Understanding the effects of doing co-design and the transitional changes in co-designers

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Declaration

This thesis has not been submitted in support of an application for another degree at this or any other university. This research is the result of my own work any collaborative work included in this thesis has been specifically recognised and indicated where appropriate. Many of the ideas in this thesis were the result of conversations with my supervisors Professor Leon Cruickshank and Dr. David Perez.

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Abstract

Co-design (Collaborative design) seeks to value the user or participant equitably. Valuing participants lived experiences without changing their position or attempting to train them to be designers is fundamental to co-design methods. Since the early nineteen seventies co-design has gained momentum involving workforces in business, organisations and communities. There is however a lack of research that focusses on the effects that taking part in co-design projects has on participants. This PhD research focuses on this gap in knowledge looking at participants in community contexts in the UK.

This research thesis looks deeply at three co-design case studies to try to determine what the effects might be of participating in a co-design project. The research seeks to establish the situations that might have led to the effects impacting any transitional changes in participants behaviour and mindset.

Two test bed projects were scrutinised in this research, they were used to examine the effects of participation that were established in the three case studies investigated in this thesis;
'Project in a Box' a dispersed co-design project due to the Covid-19 pandemic and 'Fuse' a series of in-person workshops for teachers and children.

The findings from this thesis firstly, provide new knowledge surrounding the situations that led to participants competently being able to think in a creative, designerly way. For example, shifting between being able to suspend normal consequences and think in an open and playful way, then re-engage with real-world situations and the application of ideas. Crucially this shift to designerly thinking significantly impacted the relationships of the participants not only in the co-design team but also their wider networks. Secondly, it provides new knowledge surrounding the benefits of participating in cyclical co-design activities rather than single instances. For example, adopting a slow approach to collaborative working enabled deep, trusting relationships to develop, this supported those who were less confident participants. And finally, it brings together the multiple effects of participating in co-design activities that can provide a secure base for participants to flourish in co-design situations.

Contents

List of Appendices

See folder 'Appendices 1-6 Lee Brewster'

List of Tables

List of Figures

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Chapter 1 Introduction

1.1 Introduction

This thesis investigates the effects of participating in co-design (collaborative design) activities on non-professional designers, participants who are experts through lived experiences. The thesis documents the impact of participation and uncovers the implicit and sometimes hidden effects of working that are experienced by those participants who are less familiar with design practice. This chapter provides the background, motivation and structure of the investigation.

1.2 Background of the research

Being able to envisage the future by thinking in a designerly, or critical and creative, way (Papanek and Fuller, 1972; Cross, 1982; Manzini, 2015; Schön, 2017; Simon, 2019) is fundamental for those participating in design activities. The term designerly, although not grammatically correct, has been widely adopted in design research. It was first introduced by Nigel Cross in his seminal work Designerly Ways of Knowing (1982). This term chosen to separate it from 'Design Thinking', which has become a term used in management training. For those wishing to envisage and change their futures, co-design must be more accessible, easily explained, explicit and rigorous. The lack of these qualities often and continually results in design being an arcane process that is embedded in tacit knowledge only accessible by professional designers (Polanyi, 2009; Van Dooren et al., 2014; Clarke et al., 2019). This research PhD seeks to make the process of design more visible through deeper understanding of the effects of participation.

1.3 The motivation behind the research

The motivation behind this research thesis has been driven by two strands.
Firstly, the author of this thesis has extensive experience of co-design projects over a thirty-year period as a practicing designer and community artist. They observed indicators of potential benefits of participating in co-design projects on individuals and communities. However, they were frustrated that the knowledge of process was not shared or benefitted from. Each time a project was completed the knowledge was lost in the moment of the project.

Secondly, further research in this area would provide greater understanding of the act of designing collaboratively. And provide support for those designing, co-design activities, making it more accessible and equitable.

1.4 Existing research

Firstly, design process and practices still rely on implicit, hidden and often tacit knowledge held by design professionals that are not visible (Bjögvinsson, Ehn and Hillgren, 2012; Bødker, Dindler and Iversen, 2017; Lam et al., 2017; Cross, 2023). Secondly, the effects of participation in co-design have not been subject to extensive research.

1.5 The focus of the research

The aim of this research thesis is to investigate the effects of co-design on participants. The issue laid out in section 1.4 is addressed through the following three research questions:

Research question 1

How might collaborative design (co-design) effect participants in a community context?

Research question 2

How and when can the effects of co-design be recognised?

Research Question 3

How might the effects of co-design impact behaviour during co-design activities, in future projects and everyday activities?

These questions were crafted during the literature review section of this thesis also drawing on the extensive experience of the author as a designer who has worked with communities and organisations across the U.K. between 1991 and 2020.
The literature review provided theoretical perspectives on participatory design, co-design and design practice in general.
From the research questions a proposition was constructed, as follows;

The Proposition: Understanding transitional changes in behaviour of co-designers has the potential to provide deeper understanding of the implicit and often tacit nature of co-design in a community context.

The research proposition provides overarching guidance for the structure of the investigation and the research questions. Qualitative methods of research were used to interrogate three case studies. Semi structured interviews were used to gather data from researchers involved in those case studies. The insights from the research were validated and tested in two pilot projects the first involving two thousand children, their families and teachers and the second involving sixty children, their teachers and teaching assistants.

1.6 The structure of the research thesis

This section lays out the structure of this thesis. There are eleven chapters, as follows;

Chapter 1 Introduction
The aims of the thesis, the motivation behind it and the research questions and proposition.

Chapter 2 Literature review
Exploring the literary landscape of design in general, participatory design and co-design. This chapter unpicks the nuances of each and provides working definitions for this research.

Chapter 3 The effects of co-design
Extending the literature view and focussing more deeply on the effects of doing co-design on participants.

Chapter 4 Methodology
Detailed description and justification of the methods used in similar research and this research. Sets out the case studies being used in this thesis and provides a research design.

Chapter 5 Case study 1 - Leapfrog
Detailed investigation of the Leapfrog project.

Chapter 6 Case study 2 - Empowering design practice (EDP)
Detailed investigation of the EDP project.

Chapter 7 Case study 3 - Re-envisaging infection practice ecologies in nursing (RIPEN)
Detailed investigation of the RIPEN project.

Chapter 8 Cross case analysis

Using thematic analysis methods, the case studies from the thesis were compared. Nvivo data management software was used to organise, log and retrieve data.

Chapter 9 Insight testing

Introduces the insights gained from the cross-case analysis, showing how the insights shaped the test bed workshops. Describes the test bed workshops and tracks the insights through observation and reflective workshops undertaken by a multidisciplinary research team. This chapter introduces a new model to help support co-designers.

Chapter 10 Findings

Explores the findings that emerged and were developed through the analysis of this research in response to the research questions and research proposition.

Chapter 11 Conclusion

Provides concluding thoughts, the beneficiaries of the research and further research intentions.

1.7 Summary

This chapter provides the background, motivation and issues that were the drivers for this research thesis. The research questions and proposition are highlighted, the section briefly summaries the methods used to address these. It has also provided a structure for the thesis enabling the reader to navigate more comfortably through the thesis.

1.8 Publications resulting from the thesis research

Brewster, L (2023*) Flourishing in joyful discovery: Scaffolding new thinking*. In: Flourish by design. 1st edn. Edited by Dunn, N., Cruickshank, L. and Coupe, G. Oxford: Routledge

Brewster, L. Cruickshank, L. Potts, D. Marsdin, N. (2022) *Using design to connect children through playful discovery*. [online presentation] European Conference on Art and Design, Porto. The International Academic Forum

Cruickshank, L. Brewster, L. Potts, D. Owen, V. (2023) *Design practice reimagined: new fundamentals through a study of co-design and practice based doctoral studies* [paper presentation] European Academy of Design, Bilbao.

Fonseca Braga, M. Perez Ojeda, D. Owen, V. Zhang, L. Brewster, L. Galabo, R. Changede, S. Kwon, N. Summers, S. (2023) *Shaping Social Design with Communities* [paper presentation] IASDR, Milan.

Chapter 2 Literature review

2.1 Introduction to collaborative design practices

This chapter interrogates the practice, characteristics and participatory roles in emerging design practice, including participatory design, co-design and to some extent open design, although open design is not always necessarily collaborative. Two of the most well-known authors in this area describe it as:

> 'By co-design we indicate collective creativity as it is applied across the whole span of design' (Sanders and Stappers, 2008, p.3).

This interpretation of co-design could be, collaborative design, cooperative design or collective design (Zamenopoulos and Alexiou, 2018) this thesis interprets co-design as 'collaborative' as this is the most widely accepted (Sanders and Stappers, 2008) . Although there is a significant amount of literature on collaborative design practices (Sanders and Stappers, 2008; Manzini, 2015; Bødker, Dindler and Iversen, 2017; Zamenopoulos and Alexiou, 2018) , it is evident that there is a fundamental lack of understanding, predominantly with the interchangeable terminology used to describe it and the effects of participation (Sanders and Stappers, 2008) . This study begins by examining how design has evolved into multiple practices that exist in parallel. In order to understand collaborative design practices this chapter firstly examine the term design, explore who designs and then unpick the characteristics of the collaborative approaches of design to position where this research is focussed.
To highlight the context of this study it is worth positioning it on Sanders and Stappers (2008) diagram where they discuss the growing trend of co-creation and co-design, giving reference to Figure 2.1 describing how collaborative design is growing within participatory design research, they have not added the term co-design to the diagram however, the scope of this literature review will focus on the right axis of this diagram.

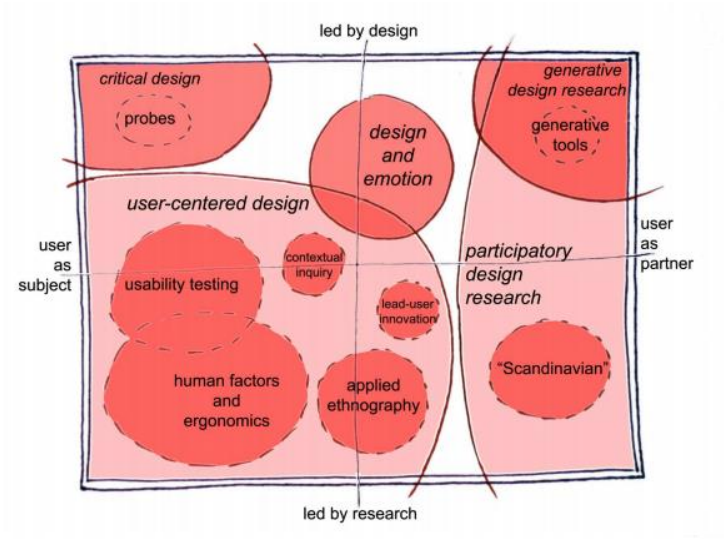


Figure 2.1 The current landscape of human-centred design research as practiced in the design and development of products and services (Sanders and Stappers, 2008, p.3).

2.2 What is design?

This section considers what the term design means to us. The Oxford English Dictionary (OED, 2020) states that:

> 'Design is a plan or scheme conceived in the mind and intended for subsequent execution; the preliminary conception of an idea to be carried out by action' (OED, 2020).

There are multiple interpretations of what design is throughout the literature, authors tweaking, refining and re-imaging it's definitions, as follows;

> 'Everyone designs who devises courses of action aimed at changing existing situations into preferred ones' (Simon, 1996, p.111).

Fuad-Luke (Fuad-Luke, 2009) proposes that:

> 'Design is the act of deliberately moving from an existing situation to a preferred one by professional designers or others applying design knowingly or unknowingly' (Fuad-Luke, 2013, p.5).

There is no distinction between the professional designer and non-designer from this perspective however, this is explored in sections 2.2 who designs?

Zamenopoulos and Alexiou (2018)describe design as a task in which people seek to understand, interpret and ultimately address a challenge or opportunity in their present reality by conceptually developing and creating things that will create better futures. They separate the connection with making and materials and seek to refine the concept philosophically, rather than recognising manufacturing, production and consumerism as elements in the process of design (2.2.1). Zamenopolous and Alexiou (2018) go on to propose that design practitioners, researchers and non-designers could all have their own interpretation of what design means to them and that they might define it very differently, even though the ultimate process and outcome is to design things, artefacts and processes.

The designer has traditionally been seen, as the primary source of creativity in design practice (Cruickshank, 2014) however, alternative practices facilitating designers and non-designers collaboration, have been gaining momentum for several decades through community engagement projects. The success of these collaborations is in part attributed to multidisciplinary approaches, Julier (2013) suggests that design needs to adopt a flexible reasoning. Design should move across traditional disciplines, he suggests, plundering other academic traditions being promiscuous and coupling with related theoretical perspectives (Julier, 2013) a succinct term, has been adopted in design terminology, which is 'multidisciplinary design' (Nygaard, 1986; Thackara, 2005; Simonsen and Robertson, 2012; Bratteteig and Wagner, 2016a).

This perspective is expanded by Zamenopoulos and Alexiou (2018) , as it could be interpreted as a framework for design that takes into account that, the contexts in which design takes place are never the same. Design could be described as crossing a diverse range of subject fields and disciplines, giving it a unique reach among the creative disciplines. This unique reach also adding complexity and blurring the discursive spaces where design takes place (Fuad-Luke, 2009) .

The implication is that design has a different meaning and is interpreted differently by participants in diverse contexts. Fuad-Luke (2013) observes that design is also engaged in by non-designers who are unknown and engage non-intentionally. Positing the idea that everyday life is design and that non-designers do engage intentionally but do not recognise it as design (Gorb and Dumas, 1987). It is note-worthy that they say their expertise is gained outside of the design profession, through lived experiences. If it is the case that design is an everyday activity engaged in by everyone then the role of the designer is diminished and design no longer has value. It is worth looking at Manzini's (2015) publication, 'Design, when everybody designs' he says:

> 'Today we are at the beginning of this journey and we still need a better understanding of the possibilities, the limits and the implications of this emerging design mode, but what is

already clear is that design for social innovation is not a new discipline: it is simply one of the ways in which contemporary design is appearing' (Manzini, 2015, p.55).

We can take from this that design is in a fluid state and multiple practices are emerging that can address social issues and innovation. This research thesis draws on Herbert Simon's definition of design.

This section explores how the term design is interpreted through multiple viewpoints that exist in parallel, however, new perspectives are perpetually emerging, some of which involve collaboration. The next section explores who designs and in what context.

2.3 Who designs?

This section explores the evidence to show that the scope of people involved in design practice, stretches beyond the professionally trained designer. This section establishes what separates the professionally trained designer from the non-designer.

2.3.1. The professionally trained designer

As seen in the next section (2.2.2) everyone does design, however that does not make everyone a designer. The difficulty with using the word designer is that it can be used without any specific context, it is a blanket term that can be used to describe anyone who adapts with intent (Potter, 2002). In this context we consider the designer to be professionally trained, having an awareness that they are consciously planning and acting in a designerly way (Cross, 1982). The professional designer is not acting unconsciously. The design profession can be a complex one and designers must be concerned with making continual adjustments of the material, spatial and visual world (Julier, 2013). They work for clients, are involved in projects with private or public organisations or in communities. Julier (2013) suggests that the role of the designer is to source material and processes as well as commission or delegate the activity of making. For this context the term professional designer will not include craftspeople. The changing factors that impact the design profession call for continual adjustments by designers, Margolin (1995) describes these factors as a complexity of design artefacts, a product milieu, the collection of objects, activities, services and environments that a designer is concerned with.

One interpretation of the relationship of the professional designer to the other factors in this complex process is shown in Julier's (2013) diagram, the domains of design culture, seen in Figure 2.2.

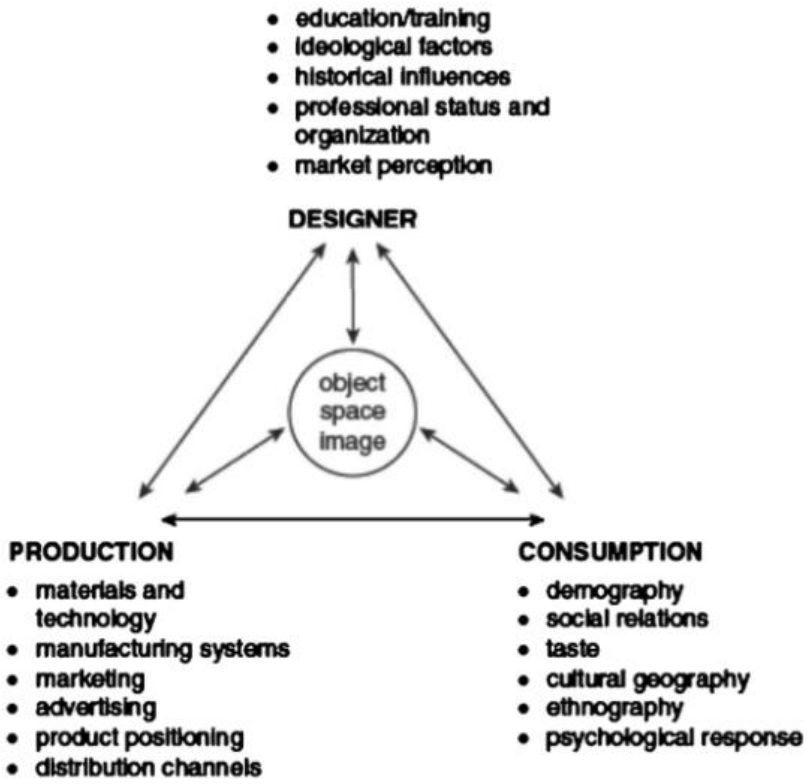


Figure 2.2 Domain of Design Culture (Julier, 2013, p.15).

The professional designer is a part of the wider process, forming an integral element that creates the conditions for design. This then leads us to consider design outside of the traditional design profession, the everyday activity of design that non-designers are concerned with.

2.3.2 Non-designers, designing

Design is not something that only designers do, it is an everyday activity. Redström (2017) suggests that we have an urge to design, to consider a situation, imagine a better situation and act to create that situation.

Everyday activities can fit under the umbrella of design, described as making a plan and drawings necessary for constructing almost any man-made phenomenon (Archer, 1968). Those phenomena might include everyday activity. This definition continues to evolve with a multiplicity of views working in parallel. Simon (2019) provides us with the following insight that includes 'everyone':

> 'Everyone designs who devises courses of action aimed at changing existing situations, into preferred ones' (Simon, 2019, p.111).

Victor Papanek (1972) also suggests a similar notion of, everyday designers. His opening line in 'Design for the real world', a notably polemic work, argues:

> 'All men are designers. All that we do, almost all of the time, is design, for design is basic to all human activity' (Papanek and Fuller, 1972, p.1).

This is a common thread through the literature of design, Thackara (2005)suggests that design is fundamental to human activities and from this he posits two questions of how design might be used. Where do we want to be? And How do we get there? (Thackara, 2005). This understanding that design is an activity that engages with everyone, professional designers and non-designers in their everyday activities. The next section explores where professional designers and everyday designers can find common ground.

2.3.3 Professional versus non-professional

Considering the practice of everyday living we might deduce that the activities of everyday people (non-professional) designing have been largely unnoticed and undervalued as social capital (Bourdieu, 2018).

However, there is desire to produce designs or artefacts based on objectivity and rationality (Cross, 2001), negotiating strategies, expressions of power and structures put in place by organisations or institutions that attempt to prescribe behaviour (DiSalvo, 2009). Ways of thinking and doing are developed by people to negotiate these strategies enabling them to follow their own logic, perhaps even shifting power. DiSalvo (2009) frames these designerly ways as tactics, interpreting them as being used outside of what is normally considered design, by people that are not considered designers. He describes two of these designerly tactics as 'projection' and 'tracing' as a means of enabling the conditions and consequences of an issue to be fore fronted and known. Zamenopoulos and Alexiou (2018b) also refer to these two tactics as essential in the co-design space, they interpret them as mechanisms.

Shifting design practices are beginning to value these tactics developed through lived experiences (Said Mosleh and Larsen, 2020).

2.4 Participatory and collaborative design (co-design)

This section looks at the relationship between participatory design and co-design and how designers and non-designers began working together. There are similarities and overlaps in theory and practice in both methods which, has resulted in contested spaces and multiple

perspectives. This section will provide some historical context regarding the emergence of these practices and discuss some of the nuances that might be associated with them. This section also explores the author of this thesis as practitioner, introducing the observations over a thirty-year period facilitating co-design projects. This section helps to position the research and identify the gaps in knowledge that this thesis addresses.

2.4.1 Participatory Design

Participatory Design invites participants to be part of the design process, it has historically sought to empower workers and users by involving them in decision making process that might have previously only involved designers and senior managers and leaders within an organisation or community.

There are extensive explanations offered regarding what participatory design is, (Bodker, 2009a; Ehn, 2011; Simonsen and Robertson, 2012; Bratteteig and Wagner, 2016a) one of these perspectives is:

> 'Participatory design is the process of expert designers and participants from impacted communities working together to create appropriate solutions' (Drain and Sanders, 2019, p.1).

The emergence of participatory design lies in the social, political and civil rights movements of the 1960s and 1970s. It is suggested that to gain greater empowerment and agency in decision making, workers were prepared to participate in collective action around shared interests and values (Simonsen and Robertson, 2012). Mattelmäki and Visser (2011) states that one of the key words in participatory design is, 'empowering'. It is worth establishing what we mean by this, as follows:

> 'To invest with legal or formal power or authority, gives a person more control over his or her life or circumstances by increasing civil rights, independence and self-esteem' (*empowering, adj. : Oxford English Dictionary*, 2020).

The effect of sustained or momentary empowerment and the impact on participants (Iversen and Dindler, 2014), could be explored further in this area of research.

Ehn (2011) adds to this by discussing the workers' possibility and right to affect their work, with a special focus on people participating in the design process. In Norway, Sweden and Denmark the Collective Research Approach (CRA) was established to increase the value of industrial production by engaging workers in the development of new systems for the workplace (Sanders and Stappers, 2008).

The Iron and Metal project in Norway (1970s) is an early example of participatory design that explicitly values action research. The researchers, Nygaard and Bergo (1974) realised that in order to build technical and organisational knowledge for unions and workers to use in negotiations with employers, it was not enough to produce research that relied on observation of users (Susman and Evered, 1978; Kensing and Greenbaum, 2013). They employed action research to directly involve people in design processes. They embraced the diverse collection of principles and practice that aimed to make technology, tools, working environments and social institutions more responsive to user needs (Simonsen and Robertson, 2013).

Action research (AR) is an important component of participatory design it seeks to engage affected workers and users with outside researchers in studying and remedying existing problems (Greenwood and Levin, 2006). There is, however, a notable absence of the word designer in the early AR literature mapping the development of these systems. Later literature discusses collaboration and the context in which the activities are set (Swann, 2002), but they provide little evidence that is concerned with how those collaborations took place and the effects of those collaborations on the participants. The literature does not discuss if participating in the design process changed the people that were involved, it tracks changes in process only.

The unions representing workers traditionally had the right to negotiate working conditions and pay but it was a radical move giving workers a say in the type of technology being introduced in the workplace (Kensing and Greenbaum, 2013). Nygaard and Bergo (1974), an early pioneer, stresses that in order to have a say in the development and introduction of technology in the workplace, organisations must build up a knowledge base to draw from (Nygaard and Bergo, 1974). The premise being, participatory design aims to share power among participants (Bratteteig *et al.*, 2012). This awareness, that Participatory Design facilitates the democratisation (Frauenberger et al., 2015; Zamenopoulos and Alexiou, 2018b) of power is in essence, recognising that tension exists between those with greater knowledge and power and those with less. This shared power is facilitated through the participants undertaking multiple roles, as designer and as user. The designer (professionally trained) strives to learn and understand the realities or lived experiences of the user and the user strives to articulate their desired aims and learn appropriate technological means to obtain them (Simonsen and Robertson, 2012), a process of mutual learning.

Mutual learning

This is a term that warrants further interrogation as part of emerging practices:

> 'The idea of mutual learning in its traditional sense, where design professionals learn about the actual use context and workers about possible technological options, often does not create the opportunity for the seen but unnoticed features of work to be revealed' (Blomberg and Karasti, 2012, p.26).

Mutual learning, implies that the process is a bilinear activity that encourages participants to share knowledge. Through mutual learning the aim is to elevate the participant, worker or user to a higher level of understanding and therefore empowerment (Bossen, Dindler and Iversen, 2016; Bødker, Dindler and Iversen, 2017; Tessier, 2020).

Participation is at the core of this process (Bodker, Kensing and Simonsen, 2009). Bratteteig et al. (2012) suggest that, the only way to gain mutual respects between different groups is for them to learn about each other and therefore understand the different ways of reasoning. Mutual learning is the guiding principle for achieving this. Bjerknes and Bratteteig (1988) introduce the merits of another element necessary for mutual learning to take place, that of building trust by getting to know and respect each other, understanding different perspectives, knowledge and skills. They highlight that valuing others as skilled practitioners in their area of expertise is a basic element of mutual learning and effective Participatory Design. Valuing others areas of expertise in this context is peculiar to the workplace.

Mutual learning through participatory design began to be achieved by using tools and techniques that allow participants, to express themselves using their own language and in their own way (Brandt, Binder and Sanders, 2012; Sanders and Stappers, 2012). Tools can be physical things used to achieve something. A technique is the way the tool is used or implemented.

There are many different tools and techniques that can be used together, this combination of elements have been described as toolkits (Sanders and Stappers, 2012) and can consist of pencils, workbooks, symbolic shapes, photos, puppets, scrap materials, Lego® and so on, an open source example being, 'Leapfrog' a resource developed by ImaginationLancaster to engage with communities to enable creative exchange, these tools can be used in participatory design however they were not designed specifically for this purpose (Calvo and De Rosa, 2017; Cruickshank, Whitham and Perez, 2017).

The adoption of design language in participatory design was an issue, forcing participants to use unfamiliar language and skewing their perspective (Ehn, 1989). This recognition led to importance being placed on letting participants use their own language or even communicating

in different ways through doing and making (Bratteteig *et al.*, 2012). Tools that were for analysing rather than design became significant (Nygaard, 1986).
The historical beginnings of Participatory design in Scandinavia worked toward giving a voice to those in the workplace who traditionally lacked power. As participatory design moves away from the workplace it engages with new participants in more diverse contexts, including community-based projects, early examples of these projects included, CAVEAT a justice reform organisation in Canada (2001) and The Community Learning Network (CLN) based in Toronto (2002), both embraced a participatory design approach to address social and political issues. This practice is now supporting creative and critical discovery, facilitating greater expression for participants through arts, crafts and other creative activity (DiSalvo, Clement et Pipek, 2012). The next section explores, firstly, co-design and its relationship to participatory design and secondly what impact being a participant might have.

2.4.2. Co-design

Participatory design has traditionally emphasised democratic involvement and the empowerment of users, where as co-design has emerged through diverse collaborative partnerships and co-creation. Both seek to value the user or participant equitably, through their lived experiences, however, there are nuanced differences and also overlaps in approach.

Co-creation, Co-Design and Participatory Design are often used interchangeably, but there is literature that challenges the synonymous use of these terms. They are often confused with one another (Sanders and Stappers, 2008; Mattelmäki, Visser, 2011; Zamenopoulos and Alexiou, 2018) .
Unpicking the seemingly similar and perhaps interwoven characteristics and terminology in this area can be problematic, there are numerous explanations and interpretations. The overlaps and often contested nature of participation is discussed in greater detail in section (2.4.3).
Mattelmäki and Visser (2011) summarise co-design as four key criteria, as follows;

- The general involvement of designers and users when exploring, envisioning and developing solutions.
- Bringing political and power-dimensional aspects of empowerment, giving voice and tools to those who are not usually involved in a design process.
- Describes engagement of potential users and stakeholder collaboration.
- A general process or tool for collaborative engagement.

Zamenopoulos and Alexiou (2018) explore the connections between the collaborative design characteristics and conclude that although there are commonalities between them, they are, to a certain extent independent. They have expressed Co-design as follows;

> 'Co-design means that people come together to conceptually develop and create things that respond to certain matters of concern and create a (better) future reality. People come together despite, or because of their different agendas, needs, knowledge and skill' (Zamenopoulos and Alexiou, 2018 p.8b).

Zamenopoulos and Alexiou (2018) have interrogated and brought together the characteristics of collaborative design practice and sum up each strand throughout the text. Figure 2.3 recognises that collaborative design interactions can be nuanced and vary in characteristics, philosophically and theoretically. Collaborative design methods employed to address systems issues in an organisation will likely be very different from social design interaction with a community group living on a housing estate. Co-design within an organisation might employ focus groups, survey and pilot programs, it might use internal communication channels and due to the culture of the organisation there might be a hierarchical structure (Liu, Sun and Bennett, 2002; Bodker, 2009b). The 'key interests' in this process 'polyphony', enabling infrastructuring and agonism. In comparison a co-design interaction in a local community might use the power of connecting people to achieve social change. This might invite diverse stakeholders to community meetings, carry out door to door surveys, put on community events to discuss issues by leveraging social gatherings and there might be participatory workshops that engage residents in creative activities to explore ideas and solutions (Ssozi-Mugarura, Blake and Rivett, 2016; Calvo and Sclater, 2021a). The 'key interest' being social good and stimulating activism, creative citizenship and a DIY self-help practice, see figure 2.3.

The key traditions of co-design.

	Community Design	Socio-technical Design	Co-creative Design	Social Design
(Historical) Context	Democratic design in architecture and planning	Democratic design of socio-technical systems	Innovation in service and product design	Social change, and social innovation
Key Interests	Community building Consensus building	Cooperative action between adversaries Polyphony	Learning from the collective creativity of potential (users) Co-created value	Making use of the power of connecting people Social good
Key Concepts	Participation, communicative action	Participation, infrastructuring, agonism	Generative research, tools for engagement	Creative citizenship, design activism, DIY and self-help practices
Key Motivations	Democracy and sustainability	Democracy	Innovation	Social innovation and sustainability

Figure 2.3 The key interactions of co-design (Zamenopoulos and Alexiou, 2018b, p.15).

The investigation to understand this has been interpreted by these authors as a recognised problem that would benefit from clarity. They go on to explain that, in co-design the designers will facilitate a collaborative process but often participate in that process as one of the contributors. These interactions are often facilitated through creative activity engaging the use of tools that include design probes (Gaver, Dunne et Pacenti, 1999; Mattelmäki, 2006), design games (Brandt, 2006) and making toolkits (Sanders and Dandavate, 1999; Sanders and Stappers, 2012). Typically, the co-design process starts as part of the early phase of design exploration (Mattelmäki and Visser, 2011). There is evidence to show that this is an important element of co-design practice when focussing on trust and risk, this will be interrogated further in Chapter 3, Sanders and Stappers (2008) refer to this initial pre-design period as the 'Fuzzy front end' shown in Figure 2.4. This engagement from the pre-design and initial ideation stage seems indicative of co-design practice (Halse *et al.*, 2010; Bødker, Dindler and Iversen, 2017).

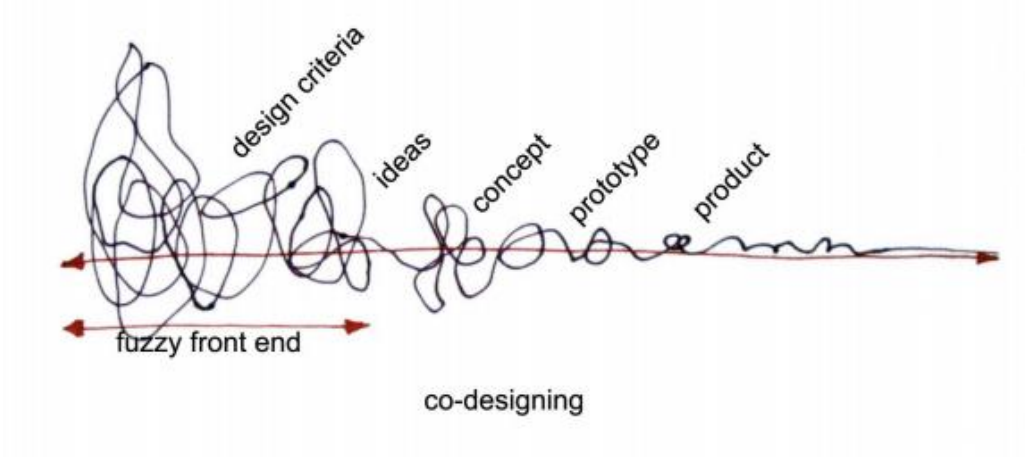


Figure 2.4 Co-designing (Sanders and Stappers, 2008, p.6).

