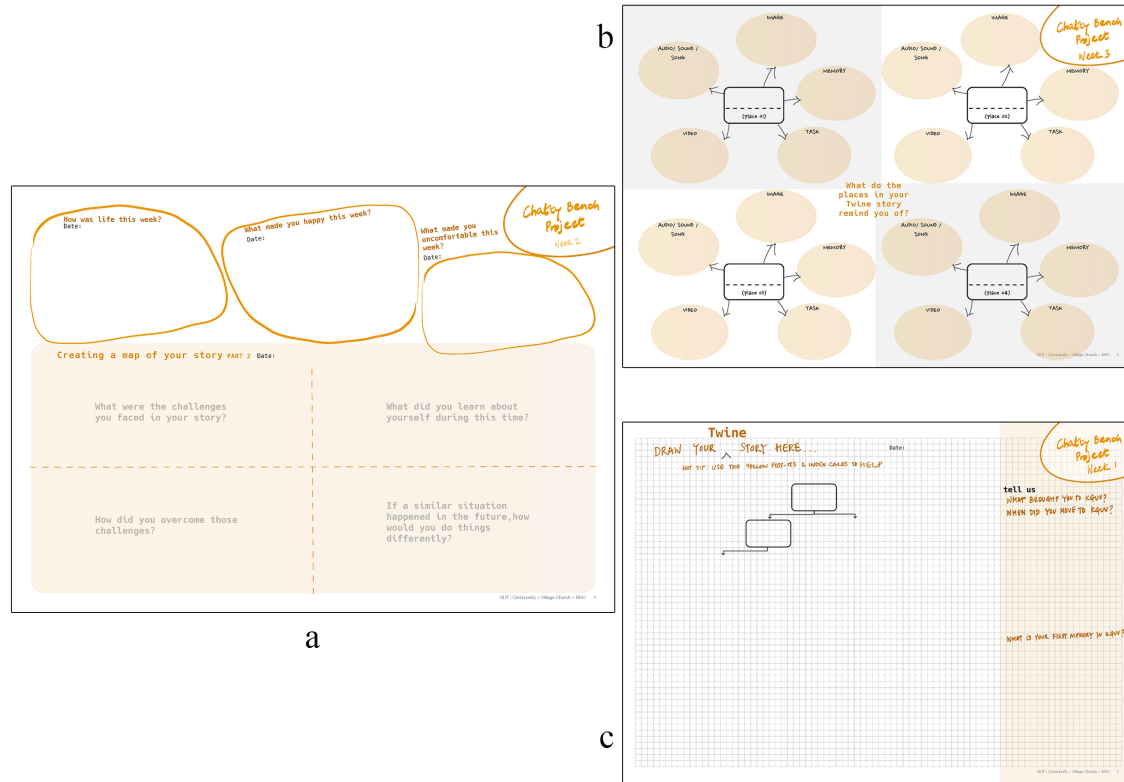


Fig. 2. Examples of probes supporting the three kinds of activities in the Chatty Bench Project (Gonsalves 2020). An enlarged version of probes is provided in the supplementary materials.

thinking about Twine's 'choose your adventure' structure and considering the digital media to be geolocated in KGUV.

3.2.4 Radical character of probes. The probes were used in Chatty Bench Project, tailored towards sixteen KGUV participants with intersections of identities: 62% of participants were affiliated with a university as an academic or student, 68% were of migrant backgrounds and 81% identified as female or non-binary gender. The participants represented an ethnically diverse and transient group with low social capital as they were predominantly new migrants and/or international students [32]. The pandemic impacted them through loss of jobs, inability to access financial support as international students did not qualify for government support, and loss of face-to-face community activities, which are entry points into the community. Thus, the participants were at risk of heightened social isolation with limited access to the local community. In times of the pandemic, radical placemaking demanded of the researcher that they consider how best to engage those who are not only marginalised but also now facing social isolation. Paper probes were considered a 'radical' tool for the study as it enabled them to consider the making of their digital stories about the place of KGUV, sparked reflection on social issues that affected them and encouraged thinking about their life experiences in the pandemic. In a time of restricted movement and personal loss, the probes provided the participants with 'acceptance' to discuss the good and the bad of KGUV in their lives through digital stories.

3.3 Data collection

Both studies collected data throughout the workshops to capture participants' experience using the probes and their engagement in radical placemaking.

3.3.1 Northrock Probe. Collected data included field notes of the summer school facilitators, audio recordings of summer school workshops, a pre-workshop and post-workshop questionnaire, and audio recordings of the three focus groups that took place after the summer school. Further, the Miro boards and all other digital artefacts that participants produced were collected, documented, and used for analysis.

3.3.2 Brisbane Probe. Chatty Bench Project had three phases: Phase A was the problem identification, Phase B was the Digital Workshops, and Phase C was the Post-evaluation. The project collected a range of audiovisual data, including video recordings of interviews, focus groups, digital artefacts and probes [33]. For the purposes of this study, the worksheets (probes) from Phase B and audio from the recorded interview with the seven experience-designers in Phase C were analysed. Data from the other activities provides context for the study.

3.4 Data analysis

Both Northrock and Brisbane probes contained a mix of textual and visual (drawings, sketches etc.) data. Audio from the recordings of both the summer school workshops and focus groups of the Northrock case study and the Brisbane case study were transcribed. In both studies, the probes underwent visual content analysis; themes in the combination of visual and textual data were identified [4]. Textual data from the transcribed audio recordings underwent thematic analysis; patterns or themes were identified in the data [8]. Two researchers were involved in this Northrock process (authors 1 and 3) and one in the Brisbane process (author 2). The thematic analysis focused on the interdependencies and interactions between probes, places and people towards radical placemaking. As a result, the following three main themes were identified:

- (1) Probes as dynamic *criticality* activators: This theme describes how participants in both cases experienced using the probes during the pandemic. It considers how the probes supported participants to articulate their experiences in the form of digital artwork or artefacts to disseminate within the wider community towards social change.
- (2) Probes as reflective *memory* provocateurs: This theme covers the extent to which the probes achieved placemaking, although the participants were mostly confined to their homes. The digital character of the probes is particularly considered in terms of supporting placemaking.
- (3) Probes as latent *social* amplifiers: This theme talks about the way the probe contributed to participants' well-being during the pandemic, for instance by fostering social connections during times of social distancing.