It was initially suggested that co-design workshops were primarily for sketching and trying out possibilities (Halse *et al.*, 2010) but Brandt and Agger Erikson (2010) expanded this by highlighting that the co-design process, by the core design team, invites other important stakeholders into the wider span of design processes. This shows that this type of iterative ideation can work and in collaboration with non-designers. As with the literature on participatory design, it does not tell us what effect this process is having on the participants and if has changed the way they think or behave over time. The literature discusses multiple benefits and what is necessary for co-design to take place including sharing power, giving greater agency and developing trust (Mattelmäki and Visser, 2011; Drain, Shekar and Grigg, 2018;Clarke et al., 2019) it does not explore what, if any, impact that has, it does not say if the feeling of empowerment is sustained longer than the project or if that empowerment has led to greater agency or behavioural change in the way they are thinking or their approach. There is literature that investigates collaborative creativity and well-being, this does seem limited to well-being however and does not consider behaviour (Clift, 2012; Vink *et al.*, 2016; Daykin *et al.*, 2017).
During the review of literature on co-design and participatory design it is evident that the hierarchical status of the designer and the passive position of the user has experienced considerable change. The next section focusses on the contested spaces and overlapping methods of participatory design and co-design.

2.4.3 Accepting contested spaces and overlapping methods

Trying to separate, categorise and characterise the differences between participatory design and co-design is problematic, even in the participatory design literature (Vines et al., 2013; Halskov and Hansen, 2015). There are multiple similarities and overlapping theories, methods and

practices. Saad-Sulonen et al. (2018) describe this as a plurality of participation. It is worth acknowledging this, it is not clearly defined and the boundaries are continually shifting. However, there are some overlapping theories and practices that will help to situate this research thesis. Temporality, for example, is a critical aspect of both co-design and participatory design. By carefully considering temporal factors designers and facilitators can create more effective, inclusive and supportive interactions (McKercher, 2020). By understanding temporal dynamics, designers will better understand the needs of the stakeholders participating in the projects. It is crucial to understand when to involve stakeholders, when to move between stages of the design process and the needs of the participants(Saad-Sulonen *et al.*, 2018). Exit strategies and knowing when to stop are also critical in both approaches. Complex social issues often have no clearly defined solution or end sometimes known as wicked problems (Coyne, 2005).

Deciding on an exit strategy as part of the process at an early stage is advantageous (Rittel and Webber, 1973) in participatory design and co-design enactments.

The overlapping, borrowing and plundering of approaches between participatory approaches has been described by Lindstrom and Stahl (2015) as a patchwork approach. This suggests that PD and CD, instead of separating and defining, might generously contribute appropriate tools and methods in multidisciplinary context, according to the needs of participants.

In the literature surrounding both PD and CD consideration has been given to how to make both approaches more effective and the research that is currently emerging around care, kindness and inclusion (Blomkamp, 2018; McKercher, 2020a), in which temporality is a significant factor, however even this does not discuss if the process of participating has changed the participant in any way or their behaviour over time. This literature review has not found any longer-term studies that consider if participation has changed the people involved or if it has impacted their everyday activities or their future aspirations. PD and CD also require preparatory work to establish relationships within the communities that the researchers are not part of. This preliminary relationship building can have significant impact on participants and the success of the project and should be considered as valuable as other more visible aspects of co-creation (Yee et al., 2024). To further help position this research thesis the next section explores the contexts of the co-design projects that the author of this thesis has facilitated between 1991 and 2020.

2.4.4. The author as collaborative design practitioner

The author of this research thesis, is a practicing designer and has historically collaborated with their partner Dr. Jill Brewster since 1992. They have extensive experience of working in the UK with communities, organisations, educational establishments and young people on collaborative and creative projects. They have worked on over a hundred projects with partners that include the NHS, environmental organisations, local government councils, schools and museums.

Projects include the design of hospital interiors, way marking systems, outdoor meeting areas, seating and artworks for the NHS. They have partnered with many environmental organisations and local government departments to work with communities to design and build artworks, entrances and interpretations for parks, nature reserves and sites of special interest and places for play.

Moving on from consultation

The projects that the author was invited to lead usually placed some emphasis on what was described as consultation during the 1990s and early 2000s. This often involved the publicly funded designer/artist developing an idea in isolation, putting that idea forward to an organisation or arts agency, who had put out a call for a project, and then, if successful, would carry out some form of 'community consultation'. This might take the form of an exhibition of the development of the work that they had produced and then they ask what local communities thought about it. The public might be invited to write in a comments book or provide verbal feedback.

Often the designer or artist would be chosen by a panel of non-design professionals, perhaps local dignitaries, project managers and accounts personnel. The designer/artist would be awarded the commission based on what the panel thought about their previous work. It was beneficial for the designer/artist to have a strong personal style of work. The steering group managing the project would expect the designer/artist to produce a design that was similar in nature to their previous work.

The author placed emphasis at this time on involving communities in the design process from the beginning, rather than asking for feedback at the end. This resulted in the author and their partner having no real style on which to build the reputation required to satisfy commissioning bodies. They were often criticised for the widely different outcomes that were produced during their projects. This was not a criticism of the outcome itself but the process that they were using. What was coming into question from the arts agencies that they often worked with, was, how

could everyday people contribute to quality art and design outcomes when they had no training or experience as designers and artists? Arts agencies and commissioning bodies needed to see the development of a concept over many years by a designer or artist that could show how deeply they might be considering an issue or theme. This approach often resulted in outcomes that were not context specific, did not reflect or address the needs of the people using and interacting with whatever was produced.

The author however focussed on valuing the lived experiences of the people that they were working with. They enabled the groups and individuals that they worked with to have an equal part in the design, development and manufacture of the outcomes they produced.
Over many years the author and their partner developed methods and tools that helped diverse groups take an active role in creative activity and have agency and power within the project. The author was not shifting from a top-down approach to a bottom up approach. The participants in the projects were not empowered to take over the design process. The author facilitated workshops that valued each person's expertise, with the author leading the design of the outcomes. Other participants were experts in education, local history, natural landscape and environment and so forth. Each participant contributing their knowledge in an equitable manner.

What was happening in the designing and making workshops?

Between 1992 and 2020 the author developed approaches that enabled increased equity and agency in the projects that they were involved with. For example, site visits and focus groups, open design workshops and skill sharing opportunities. These hands-on workshops often provided opportunities for discussions and trusting relationships to be developed. This was a slow and incremental change. The author was not, during this time, aware of what participatory or co-design was or that anyone else was working in this way. It was common place for artists to work in isolation on projects and at stages throughout the development of ideas they were compelled to reveal their progress using drawings and models. These projects were for the most part publicly funded projects with commission values of between 10 -100 thousand GBP.
The author, alternatively, was spending time identifying issues and developing ideas and process with participants from community groups on housing estates, staff from organisations and young people in schools and youth clubs. The interactions were often creative activities where participants and designer shared knowledge, expertise and skills. Drawing, writing, model making

and production of final outcomes were undertaken by core groups who were invested in the project.

The effects of the creative collaboration workshops was, observable by the author, although these observations emerged gently over a sustained period of workshops, spanning thirty years. They noticed that some of the participants were changing their behaviour, their use of language and their mindset, some participants did this early in the project, within two or three meetings and others over longer periods of time as the project evolved, some of the projects continued for many weeks or months. As trusting relationships deepened many of the participants grew more confident to talk to each other, discuss the project with people outside the group and even to be part of the presentations for funders and becoming panel members for interviewing contractors. They became more confident to take responsibility to do and make things without permission and they allowed themselves to be more irreverent and experimental. Often participants were, at the beginning of the projects, confused, uncertain and even showed frustration and anger. There were often instances of adult participants stating very clearly that they would not be able to be imaginative or creative as they were not good at art when they were at school, however as their participation grew in the workshops their ability to think in a creative, critical and designerly way increased. The author led participants through design processes, methods and materials but was unable to identify what had triggered these observable changes in participants and at what point the participants mindset, confidence and emotional responses shifted, in those that the project impacted. The author notes that not all participants were observed being affected by participating in projects.

2.5 Some of the Challenges of collaborative processes

There are multiple challenges in collaborative design practice that are arguably, preventing them from being more widely practiced. This section discusses some of these challenges and the gaps in knowledge that this thesis addresses.

2.5.1 Relinquishing power

Designers have traditionally been in control of a hierarchical position, as has previously been discussed (Sanders and Stappers, 2008; Simonsen and Robertson, 2013; Cruickshank, Coupe and Hennessy, 2016). It has also been established how collaborative design processes have the potential to provide an opportunity to share power with participants. The literature that has been

interrogated has not however discussed in depth how shifts in power have impacted the actors in the collaborative design process and if this has changed participants over time.
Some designers find it difficult to set aside their (traditional) role as the expert in charge of the design process (Cruickshank, Coupe and Hennessy, 2016). These authors discuss a framework for designers and participants to use, to address some of the issues experienced through the co-design process. It does not explore 'why' some designers find the shift in power or move away from a hierarchical process so difficult or what the motivators of other designers are that allow them to embrace this shift. One of the issues could be the ownership of the ideas. Marc Tassoul (2012) posits, 'Who's idea, is it?' As in a football team the goal belongs to the whole team, they all prepare the ground and bring the ball forward. This analogy although, providing us with an idea, is not ideal. The goal scorer is still rewarded with praise and credited with the goal, the co-designer is not, unless we start to credit the facilitator (designer), which would seem to have just shifted the credit and power from one place to another. The designer, it could be said, relinquishes the end payoff that satisfies ego, self-worth and competitive nature. There could be other motivators for the designer perhaps linked to previous discussions, 'including mindset' (Sanders and Stappers, 2008) and 'way of being in open design' (openness). It is also prudent to underline that the designer is not just the embedded professionally trained designer in this context, all participants are co-designers.

2.5.2 Accessible design language and frameworks

The reflective activity often used in design frameworks like the Design Council's Double Diamond provide opportunities to explore the individual's personal journey, however, emotions and effects are not easily uncovered or attached explicitly to stages in an activity and recognising personal development is a key element in successful social action (Tejani and Breeze, 2021). Design is not understood or discussed with any real consistency and this can be problematic when an offer is made regarding collaborative design projects.
Co-design literature does not provide a taxonomy (Becattini *et al.*, 2020) or language that is easily shared. Figure 2.5 shows the Design Council's Double Diamond framework, this was adapted from an original framework developed by Banathy and Combs (1999) to support systems design. The double diamond is promoted as a design framework that supports divergent and convergent thinking for designers and non-designers alike. It is described as a non-linear process, encouraging iteration and reflection however, it is not intuitive or easily understood as the explanations for each stage do not use explicit language.

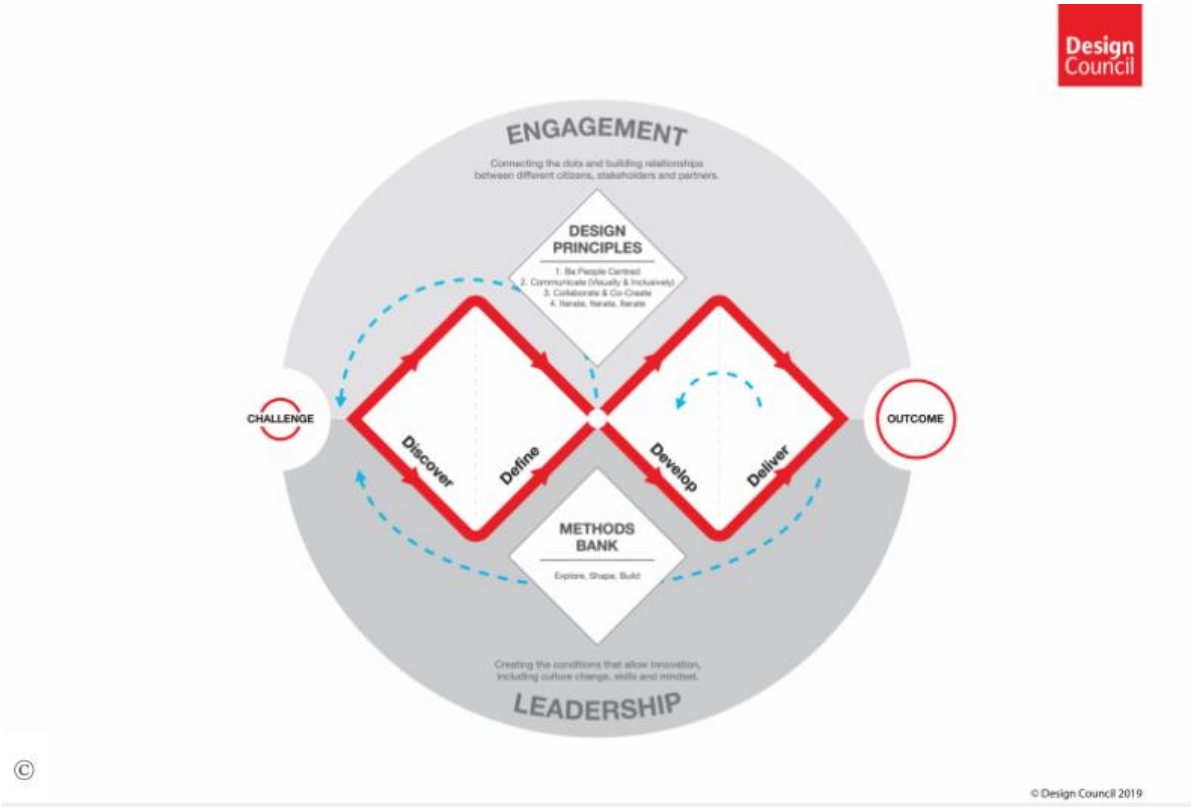


Figure 2.5 The Design Council's framework for innovation (DesignCouncil, 2021, p.2).

The model supports four stages of design process:

- Discover – helps people understand rather than assume, involves speaking to people affected by the issues.
- Define – Insights gathered from discovery can help define challenges.
- Develop – The second diamond encourages people to give different answers to the defined problems or issues, seeking inspiration from elsewhere and co-designing with a range of different people.
- Deliver – Involves testing different solutions at small scale, rejecting those that will not work and improving the ones that will.

'Be people centred' is one of the Design Council's key principles, perhaps this model facilitates greater understanding of a design process but it is missing the opportunity to provide a greater understanding or awareness of the personal development that the collaborators are subject to. There are many models that are offered in support of those wishing to participate in design and collaborative design activities, Dubberly (2004) provides 'How do you design: A compendium of models' bringing many of them together. These models similarly to the Double Diamond

(DesignCouncil, 2021a) offer participants guidance on what to do and when to do it. Sanders and Stappers (2008) mark the section 'ideas' others use language like 'be creative' (Lawson, 2006). There is little in the way of explicit language to suggest 'how'. There are some fundamental processes that are missing, hidden or tacit.

2.5.3. Emerging effects of collaboration

To explore risk and trust, it is worth revisiting Marlene Stikker's in (Van Abel et al., 2014) introduction to open design and her view on person characteristics. She says that those who respond to open design with fear and mistrust, fear that all the energy it costs to create something might be wasted. This could be interpreted as risk averse. Marc Tassoul (2012) writes:

> 'Participants should be able to trust each other and so be willing to share all their ideas and associations, whether they are weird, or not, without having to find out afterwards that they made some unfavourable lasting impression in their organisation.' (Tassoul, 2012 p.212).

It is not clear if this refers only to facilitating collaborative design projects specifically or if, as might be implied, it should be liberally applied across all aspects of the organisation. If this is the case then perhaps the elements that are essential for effective co-design can be equally effective across a wider scope.

Stikker (Van Abel et al., 2014) also says that a designer might argue that if anyone can be a designer, then amateurs will pollute the beautiful world of design. This stance does imply, in this case with some irony, that there is a deep mistrust in open and perhaps collaborative design practice. As the role of professional design is challenged there could be a polarisation between casual design activity and critical design activity (Cruickshank and Atkinson, 2014). To clarify, these authors, cite casual design as cups, tee shirts and so on and critical design as medical equipment, complex systems and mobile phones, as examples. Risk then being a factor, caused by mistrust in participants and process. The effects of collaborative practice on behaviour, is lacking in evidence and interrogation. This research seeks to recognise and establish the impact of these effects.

Trust in collaborative design practices has emerged as a significant contributor to effective collaborative design practices (Simonsen and Robertson, 2012; Clarke et al., 2019; Calvo and Sclater, 2021) as well as the environments and elements necessary to foster trust. This review has however not found research that interrogates the notion of trust and risk changing future behaviour in the individual co-designer or impacting on future organisational change.

The changing position and role of participants in design has an important part to play in the collaborative design process, not just for the designer but for all actors in the co-design process (Sanders and Stappers, 2012; Simonsen and Robertson, 2013). The impact of these processes is worthy of further exploration.

Shifting perspective, other aspects of the literature discuss what consideration should be made by designers and facilitators planning to affect changes in organisations and communities using design processes. Salmi and Mattelmäki (2021) use the magic circle (Huizinga, 1949) and transporting participants to a different world (Vaajakallio and Mattelmäki, 2014) concept to explore a mindset that enables participants to freely experiment with ideas in a playful and otherwise separate reality. Light and Akama (2012) consider the value of participants emotions in the process of co-design, not just with regard to participants well-being as might be expected but also the role of those emotions as a positive force in design practice. They consider the macrodynamics of the co-design group and the impact that might have on future design practices.

Akama and Prendiville (2013) posit that by adding the Co to design (Co-design) it signifies an epistemological shift towards openness to embrace the influence, interventions, disruptions tensions and uncertainties that might be brought about by involving other people in established design practices. They go on to suggest that improvisations are necessary to fit the unique encounters of co-design, suggesting that co-design is an ever changing and fluid series of events. These events not only helping to change services but that participants experience continually occurring transformations also. These effects will be discussed in more detail in Chapter 3.

2.6 Summary

Chapter 2 explores collaborative design practices, their historical characteristics and some of the challenges associated with them. This section of the contextual review highlights a number of areas where research could help to address the gaps in knowledge. Research exploring the effects of co-design on co-designers remains limited. This research seeks to generate greater understanding of how co-designing effects the behaviour of participants, this includes designers, non-designers, researchers, wider stakeholders and organisations involved in co-design and the pre-design stage of preparing for co-design (Akama and Light, 2020).

This section establishes that there is a distinction between 'everyone' designing through everyday activity and the professional designer, the focus of this research will be in the area where professional designer and non-designer find common ground. Making a distinction between unconscious daily activity and the conscious, awareness of planning projects provides the intersection which can be seen in Figure 2.6.

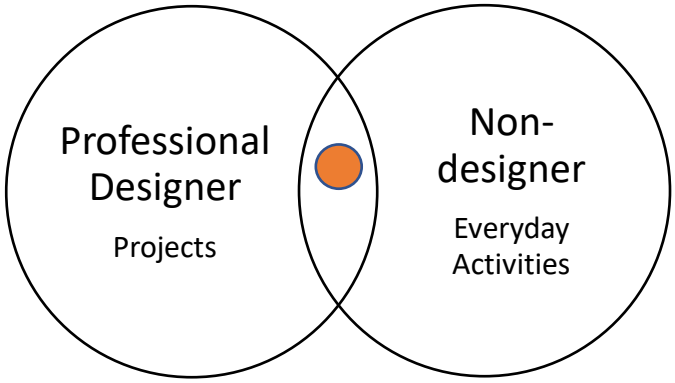


Figure 2.6 Collaborative common ground of professional designer and non-designer (everyday activity)

This highlights the position of professional designer and the non-professional designer. It highlights the gap that current design models have left unaddressed, which is, what are the fundamental processes that are used by designers to think in a designerly, creative and critical way and how are they shared with those participants who are not familiar with design. There is an essence of doing design and co-design that seems to be just out of reach.

Chapter 3 Effects of co-design; separating the elements of experience

3.1 Introduction

The last section explored different definitions of design, who designs and identified some of the effects of design practices. This section looks at the experiences and emotions that are meaningful to co-designers and provide tangible examples to support the discussion.
It has already been established, in Chapter 2, that this thesis will focus on individual participants who might be affected by doing co-design in community-based projects.

To make informed and structured identification of the effects of co-design, the elements that make up the experiences of doing co-design, it is necessary to define what is meant by, 'effects'. The OED defines 'effects' as; to bring about an event or result; to accomplish an intention or a desire; being transitive, to produce a state or condition (Oxford English dictionary. 2nd rev. e, sans date)
An effect can be described as the outcome of an activity, in this case, the focus is the effect during and beyond participating in co-design.
This section will help to position the research in this thesis, within the existing literature. It will establish if the effects of co-design are being recognised and connected on multiple levels, providing a deeper understanding of the effects on participants during the co-design process and beyond.

3.2 What levels are impacted by the effects of co-design?

There are multiple levels of interaction and they occur at three levels of scale, identified by Geels and Schot (2010) *micro, meso and macro*.
Micro is concerned with people and niches, *meso* is concerned with processes and regimes and *macro* is concerned with organisation and landscape.

> "Each level is conceptualised as a heterogenous socio-technical configuration….the (socio-) logic of the three levels is that they provide different kinds of coordination and structuration activities" (Geels and Schot, 2010 p.24).

The three levels provide a notion of networks and the possible relationships between them.

The levels can be said to be progressively more resistant to change and can be prone to stasis, as the scale of the level increases, they can become more 'locked in' to existing trajectories (Irwin, Tonkinwise and Kossoff, 2020). The likelihood of change and innovation is then lessened. The characteristics of these levels are outlined as follows;

> 'In niches the social networks are small, unstable and precarious, consisting of entrepreneurs and innovators that are willing to take a chance…regimes are more stable: social networks are larger; artefacts, regulations, markets, infrastructures etc, have coalesced into stable configurations and rules are articulated clearly and have more structuring effects, The socio- technical landscape forms a broad exogenous environment that as such is beyond the direct influence of regime and niche actors' (Geels and Schot, 2010 p.27).

The scale of these levels is however not fixed. Macro could mean, on global scale, but could also mean on a local scale, they are not bounded by geographical landscapes. It is similar for Micro or a niche level of perspective, it is not necessarily only concerned with people and everyday activities. Irwin, Tonkinwise and Kossoff (Irwin, Tonkinwise and Kossoff, 2020) summarise this by suggesting that micro, meso and macro are analytical abstractions and that they describe dynamic states of a fragment of a whole socio-technical system, the characteristics and examples of each perspective will be expanded in sections 3.4 - 3.6.

The research questions and proposition that are the basis for this thesis are concerned with the micro level perspective, the niche, the people who participate in collaborative design opportunities, it is also concerned with how any micro changes impact other levels of perspective and everyday activity. Theoretical frameworks and the potential links or connections between these levels of perspective will be explored in greater detail in section 3.7 of this chapter. The next section will explore the co-design effects on these three levels further according to the literature examined in this thesis.

3.3 The effects on policy, macro perspective

It is becoming increasingly important that societal issues are responded to collaboratively and addressed using methods that engage the people that are affected by them. Evans and Terrey

(2016) suggest that the critical public policy problems we face need to be co-created by citizens and stakeholders and that co-design has an essential role to play, if done well.
Many town councils, city councils and organisations concerned with human welfare have adopted collaborative methods of engagement to place people at the centre of the process of making decisions about better futures (Cruickshank, Coupe and Hennessy, 2016; Cruickshank, Whitham and Perez, 2017; Alexiou *et al.*, 2020; Pérez *et al.*, 2022). As discussed in 3.0 the introduction to this section, a macro perspective is concerned with policy and organisational practice and can be slow to respond to and accommodate change, however it does allow for an evidence-based understanding of existing issues (Evans and Terrey, 2016) and thus can add legitimacy to policy initiatives. However, co-design research often focusses on the micro perspective and the participants involved in fieldwork alone. Huybrechts, Benessch and Geib (2017) argue that this unilateral approach is obscuring interactivity with institutional framing. Perhaps the connected, holistic approach posited by Irwin, Tonkinwise and Kossoff (2020) provides a more fluid exchange of influence and might therefore lessen the resistance to change characteristic in organisational policy.

3.4 The effects on process, meso perspective

The impact of co-design experiences on processes is discussed by Van Mechelen et al. (2017) where a synopsis of co-design describes how participants are led through a series of small steps to navigate designerly ways of working is used to exemplify this, they use Sanders and Stappers methods of reflective activities that are analysed and the narrative accounts fed back into the design process to continually adjust, shift and adapt the processes used to do co-design. These collaborative practices are in a constant state of reformation (Shove, Pantzar and Watson, 2012) as a result of the reflective activities that are a fundamental element of co-design. Co-design research and the impact of it on developing better process for doing design is well documented, however, the effects that are valued in these processes will be valuable in other areas of participants lives. These effects might change the behaviour and trajectory of participants beyond the projects in hand and the context of designerly thinking altogether.

3.5 The effects on people, micro perspective.

The identification of the elements needed for effective co-design has grown throughout the literature in recent years, as have some of the effects that have been a result of these

collaborative practices. As these effects were scrutinised, four overarching categories emerged multiple times from the design literature that focussed on participatory design (PD) and co-design (CD) not only in the context of local communities but also in a broader sense of doing PD and CD within organisations and businesses. These categorisations are also prominent in the reflexive section by the author, observations that were made as a practitioner over a thirty-year period having led over a hundred collaborative projects, section 2.4.4. These provide the categories for the potential effects that might have contributed to any changes in behaviour of participants in these areas.

Firstly, ***confidence*** has been shown to increase in participants of co-design activities in many case studies (Hanton, Mellalieu and Hall, 2004; Corcoran, Marshall and Walsh, 2018; Grindell *et al.*, 2022). Confidence to better communicate, think creatively and carry out physical making tasks were also observed during workshops facilitated by the author, in section 2.4.4 these effects were observed within the co-design group and in participant's behaviour beyond the boundaries of the group, when interacting with people outside of the collaborative enactment. There is however a lack of depth in the research to uncover the explicit effects, environments or situations that contributed to changes in confidence and behaviour. The research that is available does not offer data that might suggest that participants had a negative experience and were less confident after participating. The following quote exemplifies the need for research that provides deeper understanding surrounding the situations where greater confidence is claimed due to collaborative design process;

> 'Authors identified that stakeholders would have more trust and confidence in the final outputs because their needs were identified, a shared understanding was gained, power and voice was attended to and a sense of ownership was achieved' (Grindell et al., 2022 p.17).

The literature provides scant insight into how and when in the co-design process this shift of confidence happens. It does not provide data to show if this was a gradual change in behaviour or if it was as a sudden response to a trigger point or particular situation or method of working. Some instances of researchers recognising the tacit nature of co-creation, participation and co-design are apparent, Roggema (2013) suggests that tacit knowledge is built, in an immersive environment and well-run charrettes are of paramount importance. Understanding this tacit nature of gaining confidence, still however, feels out of reach. Corcoran, Marshall and Walsh highlight that collaborative methods provide;

> '… benefits for the young participants including increased social and environmental awareness and decision-making confidence which co-existed with some discomfort about the realisation of new design process skills' (Corcoran, Marshall and Walsh, 2018 p.315).

They go on to suggest that collaborative situations that are too closely managed often tend not to be open and explorative. Literature that suggests how to achieve confidence through a sense of openness and exploration in collaborative processes for the individual participant is not explicit even though it is thought to be crucial in the evolution of design in the future, as seen in the following;

> 'Changes in mindset, posture and temperament will give rise to new ways of designing. As new design approaches evolve, designers' temperaments and posture will continue to evolve and change' (Irwin, Tonkinwise and Kossoff, 2020 p.91).

Self-confidence has been described in numerous ways throughout the literature but it is widely accepted that it is one's own ability to perform or behave (Bandura, 1977; Luthans and Peterson, 2002; Schyns and Sczesny, 2010; Mich, Conners and Feldman, 2014).

Secondly, there are multiple references in the literature that emphasise ***open mindset*** (Steen, Manschot and de Koning, 2011; Van Abel et al., 2014; Manzini, 2015) as playing a key role in collaborative design activities and successes. The shift in thinking and approach was observed by the author in many of the projects that they facilitated, it is notable however, that change in mindset and observable behaviour was not observed in all participants. Some were able to shift their mindset early on in the projects, others took longer as part of a gentler process and others were not able to make an observable shift in mindset. Being open to new ideas, ways of working and new ways of thinking are all suggested to be the result of an existing or shifting towards an open mindset, this is discussed in greater depth in Chapter 2, 2.5, Sanders and Stappers (2008) Van Abel et al (2014) and the Design Council's Double Diamond (2021b) model all suggest that an ability to be open to new solutions, processes and approaches are critical for developing new ideas. Successfully adopting the mindset needed to think in a designerly way seems to rely on achieving 'openness'.

The literature does not seem to discuss situations where participants were unable to achieve this state of mind or disposition. The effects that led to changes in mindset are also lacking in depth and clarity leading to a lack of insight of how to achieve this desired state of mind. The term

mindset or perhaps disposition is a term that can be used to describe a way of thinking that, in the context of design, does not hold up under scrutiny. It is vague and overarching, perhaps even tacit knowledge held by designers, perhaps making it problematic to achieve for participants in collaborative design situations. The following example shows this, recognising a certain mindset is required without explicitly providing a pathway to achieve it;

> 'We like to think about co-design as an approach for decision making in complex contexts. This is because it's a way of working requiring a certain mindset to approach different situations' (Crates and Hawkins, 2016 p.6).

Sanders and Stappers highlight some of the issues with designers and lived experience participants concerning mindset in their seminal paper, Co-creation and the new landscape of design, as follows;

> 'For many people, the mindset for co-designing, i.e., the belief that all people are creative, is difficult to embrace' (Sanders and Stappers, 2008 p.8) .

This does provide some insight in to what that particular reference to mindset requires however this is in refence to believing in the principles of co-design rather than the mindset that supports being creative.

The following quote provides an example of the implicit nature of the term mindset when used in the context of co-design enactments;

> 'Co-design as it is practiced and discussed today takes on quite different manifestations, depending upon the expertise and mindsets of its practitioners' (Sanders and Stappers, 2008 p.8).

There is a gap in the literature surrounding how to achieve this mindset that is necessary for co-design participants to be creative and critical thinkers. If as suggested it manifests differently in each co-design situation it will continue to be problematic when attempting to articulate how and when to think in a designerly way (Cross, 2001) or attempt to make the mindset generalisable.

Thirdly, ***awareness*** of context and process helped to support co-design participants across the literature, bringing about self-awareness of the multiple effects that they might be experiencing (White, 2009; Aguirre, Agudelo et Romm, 2017; Xiao, Luo et Li, 2022). Awareness seems to be due to making unseen or implicit processes more visible. This is not meant to suggest that this is the responsibility of the facilitator or professional designer but might emerge as part of the

collaborative process naturally. Kleitman and Stankov (2007) provide evidence to suggest that one's awareness of one's own cognitive processes can have a significant impact on confidence and help to facilitate intelligent behaviour, critical thinking and reflection (discussed in section 3.5). Shared awareness or shared understanding also plays a significant role in the collaborative process (Kleinsmann and Valkenburg, 2008) however this reference is concerned with the group dynamic rather than the effects on the individual participants. The effects and situations that help to bring about self-awareness are not numerous in the context of co-design literature. White (2009) posits that self-confidence and self-awareness are highly contextual and task specific. This might suggest that self-awareness is dependent on particular aspects of the co-design process. Often, practices and encounters in everyday life can be mundane and taken for granted and as such are unremarkable and even invisible (Certeau, 1988; Rosaldo, 1993), they can easily be outside the scope of awareness of collaborating participants. And with current understanding seem to constantly shift with each enactment of co-design. The author notes that participants in the co-design projects that they facilitated, (2.4.4) were often unaware of the processes that they might be using to participate. During workshops the author often pointed out to participants simple processes and how they were being used. Participants often reacted by stating that once it had been pointed out and made visible, it was obvious, they were surprised that they had not been aware of this before. For example, often participants would be reluctant to draw or make things or verbally contribute to the co-design group. The author made visible the notion that this might be due to fear of failure and a preconceived idea of what was good and bad in design. It was observable that the awareness of process and feelings often stimulated a reflective approach.

Finally in the four main themes**, *emotional responses*** experienced by participants were discussed in a number of cases where the focus of the research leant more towards the well-being of participant enacting co-design (Light and Akama, 2012; Sanders and Stappers, 2012; Fitzmaurice, 2017; McKercher, 2020), there were examples of exemplar case studies as seen here;

> 'Balanced against the need to recognise children and young people as social actors is the importance of recognising their potential vulnerability. There is a risk that children and young people who have experienced trauma may be further harmed if participation does not occur in an ethical way' (Fitzmaurice, 2017 p.48).

Some of the literature recognises the emotional element of collaborative activities. Often however, emotional responses do seem to be underplayed in many other cases, perhaps not

perceived as being as valuable in the co-design process or perhaps due to the problematic nature of substantiating them. There is perhaps further potential in the positive emotions of collaborative design activities playing a significant role in the other themes discussed here. For example, being joyful in the context of creative thinking has multiple references (Johansson and Linde, 2005; Samuelsson and Johansson, 2006; Bateson and Martin, 2013; Bateson, 2014). This is not to suggest that understanding emotion responses for the sake of ethics and protection of participants is not important. Exploring the value of emotional responses as a key contributor in the co-design process is worth greater scrutiny. The author observed that a significant number of participants in the co-design projects that they facilitated showed strong emotional responses at varying stages in the project emphasising temporality (2.4.3) as a critical element in co-design projects. For example, participants found starting a project that was unfamiliar and uncertain in its nature and possible outcome made people anxious, fearful and confused. These emotions were observed to change during the project. Participants experienced excitement and joy and sometimes anger as they progressed.

Studying the research case studies the authors reflexive account of their practice and the literature that surrounds co-design in greater depth it was possible to sift multiple effects that might have contributed to and could be catagorised into, the four main themes.
There are fundamental elements in co-design Empowerment (Manzini, 2015), underpins co-design practice in a similar way to **t**rust (Tassoul, 2012) and equality (Freire, 1972) emerging as significant contributors to effective collaborative design practices. Other effects are seen across the literature and authors reflexive account of practice. These effects are more nuanced and can be seen in multiple scenarios to a greater and lesser extent, mutual learning (Sanders and Stappers, 2012), care for participants and ethical consideration (Light and Akama, 2014)**,** similarly, togetherness (McKercher, 2020b). Focussing more on designerly thinking, risk taking (Simonsen and Robertson, 2013), playfulness (Bateson, 2014; Vaajakallio and Mattelmäki, 2014; Nitecki and Chung, 2016) creative thinking (Corcoran, Marshall and Walsh, 2018) are elements that emerged in multiple scenarios. Confidence in doing and making (Van Dooren *et al.*, 2014) were recurring themes throughout the co-design and participatory design literature and authors' practice as a co-designer.
The implication of these elements is often that they constitute the benefits of doing co-design and participatory practices but also, that they are a consequence of the process, a side benefit, the main focus being the outcome. There might be more value in the process of collaborative design if there were a shift in focus. Other social research studies and literature have considered

the emotional journey, these are less well documented however, frustration and conflict (Cruickshank, Coupe and Hennessy, 2016) apparent in participants, this includes the designers within the co-design groups affected by relinquishing power and agency. Surprise (Becattini *et al.*, 2020) for participants was a response to awareness and ability to think differently and be open to new ideas. Fear of failure (Cross, 2023) and fear in general (Alexiou *et al.*, 2020) seem to be a significant barrier in multiple projects. Anxiety (Pink, 2020) also emerges as a significant barrier to creative thinking. These effects seem to be a generalisation that might apply in some circumstances and to some participants, however, co-design is not easily generalizable (Fuad-Luke, 2009), being subject to changing contexts and times. For example, Pink (2020) does not say when any anxiety might occur in the process of co-design and does not suggest explicitly how doing co-design might combat anxiety. They do not suggest whether the anxiety existed prior to doing co-design. They do not suggest what the trigger for anxiety was, it is not clear if it is the thought of doing co-design that might have caused the anxiety. Without understanding what the effects of doing co-design are and when they occur, it is unlikely that claims about the benefits of collaborative design on participants or their everyday activities beyond the project in hand can be substantiated with any real rigour.

Table 3.1 brings together the four main themes and the effects allocated to each of them. There are however, a number of effects that that are included in Table 3.1 that are not supported by the literature that was studied in this research. These are effects that the author of this PhD thesis has observed in their extensive practice as a designer working with communities in the UK. (section 2.4.4). There is a potential gap in the literature that might be addressed by including these effects as potential contributors to the four main themes. These effects will be searched for with the effects that are supported by the literature review to establish if they are present in the research carried out in the course of this investigation. The effects supported by the literature review are entered into Table 3.1 in black, the effects that were observed during the authors practice are entered in green.

The effects of doing collaborative design **Key indicators**			
Confidence	**Awareness**	**Mindset**	**Emotional responses**
To communicate	Of own Voice	Experimental	Anxiety
To do	Of empowerment	Risk taking	Surprise - disrupting expectation and beliefs
To make	Of trust	Equality	Anger
To think/ideas/imagination	Of value, self and process	Mutual learning/creative exchange	Frustration
To be irreverent	Of conflict / friction	Enthusiasm	Uncertainty
To be disruptive	Of resources	Openness	Confusion
To be playful	Of space	Togetherness	Joy
To be wrong			Excitement
To be decisive			Fear
To be mischievous			
Unexpected effect	Unexpected effect	Unexpected effect	Unexpected effect

Table 3.1 Table of effects and elements in co-design practice compiled by the author.

3.6 The effects and language used

The lack of shared, explicit language and easily understood process and effects continue to make collaborative design a non-inclusive activity. The literature that addresses these issues provides little common design language that is easily synchronised with collaborative activity. It does not map the insightful experiences, emotions and transient thought processes that might occur in collaborative design practice.

Knowledge, experience and skills are passed and exchanged through co-design, in the context of social practice or communities. The broader theme for this being mutual learning (Simonsen and Robertson, 2013; Bødker, Dindler and Iversen, 2017; Calvo and Sclater, 2021b). And although the activity of social practice can be subject to a specific time and context, which might be in the form of a project, the effects or experiences of the activities might not be subject to the boundaries established by the project. The effects being in a state of flux or transition throughout the project. It is the transitional states that form the conditions that emerge throughout the context of collaborative design.

The idea that the effects of social practice are able to travel beyond the boundaries of a time specific situation or project has been discussed by Shove and Pantzar (2006) this is a notion that could be applied to mutual learning and the effects of co-design. They suggest that, we are surrounded by things, objects, buildings and places that have outlived the practices that they were once a vital part of. The experiences, elements or effects that were the product of these practices bounded by specific time and context can be lost, but also, they can continue, being embedded and lasting beyond the situation. 'These effects could be treated as if they had a life of their own, it is through practice that these effects are produced and reproduced, lost or taken forward from one situation to another' (Shove, Pantzar and Watson, 2012).

McLaughlin (2003) posits 'There is a crucial and complex relationship between our inner and outer worlds.' Our thinking is deeply affected by the emotions that are stimulated or generated through the experiences and interactions of social practice. When we work collaboratively, we are more likely to be influenced and influence others' perceptions. 'Discovery often comes from making use of information previously regarded as useless or unimportant' (McLaughlin, 2003) this might be interpreted as; discovery often comes from valuing failure and having the confidence to fail.

The responses of the participants doing co-design might then be linked to the effects belonging to the specific situated activity, being aware of it and being in a position to use this knowledge. Kaszynska, Kimbell and Bailey (2022) describe the necessary classification of characteristics that are required for social design research schemes, they are described as the 'Triple S' and are as follows;

- Situational—carried out in specific situations and through situational transformation, generating insights into those situations (thus, subject to situational understanding and analysis)
- Situated—aware of its own position in relation to existing and relevant bodies of research (as a form of networked knowledge production)
- Situating—contributing to an existing stock of knowledge (as judged by a community of validation) while at the same time engaging in world-changing through action (ontological transformation).

3.7 Conclusion

This section brings together the effects of co-design, it scrutinises the levels of perspective that might be affected by co-design and it explores how the effects of co-design travel between situations providing a connectedness between micro and meso situations.
Establishing changes in confidence, awareness, mindset and emotions could be problematic, however, doing design is about reflecting and action, discussed in section 3.3 of this chapter. The framework of effects in Table 3.1 will support this research thesis by providing a reflective tool, linking individual's experiences and confidence to changing situations in everyday life. The next chapter will discuss the methodology and methods that will be used in this thesis.

Chapter 4 Research methodology

4.1 Introduction

Research in a real-world context is a systematic and organised effort to investigate a specific problem that needs a solution (Sekaran and Bougie, 2016). Bruce Archer (1995) describes research in general as having five goals, as follows:

- systematic because it is pursued according to some plan;
- an enquiry because it seeks to find answers to questions;
- goal-directed because the objects of enquiry are posed by the lack of description;
- knowledge-directed because the findings of the enquiry must go beyond providing mere information and;
- communicable because the findings must be intelligible to, and located within some framework of understanding for, an appropriate audience.

To establish how we achieve this, this chapter will explore multiple interdisciplinary approaches that could be adopted or incorporated into this research methodology. Researching real world problems can mean to some, business, hospitals, schools or other organisations (Gray, 2013). In the context for this study however real-world problems will be specific to communities where people live and interact, locally in the UK. A systematic approach is employed by establishing fundamental links between theory and practice that is used as the building blocks for this research methodology.

4.2 Establishing a theory for research

Establishing theoretical links to practice is an essential element in carrying out research (Gray, 2013) but this can be problematic as the terminology used can be inconsistent and even contradictory (Crotty, 1998). Crotty (1998) suggests that there are four essential elements that should be considered when carrying out research or systematic investigations. Stating that there is, an inter-relationship, between the researcher's epistemological position, their theoretical perspective, their methodology and their methods. This is exemplified in Figure 4.1 providing a logical and solid pathway to establish a practical way of working.

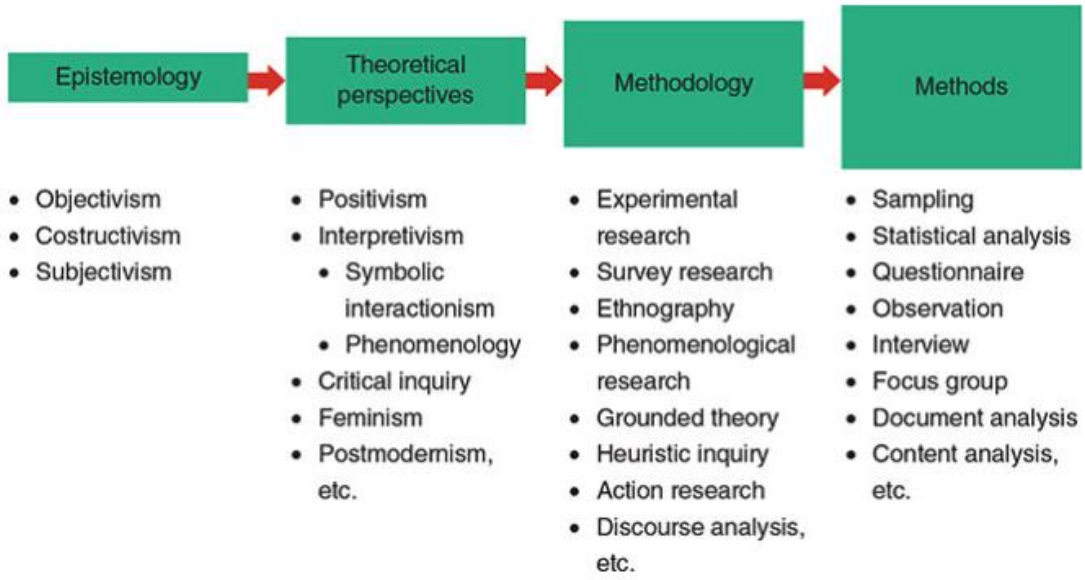


Figure 4.1 Relationship between epistemology, theoretical perspective, methodology and research methods (Crotty, 1998; Gray, 2013)

This study then adopts this framework to show how each element informs subsequent choices in building a research methodology. This then informs the research design, data collection, and data analysis later in this chapter.

4.2.1 Theory of Knowledge

There are two theories or positions on which to build knowledge Firstly, ontology could be described as the study of being, the nature of existence and what constitutes reality, *what is* (Gray, 2013). Secondly, an epistemological position or *what it means to know* provides the researcher with a philosophical position that helps to form an idea of what kinds of knowledge are genuine and appropriate to their research (Gray, 2013). Crotty(1998) lists three epistemological perspectives on which to structure a research methodology, objectivism, constructivism and subjectivism. Each of these is described as follows:

Objectivism. The objectivist epistemological position suggests that reality exists independently of consciousness. This stance accepting that reality is already out there waiting to be discovered (Gray, 2013). This theory understands that the researcher should uncover the 'objective truth' and not consider or include their own feelings or opinions. However, objectivist theory considers subjective approach as valid if, researchers can study people's views, perspectives and values objectively (Bunge, 1993).

Subjectivism. Subjectivist theory understands that meaning is not due to interactions of people with their world but by imposing meaning on objects through collective unconsciousness. Gray (2013) suggests examples of this might be dreams, religions and beliefs.

Constructivism. Constructivist position in contrast holds with the view that knowledge does not exist independently, out there to be discovered but reality and truth are created by people interacting with the world (Gray, 2013). Meaning is then constructed not discovered and that meaning is therefor made by people's individual experiences.

This research study is concerned with individuals within diverse community context in the UK, investigating their thoughts, experiences and values as participants in collaborative design practice. This research study then establishes, using the appropriate position which is, in this case constructivism. Table 4.1 Shows the building blocks of this study, this diagram will be refenced throughout this chapter.

Epistemological position Theory of knowledge. 3.2.1	**Theoretical perspective** 3.2.2	**Methodology** 3.2.3	**Methods** 3.2.4
Constructivism			

Table 4.1 Building blocks for research methodology

4.2.2 Theoretical perspective

A theoretical perspective helps the researcher to establish which appropriate research methodologies to adopt and also builds on the epistemological position discussed in section 3.2.1 Table 4.2. This brings theoretical perspectives and their characteristics together.

Theoretical perspectives	Characteristics
Positivism	Argues that the social world exists outside of the researcher and can be measured directly through observation (Gray, 2013)
Interpretivism	Closely linked to constructivist epistemology, focusing on aspects that are unique, individual and qualitative (Crotty, 1998). Relying on the interpretation of subject behaviour by the researcher.
Critical enquiry	Committed to not just interpret phenomena but to make changes to convention. Focussing on power changes, privilege and injustice (Gray, 2013)
Post-modernism	Rejects notions of social emancipation. Focussing on ambivalence, fragmentation primarily through deconstructing text to expose how values and interests are embedded in them (May and Williams, 2002)
Pragmatism	Of the view that an ideology is only true if it works promoting equity, freedom and justice. Thus, making better ways for democratic purposeful living (Kelemen and Rumens, 2012)

Table 4.2 Outline of theoretical positions

The epistemological position of constructivism discussed in the previous section 3.2.1 influences the choice of the theoretical perspective most suitable for this research study. The interpretive theoretical perspective is concerned with aspects that are individual and unique or context specific.

This study seeks to make sense of the effects of a collaborative design process and therefore adopts this position, added in Table 4.3.

Epistemological position. Theory of knowledge. 3.2.1	**Theoretical perspective.** 3.2.2	**Methodology.** 3.2.3	**Methods.** 3.2.4
Constructivism	Interpretivism		

Table 4.3 Building blocks for research methodology

4.3 Methodology

The methodology in this research study is informed by the theoretical perspective which has been identified as interpretivism. This section establishes the purpose of this research, a strategy of enquiry, type of data, unit of analysis and timeframe.

4.3.1 Identifying the purpose of the research

Deciding what the purpose of the research is, what it is trying to achieve, will help to identify the methods, logic and criteria for interpreting the findings.

Neuman (2017) describes the purpose of research falling into the following categories or groups; exploratory, descriptive and explanatory depending on what the research is trying to accomplish. This explained in Table 4.4 below.

Exploratory	Descriptive	Explanatory
Familiarity with the basic facts, context and concerns	Provide a detailed highly accurate picture	Test a theory's predictions or principles
Create a general picture of context	Locate new data and contradict new data	Elaborate and enrich a theory's explanation
Formulate questions for further research	Create a set of data categories or classify types	Extend a theory to new issues or topics
Generate new ideas, conjunctures or hypotheses	Clarify a sequence of steps or stages	Support or refute an explanation or prediction
Determine the feasibility of conducting research	Document a causal process or mechanism	Link issues or topics with a general principle

Develop techniques measuring and generating future data	Report on the background or context of a situation	Determine which of several explanations is best

Table 4.4 Re-interpretation of Neuman's matrix

Explorative: If you are exploring a completely new topic that has no previous research exploratory approaches can be used to establish familiarity and a starting point to develop new questions and identifying the potential for further, future research. An exploratory study may also be used to gather enough information to design and implement a further, extensive, study. The 'What' research questions can be investigated using this type of research study (Gray, 2013; Yin, 2014; Neuman, 2017). *This thesis seeks to address one 'what' question.*

Descriptive: This type of research explores the details of a situation or context for example social settings and relationships. Hedrick et al.(Hedrick, Bickman and Rog, 1993) *make the point that descriptive research is able to provide a picture of a phenomenon as it naturally occurs. Research that already has a defined area of focus allows the researcher to design and conduct a study that provides a detailed picture of the subject (people and context). The findings might therefore establish changes in behaviour or point of view. Descriptive research employs multiple data gathering techniques, field research, content analysis, archived or historical comparison and so on. This type of research is used to answer the 'How' questions and also the 'Who' questions* (Gray, 2013; Yin, 2014; Neuman, 2017). *This thesis seeks to address three 'How' questions.*
'Much of the social research found in scholarly journals or used for making policy decisions is descriptive' (Neuman, 2017). *Neuman goes on to say that descriptive and exploratory research often blur their boundaries.*

Explanatory: This type of research is used when an issue is well recognised. It is used to identify the sources of social behaviour, beliefs, conditions and events. It can be used to establish the reasons of causation and test theories. Often used to build on exploratory and descriptive types of research (Neuman, 2017). *For example; exploratory research might establish a new area of focus, descriptive research may document the context and phenomenon and the explanatory research will look at why it is happening.*

The research questions for this thesis seek to use a combination of these research types, there are multiple purposes for this study as outlined in the research questions. This study looks at the correlations between these 'types' to establish if there are positive associations with each (Leavy, 2017).

4.3.2 Choosing a strategy of enquiry

The strategy of enquiry is the *plan* identified by Archer (1995) in section 3.1 this section will look at which plan for strategic enquiry is the most suitable for this methodology. Table 4.5 describes the characteristics of seven strategies.

Strategy of enquiry	**Characteristics**
Case study	Case study is often associated with qualitative research. Allows for multiple perspectives through multiple data gathering techniques. The integration and contrasting of different perspectives can build a rich and detailed understanding of a context (Lewis, 2003) Typical examples include individuals, an organisation, a role or occupation or a community (Gray, 2013)
Ethnography	Seeks to understand social phenomena through emersion as a participant, often over long periods of time. Data gathered through overt or covert participant observation.
Ethnomethodology	The assumption that social order is chaotic, the focus is how realities are accomplished in everyday life. Through careful observation and analysis of social processes and actions researchers can uncover the process by which actors constantly interrupt social reality (Coulon, 1995)
Grounded theory	Theories are not applied to the subject being studied, instead emerging from the empirical data (Gray, 2013). Grounded theory seeks to build complexity by including context (Flick, 2018)
Phenomenology	Seeks to understand the world from a participant's point of view, this can only be done if the researcher removes their own preconceptions. Argues that; human consciousness actively constructs the world as well as perceiving it (Gray, 2013)
Participatory action research	PAR often focusses on the power dynamic of groups, the relationship between individuals and groups in community context. (Freire, 1972) adopting a critical pedagogical approach which seeks to empower learners to take responsibility for their learning.

Narrative analysis	The analysis of a chronologically told story, including scripts, stories and other frames used to interpret events. Often deals with ethical, moral and cultural ambiguities.

Table 4.5 Characteristics of strategies of enquiry

The chosen strategy for this enquiry is case study as this thesis gathers data from multiple sources using multiple techniques and there are multiple perspectives from diverse groups of participants and researchers. This section will expand on the benefits and disadvantages of this method.

The research questions for this thesis are concerned with effects or impact of collaborative design activity, it has been identified that the dominant method of research will be case study to examine archival material from recent projects.

This method helps to establish the effects of co-design on individuals over extended periods of time allowing for emerging multiple perspectives in multiple contexts.

The characteristics of this study align with Yin's (2014) definition that case studies are an empirical enquiry that:

- Investigate a contemporary phenomenon within its real-life context, especially when,
- the boundaries between phenomenon and context are not clearly evident.

Case studies can be effective when exploring phenomenon where relationships might be complex, ambiguous and uncertain (Gray, 2013; Yin, 2014). This investigation uses case study strategy to explore and understand individuals and their relationships within small groups using co-design activity. The research questions for this thesis explore how and when behavioural changes might occur as well as the situations that might trigger shifts in behaviour. There are likely to be complex relationships between individuals within diverse groups of participants. The relationships between the participants, researchers and facilitators might also need to be considered. These relationships might not be clearly defined, there might be a possibility of ambiguity. For these reasons case study is seen to be the most appropriate research method. There are disadvantages to using case studies, they can be expensive, time consuming and generate a substantial amount of material for analysis as they use multiple sources of material.

Therefore, it is prudent to address a number of issues (Gray, 2013).

- What is the unit of analysis?
- What criteria are to be used to select the cases for study?
- Who are the key participants?
- How many cases are there and how many participants in each case?

These issues will be addressed as follows:

- The unit of analysis are individuals within a community context, who are or have taken part in a collaborative design project.
- The criteria used to select the case studies are that as follows:
    - They are set in a community context
    - Are similar in timescale
    - Are similar in funding amount,

This is expanded in section, 'Selecting case studies, p.66'

- Sampling will include principal investigators, researchers and participants in the collaborative design team.
- This study will investigate three projects enabling the researcher to draw cross-case comparisons.

4.3.3 Research type

There is, throughout the literature, reference to data collection falling into one of two categories, qualitative or quantitative (Gray, 2013; Punch, 2013; Yin, 2014; Neuman, 2017). It could therefore be easy to set one method against another with an 'either-or' perspective. Creswell (1998) exemplifies this by saying, 'Authors often define qualitative inquiry by comparing it to quantitative inquiry' Although it is fair to say that data will fall into one of these categories and one method may be used to gather the data in a study, it is also fair to say that there are benefits to employing multiple or mixed methods simultaneously to support a research investigation.

This section seeks to identify the most suitable research type or combination of types for this study. Quantitative research is characterised usually by deductive approaches, but not always, which begin with theory and seeks to prove or disprove existing knowledge. This is often achieved by measuring variables and testing relationships between them in order to reveal patterns, correlations or causal relationships (Leavy, 2017) this will often result in statistical data. This statistical data is often generated using existing data, surveys or questionnaires. There are a

number of criticisms of quantitative data collection, exemplified here. Firstly, the researcher may often have little contact with the subjects being studied, of course this can also be viewed as positive as it helps to ensure objectivity. Secondly, the statistics could be arbitrarily defined by the researcher (Gray, 2013). Thirdly, after the event analysis could involve speculation which scientific approaches claim not to have. Lastly, measurable, numerical, statistical data can encounter difficulty addressing complex social issues.

Qualitative data collection can be characterised through inductive approaches, but again not always, which develops theories from emerging observed empirical data (Sanders and Simons, 2009; Miles, Huberman and Saldaña, 2018).
Creswell (2017)suggests that this type of research is a complex narrative and it presents issues in a multidimensional way. The researcher builds understanding by examining, observing and or participating often in a real-world situation. This is often associated with the ontological stance of constructivism and an interpretive philosophy. when investigations focus on the interactions between individuals with each other, objects and the world around them constructing reality. This research thesis focuses on the interaction of individuals, the effects of collaborative design practice and changes in behaviour and therefor will embrace qualitative data gathering methods.

Table 4.6 outlines the characteristics of both inductive and deductive methods which can be applied to both qualitative and quantitative data collection.

Inductive	Characteristics	**Deductive**
Generalisations or theories to past experience and literature.		Researcher tests or verifies a theory
Researcher looks for broad patterns, generalizations or theories from generalisations to past experience and literature.		Researcher tests hypothesis or research questions from the theory.
Analyse data to form themes and categories		Researchers defines and operationalises variables derived from the theory.
Asks open ended questions of participants and records field notes and visual material		Researcher measures or observes variables using an instrument to obtain scores.
Researcher gathers information Interviews, observations		

Table 4.6 Interpretation of (Bahari, 2012) diagram

4.3.4 Timeframe

There are two timeframes to consider for this research, cross-sectional or snapshot and longitudinal.

This research study uses a cross-sectional time frame to collect data from case studies and also collects data from a longitudinal test study that will seek to verify the findings from the case study data.

4.4 Research design

This section considers the overarching plan for collecting, measuring and analysing the data used in this investigation. The research design describes the purpose of the study and the sort of questions being addressed, the techniques used for data collection, approaches to selecting samples and how the data are analysed (Gray, 2013; Yin, 2014).

4.4.1 Strategy

The research strategy outlines the pathway and systematic process that is used to address the research questions, this will be discussed in this section. This investigation has adopted *case study* as a strategy of enquiry. Case studies can use deductive and inductive approaches (Perry, 1998) and it is worth looking at the relationships and issues associated with both before adopting a research strategy. A purely inductive case study might use the first case as a pilot study, starting with no theoretical stance, therefore in the subsequent studies the data collection and analysis can be informed by the concepts and findings of the first study (Gray, 2013). This is problematic due to new concepts emerging at each stage of data collection, this makes cross case analysis unlikely as there is no comparable data.

This problem can be overcome if the researcher favours a more deductive approach. The first case study can still be used to refine some methods and help define theoretical boundaries, tools for data collection and collection protocol. Thus, the initial theory or proposition can be confirmed or rejected. Yin (2014) suggests that if the research adopts this approach it will allow for cross-case comparison.

This research study therefore adopts the method which is described in Figure 4.2.

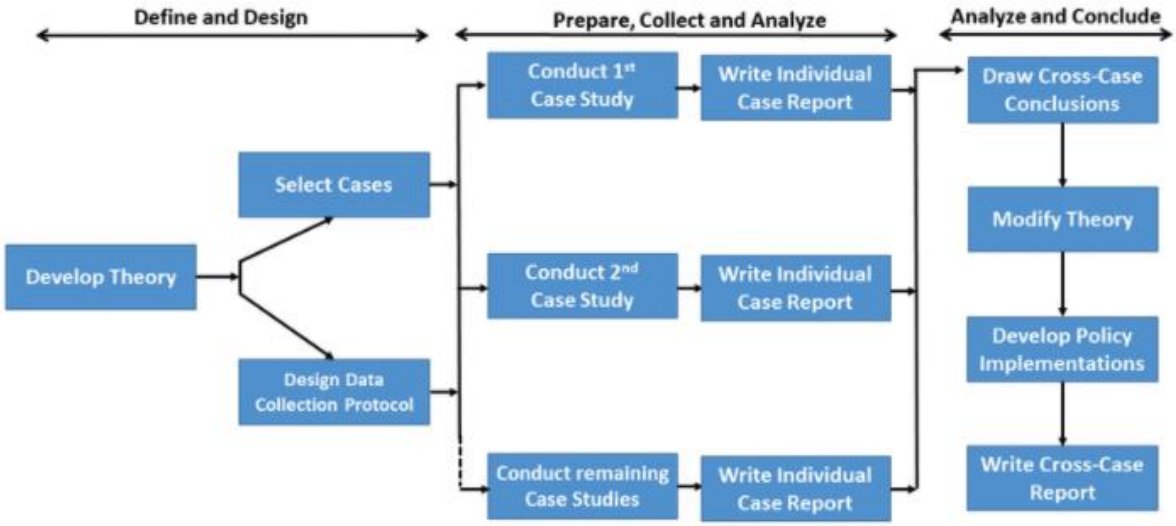


Figure 4.2 Multiple case study procedure (Yin, 2014, p.56).

I. Theory development

The contextual review that was undertaken in chapters 2 and 3, investigates the collaborative design landscape to gain knowledge in this area of interest. This review is used to identify gaps in knowledge and to help develop the research questions that this investigation is focussed on addressing.

Research questions that emerged from the literature review;

- How might collaborative design (co-design) effect participants in a community context?
- How and when can the effects of co-design be recognised?
- How do the effects of co-design impact behaviour, in future projects and everyday activities?

The proposition that emerged from the research questions is as follows:

Understanding transitional changes in behaviour of co-designers has the potential to provide deeper understanding of the implicit and often tacit nature of co-design in a community context.

The proposition is being used to explore an idea not to prove or disprove a theory. The wording has been carefully chosen so that it can be interpreted in a gentle and positive way by a diverse range of participants who might be involved in this research.

II. Selecting case studies

Researchers using case study methods of enquiry can use a single case or they can use multiple cases. Multiple case studies have advantages and disadvantages in comparison to single case studies (Yin, 2014). The evidence from multiple-case study is usually deemed to be more robust than a single case (Herriott and Firestone, 1983). However, it might not be possible to find similar cases for cross case analysis for very unusual or individual cases. In those instances, single case studies are relevant. This study adopts a multiple case study approach.

The cases that have been selected for this research have been chosen against criteria that are common to them all, they are as follows;

- Scale of project with funding values above £100.000 GBP. These projects lasted between two and a half years and seven years which provided enough time to recognise how and when changes in participant's behaviour occurred.
- Projects of this scale often have time and budget built in to evaluate and document the impact on participants.
- Case studies were sort that had a strong element of co-design, that employed multiple co-design methods and engaged with diverse groups of individuals. This would help to make them commensurate with each other and therefore allow cross case analysis.
- Projects were selected that were well documented and had supporting research papers, journal articles and other published research that was generated from the project.
- Projects were chosen that had a strong reflective element making visible the thoughts of researchers and participants, for example blog posts, observations and interviews.
- Projects were selected using UKRI (United Kingdom Research and Innovation) online resource.
- Projects were selected that were concerned with local, UK based, community contexts.

The resources used to identify projects with the desired criteria was the U.K. Research and Innovation gateway to publicly funded research projects and publicly available documentation, blog posts, papers written about the projects and impact reports. Consideration was given to the impact of the projects that were considered when identifying suitable case studies. It was not enough for a project to have engaged in co-design activities alone. Although the experiences of the participants are the focus of this thesis it was also necessary for the projects to be impactful, real-world projects. The co-design process was required to also have significant quality of

outcome. The projects that were chosen as case studies needed to have focussed to some extent on the participant's experiences. Other co-design projects that were considered, although they had explored co-design process in some depth, were not necessarily focussing on the effects on participants which might have resulted in searching for data that was not captured or valued in the project. This information provided enough detail for the author of this thesis to be confident that the data required to answer the research questions in this thesis would be present. A description of each case study addressing the criteria are as follows;

Leapfrog: Transforming public sector engagement by design.

This was a 3-year project running from January 2014 to October 2018, the project funding totalled £1.2m. This project is a collaborative design project that focusses on communities. The researchers describe consultation, the engagement of communities in public service decision making as increasingly important in regional life. The project focuses on connecting communities, special interest groups and friends through co-design activities that seek to empower participants. The project's planned impacts discuss, transforming participants ability to co-design, consult and engage. It is suggested that change will be manifest in new tools, approaches and practice but this will be driven by a change in culture of how institutions think about engagement. The aims of this project include transforming the ability of local communities to organise, consult and engage more effectively, to provide a set of toolboxes that help to provide strong impetus for improvement and to heighten the awareness and importance of evaluation of engagement activities.

https://gtr.ukri.org/projects?ref=AH%2FM001296%2F1

Connected Communities and Design Highlight: Empowering Design Practices; historic places of worship as catalysts for connecting communities.

This is a 7-year project running from October 2014 to October 2021, the project funding totalled £1,208,430. This project considers the contribution of community led design projects make in highlighting valuable community resources in this case places of worship. The aim of the project is to examine how community led design practices can help to empower the caretakers and guardians of places of worship to engage more effectively within communities. The focus is increasing or making aware of creative capacity and facilitate, designerly thinking. The specific purpose of the project, to sensitively adapt buildings through community led design (CLD). This project also claims to develop participatory design research skills for community development professionals, and students through the co-design practice and research training. The project shares knowledge derived from those activities and asserts that this will potentially

enhance the quality and effectiveness of the process of empowering and bringing people together to deliver future projects.

https://gtr.ukri.org/projects?ref=AH%2FM001709%2F1

Re-envisaging Infection Practice Ecologies in Nursing (RIPEN) through Arts and Humanities Approaches.

This project ran from January 2018 to September 2020. The project funding totalled £212.466 This project addresses antimicrobial resistance and its consequences, AMR poses a very serious threat to health and welfare globally.