These themes are further elaborated on in the next section. Findings are presented in each theme across the two cases with patterns observed in the probe design and eventual use.

4 FINDINGS

The findings present the insights that were gathered through using the probes in the two case studies: Northrock Probe and Brisbane Probe. Findings on the probes are presented for each case study separately and provide the basis for comparison. Learnings are then derived from the comparison, which is presented in Section 5 Discussion.

4.1 Probes as dynamic *criticality* activators

In both studies, the probes allowed flexibility for participants to use them when, where and how they wanted to. They also helped participants to design their artefacts and think about ways to activate change in the community, which was central in both studies, and to connect with places in the local community.

4.1.1 Northrock Probe. The Digital Art Summer School involved six scheduled workshops where the probes were used. During the focus groups that were held after the Summer School and in the post-workshop questionnaire, several participants reflected on how the probes helped them to articulate their idea and create the digital artwork: *"I think it was pretty good and the questions that you gave us really helped me think about it more."* (Molly⁶, in a focus group). Participants talked about how the Miro boards helped them develop their ideas and contributed positively to the summer school experience in the focus groups and the post-workshop questionnaire. The digital art workshops supported teenagers in thinking about local issues they care about or changes they would like to make in the community. The examples used during workshops and in the probes were always of an activist nature to stimulate teenagers to take a 'radical' approach. For example, in one exercise, teenagers analysed existing artworks, including one on the Black Lives Matter movement. Teenagers further created 'radical' artworks based on critical thinking about current social events: they conducted an analysis of how the event applied to them and used the analysis to create new knowledge and work. Participants choose their own topic for their artwork to acknowledge their autonomy and encourage ownership of the process and resulting artworks. For example, Arthur and Brian's artworks in Figure 4 addressed key issues arising during the COVID-19 pandemic, such as the importance of social distancing to prevent the spread of the COVID-19 virus and that farmers are also essential workers. Seven of the eleven participants created artworks that aimed to achieve change in the community, following the 'radical' paradigm. For example, Patrick's artwork aimed to increase volunteer work for a local charity (see Figure 1a).

Outside of allotted workshops, participants scheduled their own time in terms of when to work on their artwork, using the probes in the homework activities. The remote setting enabled teenagers to independently work on their artwork and take their own approach to design it. The digital probes allowed for more flexible use, and teenagers were less influenced by each other in how they applied the probes, which ones they use and which ones they do not use. To connect with the physical environment in some way (as going out together was not possible due to COVID-19 restrictions), Google Maps (see Fig 3), as well as photos taken by teenagers before the pandemic of locations important to them, enabled participants to share and talk about places important to them during the summer school.

4.1.2 Brisbane Probe. Chatty Bench Project ran 10 workshops with the probes being designed for the first five weeks of workshops. These were five A3 sheets of paper with activities on both sides of each sheet. The worksheets had journaling exercises, tasks for working on the digital tool Twine and activities to reflect on places of meaning. Part of the exercises was particularly focused on connecting place with social issues and experiences. The following quote of participant ED15 indicates the importance of the Week 1 'Injustice in your neighbourhood' probe activity in articulating their thoughts on a difficult situation they witnessed: *"Oh, so this, this actually happened...I was working on the assignment, and I was actually at the Kelvin Grove Bus Station Hill. The one opposite the Turkish shop...These two guys...and I was [there]...And following the arrows [in the worksheet] and even the action and everything, I could write better and what I thought about it"*

⁶Names of participants are fictive.

While placemaking exercises and feeding that knowledge into the making of the digital artefact was the main goal, having the mix of exercises from drawing to reflective exercises such as 'Injustice in your neighbourhood' to journaling were essential to participants thinking critically about their life situations in the creation of their artefact. Further, the probe design being simple, approachable and fun was key to motivating participants, while a time period of a week enabled flexibility in filling up their worksheet. Participants were drawn to different activities based on their interests, available time, and skill sets. For example, if participants felt they did not draw well, they did not enjoy the freestyle exercise of 'Imagine living on the moon. What would that look like?' All interviewees found the journaling exercises vital as they felt they had no one to talk to during this time, especially those who had recently moved to Brisbane before March 2020's COVID-19 lockdown. Thus, the project achieved the aim of radical placemaking as it ensured 'distributed' care to the participants during the pandemic through its various exercises and enabled them to critically think about events that they were witnessing in their daily lives. While the tangible paper probes were one tool in this project, they were seen as a necessary aid for the project by all the project participants interviewed in supporting the making of their digital artefact, thinking of places of meaning, and connecting their lives to local and global events [32].

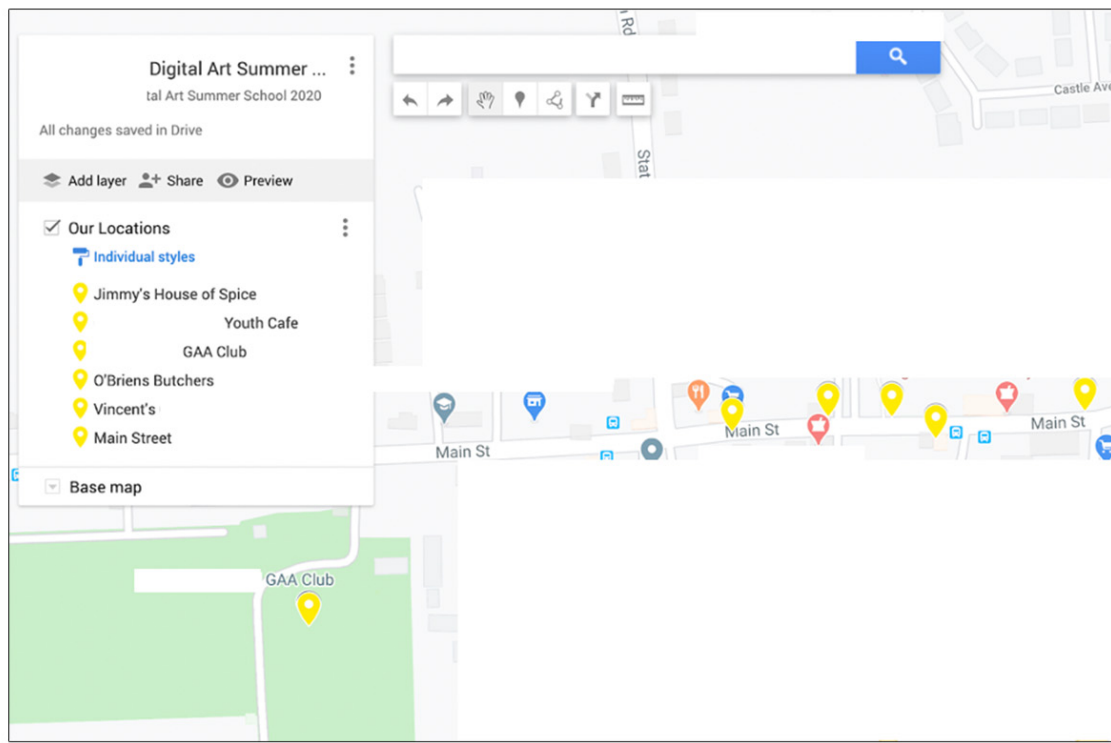
4.2 Probes as reflective memory provocateurs