Following a preparatory phase, the main qualitative research engaged a group of hospital-based nurses in Glasgow and a group of community-based nurses in London. Structured around four sequential workshops with interim activities, these respective "Labs" each addressed questions using and evaluating different combinations of methods. The final phase of the research involved a "Policy Lab" where the research team, advisory group and an invited range of policy experts and art and humanities academics come together. This project aims to provide enhanced understanding of the nature and scope of nurse's engagement with AMR in a range of environments, thus enabling more informed, nuanced planning and delivery of services. Stakeholders will be reached through direct involvement in the study and in the creation of any associated outputs.

The rationale for the testbed projects

Following the data collection and analysis of the case studies outlined above, two test case studies were designed using the insights from the thesis case studies. Two projects were chosen to test the insights to establish if the insights were able to be replicated in different co-design interactions. A multidisciplinary team considered the insights from the case studies in a linear fashion to design the co-design test bed projects. These projects are used to make observations of the effects and potential benefits of doing co-design are purposefully built into the project or workshop. The multidisciplinary team used the categories within the themes, with the insights that the author of this research thesis drew from the case studies. The following lays out the structure of testing the insights from the thesis case studies;

Multidisciplinary Research Team (MRT): The team worked together regularly over a period of two years. The team had a core group of three design researchers a linguist and a member of university outreach staff. The author of this thesis, played two roles. They were a design researcher working on doctoral studies, and they were also a participant drawing on their

extensive experience as a professional design practitioner in the core team. The team began working together whilst the author of this research was investigating the three co-design case studies. The author invited the team to validate and discuss the themes and codes they used to analyse these case studies prior to the analysis. The team then used the insights from the PhD research to establish two test bed projects, discussed in detail in the next section. The team then looked at data from the test bed projects using an auto ethnological approach (Chang, Ngunjiri and Hernandez, 2016; Jones, Adams and Ellis, 2016) and worked collaboratively, reflecting on and developing a co-design framework to help those planning collaborative enactments.
Both of the following test bed cases involve diverse groups of adults and children. This provided an opportunity to test insights across a wide spectrum of participants. Co-design values all lived experiences (Whitham *et al.*, 2020; Pérez *et al.*, 2022). Testing the insights with diverse groups of people was critical to establish possible generalisability, this is relevant to co-design as every enactment is unique and each co-design situation should purposefully include diverse individuals (Kraff, 2018). The following lays out the contexts and design of the testbed projects;

Project in a Box: This is part one of the test bed projects. The project employs designers, researchers, linguists, university outreach workers, teachers, primary school children and their families. The project addressed the inequalities in education exacerbated by the Covid-19 pandemic. Under resourced families found themselves isolated and detached from schools and peers, stalling children's education. Project in a Box aimed to reconnect families through playful discovery. Two thousand children were included in this project. The project played a key role within this doctoral thesis, it was the first of two test bed projects that was shaped with the help of the insights from the thesis case studies. This project was used to search for the effects of the co-design process on participants using the insights from the 3 case studies used in this research. Parents and families were invited to use multiple return channels, postcards, mobile phones, face to face meetings with their teachers, to provide feedback and reflect on the impact of the resources that they had been supplied. Teachers were invited to reflect, using semi structured interviews, on the resources and impact that the project might have had on the children and their wider families and if the project had impacted policy and process within the local school system. The multidisciplinary project team (MDT) analysed the written comments, visual material and the teacher interviews during the weekly discussions programmed over a two-year period. The team did not interview or have direct contact with children and parents. All correspondence including text messages, feedback from face-to-face meeting with teachers and peers were collected by teachers and shared with the MDT. The MDT had direct contact with teachers and

head teachers via email, telephone and some face-to-face meetings. Covid 19 restrictions were in place during periods of this project.

Fuse: This is part two of the test bed projects. This project is the extension of Project in a Box, a real-world project that involved sixty children, their teachers and teaching assistants. Each group of thirty children took part in three workshops to help them discover a designerly mindset and experience the benefits of participating in a collaborative design project.
The insights from the thesis case studies and 'Project in a Box', above, helped shape the design of the workshops that were used to search for the effects of the process, test and possibly validate the application of the insights. The teachers and children were separated for the workshops. The teachers worked with two members of the MDT and the children worked with two members also. One teacher and several teaching assistants were always present in the workshops that involved children. No children were interviewed in the project. Only data collected by observation were used. The data collected including photographs of outcomes and process during the workshops these were used by the team to establish if any changes in behaviour occurred between the first workshop and the third and last workshop. Two researchers used field notes during the workshops and spent thirty minutes immediately after the workshop writing detailed reflections of the children behaviour. This included how they interacted with each other, communication, proximity, use of the space, use of materials, freedom to experiment, confidence to try out ideas that might result in failure, willingness to engage, and so forth. Changes in behaviour were compared between each of the three workshops.

The MDT met weekly during and following the testbed projects. Their conversations were guided by the insights and themes used in the author's PhD research. A reflexive approach was adopted, focussing on the effects of participating, to construct a framework and secure base from which to participate in future collaborative design projects in a caring, creative and critical way. The team were mindful of the emotional responses of participants and their interdependence on each other during the projects as well as their physical interactions with each other, the spaces and materials.

4.4.2 Ethics

There are four areas to consider; *avoid harm to participants, ensure informed consent of participants, respect the privacy of participants and avoid deception* (Gray, 2013).

The author of this thesis has a current enhanced DBS (Disclosure and Barring Service) certificate. They hold current, up to date certificates in safeguarding, challenging behaviour, first aid and child exploitation. They also hold a NEBOSH certificate in health and safety, this qualification entitles them to be a 'competent person' to carry out risk assessment. Risk assessment was carried out.

Lancaster University Ethics Committee approved this research. The research team adhered to the school policy and procedures. Consent forms were obtained from the parents of the children in two parts. Firstly, to participate in the workshops. All the children attending had gained permission to do so. Secondly, permission to photograph children was also sought. Some children were not able to be photographed, these children were known to the researchers and photographer. All photographs that were collected as data were checked by school staff and the university outreach manager to establish that only those children with photographic consent were able to be identified. No children were interviewed as part of any of the research in this PhD thesis. No parents or extended family members were interviewed in this research.

Researchers also followed school policy and procedures with close supervision from teachers in place during contact time with children. The workshops took place in Lancaster University design studio, a space was made available for any participants who needed 'time out' or comfort breaks. Those participants were accompanied by a member of school staff. Catering was provided for all participants and freely available for the duration of the workshops.

Data collected from teacher's interviews are held on the secure university OneDrive system and that data were anonymised.

4.4.3 The purpose of collecting data

The quality and depth of data that is collected in a case study can have significant impact on the validity of the research, the data helps to ensure reliability (Mettler, 2023). The data in case study research can be gathered from multiple sources helping to ensure the best understanding of the case being scrutinised.

Sampling is about being selective with the data that the research captures. Miles and Huberman (1994) suggest that the data captured should address one or more of the following:

- Identify new leads of importance
- Extend the area of information
- Relate or bridge already existing elements
- Reinforce main trends
- Account for other information already in hand
- Qualify or refute existing information

This section will help explain the boundaries of the data collection that is used for cross-case comparison.
Sampling in qualitative research often involves two actions, firstly setting boundaries, defining the aspects of your cases that can be studied that are directly linked to your research questions and secondly a framework can be used to help uncover, confirm or qualify the processes or constructs that underpin the study (Miles and Huberman, 1994).

Figure 4.3 provides four bounded sections (or bins), directly informed by the research questions that are used to collect data across the three case studies being used. Each bin provides a lens to observe how the effects of co-design might have been captured in each of the case studies. These bins allow for multiple and diverse documentation to be captured from projects that have used different methods to capture, evaluate and analyse data. This method also helps to filter out documentation that is not contributing to answering the research questions in this thesis and be open ended enough to accommodate unexpected documentation that does contain relevant data.

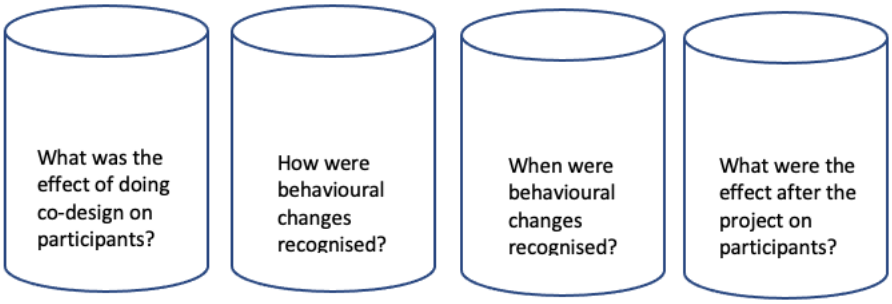


Figure 4.3 Visualisations of the research collection bins

Table 4.7 defines the most dominant characteristics or indicators, established during the contextual review, in community contexts. They have been catagorised, by the author of this thesis, under four headings or themes. These are used as a filter to sieve through each bin and

identify the key indicators. Table 4.7 is brought forward from section 3.6 where the themes and key indicators were discussed in depth.

The effects of doing collaborative design Key indicators			
Confidence	**Awareness**	**Mindset**	**Emotional responses**
To communicate	Of own Voice	Experimental	Anxiety
To do	Of empowerment	Risk taking	Surprise - disrupting expectation and beliefs
To make	Of trust	Equality	Anger
To think/ideas/imagination	Of value, self and process	Mutual learning/creative exchange	Frustration
To be irreverent	Of conflict / friction	Enthusiasm	Uncertainty
To be disruptive	Of resources	Openness	Confusion
To be playful	Of space	Togetherness	Joy
To be wrong			Excitement
To be decisive			Fear
To be mischievous			
Unexpected effect	Unexpected effect	Unexpected effect	Unexpected effect

Table 4.7 Table of effects of co-design

These actions are brought together later in this chapter in section 4.6.4, Table 4.15.
This thesis used two pilot interviews, 'A' and 'B' to refine the suitability of the procedures for collecting data and to highlight any changes in approach that might be necessary. The order and

poignancy of questions, judging the need to guide the interviewee or allowing them to develop an area of enquiry impacts the quality and depth of the data gained. The purpose of the pilot studies is to hone the approach of interviewing and to some extent build confidence. The pilot study is not a pretest (Yin, 2014). The author of this thesis only uses the pilot studies to make adjustments to their approach, the theory for this study has already been established. Table 4.8 shows this, below.

Research stages	Data collection
Pilot case study A used to refine interview questions and methods	Principle investigator – Discussing, multiple co-design projects Semi structured interview with PI
Pilot case study B used to refine interview questions and methods	Principle investigator – Discussing, Growing together project Semi structured interview with PI
Conduct case study 1	Principal Investigator
Conduct case study 2	Principal Investigator
Conduct case study 3	Principal Investigator

Table 4.8 Stages of data collection

4.4.4 Research quality

The quality of the case study research design needs to be assured; it can be judged by adopting four commonly used tests for empirical social research. Yin (2014) builds on these tests by adding tactics for dealing with these four tests, outlined in Table 4.9.

Tests	Case study tactics	Phase of research in which tactic occurs.
Construct validity	Use multiple sources of evidence. Establish chain of evidence Have key informants review draft case study report	Data collection Data collection Composition
Internal validity	Do pattern matching Do explanation building	Data analysis Data analysis

External validity	Use theory in single case study Use replication logic in multiple-case studies	Research design Research design
Reliability	Use case study protocol	Data collection

Table 4.9 Case study tactics for four design tests (Yin, 2014, p. 45).

Construct validity is about identifying the correct operational measures for the study, this can be challenging. Criticism of case study methods often point to the researcher failing to implement a good operational set of measures and this results in subjective judgements that support preconceived notions of the researcher (Yin, 2014).

Internal validity is used for explanatory or causal studies and not for descriptive or exploratory studies. It seeks to establish relationships where conditions are believed to lead to other conditions. Issues may occur when a researcher is explaining that one causal event leads to another and is unaware of a third event has impacted the findings.

External validity is about defining the domain to which a study's findings can be generalised (Yin, 2014).
Reliability demonstrates that operation in the study can be repeated and achieve the same results.

4.5 Methods of data Collection

The data collection methods used for this thesis are separated into two areas. Firstly, secondary data collected from the case studies used in this study will include semi-structured interviews and the analysis of recent archival material (documents). This data having been collected for the purpose of the original project. Secondly, primary data collected from the test field project, the author of this thesis being the primary investigator (PI) is employing, interviews, observation and project journals for reflection. Sources of data were not fixed for this study, any emerging data sources during the project were considered. This data is being collected for the purposes of supporting the findings from the case studies in addressing the research questions.

This section outlines the methods being employed in this study. The strengths and weaknesses of six sources of evidence are outlined by Yin (2014) and Gray (2013) in Table 4.10. Adaptations have been made to this table by the author of this thesis.

Sources of evidence	Strengths	Weaknesses
Documentation. *Including evaluation reports, impact report, transcripts of interviews.*	This is stable and can be reviewed repeatedly. Unobtrusive and Exact.	Problematic access and issues with confidentiality. Unknown bias.
Archival records. *Including case study data and findings.*	As above.	As above.
Interviews. *With case study PI's and teachers from testbed projects.*	Targeted and focussed on case study topic to address research questions.	Danger of bias due to poor questions.
Direct observation. *Field test project.*	Real world, cover events in real time and specific context.	Time consuming and costly. Reflexivity – event different due to observation.
Participant observation. *Field test project.*	As above. Insight into interpersonal behaviour and motives.	Bias due to researcher manipulating events.
Physical artefacts. *Made in field test and case studies.*	Insightful into technical operations.	Selectivity – may be based on idiosyncratic choices.

Table 4.10 Adapted from Gray (2013, p. 273).

Interviews

This section expands on the methods of data collection used to gather data from the case studies in this investigation in Table 4.12. The methods of data collection that are used in the test study are informed by the case study findings.

Structured interview	Semi-structured interview	Non-directive interview	Focused interviews	Informal conversational interview
Often used to collect data for quantitative analysis. Standardised schedule used. Similar to questionnaires	Non -standardised. Used in qualitative analysis. Interviewer has a list of issues or questions but may not cover them all. The order may change and	Used to explore issues without pre-planned questions. The respondents talk freely around a subject the interviewer confined to checking points	The interviewer has prior knowledge of a situation. The interview is based upon respondent's subjective responses.	Relies on spontaneous generation of questions as the interview progresses. Very flexible, interviewee may not even be aware that it

except researcher poses questions. Quick to capture. Interviewer led. Easy to analyse. Easy to anonymise.	additional questions asked. Allows probing and expansive answers. Can be interviewer or respondent led. Quantitative parts easy to analyse.	and re-phrasing answers for accuracy.		is an interview. Drawbacks – interviewer influence, difficult to analyse if people are asked different questions, sift through information to find patterns.

Table 4.11 Compiled from characteristics outlined by Gray (2013, p. 381).

The semi-structured interview allows the researcher to probe and discuss more detailed responses, the researcher can ask participants to clarify what they have said. This approach between human beings enables language to be used in the pursuit of cooperative inquiry (Gray, 2013). Reason, Rowen and Bradbury (1981) suggest that insight is gained by sharing stories that stir people's hearts and souls.

Seidman (2006) proposes that the intent of interviewing is to understand the lived experiences of others and the meaning that they make of their experiences. Telling stories and exploring experiences can be an enjoyable activity and an exchange of experience and emotion. For those who are comfortable or enthusiastic sharing their experiences through discussion, interviewing facilitates an opportunity to reflect on events that does not require the formality of writing or drawing.

Semi-structured interviews are the dominant method of interview used in this thesis due to characteristically allowing expansive answers in response to structured but open questions and the ability to adapt the structure to unexpected or emerging threads. These semi structured interviews facilitate an opportunity for the participants to express themselves using language that is familiar and natural to them.

The interviews that support this thesis take place firstly, with the principal investigator of each of the three case studies. The case studies often have documents that show the PI as author which is problematic for the triangulation of data. However, the documents that show the PI as author have data gathered by other researchers in the project and have quotations taken from recorded interviews. For example, the interviews in the Leapfrog case study were carried out by the project manager and used in multiple documents for evaluation purposes. This is sometimes not obvious in the output document. The interviews with the PI's were also carefully crafted, the questions that the author asked had previously been honed in two test cases, to mitigate possible bias from the PI's influencing the research data. There are wider sources of data that also

contribute to the documentation authored by the PI's in the case studies. These included blog posts written by other researchers, project managers and participants. This can be evidenced from the websites for Leapfrog and Empowering Design Practices and the drawings, design sheets and academic papers produced by the RIPEN case study team.
Secondly a series of interviews with teachers that took part in the testbed projects.
Figure 4.4 shows examples of research questions that were used in the semi-structured interviews with the case study PI's.

Semi structured interview question
Lee Brewster
Semi structured interview questions.

Proposition: Understanding transitional changes in behaviour of co-designers has the potential to widen the application of co-design.

Morning ….. Thank you
Are you happy for me to record this interview?

- What job do you do?
- How did you find yourself doing co-design?

So, my research is concerned with how co-design affects individual participants.
And I'm interested in digging a little deeper around your project …. Is that, ok?

What was the project

- What was your role and your motivation to get involved in this project?
- What were you trying to achieve with this project?
- Can you paint a picture for us of the people that you worked with? That must have been a rewarding experience
- What type of community/organisation did you work with?
- How many people were involved?
- How did your participation contribute to the project? [role: to figure out if they worked as participants or collaborators]

About mapping changes.

- Have you worked with them before?
- Do you remember the first session(s) with them?

    - How was the group at the beginning?
    - Were they able to work as a group?
    - How do you think they felt?
- And did people find the design process difficult or easy? Why?
- What difference do you think that taking part in the project made to individual participants? Do you think there were any changes in behaviour?
- Do you think it impacted their behaviour or emotions?
- How did you recognise any changes in the way participants were working (alone or with each other)? Was it at particular stages of the project?

About changes beyond the project.

- What contact did you have with participants after the project?
- Do you know what your participants are doing at the moment
    - [If yes]
        - What are they doing?
        - Is there anything they are doing that you can relate to your project?
        - Are they using the [outputs] of your project?
        - Have they mention anything surprising that has make you think about something you did or discuss with them?
        - Are they working differently?
        - Are they using the co-designed materials?
        - In some cases, some participants have become a sort of advocate of co-design processes. Have you seen them talking about your project with their communities? If so, what do they say about it?
- Did anyone discuss the impact the project had on them?
- Do you know if any changes in behaviour or mindset were embedded or lasted beyond the duration of the project?
- Were you surprised by any unexpected effects of the project on participants?

About the future

- How do you think that co-design projects might benefit participants in their everyday activities beyond the projects?

Figure 4.4 Example interview questions for case study co-designers

Archival material and documentation

This study uses archival material and documentation in a number of ways. The sources are divided into two classifications, primary and secondary data sources. There are multiple definitions of what 'secondary' constitutes, Smith and Smith (2008) suggest that there is a lack of

consensus regarding an excepted definition, however Heaton (1998) posits that secondary analysis uses data that already exists for a prior study and has now been collected in order to pursue a research interest that is distinct from the original. The internet has enabled researchers to access large amounts of this data, deciding what is useful and what is not can be problematic. Gray (2013) provides a suggested list of sources but stresses that the list is not an exhaustive one and that multiple sources may overlap, some examples are as follows:

- Archives and gateways
- Personal documentation
- Organisational documents
- Professional and technical reports
- Political and judicial records
- Visual and mass media
- Academic sources
- Official statistics
- Project reports
- Publications

Personal documentation is an example of how the source can span primary and secondary sources. Secondary documentation generated during the three case study projects was analysed in the first instance. This included project diaries, journals, prototypes, artefacts, photographs and drawings and social media posts.
The test project generated primary source data using similar tools.
Primary source data, Brewer (2000) suggests, is compiled by the author, whereas secondary data is obtained from someone else's primary document. The data generated in the field project will be for the explicit purpose of addressing the research questions and testing the emerging findings from the case study projects.

4.6 Thematic analysis of documentation

This section introduces thematic analysis. Thematic analysis (TA) is a flexible technique that can be used within a wide variety of qualitative research approaches (Clarke, Braun and Hayfield, 2015). TA is often used to analyse sets of text for example the transcripts from interviews. The research might use TA to identify patterns of meaning, topics or common themes that repeatedly emerge.

This doctoral thesis draws on documentation across three case studies to answer the research questions, this section therefor explores the most appropriate methods that can be employed in this context.

4.6.1 Using document analysis in case study

Using previous case studies as a source of data requires the researcher to rely on other people's interpretations and descriptions of data as an alternative to analysing raw data. Organisational and institutional document have been used in qualitative research for many years and their use has increased in research reports and journal articles that discuss document analysis in their methodological approach (Bowen, 2009).

Document analysis is a systematic procedure used to review and evaluate documents, similar to other methods used to analysis qualitative research, documents need to be examined and interpreted in order to establish meaning and understanding. This is then used to generate empirical knowledge (Corbin and Strauss, 2008). The documents that are analysed might contain text, images and diagrams that the researcher has had no part in producing, these documents have been referred to as 'social facts' that are produced, shared and used in socially organised ways (Atkinson and Coffey, 2004).

This analytic procedure consists of finding, selecting, making sense of and synthesising the data contained within (Bowen, 2008). This type of document analysis yields data in the form of excerpts, quotations and entire passages, that are then organised into themes, categories and case examples specifically through content analysis, discussed in the journal article 'Airy fairy or fundamental' (Labuschagne, 2015). Document analysis is often used in combination with other qualitative research methods, combining methodologies (Bowen, 2009; Denzin, 2017).

These sources might include interviews, participant observation and physical artifacts as well as documentation (Yin, 2014).

Document analysis as a primary or secondary source of qualitative data has been used for many years (Rossman and Wilson, 1985). Document analysis was part of the thematic analysis that Angers and Machtmes (2005) used in an ethnographic study, which explored the beliefs and practices of middle school teachers that reportedly led to an exemplarily enriched curriculum. The authors stress that triangulating the study methods was essential, they used interviews and observation to validate and corroborate the information. It is essential to establish robust collection techniques for thematic analysis of documentation and detailed information should be provided about how the study is designed and conducted (Bowen, 2009).

A 15-point checklist of criteria, provides guidance, for good thematic analysis process (Braun and Clarke 2006) shown in Table 4.13.

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'.
Coding	2	Each data item has been given equal attention in the coding process
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive. Analysis
Analysis	7	Data have been analysed- interpreted, made sense of, rather than just paraphrased or described.
	8	Analysis and data match each other the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organized story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written report	12	The assumptions about, and specific approach to, thematic analysis is clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done i.e., described method and reported analysis are consistent
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as active in the research process; themes do not just 'emerge'

Table 4.12 15-point checklist of criteria (Braun and Clarke, 2006, p.96).

4.6.2 How to use documents in thematic analysis

Bowen (2009) suggests that documents can provide a variety of purposes when undertaking research. They can be considered for five specific functions, as follows

- Provide data on the context, bearing witness to past events and provide background and historical insight, indicate conditions that impinge upon phenomena under investigation. Contextualise data collected during interviews.
- Can suggest questions that need to be asked and situations that need to be observed, could help establish new interview questions. One method can complement another. Interviews might help to establish what documents need to be analysed.
- Documents provide supplementary research data and can be valuable additions to knowledge base.
- Documents provide a means of tracking change and developments, if various drafts of a document or series of documents are available. Periodic and final reports may also provide insight on how a project or organisation fared over time.
- Documents can be analysed to verify findings and corroborate evidence from other sources. Sociologist often use document analysis to verify their findings (Angrosino and Mays de Pérez, 2000).

There are advantages and limitations of using document analysis in qualitative research shown in Table 4.14.

Advantages and limitations of using document analysis in qualitative research	
Advantages	Potential Limitations
○ Efficient method, requires less time using data selection rather than data collection. ○ Often easily available, in the public realm. ○ Cost effective. ○ Lack of obtrusiveness, the research process or event is not influenced by the researcher. ○ Documents are stable, suitable for repeated reviews ○ Exactness, inclusion of names, references and details. ○ Documents provide broad coverage, can cover a long span of time, many events and settings. ○ Can generate unanticipated insights. Allows for social as well as psychological interpretations of data.	○ Insufficient detail can be an issue when trying to answer an explicit research question. ○ Access to documents can be problematic if blocked. ○ Biased selectivity, documents in organisations can often be aligned with corporate policies and agendas

Table 4.13 Advantages and limitations of using document analysis in qualitative research, table adapted from Bowen (2009) and Braun and Clarke (2006)

Document analysis was used in this case as documentation of each case study was mostly available in the public realm and accessible. The documents were stable sources of data that were suitable for repeated reviews that were not being influenced by the author of this thesis. The documentation from each of the case studies provided data over long spans of time enabling the study of behavioural changes across multiple events, projects and settings. This timescale allowed insight in to participants reflective thinking.

4.6.3 Document analysis

'Document analysis involves skimming (superficial examination), reading (thorough examination), and interpretation' (Bowen, 2009). This process is a combination of content analysis and thematic analysis. Content analysis organises information into categories related to the research questions and or proposition. This could be described as a first pass or review of the documents that identifies and separates the relevant from non-relevant (Corbin and Strauss, 2008).

Thematic analysis is a means of pattern recognition within the data, where the emerging themes become the categories for analysis (Fereday and Muir-Cochrane, 2006). This is a re-reading and review of the documentation, looking at the selected data and performing coding and category construction, based on the data's characteristics, to uncover themes that are pertinent to a phenomenon. The researcher should represent the research material fairly and sensitively, responding to subtle cues and meaning (Bowen, 2009).

In terms of a practical approach, Braun and Clarke (2006) identify six phases:

- Phase 1: Familiarize yourself with the data. Transcribe the data if necessary or at least read and re-read the data, noting down initial ideas.
- Phase 2: Generate initial codes. Code interesting features of the data systematically across the entire data set. If coding manually, do this by writing notes in the texts you are analysing, by using highlighters to indicate potential patterns or by using 'post-it' notes to identify segments of data. Ensure that all data are collated to a code. Code extracts of the data inclusively (keep some of the surrounding data) so that the context is not lost. Individual extracts of data can be coded into as many different themes as they fit.
- Phase 3: Search for themes. Collate codes into potential themes, gathering together all data relevant to each theme. In this phase it is often useful to create visual representations of the themes in the form of thematic maps (see Figure 26.4). Hence, some codes may form main themes, while others constitute sub-themes. There may also be themes that do not initially fit into the thematic map and be temporarily labelled, miscellaneous.
- Phase 4: Review themes. Check if the themes selected are valid in relation to the coded extracts and the entire data set. At this stage it may become clear that some candidate themes are not actually themes because there is insufficient data to support them; in other cases, two themes might be integrated and renamed. Other themes might be broken down into separate themes.
- Phase 5: Define and name the themes. Refine each theme, generating clear definitions and names for each theme and identify the 'story' that each theme tells. Be clear about how each theme fits with the overall story. You should be able to describe the scope and content of each theme in no more than two sentences.
- Phase 6: Produce the report. Select vivid and compelling extracts relating back to the original research questions and the literature. The account must provide sufficient evidence of what have been identified as themes within the data.

4.6.4 Evaluation of data

The relevance and purpose of the document and what contribution it made to the issues being explored should be established, extracting words and passages from random documents is not explicit enough. The documents should be assessed for balance, accuracy, completeness, trustworthiness and selectivity as well as the original purpose of the document.
The document should be assessed to establish if it was written from first-hand experience or secondary source, whether it was solicited or not, edited or not and also context.

The sources of data have been identified and aligned with each research question bin (described in 4.4.2) and the themes that were identified in section 4.4.2. The effects of doing co-design, key indicators. Table 4.15 brings the elements together and shows how themes will provide a cross section across the data.

Sources of data								
Case studies	Leapfrog: Transforming public sector engagement by design	Connecting communities: Empowering design practices	Re-envisaging infection practices in nursing through arts and humanities approaches	Confidence	Awareness	Mindset	Emotional responses	Unexpected effect
What was the effect of doing co-design on participants?	Impact report Peer reviewed papers Existing transcripts S/S interviews	Impact report. Peer reviewed papers. Existing transcripts. S/S interviews	Impact report. Peer reviewed papers. Existing transcripts. S/S interviews					
How were behavioural changes recognised?	Evaluation documents Ethicist report	Evaluation documents Ethicist report	Evaluation documents Ethicist report					
When were behavioural changes recognised?	Blogs Reflection documents	Blogs Reflection documents	Blogs Reflection documents					
What were the effects after the project on participants?	Impact report Peer reviewed papers Research Fish report Blog posts S/S interviews	Impact report Peer reviewed papers Research Fish report Blog posts S/S interviews	Impact report Peer reviewed papers Research Fish report S/S interviews					

Table 4.14 Sources of data

Document analysis of evaluations, reports and blogs during the projects were used in combination with existing transcripts of participant interviews and semi structured interviews of principal investigators in this PhD research in order to provide a confluence of evidence that breeds credibility (Eisner, 2017).

4.6.5 Using thematic analysis to identify emotional responses

Thematic analysis can be used very effectively to analyse psychological and emotional responses to situations, and has been shown to, in many cases, particularly in the social sciences. For example, Braun and Wilkinson's (2003) study 'Liability or asset? Women talk about vaginas' shows how data can be collected from existing studies and used in collaboration with thematic analysis methods to explore feelings, emotional responses and perceived social meanings.

Braun and Clarke (2006), in a later paper 'Using thematic analysis in psychology' provide the concept of a thematic map to help the researcher develop and position themes and codes in order to potentially explore the relationship between the codes and themes and between the different levels of themes, i.e.; overarching themes and sub themes within them. The paper goes on to say that one might also end up with a set of codes that do not seem to belong anywhere and that it is perfectly acceptable to have a theme for the miscellaneous codes. This approach was used to develop the table discussed in depth in section 3.6.

Frith and Gleeson (2004) use thematic analysis in a qualitative study of men's body image and appearance. This study gathered data about men's clothing practices gathered using qualitative questionnaires from seventy-five men, who answered the questions. Four themes emerged; each theme linked to the research questions. They made sense of the men's accounts in relation to gender norms and stereotypes linking them to the individual expectations that men as members of society face, relating the patterns of meaning in men's responses to the academic analysis of how genders operate. Braun and Clarke (2006) comment that, by doing this they demonstrate a dual position that analysts need to take: as both cultural members and cultural commentators.

This research reveals that men deliberately and strategically use clothing to manipulate their appearance to meet cultural ideals of masculinity (Frith and Gleeson, 2004). This study challenges perceptions, perceived wisdom and the emotions associated with clothes and appearance in men.

There are potential pitfalls to avoid using these methods as described (Braun and Clarke, 2006) as follows;

- Failure to analyse the data at all, TA is not just a collection of extracts strung together. The extracts are illustrative of analytic points and should be used to support analysis that goes beyond their specific content, to make sense of the data and tell the reader what is does and might mean.
- The use of data collection questions as themes. No analytic work has been carried out to identify themes.
- Weak or unconvincing analysis, too much overlapping of themes or themes that are not consistent around a central concept.
- Mismatches between the data and the analytic claims that are made about it.
  Mismatch between theory and analytic claims.

4.6.6 Data analysis

Analysing data is about examining, categorising and testing evidence that will produce the empirically based findings for this study. Case study analysis is not a well-defined activity, Yin (2014) therefore suggests that 'playing' with the data and searching for promising patterns, insights and concepts should be the goal to establish what to analyse and why. This study will use strategies to guide this 'playful' approach.
There are currently four, generally accepted strategies:

Relying on theoretical propositions; Following the proposition and research questions that emerged from the contextual review in Chapter 2. The proposition (3.4.1) has shaped the data collection plan and has highlighted analytic priorities.

Developing a case description; Organising the case study to a descriptive framework. A compositional structure within the chapters (Lynd and Lynd, 1929) is used in this study. The data are collected about each topic in the same order and the case study report structured thus

- Outline description of the project
- Identifying the effects
- How are the effects recognised?
- Identifying situations where effects travel beyond the project and impact everyday activities.

Having a general analytical strategy is the best preparation for case study research (Yin, 2014) this helps to link the case study data with emerging concepts of interest. Those concepts then providing a sense of direction for the data analysis, shown in table 4.16. The next section will discuss the techniques that could be used to address the problems of validation discussed in the section 3.4.3.

Data analysis methods	Characteristics of data analysis methods for case study approach.
Pattern matching	The emerging patterns from the data can be found to match or fail to match. If a prediction is made concerning the dependant variables before the research is carried out, patterns can be used to support the internal validity of the study. Also, the pattern matching technique of using rival explanation can be used. If a rival position is found then it can exclude the presence of another.
Explanation building	This is a less structured form of pattern matching, starting with a proposition. As each case is interrogated the proposition is changed in response to the findings, this is repeated until the underlying causes are revealed.
Time-series analysis	Data on dependant or independent variables are traced over extended periods of time so that predicted patterns can be compared with the actual patterns that emerge and subsequently inferences can be drawn.
Program logic models	Combining pattern matching and time-series analysis. Pattern matching technique would predict outcomes and time-series approach would allow measurement over time. This technique is about matching empirically observed events to theoretically predicted events. Similar to pattern matching but in sequential stages.
Cross case synthesis	Applies to multiple cases. Analysis is more robust. Each study is treated as an individual study. Used when establishing whether data/findings are replicated or contrasted with each other. Cross case pattern will rely on argumentative interpretation not numeric data. This method thus needs strong, plausible and fair arguments that are supported by the data.

Table 4.15 Outlining data analysis methods adapted from Yin (2014).

This thesis adopts a cross case synthesis and pattern matching model approach to data analysis that is linked to an interpretative theoretical perspective that was identified earlier in this chapter. As can be seen in the table 4.16 above this method is best applied to research using multiple cases. This approach ensures robustness. Each study is treated individually and cross case pattern

matching relies on interpretation not numeric data. This method requires plausible and fair arguments supported by the data.

4.6.7 Limitations of data

There are a number of limitations of the data collection and analysis using the methods outlined in this chapter. Firstly, the timescale of the case studies means that there is a significant amount of documentation and visual material available, it was not possible to gather and analyse all of this data in the time available to complete this thesis. The documentation has therefore been carefully selected to focus on the most likely sources of data that helped to answer the research questions here.

Secondly, the projects have had limited numbers of participants, who are already fatigued from multiple interviews and researcher's attentions. This means that the information and knowledge that they have shared is present in transcripts that already exist. These interviews might not have been concerned with collecting the data needed to answer the research questions in this thesis. This data might have been available but not collected and is therefore missing or lacking detail.

Thirdly, changes in behaviour due to taking part in these co-design projects have the potential to impact individuals, community groups and organisations further into the future than this body of research will be able to track therefore data regarding future impact is not present, however future aspirations of individuals are available in existing documentation.

Fourth, problematic access to sensitive documents containing data if they are restricted or blocked. Lastly, the documentation available might be subject to bias or inaccuracy.

Table 4.17 shows the completed methodological approach for this doctoral thesis.

Epistemological position Theory of knowledge	**Theoretical perspective**	**Methodology**	**Methods**
Constructivism	Interpretivism	**Approach** - Case study **Purpose of research;** o Exploratory o Descriptive o Explanatory **Research type;** Qualitative **Timeframe;** cross-sectional/snapshot	**Case study**; Semi-structured interview. Secondary source-Archival material and documentation. **Analysis;** Cross-case synthesis and pattern matching,

Table 4.16 Building blocks for research methodology

4.7 Summary

This chapter discusses the epistemological position of this study, the theoretical perspective, methodology and methods that will be used in this doctoral thesis. The choices that have been made in each of these areas has been shown in the diagrams 'the building blocks for research methodology' which have emerged throughout this chapter culminating in Table 4.17. This chapter also outlines the fundamental methods used for data analysis; this will be expanded further in Chapter 8, Data analysis. The next chapter will investigate and interrogate the first of three case studies that will contribute to this study.

Chapter 5 Case study one: Leapfrog

This chapter introduces 'Leapfrog: Transforming public service consultation by design', the first of three case studies used to address the research questions and proposition in this thesis.

5.1 Introduction to case study

This section introduces the first of three case studies used in this thesis to explore the effects of doing co-design on participants. 'Leapfrog: Transforming public service consultation by design', was a £1.2m project that collaborated with communities to co-design and evaluate new approaches to consultation. The lead research organisation was Lancaster University in the North West U.K. They worked with forty-seven project partners and collaborating organisations, impacting at least eighty communities and public sector bodies. This was achieved through a series of major and minor projects. The funding for this research project was provided by the Arts and Humanities Research Council (AHRC), this funding ran between January 2015 and October 2018. The case studies used in this thesis have varying characteristics and approaches to doing co-design. The Leapfrog project encouraged an equitable 'way', discovery by design, and it promoted embedding ways of thinking that could be drawn on by participants in their future practices. This chapter draws firstly on data collected during the process of co-designing the Leapfrog engagement tools and secondly, on the use of the engagement tools in participants practices beyond the co-design process.

5.2 The desire for improved connections

There has been increased interest by funding bodies, (AHRC) to encourage 'ground up' activity that improves connections between communities, special interest groups, friendship groups and public sector organisations in the U.K. These groups have increased in numbers and national government have recognised that empowering communities to instigate referendums on local issues is important enough to provide legislation in the form of the Localism Bill (2011).
There is a strong desire to continue and increase support for public bodies that have been involved in community consultation and who encourage more active roles in society.
Leapfrog set out to help create and evaluate new models with communities that were not easy to engage with. The project sort to overcome cultural, geographical and organisational barriers through the co-design of creative engagement. Researchers worked initially with what they described as test beds for example, Lancaster had many overlapping communities with lower rates of English literacy and the Scottish Highlands and islands home communities that are geographically dispersed and often isolated, they are described as being strongly motivated by the

hardships that they face in communications and accessibility. These test beds were used to stress test the new approaches to consultation through a series of major and minor projects, later providing robustness when applied in wider contexts across the U.K.

5.3 Anatomy of the project

Lancaster University partnered Glasgow School of Art in the Leapfrog project; they planned five key types of impact (Lancaster University, 2018b) as follows;

1) To transform public sector partners ability to co-design, consult and engage with communities. This will manifest in in new tools and approaches and practices but will be driven by change in culture of how institutions think about engagement: Public services need to do more and more with diminishing resources. Transforming engagement practice through the creative collaboration of new tools, with a focus on underheard and socially disengaged groups. The project will help partners to develop skill the skills to use the new tools. These skills and new consultation activities will begin to build a culture of innovation and peer to peer exchange within the council and other public sector partners.
2) To have a material economic benefit for public sector participants by making consultation more effective and reducing the need to employ external consultants. The aim of the tools and toolboxes designed as part of the project was to give public sector workers a greater capacity to do more consultation themselves and that the communities can be more self-sufficient in undertaking their own consultation.
3) To transform the ability of local communities to organise and form effective groups to engage more actively with issues that are most relevant to them. The tools will help communities have a more effective voice. This will help communities at multiple stages of maturity. These tools will provide communities with the evidence needed to apply for lottery and heritage funding.
4) Provide strong impetus for the improvement of consultation, engagement practices and approaches nationally (and internationally). This being enabled through the creation of multiple tools, digital, physical and hybrid and five distinct toolboxes. Promoted and freely distributed across the U.K. to over eighty groups and organisations.
5) To help any group or institution that undertakes consultation activities to understand, evaluate and improve their engagement activities. The innovative, unobtrusive, creative

evaluation frameworks that are developed and shared will support the evaluation of public consultation processes more effectively.

Glasgow School of Art led the evaluation process for Leapfrog, developing an evaluation framework that facilitated evidence capture and analysis under three themes to evidence impact.

1. Evidence of the difference in results: Have the tools led to a different approach, with new and diverse people involved and with different energy and engagement?
2. Evidence of the difference in results: Through using the leapfrog tools, has this led to a new, better, different outcomes and impacts for those delivering the engagement and for the ambitions of the communities involved?
3. Leapfrog learning: Evidence of the effectiveness and usability of the tools.

Five questions were devised in response to the Leapfrog project to help evaluate if participants behaviour had been impacted by the project.

1. Has your work or contact with Leapfrog changed the way you think about working with communities, consulting with them or engaging with them (in what way)?
2. Do you feel your consultation/engagement activity is now more effective? That you can do this yourself? You can better involve colleagues or community groups in this? (and why)? b. Have you been able to, or do you plan to conduct more consultation activity yourself, rather than using external consultation organisations or agencies? c. Can you indicate what level of resources have been saved?
3. Over the past three years through what you have learnt from Leapfrog, or using the Leapfrog tools, have you seen people voice their views more effectively (can you outline the best example of this)?
4. Has your organisation changed as a result of working with Leapfrog (in what ways)?
5. What has been the best thing about Leapfrog?

5.4 What documents were used to gather data?

Leapfrog was a five-year project, during this time a range of documentation was produced that recorded, reflected and evaluated the activities and impact, including the effects on participants. Multiple and varied documentation were initially gathered in the first cycle of data collection for this doctoral study. These documents were identified as potentially rich sources of data that had been used to capture, evaluate and analyse data throughout the project. It was at this stage that

documents were filtered, by their relevance to provide data that would contribute to answering the research questions. There were some very rich sources of data in the 'Community Stories' for example (Lancaster University, 2018a), that were written by participants of partner organisation and researchers. The U.K. Research and Innovation web page listing for Leapfrog was used as a refence point to explore the aims and objectives of the project and as a sign post to other sources of data. The Principal Investigator and the Impact Manager were able to provide the documentation that was rich in data relevant to the research questions.

The documents that data were drawn from were as follows:

- Researchfish report
- Impact reports
- Scaling report
- PI Interview
- UKRI project webpage

  Evaluation documents

5.5 What were people co-designing?

The Leapfrog project co-designed engagement tools that helped participants to communicate with and involve communities in decision making and the design process. The tools helped to make the consultation process more accessible and more effective.

Leapfrog produced eight 'Tool Boxes' each toolbox contained between three and eleven tools. The tools boxes focussed on different areas of engagement, as follows;

- Tools co-designed to capture and tell stories about food and food poverty.

  Examples of co-designed objects.
- Tools to help put impact on audiences at the heart of everyday research and development.
- Tools co-designed to enable conversations with a large number or diverse groups of people.
- Tools co-designed by young people and expert practitioners to help anyone engage with young people in creative, inspiring and effective ways.
- Flexible tools that can help new teams from different services work together effectively.
- Tools to help rural communities to plan events and engage with local people.
- Tools to help unwrap and translate stories that you have encountered and to engage the rest of your organisation.

- The valuing voices toolbox aims to support care professionals to conduct person centred evaluation that goes beyond just tick boxes.

Figure 5.1 shows examples of the co-designed paper-based tools that were designed during the Leapfrog project.

Figure 5.1 Example of two co-designed paper-based tools (Lancaster University, 2018a).

The tools that were co-designed during the Leapfrog project are all able to be downloaded under the creative commons licence from the Leapfrog website. Anyone may freely download and print the tools to use in any context they might choose.

Each has instructions on when and where the tool would be most effectively used and provided are instructions on how to use the tool. There are suggestions or prompts to encourage users to adapt and change the tools to the specific context, this suggests that users should adapt the tools to fit context and not try to manipulate the context to fit the tool. An example of this can be seen in Figure 5.2 Target Control.

Target control is a way to get young people to think about how they can gain more control over the things that frustrate them and make changes in their life.

Why Should You Use Target Control

The young designers Leapfrog worked with could think of lots of things that frustrated them about being in care but it was harder for them to think of ways to fix the problems. Target Control helps young people to think about how much control they have over each of their problems and it also challenges them to think about if there is anything they can do to fix the problem for themselves. For example, if social workers wearing identity badges really annoy them, they could decide to talk to the support worker about it and show the BADGE tool.

How it Works

Target Control is based on an idea called 'The Control and Influence Model' in Stephen Covey's book; 'The 7 Habits of Highly Effective People.' Covey talks about using three circles to show what you have complete control over, what you can influence or change, and things that concern you but you cannot do anything about it. The idea is to help anybody do more about the problems they can change and worry less about the problems they cannot do anything about. We recommend that the young person writes the problems into one of the three circles depending on how much control the young person thinks they have on each one.

When we did it, we collected all the words from the work the young people had done and printed them onto the Right Words sticker sheet tool that is free from this website but it's easy to just write them onto the circles with a pen.

Download the tool on the right to try it yourself.

You Can Change the Headings

Download our editable pdf version if you would like to change the headings. Simply click on the light blue boxes and delete and add your own text. (Please note that due to software limitations, the editable pdf version varies slightly from the original Target Control)

Figure 5.2 The target control tool (Lancaster University, 2018a).

The tools were developed through workshops that were characteristic of the Leapfrog project.

Leapfrog developed tools favouring paper-based materials and collaborative design workshops that were facilitated by a design researcher.
The following examples, Figure 5.3 are images taken during the workshops that provide a snap shot of the processes used to develop the engagement tools using collaborative design methods.

Figure 5.3 A snapshot of co-design methods used in the Leapfrog workshops

The images in Figure 5.3 are taken from the final co-design workshop 'This tool is good for…' The co-design team plus five people from the community and voluntary sector, who had not previously used the tools, were guided through a process that helped to refine and improve the tools so that they could be used in multiple contexts and scaled.

> 'At the start of the workshop the tool owners were asked to create a title, scenarios and instructions for each tool which proposed what the tool is good for, how it could be used practically and describe a specific example of use' Community stories (Lancaster University, 2018d).

> 'Everyone was invited to test out all the new tools and instructions, working in small groups to think about how the tool could be used in their engagement practise. After testing the tools and their instructions out the group left detailed feedback on how the

> tool/instructions could be improved and presented this to the whole group' Community stories (Lancaster University, 2018d).

The tools accompanied by instruction were then produced as one-page editable PDF documents with three suggestions for how they might be used in varying scenarios. The document was then added to the Leapfrog website in order for it to be easily accessible and downloaded by anyone who wished to use them. Each stage of the project used collaborative design methods to engage and value community members and stakeholder's expertise (Chapter 2, 2.4). The Leapfrog project emphasised the importance of sharing the knowledge and tools that had emerged from the initial collaborative design workshops.

> 'Keen to share them further, especially with those with lived experience of food poverty and individuals working at a grassroots level we held a residential in Scarborough over a sunny August weekend. Several of those who co-designed the tools in Newcastle attended and helped to facilitate the workshop in which they were shared. We explored how the tools could be used for activism and campaigning, alongside capturing stories and opening up conversations about access and affordability to food.' Community stories (Lancaster University, 2018d)

Emphasis was placed on the ease of use of the editable PDF tools that were developed during the Leapfrog project, making them and the process accessible to diverse user groups.

> "One attendee said *'I enjoyed most the part with the Talking Food Card Deck and the local food cards, really easy to use and a good ice breaker with both children and adults.' " Community stories* (Lancaster University, 2018d).

> 'With just four of us & little under two hours a tool had emerged, a colourful fold out caterpillar, playful yet practical, and something that could neatly sit in the back of our notebooks' Community stories (Lancaster University, 2018d).

There was, throughout the documentation written by the Leapfrog researchers, the idea that the tools, knowledge and processes employed in the multiple projects, would go beyond the project, using the momentum gained by the collaborative design methods.

> 'I'm excited to see how and where the tools continue to be used, and how I can continue to adapt them to overcome challenges and enhance my work.'

Empowerment Officer for Food Power' Community stories (Lancaster University, 2018d).

The impact of the objects or tools can be seen through the response of the co-design participants. There is emphasis on the importance of the tools that were developed during the workshops. However, the process and knowledge gained is not as tangible as the object and might be less visible or valued. The next section will look at the effects of the processes and methods on participants.

5.6 How were participants affected by the co-design process?

This section looks at the effects of participating in the leapfrog projects at a micro level. In many cases the participants reflected on how they had been affected by taking part in the collaborative design process and how that had impacted on their behaviour and practice at the time of the project and in the time beyond the project.

Data was gathered on how individuals practice might have changed. These data characteristically valued the voices of the participants and used many direct references.

There were thirty-three codes used under four key themes (see Chapter 4, 4.4.2). 'The purpose of collecting data'. This section will draw on this to establish the most prominent effects, providing key insights from participants and researchers.

There were clear trends emerging in each of the four themes, shown in Table 5.1.

Initial findings	
Themes	**Prominent codes**
Confidence	To think, have ideas and to use imagination. To communicate. To Do.
Awareness	Of the value of self and the process. Of agency.
Mindset	Openness, to new ideas and new ways of working. Enthusiasm.
Emotional response	Surprise, at the disruption to existing thoughts and practice. Excitement.

Table 5.1 Initial findings in data analysis

5.6.1 Confidence.

To think, have ideas and to use imagination.

Throughout the documentation there have been clear references that suggest that participants had changed the way they think and that this change was as a direct result of having participated in the Leapfrog project and its collaborative design methods and process outlined in section 5.5. Participants described changing the way they think, having the agency to have ideas and using their imagination to think through issues regarding the way they engage with groups and their own practice often as a matter of gaining enough confidence to go beyond what they already understood this participant describes a change in their practice when using the tools;

> 'The tools allow you to think differently to approach problems and challenges in a much creative and solution focused way' Impact evidence map (Lancaster University, 2018c).

This participant describes the changes in practice due to the co-design process, when they were designing the tools in a workshop;

> 'Leapfrog changed the way we think about working with the community as it began at the same time that austerity started when we were thinking of ways of maintaining our parks and open space in a situation where we got less and less money from the government to do so' Impact evidence map (Lancaster University, 2018c).

Having the confidence and agency to have new and independent ideas and implement them might be a relatively easy concept to understand. However, 'changing the way we think' and 'using my imagination' are not easily explained by participants. They are aware that a change has occurred in the way that they think and that using their imagination has become a valued part of the co-design process but participants do not discuss why these changes have occurred or what might have triggered these changes. This is seen across the many smaller projects and their unique contexts that made up the Leapfrog research. The following quotes are by participants reflecting on the impact on their practices beyond the project.

> ‘It (Leapfrog) made me think about the whole design of projects in a different way. It really sort of embedded that kind of co-production ethos into my work and into the organisation's work’ Impact evidence map (Lancaster University, 2018c).

> ‘Always I'd be going back and thinking Leapfrog's doing this. [44] Would you call that a strategic change? Yes. And a step-change as well. A different way of looking at things’ [45]. Impact evidence map (Lancaster University, 2018c).

> ‘So, I think that I now go to the Leapfrog toolbox when I'm designing a new project. I look at what have I already go here that can help? What can I adapt? How can I get the best out of this group by using these tools? So I've gone beyond changing my own practice technologically and having a whole new range of skills now, into using those tools to help me not just facilitate issue based work but to plan it as well, I think’ Researchfish report (Cruickshank, 2022b).

There is value in and an awareness of the method, situation and environment that supports changes in thinking and confidence, however, this is not enough to explain changes in designerly thinking (Cross, 2001).

> ‘I think it's just stepping out from the norm and being able to think. Getting that break and being able to think. And explore, having that opportunity to explore in different ways and see where things aren't working’ Scaling Leapfrog report (Cruickshank, 2022b).

The above quote is an example of how a participant, working on the co-design of tools, has recognised that changes in behaviour and practice, have occurred, but they are searching or trying to attribute these changes to something that they are not quite able to pin point or make tangible.

To communicate.

Developing the confidence to communicate and to do (act), emerged as significant effects of the co-design process during the Leapfrog project. Participants clearly stating that they would not have had the confidence to carry out tasks if they had not first experienced the collaborative design project. Confidence, is frequently referred to across the documentation that was analysed for this case study in the reflections on the impact on practices, as follows;

> ‘One respondent, who was a project partner on the Major Project, Working with Young People, shared how without Leapfrog, they ‘would have lacked the confidence’ nor have ‘gained the quality of comments’ from those she used the tools with’ Researchfish report (Cruickshank, 2022a).

> ‘Being able to do a confident interview with the media that first time having used the tools just minutes prior, I think has stood them in good stead to do more media coverage and think about how they structure conversations moving forwards as well’ Participant 4 interview (Lancaster University, 2018b).

There are key moments when participants were aware of increased confidence, section 5.10 in this chapter. The participants and researchers were not however explicit in their understanding of what characteristics, actions or understanding allowed them to gain more confidence. The gain in confidence allowed participants to communicate more effectively and it seems with more conviction with the groups that they were working with. Participants also reflected that they felt able to and were communicating with more diverse groups of people in multiple contexts and using multiple and new mediums to communicate. Participant 4 recognises that the co-design process used in Leapfrog has impacted them and has been adopted through them to the people they are engaging with in their practice.

> ‘Yeah. I think speaking truth to power, questioning, challenging. I think because the process of the co-design very much instilled that within people, and we took tools from Blackburn to Newcastle and vice-versa, because it was an open space where people were free to give honest and open feedback, that we were open to scrutiny, that actually that's something that's stayed with them and then now in campaigning and activism. Again, sort of a more an invincible outcome’ Participant 4 interview (Lancaster University, 2018b).

Questioning and challenging are recognised as important elements in the design process and the freedom to be honest and open are valued by this participant. The participant is talking about fundamental co-design elements and process rather than the objects or outcomes of the workshops that they took part in. This is a key marker, that shows how Leapfrog placed emphasis on understanding co-design principles that could travel beyond the project.

To Do.

There were changes in participants behaviour due to their increased confidence to do things, to act. Participant 2, explains the changes in scale and use of technology that they felt able to apply to their practice after experiencing the co-design process and way of thinking.

> 'The next project that I ran as a spinoff from that was with Barrowford Primary School, where I worked with over 300 children on using sound advice, doing digital audio recording, where we looked at all the sustainable development goals, and we made a 35-minute audio that represented what the children thought about all the different goals. So that really was a direct spinoff from the original Leapfrog project too' Participant 2 interview (Lancaster University, 2018b).

The data on confidence 'to communicate' and 'to do' might suggest that the complexity of co-design methods and process contribute to an experience that is more than the sum its parts. Alternatively, that changes in participant's way of thinking and confidence are due to a number of key elements of the co-design process overlapping. Thus, supporting a designerly way of thinking or 'design disposition' to emerge. The awareness of this disposition seems to make designerly thinking a purposeful act that could be widely applied.

5.6.2 Awareness.

An awareness of value of self and the process.

Through reflective and evaluative methods used across the Leapfrog projects, participants became, clearly aware of their value, their lived experiences and expertise and they were aware of the value and importance of the process and methods used in the projects. The awareness of participant's value seemed to ignite or uncover a realisation that the methods used in the co-design process underpinned their ability to reach beyond their normal practice parameters into everyday activities (Certeau, 1988; Shove, Pantzar and Watson, 2012). To make these behavioural changes, participants might have needed to adopt an approach that accepted more risk taking and promoted less fear of failure or 'getting it wrong'. Awareness of self and process has facilitated participants to explore their practice using different lenses, increasing empathy and valuing other participants areas of confidence and skill sets which has helped to remove barriers of communication. Connections were made between diverse social groups and the practice of participants in the co-design projects were more inclusive and effective. Different participants describe the impact of the experience and their awareness of the changes that it had on them in a

way that implies a permanent change in practice and the momentum to continue using co-design approaches beyond the project, evidenced in the following quotes;

> 'So, the impact was phenomenal really. The impact on me was huge because I've entered into a whole new body of work that really captures the essence of what young people think. Young people are really confident with technology. They might not be as confident writing as they are speaking. I feel that by using a technology that they're confident with, we overcome a huge barrier to start off with'. Participant 2 interview (Lancaster University, 2018b).

> 'The tools have been adopted and adapted in a wide range of settings: from Children's Services where they have helped to transform the creative methods for ensuring that the voice of the child is embedded in service development planning.' Impact evaluation map (Lancaster University, 2018c).

The word embedded has been used in multiple contexts by participants, implying that changes in behaviour/practice are longer lasting and travel beyond the project.

An awareness of agency

Agency is a reoccurring theme throughout the co-design literature (Chapter 3). Within the refences identified in the data collection it is apparent that there is a sense of relief, that it is acceptable to value the lived experience voice and it is acceptable to value the expertise of non-professional practitioners.

With greater awareness of agency, participants were able to have an appreciation of the powerful impact a clear and honest voice could have. Participants changed their practices to support others by using the tools that they had co-designed during the Leapfrog project, shown in the following;

> 'Tools like that enable you to kind of have subtle conversations about power, about dynamics, about the things that people don't often acknowledge in their workplace.' Researchfish report (Cruickshank, 2022a).

> 'The tools have given young patients more ownership with their experiences; they are better able to have their voices heard and to be listened to by the right people.' Scaling leapfrog report (Cruickshank, 2022b).

The awareness of a change in design disposition seems to have supported increased agency in participants through the process and methods used in leapfrog's way of doing co-design. The co-designed tools that Leapfrog produced were the vehicle for the higher-level process.

> 'I think it's just really inspiring to be in a room full of people who are trying to improve their service and improve their engagement for people, and looking for creative ways of doing that.' Researchfish report (Cruickshank, 2022a).

The awareness of agency has released a sense of force and solidarity in participants that can be focussed on communicating in a targeted way.

5.6.3 Mindset

Openness to new ideas and new ways of working

Participants have discussed how they have changed the way they think after experiencing the Leapfrog co-design workshops and using the tools and ideas in their practice beyond the projects. Although they have not been explicit in how they have changed the way they think, it is possible to see that they have an increase, in how 'open' they are to new ways of working and to think in an open-minded way. Thinking collectively, using the group to develop an idea through divergent thinking is increasing participants willingness to have a 'why not?' approach.

> 'I think it's fair to say that my involvement with Leapfrog has transformed my practice as a youth arts worker and as a community worker really' Participant 2 interview (Lancaster University, 2018b).

> 'For 20 years I've been doing arts projects with young people using a wide range of visual arts materials, but I've never ventured into the world of technology, and probably would have described myself as a technophobe prior to the Leapfrog launch really of those tools.' Participant 2 interview (Lancaster University, 2018b).

Researchers too, observe changes in openness, the following quote would suggest that the capability to be reflective and reflect with other participants and their peers played a significant part in this change in behaviour.

> 'This acknowledgement on adapting a way of thinking was also often replicated in the appreciation of attending co-design workshops and tool dissemination events alongside fellow practitioners; helping participants to focus their 'thinking around how they used tools' through exposure and informal conversations with their peers' Researchfish report (Cruickshank, 2022a).

The group dynamic, and perhaps shared responsibility for any successes or failures, is pushing the participants in a direction of uncertainty with potentially unknown or at least not easily predictable outcomes. The shared dynamic and equality seems to make this risk acceptable. That open-minded risk-taking attitude is a key element in creative thinking (Cross, 2023).

Enthusiasm

Participant's enthusiasm for their practice increased when they observed how effective the co-design tools and methods were when they engaged with them. The catalyst for this enthusiasm seemed to be ignited by enjoyment of the playful approach that co-design can adopt but also in the successful application of ideas to participants areas of practice. There was a recognition that the changes that participants made to their practice after the co-design workshops, directly helped to create new and unexpected opportunities.

> 'However, the spinoff from that was phenomenal, and I was then offered the opportunity to go to Budapest for five days' intensive training to learn how to make digital stories. So I snapped that opportunity up. That came as a package, so I ended up going to Transylvania with five young people that I work with to take part in an international Erasmus funded digital story project that looked at the United Nations Sustainable Development Goals, and to put my skills to the test really' Participant interview. Researchfish report (Cruickshank, 2022a).

> 'I've thoroughly enjoyed it. Like I say, when it came to the end I've gone on to the website and I've looked at a few things, 'Right'. Next time I need a consultation the first

> place I go is look at the toolkit, 'Right, that's what I'll use' Impact case study (Cruickshank, Pérez and Whitham, 2021).

Researchers also recognised that playfulness directly affected participants enthusiasm and enjoyment in the collaborative workshops when they were co-designing tools.

> 'Due to the more playful aspects of many Leapfrog tools, multiple interviewees reported how they and their engagement participants also enjoyed the tools and expressed eagerness to repeat similar exercises' Impact case study (Cruickshank, Pérez and Whitham, 2021).

There is a realisation that a playful approach (Bateson, 2014) will be an effective driver for momentum and participants enthusiasm and eagerness to continue using the co-design methods and tools beyond the project in their practices.

5.6.4 Emotional response

Surprise, at the disruption to existing thoughts and practice

The reaction of participants to the experience of the co-design projects was often one of surprise. There are two elements of surprise at play here, firstly there is surprise at the effect of the experience on the participant personally, the change in the way they think and how much impact it has had on their own practice.

The moment of surprise seems to be the moment of realisation or consciousness of the participants capability of reflection, evidenced in the quotes below, by the idea of stepping backward to re-evaluate the processes being used in their current practice. This was during the co-design workshops, as follows;

> 'we hadn't really thought about how you properly engage with communities, made me step back a bit and think we're about a million miles away from the world that Leon's talking about' Scaling Leapfrog report (Cruickshank, 2022b).

> 'It (Leapfrog) made me think about the whole design of projects in a different way. It really sort of embedded that kind of co-production ethos into my work and into the organisation's work.' Impact evidence map (Lancaster University, 2018c).

Secondly there is surprise at the process to stimulate deep reflection seen in the use of language in the following quote;

> 'As well as really reflective sort of practice, deep inside me reflecting on my practice, really challenging me to join the 21st Century.' Participant 2 interview (Lancaster University, 2018b).

The co-design process and methods has disrupted practice during the workshops and that disruption seems to have been significant enough to cause a change in thinking and behaviour to individuals and, in time, organisations and future projects that were not directly part of the Leapfrog project.

Excitement

The language used by participants emphasises that they believe they are now doing real, meaningful and proper consultation and engagement and that is something to be excited about;

> 'They've gone on to continue their involvement. And I think because Leapfrog was an exciting process for them and it made it interesting, so it wasn't kind of the same old let's do another workshop sort of thing, it was different. So I think just the thinking' Participant 4 interview (Lancaster University, 2018b).

The process and methods used in the Leapfrog projects have been explicitly described as 'exciting' and this seems to underpin participant's enthusiasm and motivation to continue the momentum.

5.7 How were behavioural changes evaluated?

There is extensive refence to evidence capture and evaluation, this is folded into the leapfrog projects by establishing methods of evaluation at the beginning of the project (5.3 Anatomy of the project).

> 'Having witnessed change through successful project delivery with first-hand experience, direct contact with partners, and various reports from communities involved from across

> the UK, the project team has collected a solid amount of data and documented evidence.' Impact case study (Cruickshank, Pérez and Whitham, 2021).

> 'Evidence collected includes an evaluation report with 58 supporting interviews, baseline interviews taken throughout the duration of each project, individual blog reports highlighting every tool sharing event, workshop or point of noteworthy research, along with photographs, and videos. Data has also been captured through dissemination activities such as the downloading of tools, newsletters and social media channels (Facebook, Twitter, Vimeo), with a network of over 500 people subscribing to the projects Mailchimp account.' Impact case study (Cruickshank, Pérez and Whitham, 2021).

The participants seem to have become familiar with the evaluation methods and reflected on their experiences openly and honestly.

> 'It was found that all twenty people had either changed the way they thought about engagement or the way they actually delivered their activities.' Impact case study (Cruickshank, Pérez and Whitham, 2021).

The evaluation methods (5.3 Anatomy of the project) captured evidence of change in individual participants, group dynamics, changes in organisational practice and the financial impact of the co-design project and workshops, the following quote exemplifies this.

> 'Financial Resources: in two instances resources were reported to have been gained in a financial capacity. Positive outcomes were gained through the tools enabling new funding bids to have been successful. Through use of Leapfrog tools, bid writers had gained sufficient and accurate data, and a more effective method for direct service user involvement, proving to funders the worth of their support. One interviewee remarked that a funding body actually increased the amount of their donation due to the evidence and quality of request made' Impact case study (Cruickshank, Pérez and Whitham, 2021).

5.8 How were key moments recognised in the journey?

The evaluation methods used in Leapfrog facilitated a reflective approach by participants (5.3). There were key moments when researchers and participants noticed changes in thinking and

changes in behaviour and practice. Multiple participants realised at an early stage in workshops that there were alternative methods of community engagement. Awareness, surprise and realisation of more open-minded approaches to consultation and engagement prompted participants to question what they were doing and how they were doing it, and make comparisons with what was being offered to them as alternative practices. For many this was not a gradual realisation but an immediate and powerful moment of realisation, seen in the following example;

> 'And just the sort of work that Leapfrog were doing, the conversation that we had right at the very early stage in the shed that Leon described, that made us kind of step back a bit. It certainly made me step back a bit and think we're about a million miles away from the world that Leon's talking about.' Participant 1 (Lancaster University, 2018b).

These moments helped participants to continue to be open to new ideas and new ways of doing and thinking.