Placemaking was an outcome of both Northrock and Brisbane probes, and the probes were tailored to enhance participants' connection with the spaces around them. The findings reflect that the probes provoked memories of places, learning about new places in the community, and building networks and memory with each other.

4.2.1 Northrock Probe. Through using the probes to share their experiences and unique perspectives on Northrock, the teenagers engaged in this dynamic of provoking memory, learning about new places and building connections with each other. For example, Molly shared her affinity with the natural spaces in the community and was motivated to encourage others to develop the same love for these spaces. Molly's love for the natural spaces of the community is highly evident here and the probes helped her to share this with the other participants. In addition to the natural spaces of the community, participants also communicated their experiences of the built environment through the use of the probes. The local youth cafe and the sports pitch, which had to close down due to the pandemic, were locations that were often discussed as important places to some teenagers. Lucas shared his memory of the youth cafe: *'I think it was kind of nice, cause you know there was tons of things to do. There were like board games, there were snacks, you can make your own tea, a guy brought in a video game and that was allowed. Ehm, cause they had a console for it. And it wasn't really boring, cause there was always something to do, but you weren't really told to do anything.'* (during summer school workshop). As the summer school was completely virtual and teenagers participated from home, placemaking through the physical environment was challenged. Place-based connections were made by pinning favourite locations on Google Maps, see Figure 3. This exercise specifically supported participants in thinking about their connections and experiences to the places in the community.

4.2.2 Brisbane Probe. As the Brisbane participants engaged in digital storytelling activities on Twine (a digital tool) and in the online workshops about KGUV places, the hardcopy probe became an opportunity to reflect on what places meant to them individually while quarantined in their homes. ED16 expands on how Week 2 exercise 'Draw your route from home to other places you go to most' enabled reflection, see Figure 3: *"So the route to the place you go to the most. See, this is something that the worksheet -the worksheet, wants to know what I do. Nobody asked me where I go. The worksheet wanted to know that there was...I love doing this, -you know... I was walking on the road, trying to observe small*

Northrock Probe: Mapping exercise



Brisbane Probe: ED 16

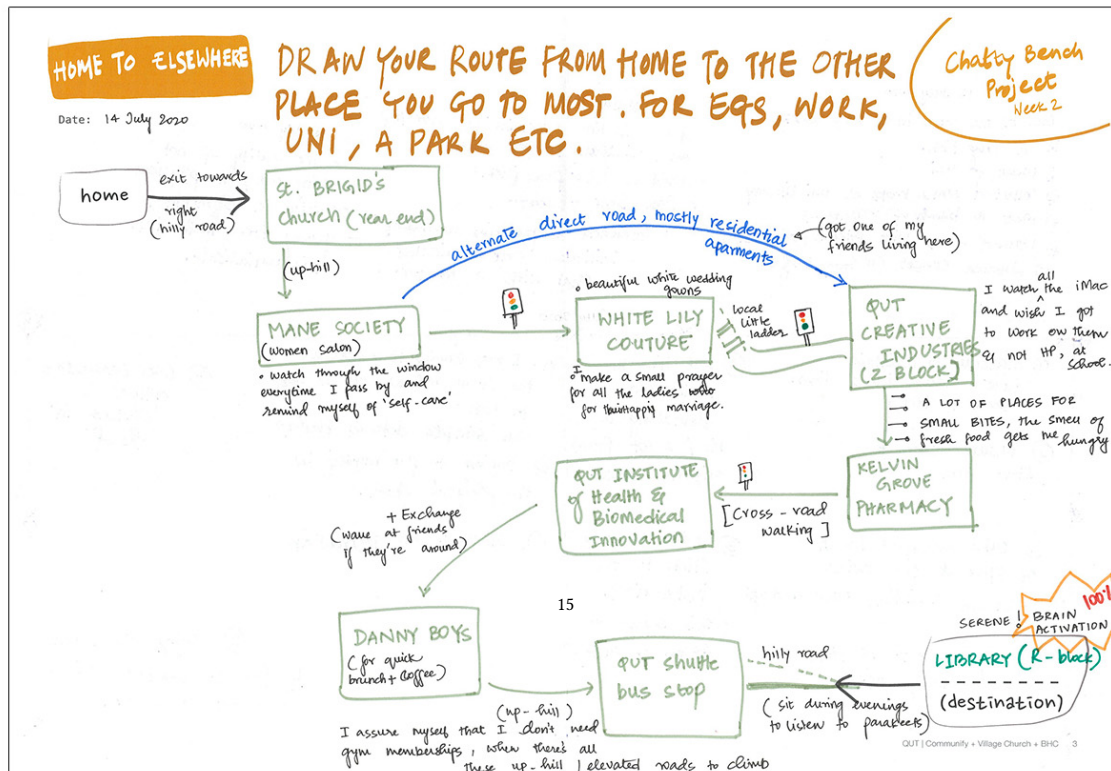


Fig. 3. Northrock Probe: Participants pinned their favourite locations in Northrock on the map (Slingerland and Murray 2020); Brisbane probe: ED16 mapping their experience from home to university library (Gonsalves 2020).

things. I am observant by nature. But I wanted to put this on the paper—I normally write, but drawing these, doing the roadmap was- this is one of my favourites.”