When participants became aware of their own practices and the practice of co-design, they began to be more open minded. This was in part due to seeing the methods and processes used in the workshops. The experience of co-design making process and outcomes tangible and successful provided credible alternatives to their current practices. The researchers made the following observations:

> 'This passion was most easily traced in the way co-design participants spoke with a real ownership language of the tools and the way they sought to implement them.' Researchfish report (Cruickshank, 2022a).

> 'From their accounts, this ownership of progress is argued to take stronger hold when they experienced tangible effects, particularly in the stronger relationships they were building.' Researchfish report (Cruickshank, 2022a).

> 'So even if they [managers] couldn't attend, they saw the photographs and it was more like a reassurance, yeah, it's okay, you're engaging in enough people with a broad background, they're getting involved. And I think that's where it changed' (Cruickshank, Coupe and Hennessy, 2016).

The culture of evaluation was weaved into the project throughout, using a series of carefully developed prompt questions, seen in section 5.3. This helped to uncover the effects of doing co-design by making them visible to the researchers but significantly, to the participants in what seems due to a combination of co-design process and methods.

There were significant moments of realisation when participants adopted the collaborative design approach and the tools that Leapfrog had developed, into their own practices. When participants became aware of the authentic voices and agency of the people that they were working with it provided them with a solid foundation from where they might explore their own adaptations of the project methods and processes. The success was tangible shown in the following;

> The tool that I took away with me was sound advice. It absolutely blew me away as a tool because it captured the authentic voice of the young person.' Participant 2 interview (Lancaster University, 2018b).

> 'It certainly made me realise, and I think my teams, that there's a lot more to consultation, there's a lot more to engagement, there's a lot more to finding out what people want, than just filling in forms or box pop type exercises. And that even when people say they want something, if you don't engage with them properly you could deliver them something and then they realise they don't want it, or they don't like the way you've delivered it' Researchfish report (Cruickshank, 2022a).

Participants realised that they were more effective in what they were doing, these moments have prompted the participants to discuss how this has impacted them.

5.9 What were the effects on participants over time?

Patterns emerged from the analysis of the data collected for the Leapfrog project that are traveling beyond the scope of the project and into participants own areas of practice. This was observed by the participants, as follows;

> 'They've gone on to continue their involvement. And I think because Leapfrog was an exciting process for them and it made it interesting, so it wasn't kind of the same old let's

> do another workshop sort of thing, it was different. So, I think just the thinking' Participants 4 interview (Lancaster University, 2018b).
>
> 'I think it's helped me think about actually the whole Leapfrog process worked really well, people were really engaged, they enjoyed it. There's other things that in the past we might have invited people with lived experience along to, but actually we're now saying that's probably not that fun or interesting for them' Participant 4 interview (Lancaster University, 2018b).
>
> 'It doesn't feel right to go away and then come up with a resource sort of in isolation from that. So that's something that I'm sure has come out of that thinking' Researchfish report (Cruickshank, 2022a).

These observations were also noted by the researchers, evidenced below;

> 'The engagement practitioners were themselves becoming 'designers' in their own context, with tools adding an extra dimension to make their practice seem more tangible' Researchfish report (Cruickshank, 2022a).
>
> 'One respondent from the Major Project, Neighbourhood Centres, shared how she applied for £50k for a community project, inspired by Leapfrog, and was successful in her application. This support for informing new projects became an exciting learning on more fronts' Researchfish report (Cruickshank, 2022a).
>
> Participant, has reflected that Leapfrog goes beyond providing effective tools, it has impacted fundamentally on how she thinks about engagement 'I've gone beyond changing my own practice technologically and having a whole new range of skills now, into using those tools to help me not just facilitate issue-based work but to plan it as well' Researchfish report (Cruickshank, 2022a).

Changes in thinking are the reoccurring theme and reaching beyond what has become normalised behaviour or openness to change. Having tangible tools and guidance about how to design and what it was to design has provided a foundation to build on. Previously there was no tangible process or evidence of success and failures.

Participants are sharing that they have experienced a new way to think and now they are able to appreciate how to use multiple tools and be open in their approach and think in a different way, in multiple and diverse situation.

> 'In particular, they wanted to stress training trying 'to get people to change the ways they do things and to about things differently': "My view is, while this is a personal development tool it's not a training tool, it's an implementation tool, it's a communication tool. Because it's a creative tool and a communication tool it's around ensuring that people buy into it, and you can train people to lift it up, but the whole point of the tool is that you utilise it in the best way that fits your purpose' Researchfish report (Cruickshank, 2022a).

This has led to greater belief in what participants who have been working with communities are doing and that they feel closer to the people that they are working with.

Almost all of the data collected supported positive experiences and provided strong evidence to suggest that many of the effects of doing collaborative design were carried forward over time and were embedded beyond the scope of the Leapfrog project.
However, there is some evidence that would suggest that those individuals who did not experience or understand the collaborative design approach did not buy into it. This participant suggests that a questionnaire would be the way to assess the impact of the project in the future. Participants have recognised that questionnaires are not an effective way to evaluate used on their own and that the process and methods used in the project were far more effective.

> 'We're not sure. We need to do a questionnaire at a later date. There perhaps is some follow-up. But I think given much of the things within Food Power and within this sector, when you're looking at influencing things at a strategic level, it doesn't happen overnight, it can take some time. So I think at this stage we'd certainly know the tools. work to empower individuals and engage them, and to even recruit and get people actually this is interesting, this is relevant to me. But in terms of the impact that it's had, I can't really give any definite examples' Participant 4 interview (Lancaster University, 2018b).

This comment was made by a person in a position of management, it sits in contrast to the participants who are working closely with communities' face to face and who are facilitating workshops. No negative experiences have been recorded or carried forward in the documentation that has been used to draw data from in this case study.

There are effects on participants over time this might be the result of a combination of effects. The individual effects that have affected participants over time beyond the project have been evidenced as follows;

- New ways of thinking
- Open to new ideas
- Enthusiasm due to enjoyment, excitement and belief
- Confidence to go beyond existing practices

The excerpt from an interview between the author and the Leapfrog Principal Investigator (PI) provides an observation of the effects on participants over time, as follows;

> (Postgraduate Researcher) 'and do you think that the 'Leapfrog way' has prompted people to reflect in that way, in a certain way?'
> PI. 'Yes, yeah, totally to be really collaborative to be open. Exploring to um, to be happy with a bit of uncertainty at the beginning, when knowing that you can pull it together, that sort of thing. So we see that and the results sound always amazing, but we see that if follow up with people and they doing that, they're doing their own thing' PI interview (Appendix 1).

The PI observes that, due to the way Leapfrog encouraged an understanding of co-design fundamentals, the participants become comfortable with uncertainty at the beginning of the workshops and projects. This suggests that something has happened or been triggered to provide the support or scaffolding to take risks and feel comfortable in doing so, from that point. There seems to be a point when there is a reduction in stress and anxiety that enables participants to either shift responsibility away from themselves or shift their perception about what is valued as being a successful process and outcome. The PI suggests that they have taken responsibility for the risk of failure away from the participants by saying that the process might be taking them into uncertain ground, but it will be 'okay', it will all come together at the end. The PI suggests that this way of thinking travels beyond the project, implying that once this way

of thinking has been experienced with successful tangible outcomes, participants are comfortable to adopt it.

5.10 Conclusion

This section discusses the strands that have emerged through the data analysis that help to provide insight and understanding of any transitional changes in behaviour of participants in this co-design case study.

The initial analysis of data, collected for Leapfrog, provides insights that can be directly linked to the process and methods used in the Leapfrog project (section 5.1). NVivo a Computer-assisted qualitative data analysis software (CAQDAS) was used to help organise and identify the key 'effects of doing collaborative design' (section 3.6).

The analysis shows that the following clusters are the most prevalent under the 'effects' themes:

- The confidence and awareness to think, have ideas and imagine (section 5.7.1)
- Confidence to do, communicate, have agency and be independent (section 5.7.2)
- Openness in approach (section 5.7.3)
- Enthusiasm (5.7.4)
- Awareness of the value of self and process (reflection) (section 5.7.2)

There were two effects that were not found to be present in the data, they were;

- Fear
- Having the confidence to be mischievous

Using NVivo it has also been possible to explore the relationship between the effects that participants have identified as being part of the collaborative design/participation experience (Kelty, 2020). It shows that a combination or overlap of 'effects' might have affected participants in other ways. Nvivo has provided markers that help to signpost such intersections.

Evidence supports the argument that the experience of collaborative design in the Leapfrog project has impacted participants and helped to facilitate changes in behaviour. The data suggests that where participants have developed, for example, the confidence (I can) to think and have ideas, combined with openness to new ways of working (what if) that emotional responses, also

change (Chapter 3, 3.6). This has been evident firstly, during the co-design workshops and secondly, whilst using the co-designed tools in practice, by participants. There are multiple instances of this occurring, suggesting that when multiple effects are experienced together, it is possible that they overlay and combine to cause changes in behaviour and thinking that might not have occurred had participants experienced fewer effects or individual separated effects.

The clusters identified at the beginning of this section, could be described in a more fundamental way and separated into tangible, easily understood effects and those that are less tangible and less visible. Confidence and enthusiasm have been described in, section 3.6 and although are key insights in the effects of doing co-design, can be relatively, easily explained, understood and shared. 'To have ideas and imagine', 'be open in one's approach' and 'have the capability to reflect' are not as easily shared and understood. These elements of the co-design process are less tangible and open to interpretation and therefore this knowledge is not easily disseminated (Galabo and Cruickshank, 2019), by participants (researchers, designers, professional experts and lived experience experts).
There are three points to address that are not clearly visible yet, as follows;

1 What happened when participants start to become aware or conscious of the process and themselves, their capability to be reflective?
2 What is 'openness in approach?'
3 What do participants mean by the term 'It changed the way I think?'

There are a number of instances where participants have recognised an effect in real time but have not recognised the higher-level impact of that instance. For example, participants are surprised at their understanding of how to use designerly thinking, the surprise of realising that continual evaluation and assessment of an idea is essential for designing can be seen at initial stages of many of the collaborative design workshops. When or if this occurs it is a point of consciousness, a Gestalt moment (Wertheimer, 1938; Freire, 1972) of reflection, seen in section 5.7.4. Reflection being a pre-requisite for doing design, not just co-design, but all design (Schön, 2017).
There are multiple instances of this occurring, however the data does not yield information regarding participants to whom this did not occur.

The characteristics of the workshops, the process, methods and materials used suggest that this is a way of working that might be more playful and experimental than participants have been previously used to in their practices. Making and prototyping and thinking through ideas, sometimes without a sensible end goal in sight (Johansson and Linde, 2005; Bateson and Martin, 2013; Brewster *et al.*, 2022). This playfulness is not explicitly recognised by participants and has not been explicitly discussed by researchers but the method of working through a process has clearly helped to create a state of mind that is playful, shown in section 5.10. and is further supported by participants level of joy and emotional responses to participation. This state of playfulness is encouraged early in the projects and seems to contribute to participants being comfortable with uncertainty discussed by the PI at the end of section 5.10.

The term 'thinking differently' needs to be analysed in greater depth. Open mindedness, open to new ideas and ways of working and open to change, might all contribute to what participants mean when they say, 'it changed the way I think'. The characteristic workshops of Leapfrog seem to have unlocked a deeper level of thinking and shared how to think in a designerly way (Cross, 1982; Cruickshank, Coupe and Hennessy, 2016) by bringing the complexity of collaborative design approaches together. in a way that is tangible and that can be applied in real world situations (Papanek and Fuller, 1972). The processes used in 'doing' co-design and then 'using' the products that have been co-designed, in practice are tangible and examples of how to employ a way of doing and thinking are evident across the minor and major projects of Leapfrog. The effects of doing co-design as a Leapfrog participant are clearly evident. However, design is still an arcane subject, this is seen in the literature review in Chapters 2 and 3, this can be a barrier to access. The emotional experience of participation is not understood even though the characteristics of the process and methods have impacted the use of participants language, shown in the quotes used in this chapter. For example, 5.7.1 shows a participant searching for a tangible explanation for changes in ways of thinking. The participant knows changes have taken place but is unable to say why or how.

Co-design characteristics are accepted, section 5.6, throughout the workshops and promoted by the researchers. However, it is not clear if the researchers have a shared, fundamental understanding of design or if there are multiple effects that come together to form a process that the researchers know works but do not understand why or alternatively, the researchers do understand the fundamentals of design processes but it is tacit knowledge and as tacit knowledge

it can be out of sight and out of scrutiny. If the process/knowledge is not visible the issue arises that each participant's understanding of the process is different.
This is worth exploring further when a cross comparison of the three case studies is carried out.

5.11 Project Bibliography

This section provides selected literature that was connected to the Leapfrog project.

1. Redesigning tools for Knowledge exchange. An improvement framework (Galabo and Cruickshank, 2019).
2. Co-designing tools to empower further, independent co-design: collaborating with diverse individuals with lived experience of food poverty (Whitham *et al.*, 2020).
3. Co-Design: Fundamental Issues and Guidelines for Designers: Beyond the Castle Case Study(Cruickshank, Coupe and Hennessy, 2016).
4. Providing Fast Flowing Calm Waters. The role of the Design Manager in mid-large scale Public Sector Co-Design Projects (Coupe and Cruickshank, 2017).
5. Health and Wellbeing. Challenging Co-Design for Difficult Conversations, Successes and Failures of the Leapfrog Approach (Whitham *et al.*, 2019).

5.12 Limitations

This chapter analysed the data collected in the case study for the Leapfrog project and therefore the analysis is limited to the conclusions drawn by the author of this thesis. The Leapfrog project focussed on a series of unique contexts, participants, settings and circumstances that may be transferable rather than generalisable in other contexts (Lewis *et al.*, 2003). The insights that emerged from the analysis of data are not conclusive.

Chapter 6 Case study two: Empowering design practices

This chapter introduces 'Empowering design practices' the Second of three case studies used to address the research questions and proposition in this thesis.

6.1 Introduction to case study

This section introduces the second of three case studies used in this thesis to explore the effects of doing co-design on participants. 'Connecting communities and design highlight: Empowering design practices: historic places of worship as catalysts for connecting communities' was a £1.2m project that explored the contribution community led design could make to unlock the potential of historic places of worship to be a highly valuable community resource as well as a fundamental part of the UK's national collective culture.

The aim of the project was to examine how community led design practices can help empower those that look after historic places of worship to engage with their communities and develop creative capacity.

The lead research organisation was the Open University in the U.K. funding for this project was provided by the Arts and Humanities Research Council (AHRC) between October 2014 and October 2021. There were thirty projects that came under the umbrella of the main research title. Empowering Design Practices adopted a teaching and learning approach to collaborative design, it provided support and instruction through co-design workshops, focus groups and other comprehensive resources via an open access website. The Open University worked with communities for a period of two years prior to securing funding for the project. This chapter draws on the data collected during the process of, co-designing, to track changes under the four themes of the framework being used to explore the effects of co-design, shown in Chapter 3, section 3.6.

6.2 The desire for improved connections

Increased desire by advisory bodies, such as the Heritage Lottery Fund and funders for the protection of heritage, to move away from a model focused exclusively on repairs and restoration of the physical structure of buildings have led to a model that places a new emphasis on long-term use. There has been increased interest in the engagement of the larger community in the design process and the co-production of new uses and solutions that will make places relevant to people and society. However, there is a concern that professional design practices are disconnected from the needs and practices of communities. The lead organisation underscore this by suggesting that;

> 'The processes that support and empower communities to develop and take ownership of their space are not well established' (Open University, 2021a).

The researchers suggest that, there is poor understanding of the value of collaborative and participatory design in creating inclusive and sustainable places. In response to this the project brought together multiple partners including advisory bodies such as English Heritage (EH) and the Historic Religious Buildings Alliance (HRBA), funders such as Heritage Lottery Fund, design professionals, such as Wright and Wright architects, research-based consultancy bodies such as the Bureau of Design Research (BDR), and design support and infrastructure organisations such as The Glass-House Community Led Design.

6.3 Anatomy of the project

The project aimed to separate impact into two areas,

- Who will benefit from the research?
- How will they benefit from the research?

The scope of the project ranged across 65 workshops were delivered to 55 communities.

Who will benefit?

It was expected that the activities and research outputs would benefit individuals and organisations in multiple sectors and across a wide range of roles, outlined below;

- individuals and communities involved in Community led design (CLD) in their local area and particularly communities looking after historic places of worship
- professionals working in regeneration and CLD (facilitation experts, artists, architects, urban planners), particularly those working in conservation of historic places of worship (ecclesiastical/conservation architects and surveyors)
- third sector organisations mediating, supporting and advocating CLD
- organizations providing support and funding to sustain historic places of worship
- independent organisations dedicated to promoting design, and organisations interested in embedding innovation in heritage
- local authority representatives and policy-makers (involved in planning, regeneration, service provision and heritage management)

The project aimed to provide the following for these participants:

> 'These stakeholders will benefit from a better understanding of the current landscape surrounding community-led design in the context of historic places of worship, including barriers, opportunities and best practice examples; from gaining access to evidence of impact of those practices; and from practical guidelines and methods for design research and community engagement' (Open University, 2021a).

How will they benefit from the research?

The project focused on empowering design practices and supporting those involved in CLD and the adaptation of historic places of worship. It was envisaged that the use 'design thinking' might support participants to effectively engage with their wider communities. It was suggested that other communities might benefit indirectly through gaining access to produced resources providing advice and practical help (open access website). The project also includes activities (workshop and events) that brought together communities in places of worship, helping them to share experiences and knowledge and potentially create a peer-to-peer support network.

> 'The Empowering Design Practices project aims to help advance our knowledge and understanding of community-led design and its value for individuals, communities and society. While there is a specific focus and contribution in the context of historic places of worship, we intend to use our learning to inform and help build capacity in community-led design research and practice in general, both within and beyond academia' (Open University, 2021a).

The Open University commissioned an independent consultant to conduct an impact review for the research project. The review looked at the impact of the project on local groups, organisations and institutions that engaged in the project activities.

The review provides data on;

- people, communities and the projects that they engaged with and
- impacts leading to socio-economic benefits

This scope of this thesis does not extend to the socio-economic benefits at this point in time.

The review gathered the following data;

- Feedback forms, email communications and de-brief sessions, recording the views of 153 people from 45 communities who engaged in 6 different types of activity.
- Phone interviews and site visits at 8 places of worship, recording the views of 18 participants and community leaders *(The researchers have used language that separates community leaders from 'participants').*

This impact review was used to inform a cluster of key indicators, as follows;

> • Empowerment: development of people's capacity to engage in the design of their place of worship to meet their needs, and/or development of people's capacity to effect positive change in their community through design; The overarching impact theme was then broken down to more specific themes:
> • Connectivity: development of the capacity to connect with others, share insights and build networks;
> • Morale: development of confidence and a wide variety of positive emotions that can drive change;
> • Learning: acquiring or applying (design) skills, methods, knowledge and understanding;
> • Perceptions: development of people's ability to reflect on existing perceptions of their building, faith, community, heritage or places of worship and understand future potential;
> • Engagement: the development of the ability to mobilise and work with other people from the wider community.
> (Brockwell, 2018).

6.4 What documents were used to gather data?

Empowering design practices (EDP) was a five-year project, there were many forms of documentation during this period that recorded, reflected and evaluated the activities, effects on participants and impact. A number of these documents were gathered in accordance with the project ethics, a number of documents were not able to released. These documents were identified as potentially rich sources of data that had been used to capture, evaluate and analyse data throughout the project. They were filtered by their relevance to provide data that would contribute to answering the research questions in this thesis.

The U.K. Research and Innovation (UKRI) web page listing for EDP was used as a reference point to explore the aims and objectives of the project and as a sign post to other sources of data. The Principal Investigator was able to provide the documentation that was rich in data relevant to the research questions.

The documents that data were drawn from were as follows:

- Researchfish report
- Impact report
- UKRI webpage
- Academic papers
- Project website
- Interview with Principal Investigator

These documents provided the opportunity to hear the voices of the participants as well as the researchers. In many cases the participants reflected on how they had been affected by taking part in the collaborative design process and how that had impacted on their behaviour and practice at the time of the project and in the time beyond the project.

6.5 What were people co-designing?

The EDP project explored (co-designed), community spaces within existing places of worship. It explored how to empower those who looked after historic places of worship to make them open, vibrant and more sustainable.
This included lighting design, functional services like heating and water, free standing structures, connecting open spaces and the continuity of craftmanship and materials. Figure 6.1 shows examples of what participants designed.

Continuity of materials and craftsmanship
The quality of the materials used for the flooring and furniture was carefully considered to ensure continuity of the spaces, and to help create an atmosphere of warmth and natural beauty. Bespoke storage units, some of which are moveable, were commissioned to help solve common storage issues.

A significant number of pews were removed and replaced with new chairs. The group chose the 'Theo' chair, a design which won an award in the 2012 'Design a Church Chair!' competition run by the Church Buildings Council.

Open, connected spaces
The reworking involved the installation of an underfloor heating system that has helped to make the church more habitable and enabled more regular use. The (former) separation between different spaces in the main body of the building has been broken down by the addition of a new floating floor which creates a shared level floor across the chancel, nave, aisles and chapel, allowing ease of access and creating a stronger sense of connectedness.

Letting in the light
A major part of transforming the medieval church, was undoing some of the damage done by adaptations to the building in the 20th century. The east window in the chancel, which had been boarded up was revealed, and with nothing but fragments remaining of the glass, the decision was made to replace it with clear glass.

A box of tricks
A new free-standing structure clad in oak was inserted in the nave which supports and serves a huge range of uses. At ground floor it contains the access to the lift, a kitchen and an accessible toilet. A carefully crafted family of joinery details permits all of the doors to close up the 'Box of Tricks', making it fully secure and separated from the body of the church when the kitchen and other elements are not in use.

Figure 6.1 Examples of what participants were designing (Open University, 2021c).

The EDP community-led projects, the stories that accompany them and the resources and tools that helped support the participants are all open access on the dedicated project website. There are step guides for the processes and methods used in their approach. The resources are adaptable to other contexts that might benefit from community-led co-design. For example, the design thinking guide in Figure 6.2.

Figure 6.2 A design thinking guide tool (Open University, 2021a).

EDP employed multiple methods in a collaborative design approach to community-led design. There were substantial resources developed by the research team and made available to participants and the wider public via the project website. There seems to be easy to follow steps at each stage with many examples of how to work through a design process. Figure 6.3 shows the EDP website that documented and shared the learning of the researchers and communities that they worked with.

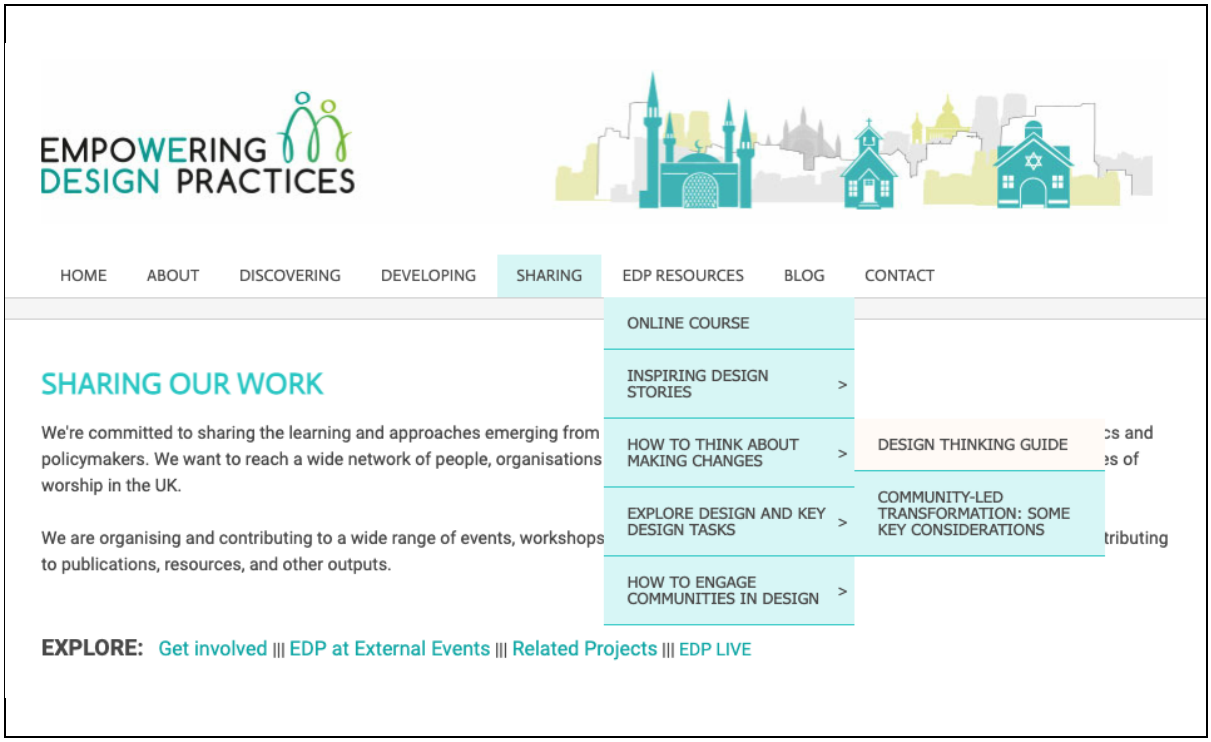


Figure 6.3 Shows the EDP website resource (Open University, 2021c).

The design workshops ranged between paper-based tools (post it notes) and three dimensional, physical models and materials. The workshops took place in multiple venues. Figure 6.4 shows co-design workshops and materials used in the EDP project.


Figure 6.4 Design workshops and materials used during the EDP project (Open University, 2021c).

The methods and processes that participants could potentially use to employ collaborative design in communities were provided by the researchers to explore the design process. Notably the researchers refer to the workshops as 'design training' Figure 6.5. The discussion on the blog is

headed co-design but then discusses the characteristics of participatory design. The terms seem to be being used interchangeably.

Figure 6.5 Design Training course (Open University, 2021c).

6.6 How were participants affected by the co-design process?

This section looks at the effects of participating in the EDP projects at a micro level. The documentation was used to gather data on how individuals practice might have changed, some documents provided rich sources of data. These documents characteristically valued the voices of the participants and used many direct references. There were thirty-three codes used under four key themes (see 4.4.2). 'The purpose of collecting data'. This section will draw on this to establish the most prominent effects, providing key insights from participants and researchers.

Initial findings

There were trends emerging in each of the four themes, shown in Table 6.1.

Initial findings	
Themes	**Prominent codes**
Confidence	To think, have ideas and to use imagination. To communicate. To Do.
Awareness	Of the value of self and the process. Of agency.
Mindset	Openness, to new ideas and new ways of working. Enthusiasm.
Emotional response	Surprise, at the disruption to existing thoughts and practice. Joy. Unexpected emotional responses: • Reliance of community members on others to lead. • Strong emotional attachment to the places of worship due to loss of loved ones, weddings etc.

Table 6.1 Initial findings in data analysis

6.6.1 Confidence.

To think, have ideas and to use imagination.

Throughout the documentation there have been clear references that suggest that participants had changed the way they think and that this change is as a direct result of having participated in the EDP project and its collaborative design methods and process outlined in section 5.5. Initially community members were seeking help, expecting the professional participants to lead them through a project however behavioural changes were noted, as follows;

> Participant: `The basic thing when people were talking about it, those who came were thinking 'how are they going to really help us?' That's the sort of question because that's what we were looking for, was help. And I feel it was sort of doing it in the way they were doing it to get us to take the step to help. Interviewer (IV): Yes, it was to get you to help yourselves, rather than sort of expecting them to sort it all out for you. Participant: Yes, I think initially that was probably what we were thinking. IV: You were sort of looking for somebody that would come along and say… Participant: "Right, if you do

> this, this, and this, it'll all be fine." IV: They were more about trying to draw something out from you… JS: Yes, so, very simply, it was up to us' Extract from interview between researcher and participant included on EDP mid-term impact report (Brockwell, 2018).

It is interesting to note that this participant recognises that they have developed the confidence to take a risk on participating in the project and to not be scared of failure. They state that the researcher said 'if you do this, it will be fine'. This participant trusted the researcher to take responsibility for potential failure.
This shift in responsibility was also acknowledged during an interview carried out by the author, the extract below evidences this.

> [Author] 'Is that when you started working with them, did they feel like there was a shift you think, of you taking the responsibility because you were the expert?'

> [PI] 'I think that was the hope. You know it is for everyone. I mean, when you are in a very difficult situation, you look for someone to hold your hand and said, OK, you're doing the right thing at least or to say that's the right thing. So when they go to their community, they have the experts to say that's have been told by expert to do and B. And that's the right thing to do, so you're not alone. You feel that you have the support file, but that was not what we were doing. And with our help was by essentially slowly building their confidence' Interview EDP PI (Appendix 2).

Participants described changing the way they thought about what might be possible for the future of their buildings, the objects in them and the communities that used them. There were multiple refences to the power of using imagination to create a vision for the future. There were discussions about how ideas and imagination were turned into tangible outcomes and that this helped to boost confidence to have ideas and act on those ideas instead of hoping that someone else would come and do it for them. There were multiple refences to very particular aspects of the design process that was used in the EDP project, aspects that they particularly enjoyed and could use in the future. Other participants seemed to recognise the impact of the design process and highlighted the depth of understanding and confidence that had emerged as a response to taking part in the project, for example;

> 'I learned how vision must impact design and function. Can't just do something to update building – far deeper than that' Participant in Manchester design training, EDP mid-term impact report (Brockwell, 2018).

> `It is amazing to see this happening at last. All this was imagination! It wasn't even really imagined until we had that (EDP) meeting – it was just a vague hope. These people structured it, they asked us how we were seeing it' EDP mid-term impact report (Brockwell, 2018).

Some participants recognised that the workshops had provided inspiration, confidence and courage, they also suggested that God might have been providing the security for them to think differently, shown in the following quote.

> 'It was just me taking it forward, but the results of the workshop gave me inspiration, confidence, courage to go for it. It was good to hear people saying the same thing that I have been thinking. I thought I was thinking on my own but then it was as if 31 God was saying to me, "there's a choir behind you." It was a sense of solidarity. People were behind me had around me and it was very encouraging' Participant, All Saints Hanley, included in EDP mid-term impact report (Brockwell, 2018).

To communicate

Developing the confidence to communicate and to do (act), emerged as significant effects of the co-design process during the EDP project. In this project it was researchers who recognised the changes in participants confidence to communicate for the most part, rather than participants recognising or discussing the changes that might have occurred. The data does not show any particular key points in time that changes in confidence to communicate occurred, however the researchers do suggest that changes occurred due to the methods that were employed throughout the project. There does not seem to be any explicit refence to which methods, characteristics or levels of understanding might have triggered these changes, as follows;

> 'We found that projects that successfully transform places of worship require those looking after them to develop their capability and confidence to engage with others (people and organisations in the community, professionals, funders and policy makers) to

help them form a vision for building, explore design ideas and understand the challenges involved' (Alexiou *et al.*, 2020).

'I have gained skills and confidence to help lead a design process and engage my community in it' Participant EDP mid-term impact report (Brockwell, 2018).

'It gave me the confidence to grow my approach as design enabler, and not be shy to voice my opinion about the importance of it.' Participant at training programme for professionals, EDP live report (Open University, 2021d).

One participant recognised how taking part in the project had provided them with the confidence to communicate by having the credentials provided by extending their knowledge of the design process, as follows.

'Well, I think our involvement with EDP gives us more legitimacy when we discuss these issues with the membership. It's not just our high-flown ideas, you've been on a course so you know some things about it, it gives you that legitimacy when you're talking about it at the church meeting and trying to persuade people about change.' Participant, Stratford-upon-Avon, EDP mid-term impact report (Brockwell, 2018).

It is worth noting that this participant interprets their experience of doing co-design as having attended a course.

The dominance of confidence throughout the project is emphasised by the EDP PI in the excerpt from the interview below;

'Overall, overall, I think a lot of that was confidence, basically the confidence that I think the most important that you can see from the reports, everyone's talking about confidence, the reason element of skills as well and knowledge. I mean because you obviously interact and you develop and there is an element also of structuring in the sense of, they start by doing all these processes they start creating connections with each other' Interview EDP PI (Appendix 2).

To Do

The observations that focussed on the confidence 'to do' came almost exclusively from the researchers with a small number of recorded observations by participants. These observations focussed on outcomes for funding and structural changes in the building and interiors for the most part

> 'A church in Sheffield which following a number of EDP workshops and training were able to develop their own project development strategy. Indeed, they commissioned a member of another group that they had met through EDP workshops to help them develop their strategic development plan. Following their collaboration with EDP, they went on to secure £98K in funding for initial repairs to their building, and are now in the process of developing an ambitious refurbishment plan.' Researcher, EDP mid-term impact report (Brockwell, 2018).

> 'A church in Stoke-on-Trent which reordered the church, funded by a Heritage Lottery Fund grant (£205K), to convert part of the interior into a heated space that could serve as a community heritage centre. The interviewees made it clear that the likelihood of this happening without EDP intervention would have been extremely low, as members of the community (including the priest) had previously been disheartened, and even the Bishop had described it as 'that impossible church' Researcher, EDP mid-term impact report (Brockwell, 2018).

One participant noted the increase in confidence in themselves and the changes in the people of the community, below;

> 'We're going to have a poetry festival...it's the sort of thing I think we now feel more able to tackle, organising a thing like that, whereas we might have not felt up for it before' Participant, EDP mid-term impact report (Brockwell, 2018).

6.6.2 Awareness

An awareness of value of self and the process.

Through reflective and evaluative methods used in the EDP projects, participants were aware of their emerging value and their lived experiences and they were beginning to be aware of the value and importance of the process and methods used in the projects.

The participants in the EDP project became aware of the value of the processes and methods that they were using and taking part in, they seemed to value the experts and researchers that they were working with but placed less importance on the value of themselves and their lived experiences. The response from participants in the following quotes suggests that they perceived this as a learning process that was being taught to them, shown below;

> [Talking specifically about the EDP workshop]: `We then began to verbalise [our vision], we'd never done that before, it was always in the ether. Everything led to this. In the first instance we went to look round the church. […] We came back in the splitting to groups. We had to write a postcard, and on it we had to write a message about the value of the church. [The EDP team members] were very good at what they were doing to provoke people into thinking. It was a bunch of people who knew what they were doing, confronting a bunch of people who haven't got a clue! If we'd met in a room without those people, we would still be going around in circles now' Participant EDP mid-term impact report (Brockwell, 2018).

There was a point that one of the participants became aware of the difficulties they faced due to disparity in the use of language;

> 'The architect working with us in the Design Training definitely didn't like the [idea of creating a stage and spiritual area, and we've actually binned all that…He didn't 'not like' it, he was sort of a bit concerned about how it was worked up. He challenged us on it, sowed a seed, really, a big seed with us, and we never felt like it was worked up because we couldn't describe it. We could describe, and that was really interesting because we had to describe our plans so many times, and each time we described it I realised we couldn't describe that bit because we didn't get it. So that was really great' Participant in Graylingwell, EDP mid-term impact report (Brockwell, 2018).

Further investigation to establish evidence for the position of the researchers, experts and participants reveals language and indicators that would suggest the project was framed and presented as a learning process, the researcher/evaluator explains, as follows;

> 'Learning' emerged as the most strongly-evidenced category of impact in Phase 1, overall, for both individuals and groups looking after historic places of worship – which is unsurprising, as most workshops are designed with the primary goal of facilitating learning. This category included three very closely related indicators, which were differentiated as follows: - People acquire skills, methods, knowledge and understanding: Used only when it is clear that people have learned something that is (a) clearly defined and specific, AND (b) new to them - People develop skills, methods, knowledge and understanding: Used where the criteria for 'Acquire' could not be met, but it is clear that some learning has taken place – e.g. deepening understanding of a topic, gaining proficiency in a skill, or building on something already known - People apply skills, methods, knowledge and understanding: Used only when it is clear that people are putting into practice something that they have acquired or developed through the EDP project activities. This indicator cannot be measured through workshop feedback forms.' Researcher, EDP mid-term impact report (Brockwell, 2018).

An awareness of agency

Within the refences identified in the data collection it is apparent that there is a sense of relief, that it is acceptable to value the lived experience voice and it is acceptable to value the expertise of non-professional practitioners.

> 'I think now we are a bit informed when we speak to our architects, we can work with them, as opposed to one way traffic, I think we can have input into the process' Design Training debrief, EDP mid-term impact report (Brockwell, 2018).

> [so, you have got a focus of the bits you need to investigate further now] 'Yes, yes, yes, and actually it is quite heartening to think that actually we really could change the character and nature of the back of the church with very little expenditure' Design Training debrief, EDP mid-term impact report (Brockwell, 2018).

The researchers place emphasis on two elements of the project that they believe increased an awareness of agency. Firstly, site visits to 30 other projects and secondly, the activity of model making of their church from memory. The participant interviews and feedback mechanisms do not provide a participant perspective regarding how greater awareness of agency emerged. It is not obvious how these two elements of the project contributed to emergent agency.

> 'For the URC Stratford-upon-Avon participants, the Design Training conducted in Sheffield also had a morale-boosting effect (raising aspirations) over and above the specific 'applications of learning' discussed above. This effect, which has a large overlap with the Empowerment To/ Through Design theme, was generated through two specific elements of Design Training, namely the site visits to 30 other projects and the process of trying to make a three-dimensional model of the church from memory' Researcher, mid-term impact report (Brockwell, 2018).

6.6.3 Mindset.

Openness to new ideas and new ways of working.

Participants have discussed a new openness to ideas and ways of working with refence to how they envisage the future and their expectations as a result of taking part in the EDP project. It is notable that the participants have not used the words or term Open or open minded. They have implied open mindedness by suggesting that researchers and experts have made visible the possibilities of what might be. The participants might not have recognised changes in their mindset but rather they have greater visibility of potential outcomes due to the learning process built into the EDP project.

> 'It's the mental attitude to it which I think was influenced by Sheffield [Design training]- that was the big thing. Previously we thought "that would be nice but it's not really possible". We think much more things are possible.' participant, Stratford upon-Avon URC, EDP mid-term impact report (Brockwell, 2018).

> 'I think in tune with what you guys were doing, the money came in, we had the money at the level we needed it and you opened the eyes to possibilities, so instead of being constrained by budget and practicalities it's about what's right, what's proper, what does the building need to be, and then we make it happen.' Bideford participant 2, EDP mid-term impact report (Brockwell, 2018).

Evidence is also provided from an excerpt of a researcher/participant interview, as follows;

> Interviewer (IV): So, when you had that [EDP] workshop, did it change the way you thought about the church at all, e.g., the way you saw the building or the community? Participant: Yes, it did. IV: In what sort of way? Participant: We thought that there were possibilities […] The general feeling was 'OK, look, let's investigate this further, perhaps there is a way forward. Excerpt from participant interview, EDP mid-term impact report (Brockwell, 2018).

There are multiple entries in the EDP impact report and Researchfish report that recognise changes in mindset, however, they do not expand on what those changes are or provide details, the generic statement used is as follows;

> 'Audience reported change in views, opinions or behaviours.' researcher's entry Research fish report (Zamenopoulos, 2021).

The EDP project workshops seem to have provided participants with a way of uncovering visions and possibilities for the future rather than perhaps changing the way that they think at a fundamental level. There seems to be vision that looks outwardly perhaps rather than inwardly, a vision for things and building and environments rather than personal changes in the way the participants think.

Enthusiasm

The participants in the EDP project showed a change in enthusiasm across the data that was analysed. It is not obvious if there were certain, explicit triggers for these changes other than taking part in the workshops generally. The enthusiasm, for the most part, seems to have increased with knowledge gain from the design training, described by the researchers as learning, workshops. These changes were recognised by researchers and participants. There were instances when participant's enthusiasm increased due to the togetherness of their community members. This is evident in the language used and the refences to the multiple events that have taken place in the following examples;

'We five chatted all the way back home about form, function, and resolving our problems for the future. We sounded like a group of architects!!' Design training participant, EDP live report (Open University, 2021d).

'I loved the part when we worked together, and our ideas were good so we put them together and made [a] great building;' Design training participant, EDP live report (Open University, 2021d).

'A church in Stratford-upon-Avon, has begun to implement a project idea coming directly from one of the EDP workshops. By making small-scale changes – removing pews to create a social space at the back of the church with chairs and tables, and renovating the small kitchenette – the church has already enabled coffee mornings and a Christmas gathering for older people to be held within the church itself, as well as creating a space for charity Christmas card sales.' Researcher, EDP impact report (Brockwell, 2018).

6.6.4 Emotional responses

Surprise, at the disruption to existing thoughts and practice.

The reaction of participants to the experience of the co-design projects was often one of surprise. Participants across the project showed surprise at the process of doing collaborative design and that it actually worked. Participants were surprised at the professionalism and effectiveness of the researchers, experts and students who they engaged with, exemplified in the following quotes.

'At first it was 'the church doesn't want to go' [i.e. close down] but we were hopelessly vague. It was crucial to have those people, they were very professional, they knew what they were doing. They got the information out of us. They got the information by asking us questions, they basically made it visible to us because it was so vague.' Participant, EDP mid-term impact report (Brockwell, 2018).

'It is amazing to see this happening at last. All this was imagination! It wasn't even really imagined until we had that [EDP] meeting – it was just a vague hope. These people structured it, they asked us how we were seeing it.' Participant, EDP mid-term impact report (Brockwell, 2018).

> 'We five chatted all the way back home about form, function, and resolving our problems for the future. We sounded like a group of architects!!' Design training participant, EDP live report (Open University, 2021d).

Joy

There are a number instances that show a joyful emotional response to activities facilitated by the researchers and experts during the EDP project workshops. It is unclear if participants only associate joyfulness from the activities provided for them to take part in or if they might adopt these practices in future stimulating further joyful emotions. One participant did suggest that the mind mapping activity could be taken back to their church, but it is unclear if they just enjoyed this activity and wished to do it again for the activity's sake or they saw it as part of a bigger process that helped them address design issues.

> 'I loved the part when we worked together, and our ideas were good so we put them together and made [a] great building.' Participant, EDP live report (Open University, 2021d).

> 'EDP activities helped people feel better about themselves and their projects.' Participant EDP mid-term impact report (Brockwell, 2018).

> 'Memory mapping, we enjoyed and can take back to our church. Model making highlighted problems we hadn't thought of.' Participant in Sheffield design training, feedback form, EDP mid-term impact report (Brockwell, 2018).

The joyfulness experienced by the participants in the EDP project does not really imply or suggest any motivation to continue the momentum of the project beyond the project itself.

Unexpected emotions

It is worth discussing the context of the EDP projects at this point. The communities that were part of this project were focussed on places of worship. The sense of place was very strong with many of the participants in the project. Participants had a connection with the physical building, in some cases the connection was due to joyful memories like weddings, however in many cases the connection was due to loss and grief. This is not apparent in the reports or literature that was

concerned with the project. This depth of emotional feeling was highlighted by the EDP PI during interview with the author.

> 'With a place of worship, death, happiness, everything is linked there and, and so they, the emotional attachment is quite strong. So, when there are people that say OK, we need to do something with our place that sometimes comes in to conflict with some other people that have, only, you know an academic interest' Interview EDP PI (Appendix 2).

> 'So, there was things like my child died and this place was where I last saw him, the last time so I need to, we need to preserve that space. So, this emotionality, which is not obvious in the, you know top level descriptions' Interview EDP PI (Appendix 2).

This strong emotional sense of place is unique to each context and clearly plays a significant part in the dynamics of the co-design teams in the EDP project. This clearly highlights that each co-design context in this project and beyond will have uniquely affected the individual participants.

6.7 How were behavioural changes evaluated?

There was some reference to behavioural changes being observed by participants or recorded by researchers, however as indicated in the following paragraph, researchers considered that behavioural changes might only be possible if contact was maintained in the future with participants.

> 'Impacts in the category of 'Empowerment To/Through Design' are, by their very nature, expected to unfold over the longer term. They could not easily be captured through the Phase 1 mechanisms such as feedback forms for one-off workshops. Some promising leads were, however, obtained at this early stage, in the form of comments about what workshop participants intended to do (or felt that they would now be able to do) when they returned to their historic place of worship' (Brockwell, 2018).

The refences suggest that the participants have had a positive experience of the project, however there does not seem to be any evidence of changes in behaviour beyond the project, that is not to say there were not changes beyond the project but the scope of this project did not extend beyond the project itself, examples as follows;

> 'I think now we are a bit informed when we speak to our architects, we can work with them, as opposed to one way traffic, I think we can have input into the process' Participant, Design Training debrief, mid-term impact report (Brockwell, 2018).

> '[so you have got a focus of the bits you need to investigate further now] Yes, yes, yes, and actually it is quite heartening to think that actually we really could change the character and nature of the back of the church with very little expenditure' Design Training debrief (Brockwell, 2018).

This might be due to the nature of the questions being asked by the researchers. The researchers focus leans toward the financial and physical befits to the community, rather than benefits to the individual. There is some ambiguity in the shared understanding of what a 'co-design' project should aim to achieve, the project evaluator observes;

> 'However, it was by no means clear from the forms whether the students had actually empowered the local group to engage others in design – which was the intent of the indicator – or merely done all the engagement work themselves' (Brockwell, 2018).

During the, author and EDP PI interview, the PI discussed that they had tiring rounds of interviews and what might be described as focus groups, perhaps very simple workshops to help evaluate changes. These activities provided the space for community participants to share stories and experiences together. The PI suggests these activities revealed the occasional significant change in behaviour and thinking but the majority of changes had been far gentler and more discrete and that these changes had occurred very slowly (Discussed in Chapters 10 and 11).

6.8 How were key moments recognised in the journey?

The evaluation methods used in the EDP project encouraged some reflective activity. Researchers created a 'policy corner' and invited participants to record thoughts and recommendations.

The data that is available from this reflective activity does not provide any depth, in regard to key moments for the participants experiences. The data available from the mid-term impact report (Brockwell, 2018) does provide some limited insight, as follows;

> 'It is clear that much has already been achieved, especially in terms of the immediate and direct impact of EDP community-led design activities on the connectivity, learning, morale, and perceptions of individuals and groups looking after historic places of worship. In addition, the site visits have provided evidence that the objective of 'Empowerment To Design / Empowerment Through Design' is also being achieved, although at this point not all projects have received site visits. We have identified some initial mechanisms through which empowerment occurs, but to link these to the types of support provided by EDP will require a more systematic process of qualitative evaluation.' (Brockwell, 2018).

The observations that emerged from this data where all by researchers rather than participants. The data that might have been provided by participants and discussed in the paragraph above, is not included in the report. The researchers recognise the limitations of the qualitative evaluation in this project.

6.9 What were the effects on participants over time?

Researchers and participants seem to focus on the communities' ability to organise events, generate end result and secure further funding for their places of worship. The effects on participants over time are focused on the community rather than the individual, which can be seen in the following statements;

> 'A church in Bideford which following an EDP workshop that helped them develop their community engagement strategy, were able to organise their own public event bringing together around 150 people and ultimately secure £13K funding to refurbish the entrance' (Brockwell, 2018).

> 'A church in Stratford-upon-Avon, has begun to implement a project idea coming directly from one of the EDP workshops. By making small-scale changes – removing pews to create a social space at the back of the church with chairs and tables, and renovating the small kitchenette – the church has already enabled coffee mornings and a Christmas gathering for older people to be held within the church itself, as well as creating a space for charity Christmas card sales' (Brockwell, 2018).

The data showed limited observations or reflections by participants, although the quote that follows, was taken from the EDP Live Report (Open University, 2021d) shows some increased ability due to the EDP workshop;

> 'We're going to have a poetry festival...it's the sort of thing I think we now feel more able to tackle, organising a thing like that, whereas we might have not felt up for it before' Participant, EDP mid-term impact report (Brockwell, 2018).

This data showed 'the things that happened' in the future rather than any fundamental changes in personal behaviour. There is an underlying potential for personal changes in behaviour but they do not seem to be visible in the scope of this research. An example of this is shown below;

> 'At the individual level, another closed question, 'I have gained skills and confidence to help lead a design process and engage my community in it', points to potential impact in Engaging others in design. This question was answered very positively in relation to the Design Training events in Sheffield and Manchester, with all participants responding either 'strongly agree' (8/20) or 'agree' (12/20), but less positively in relation to a workshop held in Bideford, where 4/12 replied 'strongly agree', 5/12 'agree', 2/12 'disagree', and one said that it was not applicable' (Brockwell, 2018).

The data does not offer insight into why, how or when any changes occurred, only that they did. The EDP PI was able to share their observations on the effects of the co-design project on participants beyond the project.

> [Author] 'Do you, do you think that, that taking part in that project changed the way that those participants think?'
> [EDP PI] 'Yes, it did, it did, and the answer is simply, yes.'
> Interview EDP PI (Appendix 2).

The EDP PI goes on to discuss that taking part in the project supported people to take part in further projects by building their capacity to connect with people and to be more confident. This confidence in some part being due to skills and knowledge gain and the overlapping and combination of experiences.

The effects of the EDP project on participants over time can be observed by the socio-economic outputs of the community groups beyond the project, securing funding, making alterations to buildings and changed use of existing buildings. The emphasis in the EDP project has focussed on the community rather than the individual, however, the analysis of the data made visible changes in behaviour and thinking of the individual participant (community participant not professional participant).

- New ways of thinking
- Open to new ideas
- Confidence to go beyond existing practices

It has not been possible to really explore what has explicitly triggered these changes, although the multiple experiences in this project seem to have combined over time to encourage quite gentle shifts in thinking.

6.10 Conclusion

This section discusses the strands that have emerged through the data analysis that help to provide insight and understanding of any transitional changes in behaviour of participants in this co-design case study.
The initial analysis of data, collected for EDP, provides several insights that can be linked to the process and methods used in the EDP project (section 5.1). Nvivo computer assisted qualitative data analysis software, was used to help organise and identify the key 'effects of doing collaborative design' (section 3.6).

The analysis shows that the following clusters are the most prevalent under the 'effects' themes:

- The confidence and awareness to think, have ideas and imagine
- Openness in approach
- Confidence to do, to communicate, and be independent
- Awareness of the value of self and process and agency

There were seven effects that were not found across the data at all, they were;

- Confidence to be wrong
- Confidence to be mischievous

- Confidence to be decisive
- Confidence to be disruptive
- Having the mindset to take risks
- Having the mindset to be experimental
- Anger

Using the NVivo software it has also been possible to explore the relationship between the effects that participants have identified as being part of the collaborative design/participation experience (Kelty, 2020). It shows that a combination or overlap of 'effects' might have affected participants in other ways. NVivo has provided markers that help to signpost such intersections.

The data analysis supports the argument that the experiences of participation in the EDP collaborative design project helped to scaffold changes in behaviour, for example, participants have developed increases in confidence enabling participants to engage in multiple activities that they were not previously engaging in (I can). The data also suggests that participants have a greater capacity to be open to new ways of working and thinking (what if). There are multiple instances of this occurring, suggesting that when multiple effects are experienced together, it is possible that they overlay and combine to support changes in behaviour and thinking that might not have occurred had participants experienced fewer, less rich experiences.

The clusters identified at the beginning of this section, could be described in a more fundamental way and separated into tangible, more explicit effects and those that are less tangible and less visible, implied effects. Confidence and enthusiasm have been described in, section 3.6 and although are key insights in the effects of doing co-design, are explicit. 'To have ideas and imagine', 'be open in one's approach' and 'have the capability to reflect' are not as easily shared and explained. These elements of the co-design process are less tangible and open to interpretation and therefore this knowledge is not easily disseminated (Galabo, Nthubu and Cruickshank, 2020), by participants (researchers, designers, professional experts and lived experience experts).

There are several points to address that are not clearly visible, as follows;

1. What happened when participants start to become aware or conscious of the process and themselves, their capability to be reflective?
2. What is 'openness in approach?'
3. What do participants mean by the term 'It changed the way I think?'

Participants in the EDP project have noticed changes in their behaviour occasionally in a big way, a 'wow' moment that changed their practice immediately. Others, the majority had a slower gentler experience of change that was not as easily captured. The EDP PI discussed during interview that at the beginning of the project, when participants gained some confidence, they began to try and solve problems as quickly as they could. The PI shared that it took a long time for the community participants to work more slowly and explore ideas deeply in a more reflective way (Schön, 2017) but this reflective approach did emerge, notably there was no specific moment of realisation (Freire, 1972).

The characteristics of the workshops in the EDP project, the methods and materials and iteration of models was more experimental than participants were familiar with. The community participants were not in a professional mode or context, this is worth noting, they were in a social context which was not part of their job. The participants took time to become familiar with experimenting and iterating multiple times. This was due to fear of failure at the beginning of the project (Kolb, 2014). This can be seen in the following example;

> 'We have learnt a lot today, practically, actually looking at this model and having to view the building from above and see where everything is just gives you a very different perspective. It will be nice to have the roof so we can look at where we can fix but it will certainly give us a good understanding of what needs doing and how much space we have got and how we can best utilise this space that we have' Participant in Sheffield design training, mid-term impact report (Brockwell, 2018).

The term 'thinking differently' needs to be analysed in greater depth. Open mindedness, open to new ideas and ways of working and open to change, might all contribute to what participants mean when they say, 'it changed the way I think' EDP workshops and spaces were provided for less formal meetings. Plus, the two-year preparation, pre-design time that this project undertook seems to have gently and sensitively teased out some quite timid approaches and connections that supported engaging with the wider community and professional stakeholders. This slow burn approach helped unlock a designerly way of thinking (Cross, 2001).
Making design accessible is an ongoing endeavour, explored in the literature review of this thesis. One of the issues is understanding design language, the implicit and tacit knowledge that designers take many years to acquire. Multiple times the EDP PI discusses the issues faced in the

project due to not having language that the participants and stakeholders could all understand. The transitional changes participants experienced were attributed to knowledge, experiences, and skills. It took two years of pre-design time unfunded and three years of funded project time to establish a shared language and understanding of design.

Understanding the fundamental processes and language used in co-design, comes from doing, co-design and is necessary to do co-design. Doing co-design is the driver that helps makes visible hidden processes. Understanding the experience of participation (Kelty, 2020) and design fundamentals could provide the confidence to break away from using frameworks and guidelines for participation and engagement (DesignCouncil, 2021a) by providing a secure base (Waters and Cummings, 2000; Bowlby, 2005; Schofield and Beek, 2014) from which to explore design and collaborative relationships equitably.

This is worth exploring further when a cross comparison of the three case studies is carried out.

6.11 Project Bibliography

1. Empowering Design Practices: Exploring relations between architecture, faith, society and community (Alexiou *et al.*, 2020).
2. Connected communities: Valuing community-led design (Alexiou, Zamenopoulos and Alexiou, 2013).
3. Connected communities and design highlights: Empowering design practices: historic places of worship as catalysts for connecting communities (Open University, 2021b)

6.12 Limitations

This chapter analysed the data collected in the case study for the EDP project. The analysis is limited to the conclusions drawn by the author of this thesis. The EDP project focussed on a series of unique contexts, participants, settings and circumstances that may be transferable rather than generalisable in other contexts (Lewis, 2003). The insights that emerged from the analysis of data are not conclusive.

Chapter 7 Case study three: Re-envisaging Infection Practice Ecologies in Nursing (RIPEN)

This chapter introduces 'RIPEN' the third of three case studies used to address the research questions and proposition in this thesis.

7.1 Introduction to case study

This section introduces the third of three case studies used in this thesis to explore the effects of doing co-design on participants. Re-envisioning infection practice ecologies in nursing (RIPEN) was a £212.000 project that collaborated with healthcare workers, typically nurses, to co-design future visions for infection control and antimicrobial resistance (AMR). The lead research organisation was The Glasgow School of Art partnered with University of the Arts London, they worked with two groups of health care professionals, one in Glasgow and one in London. The funding for this research project was provided by the Arts and Humanities Research Council (AHRC), this funding ran between January 2018 and September 2020. The case studies used in this thesis have varying characteristics and approaches to doing co-design. The RIPEN project encouraged an intimate and largely independent approach that focused on the historical narrative to draw out and highlight issues and envisage possible changes in current practice. This chapter draws on data collected during a series of workshops with researchers and health care professionals.

7.2 The desire for improved connections

This section introduces the third of three case studies used in this thesis to explore the effect of doing co-design on participants. There has been increased interest by the Arts and Humanities Research Council (AHRC) to encourage 'ground up' activity that improves connections between communities, special interest groups, friendship groups and public sector organisations in the U.K. In this case nurses and healthcare professionals.

Antimicrobial resistance (AMR) is a global health threat, The World Health Organisation (WHO) have stated that addressing this issue requires urgent multisectoral action in order to achieve any sustainable development goals (World Health Organisation, 2021). AMR has been declared one of the top ten global public threats facing humanity. Understanding the scope of nurse's engagement in multiple contexts and their enhanced understanding of AMR requires more research projects than are currently available. There have been few in depth studies that provide insight across, hospitals, GP surgeries and people's homes. RIPEN used arts and

humanities approaches to help illuminate issues and possible solutions by 'using an alternative lens to study AMR issues.' Prototyped AMR-related prevention practices were the focus for the clinical stakeholders in the project, the outputs had a variety of formats including written, visual and web-based. There were multiple challenges engaging the participants of the co-design workshops in the RIPEN project, participants gave up time in addition to their existing workload as practitioners and they were required to travel to attend the workshops. The participants in the London based workshops gave two hundred hours to the research project.

7.3 Anatomy of the project

Glasgow School of Art partnered with University of the Arts London to engage with the healthcare professionals. The organisations have historical research based on cross disciplinary visualisation of pathogens, people and places that are concerned with practice ecologies. They posited the question;

> 'How can relevant arts and humanities-based approaches help nurses to re-envisage their infection control practice ecologies in response to antimicrobial resistance?
>
> In doing so they investigated four subsidiary questions:
>
> 1) How do groups of hospital and community based nurses understand and respond to the priorities and consequences of AMR within the context of their everyday working lives?
> 2) How can co-design and visualisation based approaches help these nurses to identify and construct sets of meaningful practices that optimise present prevention of AMR?
> 3) How can co-design, visualisation, history and other relevant arts and humanities approaches help nurses to re-imagine and re-envisage their infection control practice ecologies in a future with minimal or no effective antibiotics?
> 4) What priority issues and other questions does this initial enquiry raise, and how can these best inform policy and planning, education and further research?
> (Macduff, Prendiville, *et al.*, 2020b).

The co-design workshops set out to address questions 1-3. The fourth question was addressed through a 'policy lab', where the research team, advisory group and an invited range of experts and academics convened.

The intension of the study was to produce a series of deliverables, as follows;

> a. Project outputs (e.g. journal publications) that demonstrate enhanced understanding of the nature and scope of nurses' engagement with AMR in a range of built environments including hospitals, GP surgeries and people's homes
>
> b. Sets of prototyped AMR-related prevention practices that nurses believe they can meaningfully enact within these practice contexts.
>
> c. Project outputs in a variety of possible formats (written, visual, web-based) that demonstrate how nurses can re-envisage their infection practice ecologies in a future with minimal or no effective antibiotics.
>
> d. Identification of a set of priority issues and other key questions that arise from the enquiry and will inform a policy brief.
>
> e. An overarching analysis of the challenges, strengths and added value of deploying particular arts and humanities approaches within a health services research context (Macduff, Prendiville, *et al.*, 2020b).

It is suggested that deliverables would be of value to, clinicians, the public as health service users, managers, planners and academics, yielding potential for further developments in practice, policy, education and research.

7.4 What documents were used to gather data?

RIPEN was a two-year project, during this time a range of documentation was produced that recorded, reflected and evaluated the activities and impact, including the effects on participants. Multiple and varied documentation were initially gathered in the first cycle of data collection for this doctoral study. These documents were identified as potentially rich sources of data that had been used to capture, evaluate and analyse data throughout the project. It was at this stage that documents were filtered, by their relevance to provide data that would contribute to answering the research questions.

There were some very rich sources of data in the Researchfish report for example. The U.K. Research and Innovation web page listing for RIPEN was used as a refence point to explore the aims and objectives of the project and as a sign post to other sources of data. The Co-investigator was able to provide the documentation that was rich in data relevant to the research questions.

The documents that data were drawn from were as follows:

- Researchfish report
- Co-investigator Interview
- UKRI project webpage
- Evaluation documents

Academic papers

7.5 What were people co-designing?

RIPEN recognised that using a collaborative design approach to engaging people in stubborn social issues (Coyne, 2005) would help to 'provide a shared understandings through implicit knowledge co-creation' (Macduff, Prendiville, *et al.*, 2020a). RIPEN chose to employ the Double Diamond framework (DesignCouncil, 2021a) to help guide the workshops. The researchers aligned the research questions and activities of the workshops with the four stages of the model, as shown below in Figure 7.1.

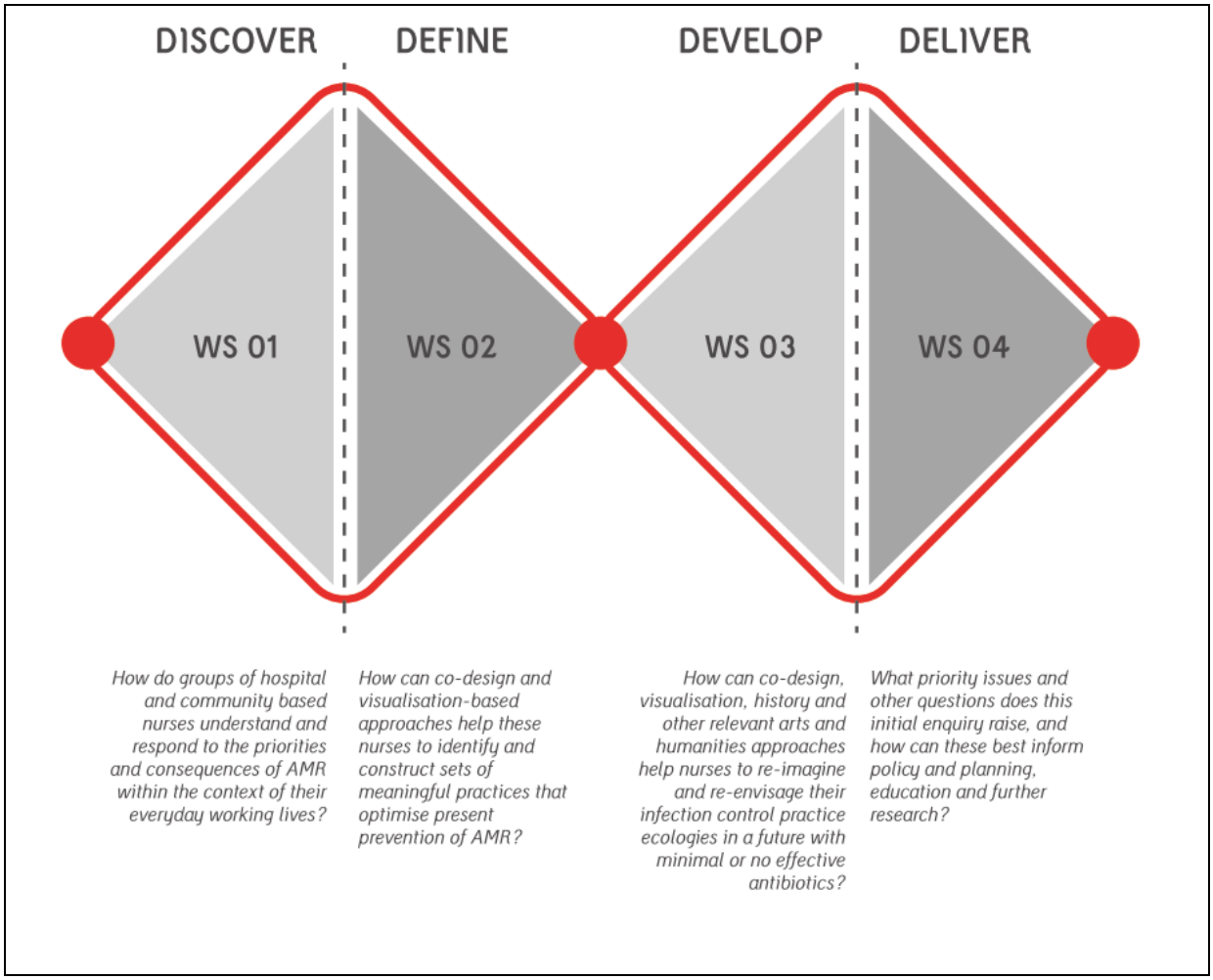


Figure 7.1 Double Diamond interpreted by RIPEN researchers (Macduff, Prendiville, et al., 2020b).

The workshops were divided into four events, each workshop with its own clear rational and objectives and methods of engagement. They are referred to by the researchers as (ACT 1) (ACT 2) and so forth.