In the Brisbane project, radical placemaking emphasises the ephemeral nature of technology to hold stories in place [33]. The sixteen digital stories created through Chatty Bench Project were place-based i.e. you had to be in a specific place to experience different parts of the story with a smartphone [88]. The project and its artefacts are inspired by Pokémon Go, where you ‘catch’ the stories of the sixteen storytellers in the KGUV. This required participants to identify places, construct narratives around the places and guide the potential reader through the neighbourhood. The probe contained specific exercises that geared the participants towards thinking about their experiences of their home and neighbourhood and how they could transfer that back into the digital artefact they were constructing. The placemaking exercises in the probes encouraged them to engage in ephemeral memory-remembering and memory-making; either through remembering specific routes in their lives or going on a journey, while physical distancing due to the COVID-19 pandemic restrictions, to decide what locations fit their eventual digital story. Participants also noted that the probe encouraged them to consider media that would be relevant to their specific locations which were crucial in the making of their digital artefacts, such as the images of the park or the sound of birds in the park. Key to the radical placemaking process was that the probes were designed as a place to source, write and draw their stories of place, draw connections between their personal stories of social injustice to the KGUV and eventually function as a conceptualising and referencing tool for the making of their place-based digital stories- the radical artefact. The probe provided them with a way to think and reflect about places of meaning to them: some even visited the places adhering to physical restrictions to the place, while others made use of digital online maps such as Google Maps to ‘digitally’ visit places as part of their making process.

4.3 Probes as latent social amplifiers

As both studies took place during the pandemic, the probes also supported participants in reflecting on their lives in lockdown and created moments of social connection, which contributed to participants’ creativity and well-being.

4.3.1 Northrock Probe. The summer school was a good distraction for the teenagers, who expressed boredom during the pandemic (as reflected in the pre-questionnaire). The probes contributed to the well-being of participants during lockdown because they had something to do and were talking to other people. The pandemic was discussed in some of the artworks of teenagers. For example, Deirdre reflects on Arthur’s family restaurant which had to close down: *‘Well you probably heard that with the coronavirus the family restaurant had to shut down and they start back again.’* (During focus group). Arthur designed his artwork to encourage the uptake of COVID-19 regulations because his parents own a restaurant and want to serve their customers in a safe way, as shown in Figure 4 (left). Brian aimed to highlight the contribution of farmers to the pandemic effort, stating that they are also frontline workers who are often overlooked as illustrated in Figure 4 (right). Other artworks did not focus on the pandemic specifically, and no deep reflection on the pandemic as such was observed. The artworks mainly engaged with the general challenges faced by the community, such as inclusion and urbanisation. Teenagers appreciated the diversity in the creative artworks and ideas: *“Well I have been thinking about it like everybody else’s ideas and like ehm.. how everybody’s ideas were different and they are all like really good. And they all like had some sort of meaning behind it.”* (Teresa in the post-workshop questionnaire), several participants stated that the summer school helped them deal with boredom during the lockdown and that they appreciated the organised social interactions. Participants also reported a deepening understanding of each others’ experiences as they were shared via the probes: *‘Ehm, because like it’s kind of true what she was saying and.. I just*



Fig. 4. Digital arts created by Arthur (left) and Brian (right) (Slingerland and Murray 2020).

thought it was very.. well.. very, I don't know the word.. thought-provoking kind of like it made me think about like what it would be like in that situation.' (Teresa, in a focus group).

4.3.2 Brisbane Probe. Chatty Bench Project took place during COVID-19 pandemic restrictions when people were confined to their homes. The tangible probes presented a moment for participants to not just reflect on what places meant to them but also on their life situations. Participants worked creatively on these probes as they brainstormed and mapped ideas on the worksheet: having something to look forward to via the project contributed to their well-being. The worksheets in tandem with the workshop exercise held during the online calls assured the participants that every Kelvin Grove story of theirs was important and essential. Participant ED14 spoke on using the sheets for reflection and journaling: "Yeah. I really believe in journaling, and like letting things out. And so I felt like the worksheets was sort of like a prompted journal entry. And even if it didn't directly help, it did help. Because it was getting my ideas out. But it was like, not asking us to be creative. It was just being like, 'what's been happening for you lately? Huh?' Yeah, I think it was very helpful." Feeling what they had to say was valuable contributed to the quality of the place-based digital artefacts created in the project, which involved stories of domestic violence, seeking asylum, anxiety, grief and love.

Instructional videos were made for the participants to illustrate the possibilities of the probes: the options to sketch, draw and even collage offered the participants creative freedom to explore on the sheets. One participant filled her sheet with the help of her little child which was evident from the scribbles and children's stickers on them: thus, this became a shared activity with their family members (See Figure 5). As the probes supplemented the online workshops, it enabled them to build self-confidence in developing stories and connections, even if temporal, with other participants. Thus, the

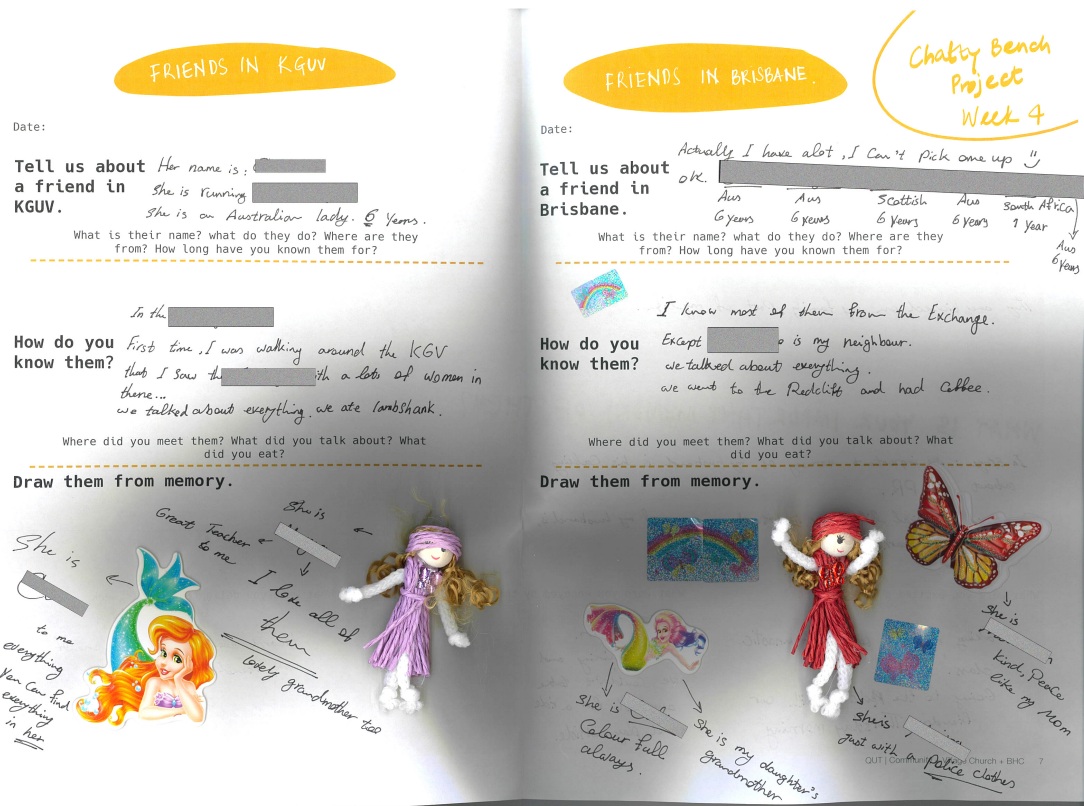


Fig. 5. Brisbane probe indicating how a parent and child engaged with the probe: there were stickers and physical 3D objects such as small dolls stuck to the probe sheet (Gonsalves 2022).

probes helped to build connections with themselves through reflections and creativity, and with others through probe activities and storytelling.

5 DISCUSSION

The purpose of this paper is to understand the potential of design probes to enable (radical) placemaking during global crises. This study presented findings from two cases, in Northrock (Ireland) and Brisbane (Australia), that took place during the COVID-19 pandemic and used digital and tactile probes to foster placemaking. Below the findings of both case studies are discussed to identify which concepts of the design probes contributed to placemaking.

5.1 Probes as a voice in uncertain times

The COVID-19 pandemic pushed both the research projects of the Northrock summer school and the Chatty Bench Project online. As previously outlined, the use of probes in online research is relatively unexplored [2]. In the two respective studies, probes became vehicles for participants' personal expression in the very uncertain context of the pandemic. While the Northrock study was completely remote and used only digital probes, Chatty Bench Project utilised tactile probes in a digital setting. In both studies, the probes were designed for participants to reflect on their

personal experiences in their local community to create a digital artwork (Northrock) or to create a place-based digital story (Brisbane). The probes not only provided an avenue for participant expression but also provided the researchers with rich insights into how participants experienced place, before and during the pandemic [55].

Participants were not directly observable during the pandemic. In the event, the probes provided the researchers with alternative access to participants, helping to meet that research requirement. This type of probing is another type of ethnography, providing unique and particular insights that are otherwise not available [65]. To enable effective design and use of probes, the participant demographic, and the context in which they are working in, need to be understood. The Northrock and Brisbane probes both catered to teenagers, young and older adults. As a result, they were designed to be aesthetically pleasing to those demographics as well as being easy to use, utilising media familiar to the specific age group [49]. Both the Northrock digital and the Brisbane tactile probes allowed participants to revisit and access them on their own schedules. The findings indicate that probe design was successful in enabling and encouraging participant use of them; whether in a digital or tangible format. Since the COVID-19 pandemic, the mutating nature of the virus and the prospects of emerging pandemics have normalised lockdowns and physical distancing restrictions as part of daily living. Further, other persistent global problems such as wars, climate change, natural disasters and regional conflicts indicate that research in uncertain and precarious times is here to stay. The pandemic pushed researchers and practitioners to conduct research online [2] which provided a taster of the critical role of design probes as self-reporting tools in research under siege. It also illustrated the stresses that participants of radical or any placemaking projects will be operating under. The presented research confirmed the required flexibility of probes, for participants to fill them out on their terms, and the need for user-friendliness in terms of appropriate aesthetics and media, as researchers have less opportunity to help participants with the probes, and participants are working under added pressures of uncertain times. With digital probes, the digital literacy and access challenges of participants need to be taken into account and this brings an extra layer of complexity to designing appropriate probes [17].

Takeaway: Since the probes are applied in a hybrid setting, they require adaptive and flexible configuration to cater to specific participants, contexts and changing circumstances. Increased participant autonomy through design probes empowers them to move toward social change, specific to radical placemaking. The probes need to be flexible for users in terms of their available time to be involved in the research, must consider what kind of activities will engage them towards the research objectives based on the understanding of participant's abilities, and provide different kinds of activity to tap their interest and engagement beyond the research objectives in the probe. This requires creativity in how research is designed and consideration in aspects of research such as methodological challenges for data analysis. Researchers must also consider the extent of independence the participants have to contribute comfortably and meaningfully in times of crisis. For example, a daily audio recording may be more suitable than a written probe for a participant group of varying literacy levels. To aid their autonomy in contributing to the probe, the digital audio recording may have an online tutorial which can be referred to when the participant requires it.

5.2 Placemaking redefined during a global crisis

The COVID-19 pandemic pushed people away from public spaces into their homes and the virtual space. Both case studies adapted their activities to these hybrid places. Both studies partially occurred in the virtual, using Zoom or Google classroom. The results indicate that digital probes could circumvent the physical proximity required for placemaking to an extent [47]. Particularly in the case of the digital probes, the findings supported the idea that place is not just created in the physical environment but also the digital. Both cases are examples of radical placemaking as both involved populations facing particular social issues at the time and digital technologies were utilised to create

personal digital artwork or artefacts to articulate and communicate these social issues with the hope of affecting social change. To enable and support these activities in a participatory ethos [15, 24], probes were used as an act of radical placemaking in terms of both data-collection and, beyond this, enabling participants to rely on memory, recall and mental imagery to create digital artefacts that could either be experienced in the digital spaces or in-situ.

Placemaking happened through the probes when participants recalled memories of places and developed personal connections around new places [15, 29]. The generative activities of the digital and tangible probes allowed participants to switch from physical spaces to digital spaces to hybrid physical-digital modes in order to reflect on how they connect to places [73, 86]. Placemaking is generally assumed to be just the physical space with memories to hold them [83] but this study during the pandemic indicates that place transcends the physical into the digital, and is also held in the bodies, memories and interactions of people. The added value and meaning to move from spaces to places [15, 40, 64] is what grounds placemaking and is usually identified with physical spaces, but the pandemic has shown that it is also through digital interactions and digital sharing of experiences about a place.

Takeaway: Radical placemaking is placemaking by those who experience personal and political issues (such as those around identity, belonging and marginalisation) to affect social change and probes were designed for this placemaking paradigm. However, the placemaking aspects of the probes' design have implications for wider placemaking approaches that take place in the virtual, physical space, and hybrid settings. When designing placemaking probes, researchers and designers must consider the participants' context: what kind of crisis the participant is facing, how can they engage in placemaking during this time, their ability to access public spaces, and any limitations. Clear instructions must be provided to participants on the activities without posing any bodily or emotional risks. Depending on the placemaking goals and context, probes need tasks that engage participants in exploring places in their personal memories or reality. If a digital artefact is one of the goals of the research study, then the probes must include activities that assist the making of the artefact while bearing in mind that in crisis, participants have limited resources and time.

5.3 Connection and community in the digital

All participants shared the common experience of the pandemic, which served as a point of connection between participants [23]. The shared project, goals and probes additionally created connections between the participants and hence, fostered a sense of community [10] which was essential to their well-being. It also allowed participants to reflect on their personal situations during the COVID-19 pandemic. The findings indicate that boredom was a great motivator for participants to engage with the probes. Further, they noted that as they did not get enough time for reflection before the lockdown, they appreciated that the probes allowed these moments of reflection in their lives. The design decisions on styling the probes in a fun and playful manner (akin to kindergarten notebooks), using simple and minimal instructions to meet varying language requirements of the participants, and ensuring diversity in activities paid off: they attracted the participants to engage with the probes in an authentic and transformative way. Further, in engaging with the probe as and when they pleased, they were given an outlet for their creativity or boredom that led to creative, exploratory and socially-engaged work. Boredom can play an important role in providing room for reflection on moving toward new personal goals and can be a key ingredient towards creativity [5]. The authors note that both projects took place in early COVID-19 lockdown periods (2020) and under varying physical distancing restrictions. At the time, the uncertainty, lack of employment, excess of free time, and the project brief enabled the attraction and retention of participants. However, in 2021 and 2022, with COVID-19 lockdowns and restrictions being a 'normal' state, the constant boredom with no end in sight was stated as one of the reasons for quarantine fatigue where people engaged in non-COVID-safe behaviours [37, 38]. While the findings indicate a need or a desire for reflective thinking and creative

exercises in design probes, the paper also acknowledges the limitations of probes in staving off boredom: these cannot be the only tool that researchers rely on for keeping research participants interested in the study.

Takeaway: A crisis has the potential to bring participants together as they have a shared experience of that crisis. Probes can be used to tap into both the shared and individual experience of a crisis through activities such as storytelling and journaling. Various exercises are essential to keeping participants engaged, which may be a welcomed activity during sustained periods of crisis. Probes must cater to both these individual and shared experiences of the crisis to enable personal reflections and sense-making of a difficult situation and build networks and relationships between participants. Probes must consider tasks that enable the individual participant's interest in working with a probe, must provide space for transitioning from individual to wider project goals, and utilise shared creativity and storytelling to foster connection with the wider community as an incentive and motivation beyond the probe. Shared openness, creativity, and vulnerability have the potential for cultivating meaningful networks, relationships, and eventual collective organising leading to change-making [14].

6 CONCLUSION

This paper presented two radical placemaking projects, Digital Arts Summer School (Northrock, Ireland) and Chatty Bench Project (Brisbane, Australia), that took place during the COVID-19 pandemic. Both project communities were at the crux of social issues: the Northrock community was confronted with local urbanisation issues of diversity and inclusivity and the Brisbane community with its new migrants and transient residents were faced with low social capital resulting in social isolation. Both places experienced increased social isolation due to COVID-19 pandemic. The projects involved community members utilising digital tools to engage in creative placemaking. The Northrock digital probe and the Brisbane tactile probe played a key role in establishing the values of the radical placemaking projects that were conducted in hybrid digital places.

The guiding research question in this paper was: *How can design probes assist the radical placemaking process during a global crisis such as COVID-19 pandemic?*, and as such the specific interactions between **probes**, **places**, and **people** in the two case studies were considered and analysed. From this analysis, three take-aways were identified as an answer to the research question. For probes to assist radical placemaking during global crisis, they need to 1) be designed in a way that they support autonomy and empowerment of participants, 2) be a combination of digital and tactile, to support the hybrid elements (digital and physical) of placemaking, and 3) support flexibility and variety in use, allow for multi-users of the probe (such as family members within a household), to foster community connections towards social change. Furthermore, the probes presented in this paper are a showcase and example of how these take-aways can be leveraged in probe design.

Personal and community well-being were unintentional consequences of the design probes and contributed to the broader goals of the Northrock and Brisbane research activities of building a creative and activist community during a time of social isolation. Thus, the insights of this paper draw up new and existing questions; such as which type of design activities could be best supported with tactile or digital probes for participant well-being, or what kind of data these two different probes collect without compromising researcher-participant duty of care. Moreover, remote and virtual design workshops bring methodological challenges that need further study. The authors look forward to continuing the debate on the design and deployment of probes in radical placemaking, as the pandemic has spurred the research into this exciting, yet relatively unexplored context of design. Another open question is around how probes can further support participants to take action, based on the reflections and stories they shared. The insights of the presented study, complemented with future work of others and ourselves, will guide fellow design practitioners of various disciplines in

creating appropriate and engaging tangible and digital probes to be used in the hybrid digital-physical settings of radical placemaking. Probes can be more than just a data collection tool: its purpose can be expanded to care, self-expression, reflection, sense-making and connection during and post-crisis.

ACKNOWLEDGMENTS

The authors wish to thank all participants in the Northrock summer school and the Chatty Bench Project. The authors also thank the three anonymous reviewers whose comments and suggestions helped to improve and clarify this work.

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7 SUPPLEMENTARY MATERIALS

- 7.1 Supplementary material 1 (pp. 26): Content of the probes in each workshop (W) during Digital Summer School**
- 7.2 Supplementary material 2: Content of the Chatty Bench Weekly probes (pp. 27)**
- 7.3 Supplementary material 3: Enlarged figures of probes (pp. 28-34)**

W	Articulating experiences	Digital making	Reflection
W1	What message do you want to communicate? For who will you make your piece? What do you want to achieve with your piece?	Consider an existing digital art: What message does this piece communicate? How does it communicate this message? Is it effective? Why (not)?	Find a digital artwork that communicates a message similar to yours, and analyse why and how it works
W2	What is your message? Who is your audience? What do you want to achieve with your piece? Where do you reach your audience?	Create a quick poster of your idea - using 1 key word and 1 key image, using ObamaPoster-Maker.	Which unique perspective of Northrock do you want to highlight in your artwork? Find a location that connects to your idea and take a picture of it
W3	Shared mapping of important locations in Northrock on Google Maps	What if a newspaper wrote about your idea? Make a newspaper clipping.	Sharing your idea with Northrock: How could you share it digitally and in-person? How would you like people to respond to your idea? How would you like to discuss your piece with the audience? Do you want people to take action when they see your piece?
W4	Critiquing the artworks of each other What can you see in the work? Describe the tone of voice What other messages can you see in the work? How else could this work reach its audience? How else might this work make change in the community? Could this work help diversity and inclusion? How?	Make a breaking news item of your message, using Breaky-ournews.com	Think about how to share your idea online. Create a social media post with a slogan, image, and short text
W5	One-on-ones with facilitator to talk about final articulation and artwork	Create a meme about your work	Reflect on tone of voice of your artwork: Which colours, typography, image style fit with your tone of voice?
W6	Final presentations Why did you chose this idea? What is your tone of voice and how does it relate to your design choices with colour, image and typeface? How does this piece relate to theme of inclusion and diversity? What is the main message of the piece? How could this piece improve the community? What are the obstacles to achieving your message? What is the thing you are most happy about with your piece?	-	Providing tip-top feedback to your peers: What did you like about the piece? What is a suggestion for improvement? Why is the message of this piece important? How does this piece improve Northrock?

Table 2. Probes content for the Digital Summer School, Northrock

Week	Articulating Experiences	Reflection	Digital making
Week 1	How was your week? What are the key events that happened? What was the best thing that happened this week? What were your greatest challenges this week?	What brought you to KGUV? When did you move to KGUV? What is your first memory in KGUV? Injustice in your neighbourhood: Creating a map of your story (Part 1)- action person setting	Draw your Twine story here. Hot tip: Use the yellow post-its & Index cards to help
Week 2	How was life this week? What made you happy this week? What made you uncomfortable this week?	Draw your route from home to other places you go to most, e.g., work, uni, a park etc. Injustice in your neighbourhood: Creating a map of your story (Part 2): -What were the challenges you faced in your story? -What did you learn about yourself during this time? -How did you overcome those challenges? -If a similar situation happened in the future, how would you do things differently?	
Week 3	What did you struggle with this week? What are you passionate about this week? What gave you hope this week?	Imagine living on the moon. What would that look like? Who would be with you? What does your house look like? What would you be wearing?	What do you places in your Twine story remind you of? List places and the media such as photos, video, task, memory, image
Week 4	What were you excited about this week? What were you annoyed by this week? What were you delighted by this week?	Friends in KGUV & in Brisbane -Tell us about a friend in KGUV. What is their name? What do they do? Where are they from? How long have you known them for? -How do you know them? Where did you meet them? What did you talk about? What did you eat? -Draw them from memory	-Who are the characters in your story? -Who are they based on? -What is your important memory of them?
Week 5	What scared or frightened you this week? What amazed you this week? What are you grateful for this week?	What are the 4 objects in your house that give you joy? Map where they are in your house- write about them/draw them. Where is home? What is home? What makes home? Write or draw.	

Table 3. Probes content for the Chatty Bench Project, Brisbane



Fig. 6. Northrock Probe (Slingerland and Murray 2020).

INTRODUCE YOUR IDEA TO US

- What if a newspaper wrote about your idea?
- Make a newspaper clipping
- <https://www.fodey.com/generators/newspaper/snippet.asp>



Fig. 7. Northrock Probe (Slingerland and Murray 2020).

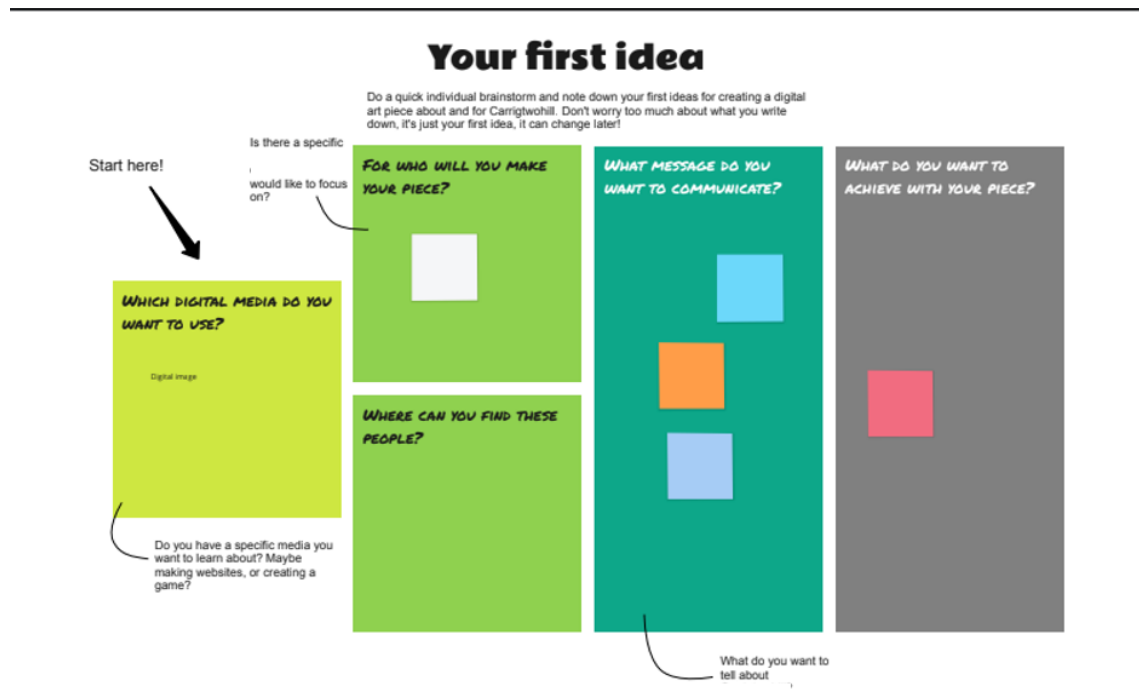


Fig. 8. Northrock Probe (Slingerland and Murray 2020).

Twine

DRAW YOUR STORY HERE...

HOT TIP: USE THE YELLOW POST-ITS & INDEX CARDS TO HELP

Date:

Chatty Bench Project Week 1

tell us
WHAT BROUGHT YOU TO KGV?
WHEN DID YOU MOVE TO KGV?

WHAT IS YOUR FIRST MEMORY IN KGV?

OUT | Community + Village Church + BHC 1

Creating a map of your story PART 1 Date:

Tell me a story about injustice in your neighborhood.

action

What were you doing at that moment? What was happening?

Person

What did this mean for you? What do you think is the theme of the story? How does it make you feel?

Setting

Where were you when this happened?
What was happening around you?

Chatty Bench Project Week 1

Date:

How was your week? What are the key events that happened?

What was the best thing that happened this week?

Date:

What were your greatest challenges this week?

Date:

OUT | Community + Village Church + BHC 2

Fig. 9. Brisbane Probe Week 1 (Gonsalves 2020).

HOME TO ELSEWHERE **DRAW YOUR ROUTE FROM HOME TO THE OTHER PLACE YOU GO TO MOST. FOR EQS, WORK, UNI, A PARK ETC.** *Chatby Bench Project Week 2*

Date:

home →

← (destination)

QUT | Community + Village Church + BHC 3

Chatby Bench Project Week 2

How was life this week?
Date:

What made you happy this week?
Date:

What made you uncomfortable this week?
Date:

Creating a map of your story PART 2 Date:

What were the challenges you faced in your story?	What did you learn about yourself during this time?
How did you overcome those challenges?	If a similar situation happened in the future, how would you do things differently?

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QUT | Community + Village Church + BHC 4

Fig. 10. Brisbane Probe Week 2 (Gonsalves 2020).

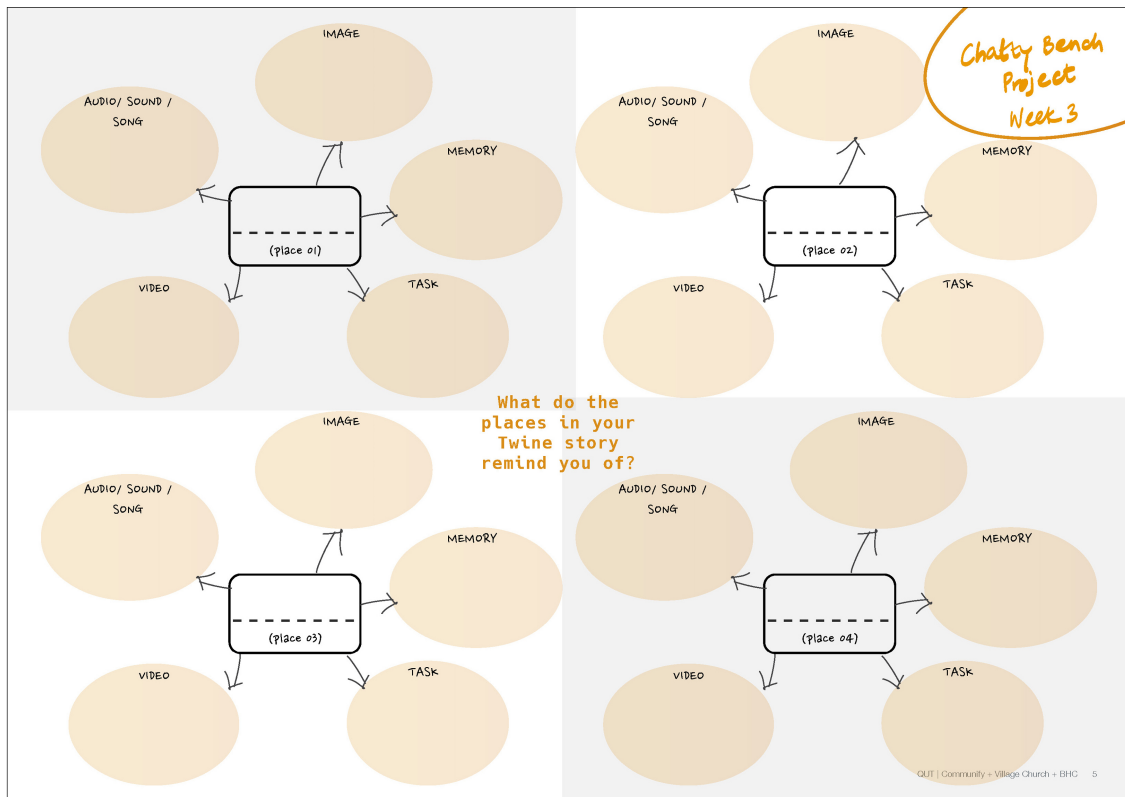


Fig. 11. Brisbane Probe Week 3 (Gonsalves 2020).

FRIENDS IN KGV

Date: _____

Tell us about a friend in KGV.

What is their name? what do they do? Where are they from? How long have you known them for?

How do you know them?

Where did you meet them? What did you talk about? What did you eat?

Draw them from memory.

FRIENDS IN BRISBANE.

Date: _____

Tell us about a friend in Brisbane.

What is their name? what do they do? Where are they from? How long have you known them for?

How do you know them?

Where did you meet them? What did you talk about? What did you eat?

Draw them from memory.

Chatby Bench
Project
Week 4

QUT | Community + Village Church + BHC 7

WHO ARE THE CHARACTERS IN YOUR STORY?

WHO ARE THEY BIASED ON?

WHAT IS YOUR IMPORTANT MEMORY OF THEM?

What were you excited about this week?

33

What were you delighted by this week?

QUT | Community + Village Church + BHC 8

Fig. 12. Brisbane Probe Week 4 (Gonsalves 2020).

HOME WHAT ARE THE 4 OBJECTS IN YOUR HOUSE THAT GIVE YOU JOY?

Chakky Bench Project Week 5

MAP WHERE THEY ARE IN YOUR HOUSE IN YOUR HOUSE.
WRITE ABOUT THEM/DRAW THEM.

QUT | Community + Village Church + BHC 9

WHERE IS HOME?

Chakky Bench Project Week 5

Date: _____

What scared or frightened you this week?

What amazed you this week?

WHAT IS HOME?

Date: _____

What are you grateful for this week?

WHAT MAKES HOME? WRITE OR DRAW.

Date: _____

34

QUT | Community + Village Church + BHC 10

Fig. 13. Brisbane Probe Week 5 (Gonsalves 2020).