The workshops were allocated an individual title and activity seen below;

- Visualising Narratives around AMR/IPC from a Personal and Professional Perspective (London)
- Eliciting understandings of, and responses to, the priorities and consequences of AMR within everyday working and personal life (Glasgow)
- Defining Individual and Collective Priorities to Think About Solutions for AMR and the Role of Nurses (London)
- A Meaningful Repertoire for AMR: identifying and developing sets of practices for optimal prevention and control (Glasgow)
- Historical Reflections and Future Projections on AMR/IPC Nursing Practice (London)

- Prototyping policy proposals from prioritised practices (Glasgow)
- Translating Process and Practice into policy on AMR and IPC (London)
- Using arts and humanities-based approaches to re-envisage infection control practice ecologies in a future with minimal or no effective antibiotics (Glasgow)

RIPEN used the workshops to co-design storyboards that provided visions, tangible images and text that made visible hidden and abstract issues Figure 7.2. Participants worked in pairs and used story boards to articulate eight stages of their working day where they were concerned about AMR or where they believed AMR might have an influence in their practice or impact their behaviour. The participants then worked on producing visual narratives to help their reflective thought process on the potential effects of AMR.

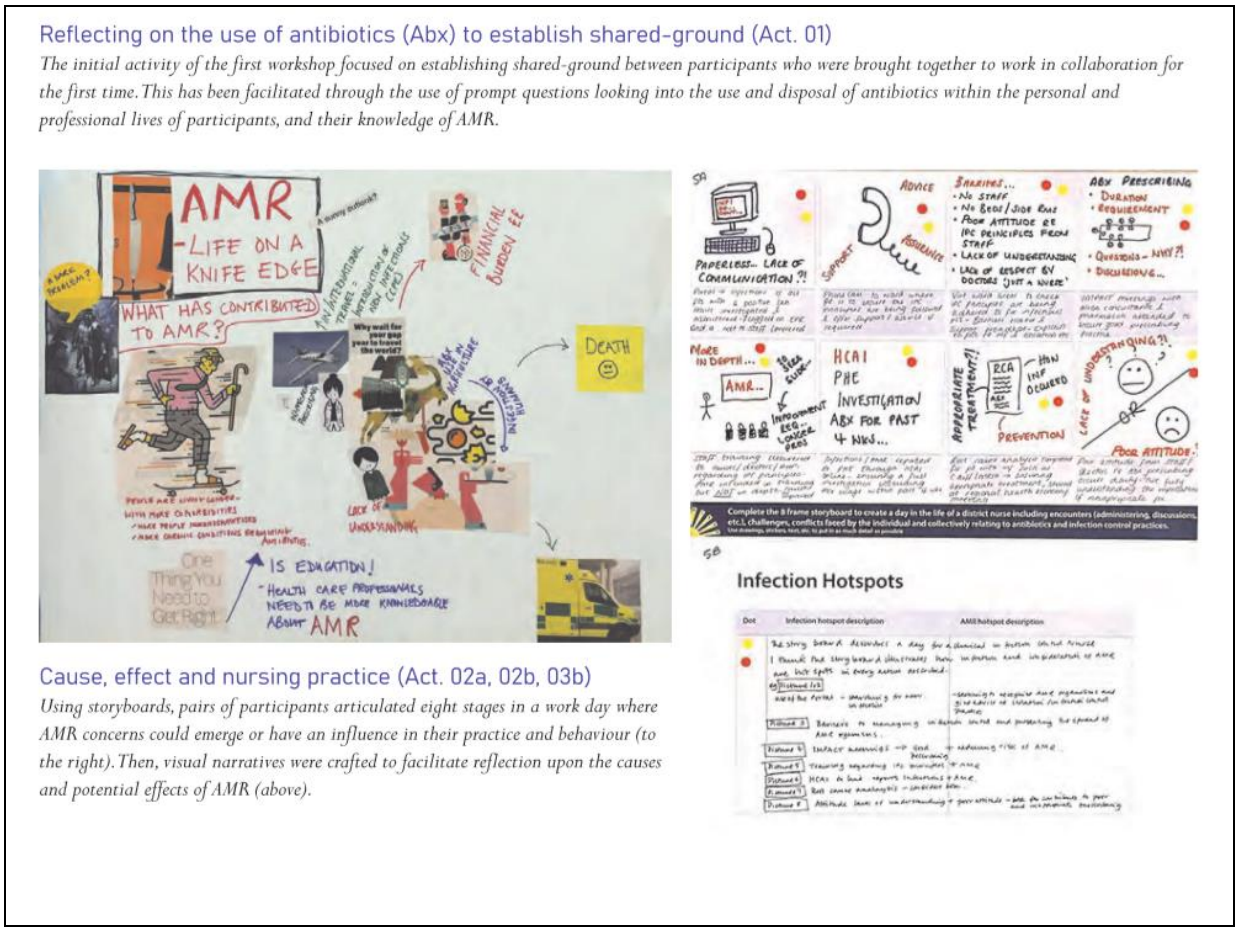


Figure 7.2 Example of co-designed storyboard (Macduff, Prendiville, et al., 2020b).

Figure 7.3 provides examples of the methods used to generate and visualise iterations.

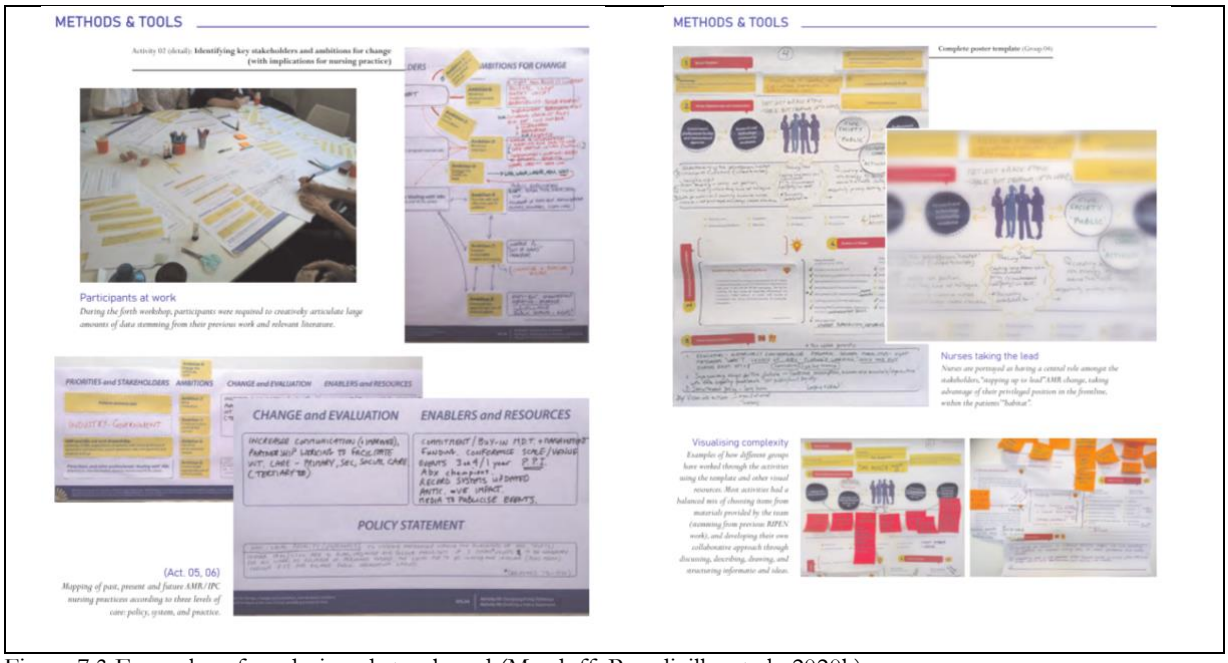


Figure 7.3 Examples of co-designed storyboard (Macduff, Prendiville, et al., 2020b).

7.6 How were participants affected by the co-design process?

This section looks at the effects of participating in the RIPEN project at a micro level. In many cases the participants reflected on how they had been affected by taking part in the collaborative design process and how that had impacted on their behaviour and practice at the time of the project.

Data was gathered on how individual's practices might be affected; this dataset characteristically valued the voice of the participants and used many direct refences.

There were thirty-three codes used under four key themes, (see section 4.4.2). 'The purpose of collecting data'. This section will draw on this to establish the most prominent effects, providing key insights from participants and researchers. Table 7.1 provides initial findings.

Initial findings	
Themes	**Prominent codes**
Confidence	To think, have ideas and to use imagination. To communicate
Awareness	Of the value of self and the process. Own voice
Mindset	Openness, to new ideas and new ways of working. Togetherness.
Emotional response	Frustration Anxiety

Table 7.1 Initial findings in data analysis

7.6.1 Confidence

To think, have ideas and to use imagination.

Throughout the documentation there have been clear references that suggest that participants have changed the way they think. And that this change is as a direct result of having participated in the RIPEN project, its collaborative design methods and the process outlined in section 7.5. Participants described changing the way they think, gaining the ability to have ideas and use their imagination to think through issues regarding AMR, current practices and their own practice. Often this is attributed to gaining enough confidence (Sanders, 2000; Trischler, Dietrich and Rundle-Thiele, 2019; Irwin, Tonkinwise and Kossoff, 2020) to go beyond what they already understood. The following quotes provide insight from participant and researcher perspectives;

> 'I've really enjoyed the creativity and the lateral thinking, and how to put science and art, joining the two together. They are seen as different but they can be very collaborative and informative. It's been revelatory and enlightening in a lot of ways' Participant (Macduff, Marie Rafferty, *et al.*, 2020).

> 'it can be seen that participation in the project typically had benefits in terms of enhancing ways of thinking and seeing practice. Moreover, there was some evidence of participants making related changes in their professional and personal practices related to AMR' Researcher (Macduff, Marie Rafferty, *et al.*, 2020).

The participant quoted above has recognised that they have changed the way that they are thinking, they have however gone further by recognising that it has been lateral. They are thinking about the same problems but with an alternative perspective and they recognise that it has shifted into a creative approach (Tassoul, 2012). This participant has also recognised that the collaborative element of the process has yielded or generated useful information. This participant speaks confidently about the changes in their approach and with understanding, the implication of language 'revelatory and enlightening' is that the participant has experienced an effect that might be long lasting and impact their future practice (Shove, Pantzar and Watson, 2012).

To communicate.

Developing the confidence to communicate and to do (act), emerged as significant effects of the co-design process during the RIPEN project. The Co-investigator made a number of observations during the workshops, they discussed how the co-design process and methods used in the workshops allowed those whose voices might be seldom heard felt far more able to make a contribution, seen in the following quotes;

> 'I think what it allows people, especially maybe more introverted people. To feel more Confident in a group' Co-investigator interview (Appendix 3).

> 'Often you find in the group that you might get somebody who's quite domineering and feels that their ideas need to be pushed. I think Co design gives an opportunity for a different way of working. Co-investigator interview (Appendix 3).

Participants too, recognised that the process and methods used in co-design helped to provide a situation that triggered communication within the group (Steen, Manschot and de Koning, 2011; Ssozi-Mugarura, Blake and Rivett, 2016). The materials providing the scaffolding and confidence to make their ideas heard, exemplified below;

> 'Using the stickers provided the opportunity to reflect on perceptions of AMR. My group facilitated an insightful discussion' (Macduff, Prendiville, *et al.*, 2020b).

> 'The drawing AMR activity yielded a range of images which triggered useful initial discussions' (Macduff, Prendiville, *et al.*, 2020b).

The participants above recognise and value the communications within the group, confidently stating that they are 'useful' and 'insightful'. They describe the images that they had drawn as triggering 'initial' discussions, this implies that it provided participants with the confidence and drive to continue making group contributions facilitating mutual learning (Sanders and Stappers, 2012).

7.6.2 Awareness

An awareness of value of self and the process.

The participants in the RIPEN project developed a strong sense of themselves, the value of their lived experiences and expertise and they attributed the emergence of these elements to the processes and methods of the collaborative approach. There were varied and multiple examples of this throughout the dataset exemplified in the following participant's quotes;

> 'Perhaps the strongest theme, however, was the benefits derived from group work and the related discussions amongst practitioners working in different contexts and levels of speciality' (Macduff, Prendiville, *et al.*, 2020b).

> I think to have such a spread of different backgrounds all approaching a problem from a variety of perspectives has helped me think about this (and other problems) in a wider way. Additionally, I am now exploring other ways of using more visual approaches in other areas of my work' (Macduff, Prendiville, *et al.*, 2020b).

> 'This reflected a very strong generic theme in feedback, namely learning about the topic in detail and in overview through individual and group reflections: Great to be able to take time out to think about the bigger picture, and put each person's role into overall context' (Macduff, Marie Rafferty, *et al.*, 2020).

The participants seemed to value the process very early on in the project, the emphasis throughout was on the 'group' and how the collective reflections and awareness of the topic were providing diverse perspectives. The participants recognised that the value of other participants professional diversity was at the heart of their emerging ability to envisage issues in an alternative way. This awareness impacted one of the participants above to adopt and adapt visual approaches in other areas of their practice.

The Co-investigator also observed that as participants became aware or conscious of the creative process it increased their competence to work through issues and solutions, this is seen in the following quote;

> 'And I think that's when they also began to realize that they had a lot of creative knowledge themselves and that they could through that collaboration, they could actually work through solution to solutions very, very effectively so. It wasn't just a reflection; it was also that they could enact change or they were given the sense that they could enact change' Co-investigator interview (Appendix 3).

Own voice

The participants awareness of their own voice seemed to emerge as their awareness and value of the co-design process progressed. Initially they became aware that their voice was not being heard or valued in their current practices. The Co-investigator observes the nurses saying;

> 'if we had more autonomy, we could actually make a difference and AMR instead of it being something that they were sort of have to deal with it. Gave them a sense that they were empowered to do something' Co-investigator interview (Appendix 3).

This position however, shifted as the project progressed and nurses envisaged themselves as key actors in future changes of practice, exemplified by this participant;

> 'The whole process has identified how nurses can and do have a key role in AMR/ICP change' (Macduff, Prendiville, *et al.*, 2020b).

The researchers also observed changes in the participants awareness of their own voice after they became conscious of the value of their lived experiences, this is discussed in greater depth in Chapter 2, seen in the following quote;

> 'And the thing that they really found with the process that we took them through was that through identifying and knowledge gaps that they also had experiences which would allow them to come up with solutions' Co-investigator interview (Appendix 3).

The participants went on to present their findings and visions for the future at the Royal College of Nursing, delivery a lecture.

7.6.3 Mindset

Openness to new ideas and new ways of working

Observations on participants shift towards a more open-minded disposition (Van Abel et al., 2014) were made primarily by the participants themselves, evidenced in the following quote;

> 'I think to have such a spread of different backgrounds all approaching a problem from a variety of perspectives has helped me think about this (and other problems) in a wider way. Additionally, I am now exploring other ways of using more visual approaches in other areas of my work' (Macduff, Prendiville, *et al.*, 2020b).

> 'Working with the arts based method really makes you think about what you are doing and probably challenges, maybe people like me who probably think about things in a kind of probably one-dimensional method whereas this has made me think on a much wider scale and really made me think about what we are going to do in future' (Macduff, Marie Rafferty, *et al.*, 2020).

The participants in the RIPEN project expressed themselves and reflected in quite an explicit way. They often used examples to evidence their observations and have reflected on the experience considering what has caused their changes in thinking and behaviour. This might be a result of participants current professional practices, making observations of changing situations, seen in the following example;

> 'It took me a while to change my way of thinking from text to picture based' (Prendiville, 2022).

Changes in openness to new ways of working and approaches was also evident in the workshops as well as professional practice. RIPEN researchers observed that;

> 'Real time feedback from participants sometimes resulted in "tweaks" such as annotating the storyboards to distinguish individual and team priorities, but this was all to the better' (Prendiville, 2022).

This shows that participants have begun to value the equitable process, instead of pushing their own ideas and agendas they are contributing to other participants ideas, this follows the argument that ego needs to feature less in co-design by accepting that sometimes having an idea improved or replaced by other participants is acceptable and progressive. This is discussed in depth in Chapter 2 and builds on Marc Tassoul's (2012) arguments regarding 'who's idea, is it?'

The participants shift in disposition seems to have occurred through exposure of, and participation in, multiple aspects of the co-design process and principals. It is not possible to attribute changes or shifts in behaviour to individual elements of co-design. Rather it could be described as a way of 'being' (Van Abel et al., 2014). Identifying what that way of being is, is not easily uncovered and is all too often thought of as an arcane practice that designers just have.

Togetherness

The sense of togetherness in the RIPEN project was significant, participants and researchers recognised that having this social disposition brought a richness to the workshops. This includes mutual learning (Sanders and Stappers, 2012) which is included here instead of having a separate heading. Participants valued the togetherness in the process and observed how beneficial working together was, as follows;

> 'I found it valuable hearing about other participants' practices and what is most challenging for them' (Macduff, Prendiville, *et al.*, 2020b).

> 'Perhaps the strongest theme, however, was the benefits derived from group work and the related discussions amongst practitioners working in different contexts and levels of speciality' (Macduff, Prendiville, *et al.*, 2020b).

Participants recognised that the sense of togetherness from group working methods made them more effective than they might have been if they had not adopted co-design principals, seen in the following quote;

> 'we are unanimous that in-person encounters and work activities between team members were, by far, much more productive, enjoyable and effective than anything done remotely' (Macduff, Prendiville, *et al.*, 2020b).

They clearly state that all of the participants gained a sense of joy from this experience this seems to have enhanced the sharing of knowledge and mutual learning but also provided a foundation of confidence and in turn drive and motivation.

The researchers also observed the benefits of the diversity and closeness of the project team

> 'The disciplinary diversity of the team undoubtedly enriched the project but necessarily raised questions about optimal integration' (Macduff, Prendiville, *et al.*, 2020b).

> 'I think they really enjoyed the collaboration I think they've really benefited from the shared experiences that was very very clear when they started working together and I think they also found that there was a lot of sort of friendship in a way' Co-investigator interview (Appendix 3).

The participants commented on the benefits of togetherness and mutual learning during the workshops but they also took the process with them beyond the project into their professional practices, as discussed by the following team member;

> 'Experiences of different practitioners were very useful and allowed me to introduce new ways of working in regards to my practices in infection control areas' (Macduff, Marie Rafferty, *et al.*, 2020).

During the interview with the author and the project Co-investigator the researcher discussed in detail the closeness of the participants beyond the project, that even though the group was made up of diverse age ranges, genders and professional backgrounds, they corresponded with each other regarding their personal lives and everyday experiences. They continued to do this after the project had finished, seen below;

> 'there was a sort of closeness running through in terms of people's lives as well' Co-investigator interview (Appendix 3).

This mindset or way of being, has in this case clearly been carried into participants everyday activities.

7.6.4 Emotional response

Frustration and Anxiety

This brief section was intended to highlight any frustrations and anxiety about taking part in the co-design process or that was caused due to the co-design process. There were instances of this at the beginning of the project seen in the interview except below;

> 'Author - so how were the groups at the beginning of the of the Co design process?
> Co-investigator - So the there was a little bit of trepidation'
> Co-investigator interview (Appendix 3).

However, it emerged that taking part in the RIPEN project had provided opportunities for participants to discuss their frustration and anxiety brought about by current professional practices requiring them to make and implement discissions in isolation, exemplified as follows;

> 'It was so one of the first things we got them to do was to storyboard their experiences of their day a day in the life of and then to look to reflect on where the infection hotspots were there. They all have very different experiences, but there was a lot of common areas that the shared about, you know, they often felt that nobody listened, for example, or they felt that they were having to make very critical decisions on their own. And there was a sort of anxiety. So, there was a lot of what I'd call personal reflections going on, which I think also because that was very shared' Co-investigator interview (Appendix 3).

The collaborative workshops seem to have provided a solution to this cause of anxiety. This might account for the participants in this project placing considerable emphasis on togetherness and the team dynamics, discussed in 5.6.3 togetherness.

7.7 How were behavioural changes evaluated?

It would be fair to say that the main focus of the RIPEN project was not, changes in participants behaviour. However, there is evidence to suggest that participants and researchers did make some observations that help to make changes visible. There was a structured feedback form that encouraged reflection at the end of the workshops, accompanied by group discussion. The feedback seems to have concentrated on how beneficial the process was rather than the impact that it might have had on the participants personally.

The observations on individual participants behavioural changes were made by the researchers, as follows;

> 'I mean, I just did personal observations in terms of, as you mentioned, confidence' Co-investigator interview (Appendix 3).

There were many observations regarding key moments however, that follow in the next section.

7.8 How were key moments recognised in the journey?

Participants used the feedback forms and discussion sessions to reflect on what was happening in the workshops. They observed the dynamics of the group and the benefits of the process and methods, this is evident in the quotes used throughout the data analysis in this chapter. There were a number of participants observations that highlighted the opportunity to have 'time' to think outside of their practice, seen below;

> 'Great to be able to take time out to think about the bigger picture, and put each person's role into overall context' (MacDuff *et al.*, 2019).

The researchers highlighted multiple key moments in their reflections of the workshops exemplified in the following quote;

> 'A key point here was that the workshops treated participants as experts on their professional and personal practices, while the research team presented themselves as skilled in customised facilitation. This was foundational to our approach as it engendered mutual respect, working trust and a power dynamic where researcher control of workshop activities and progression flexed in response to participants' collaborative working and needs' Researcher (Macduff, Prendiville, *et al.*, 2020b).

The interview carried out by the author with the RIPEN Co-investigator yielded more insight as it was possible to ask questions that were pertinent to the research questions in this thesis. At the beginning of the project there was some trepidation or nervousness with uncertainty but in this case was quickly dispelled, as follows;

> What was very noticeable that people vary, the first session people were tentative but by the end, as we progressed, they became incredibly in tuned with how their co-participants worked.
>
> We took material from King's College London their nursing archive, and we looked at a world without antibiotics as it was years ago and that just they thought that was fantastic and they really got into again thinking about their roles and also by that end of the second, third workshop we were encouraged them to create their own ideas. So, to innovate. And I think that's when they also began to realize that they had a lot of creative knowledge themselves and that they could through that collaboration, they could actually work through solution to solutions very, very effectively so. It wasn't just a reflection; it was also that they could enact change or they were given the sense that they could enact change.
>
> By midway through the project, they were absolutely relaxed about it, their efforts were actually going into a higher level.
> Interview with co-investigator (Appendix 3).

The participants have recognised that the process and methods they have experienced in the RIPEN project can be realised and made into tangible outcomes that are effective.

7.9 What were the effects on participants over time?

The scope of the RIPEN project did not extend beyond the workshops and presentation event at the Royal College of Nursing. There was therefore little data to provide insight into the effects of the collaborative design project on participants past this point. However, participants recognised multiple changes in their practices during the period of the project and have suggested that their experience has impacted their practice for the future, exemplified in the following;

> 'Actually, the small group sessions of 'making rich pictures' really helped me…and they've stuck in my memory' (Macduff, Prendiville, *et al.*, 2020b).
>
> 'Additionally, I am now exploring other ways of using more visual approaches in other areas of my work' (Macduff, Prendiville, *et al.*, 2020b).

The participants in the RIPEN project have reflected on their experiences and have been able to identify what has changed for them. They have identified that they are able to focus on issues, explain them in simple terms to non-professional and explore issues in more depth. They are conscious of choices and options that they inform. The following quotes taken from the RIPEN evaluation report (Macduff, Prendiville, *et al.*, 2020b) highlight these elements;

> It has opened my eyes**,** helped me focus on my clinical practice and question even more deeply than I did prior to attending RIPEN, of the relevance of antimicrobial resistance & prescription of antibiotics.

> I feel more aware of my own practice and feel able to advocate in a more informed way. It has explained to me more thoroughly what the issues are with antibiotic use and I can then explain more clearly and concisely to my own family as well as patients, why caution is required. So, from a health promotion and prevention approach, this is where I really feel the impact of RIPEN, in both my professional and personal life.

Participants have also shown greater depth of understanding of their practice and are prepared to challenge assumption and not accept existing practices as being the best that they can be, seen below;

> 'The biggest change is that I make sure I understand exactly why a specific antibiotic has been chosen, rather than taking on trust that the other doctor had thought it through carefully before prescribing' (Macduff, Prendiville, *et al.*, 2020b).

This has had the effect of making the core issue a complex one, tangible through written and spoken language but notably through images. The combination of these mediums seems to have provided connections, supporting the participants to create narratives and contexts that they can explore themselves and then easily share the knowledge with others, making them advocates for co-design and providing them with the tools and skills to help them envisage alternative futures.

The effects of the RIPEN project on the participants beyond the project have been summarised as follows;

- New ways of thinking

- Open to new ideas
- Confidence to go beyond existing practices

The participants have been able to identify the situations, environments and methods that supported the emergence of the above characteristics, however, they have not suggested what the 'way of being' is, what the 'mindset and togetherness' combined, to change in their thinking process.

7.10 Conclusion

This section discusses the strands that have emerged through the data analysis that help to provide insight and understanding of any transitional changes in behaviour of participants in this co-design case study.

The initial analysis of data, collected for RIPEN, provides a number of insights that can be directly linked to the process and methods used in the RIPEN project (section 5.1). Nvivo; computer assisted qualitative data analysis software, was used to help organise and identify the key 'effects of doing collaborative design' (section 3.6).

The analysis shows that the following clusters are the most prevalent under the 'effects' themes:

- The confidence and awareness to think, have ideas and imagine (section 5.7.1)
- Openness in approach and sense of togetherness (section 5.7.3)
- Confidence to communicate (5.7.2)
- Awareness of the value of self and process and own voice (reflection) (section 5.7.2)

There were eleven effects that were not found to be present in the data, these were;

- Awareness of conflict
- Awareness of space
- Confidence to be decisive
- Confidence to be disruptive
- Confidence to be irreverent
- Confidence to be mischievous
- Confidence to be wrong
- Anger
- Excitement

- Fear
- Risk taking

Using the NVivo software it has also been possible to explore the relationship between the effects that participants have identified as being part of the collaborative design/participation experience (Kelty, 2020). It shows that a combination or overlap of 'effects' might have affected participants in other ways. NVivo has provided markers that helped to signpost such intersections.

The data analysis supports the argument that the experiences of participation in the RIPEN collaborative design project helped to scaffold changes in behaviour. The data suggests that participants have developed increases in confidence enabling participants to engage in multiple activities that they were not previously engaging in (I can). The data also suggests that participants have a greater capacity to be open to new ways of working and thinking (what if). There are multiple instances of this occurring, suggesting that when multiple effects are experienced together, it is possible that they overly and combine to cause changes in behaviour and thinking that might not have occurred had participants experienced fewer, less rich experiences.

As with the previous case studies in this thesis there are effects that have been experienced by participants that can be relatively easily understood but also played a significant role in the project, in this case 'togetherness and mutual learning'. Participants were joyful that they were able to sound out their ideas with colleagues and gather mutual strength for decision making, especially when they believed those decisions to be important or difficult. Similarly, there were a number of points that emerged from the analysis of the data that are not tangible and so easily understood or explained.

3. What happened when participants started to become aware or conscious of the process and themselves, their capability to be reflective?
4. What supported participants to have 'openness in approach?'

Participants in the RIPEN project recorded changes in their behaviour at the end of each of the workshops. They were objective in their reflections and analysed the objectives of the co-design process and the methods used by the researchers during the sessions this seemed to provide the

participants with confidence and security to participate at a very early stage of the project. They were prepared to draw and create images and stories visually as well as written and spoken word. RIPEN researchers set out very clear objects at the beginning of this project and subsequently after the first session they were able step back from the group and the participants worked virtually independently from the researchers, who became observers. They were comfortable and confident embracing the agency and empowerment that they felt, this leads on from the literature review (Manzini, 2015; Bødker, Dindler and Iversen, 2017).
This distance between researchers and participants is discussed by the Co-investigator during interview with the author. It is unclear as to what level of autonomy there was however and how competent the participants were at designing without a designer as a participant. The workshops concentrated on producing storyboards and information that might impact the direction of future policy which, from the available data, might not have required a high level of understanding about design (Simon, 1988) as such.

This project focussed on drawing out the experiences and knowledge of expert practitioners enabling them to explore specific issues and disseminate this knowledge by using a fresh lens to focus their understanding. Rather than exploring the complexities of design they have explored the dynamics of the group, the value of diversity and the value of lived experiences of the participants, these elements of co-design are discussed in Chapter 2 in greater depth.

This was a project that required from its participants the ability to be reflective and consider what was happening in practice as a whole and then what was happening in their own practice. Reflection is a pre-requisite for being able to move forward (see Chapter 3) and engage in the 'doing' co-design process.
The trigger for greater openness (Van Abel et al., 2014) in this case, could be as a result of a combination of methods that were employed in this project, the methods that supported participants to make what they already knew, tangible. They were, by using co-design principles and methods, able to visualise and contextualise historic situations, current situations, and then future situations, in essence mapping contexts in order to provide a big picture that they were able visualise themselves and others acting in.

7.11 Project bibliography

This section provides selected literature that was connected to the RIPEN project.

1. Antimicrobial resistance: join us for a fresh approach (Macduff *et al.*, 2018).
2. Fostering nursing innovation to prevent and control antimicrobial resistance using approaches from the arts and humanities (Macduff, Marie Rafferty, *et al.*, 2020).

   Visualising and Activating Nursing Action to Address Antimicrobial Resistance (MacDuff *et al.*, 2019).

7.12 Limitations

This chapter analysed the data collected in the case study for the RIPEN project and therefore the analysis is limited to the conclusions drawn by the author of this thesis. The Leapfrog project focussed on a series of unique contexts, participants, settings and circumstances that may be transferable rather than generalisable in other contexts (Lewis *et al.*, 2003). The insights that emerged from the analysis of data are not conclusive.

Chapter 8 Cross case analysis

8.1 Introduction

This chapter looks deeply at this thesis' proposition: Understanding transitional changes in explicit and implicit behaviour of co-designers. A case-oriented approach (Yin, 2014) has been used in this thesis to consider each case as a complete entity, Chapters 5, 6 and 7 have looked at configurations, associations, causes and effects. This chapter will focus on comparative analysis between the three establish if the underlying similarities or differences and if the occurrences of any patterns have been observed and interpreted. Finally, this chapter provides comparison of the cases and then explores the findings to begin to establish more general explanations. Finally, this chapter describes what is needed to support participants experiencing the effects in co-design projects in the future and propose a test bed to build in and explore the less tangible effects further.

8.2 Principal effects of doing co-design

This section brings together the effects of doing co-design that had significant impact on the participants in each of the three case studies that were looked at in this thesis.
Table 8.1 provides a cross case analysis matrix (Miles, Huberman and Saldaña, 2018) of the case studies and the themes that were generated from the literature review in Chapters 2 and 3. The matrix shows the themes that were used to ascertain which effects of doing co-design impacted participants to a greater extent (Cruzes *et al.*, 2015).

The case study themes are considered in a more nuanced way in Tables 8.1 and 8.2 that follow.

Cross case analysis matrix	**The principal effects of doing co-design on participants Themes and codes**				
Case Study	**Confidence** (Hanton, Mellalieu and Hall, 2004; Corcoran, Marshall and Walsh, 2018)	**Awareness** (Steen, Manschot and de Koning, 2011; Whitfield *et al.*, 2018)	**Mindset** (White, 2009; Aguirre, Agudelo and Romm, 2017)	**Emotional Response** (Light and Akama, 2012; Sanders and Stappers, 2012)	**Effects beyond the project**
Leapfrog Chapter 5	To think differently have ideas and use imagination to Communicate	Of self and the process (reflection) Of agency	Openness to new ideas and ways of working Enthusiasm	Surprise, at the disruption to existing thoughts and practice. Excitement	Thinking differently Reflective Open minded
Empowering Design Practice Chapter 6	To think differently and have ideas. To communicate	Of self and the process. (reflection) Of agency	Openness to new ideas and ways of working.	Surprise Joy Reliance on others Emotional attachment to place	Thinking differently Reflective Open minded
Re-envisaging Infection Practice Ecologies in Nursing Chapter 7	To think differently and have ideas. To communicate	Of the value of self and the process (reflection) Of own voice	Openness, to new ideas and new ways of working. Togetherness	Frustration Anxiety. (Through awareness)	Thinking differently Reflective Open minded

Table 8.1 Cross case analysis matrix, effects that were present in the case studies

Table 8.1. provides an overview of the principal effects of doing co-design on participants. The table shows common themes and patterns of similarities and differences used in the creation of clusters of phenomena (Khan and Van Wynsberghe, 2008) The aim of this analysis is to answer the question 'do these findings make sense beyond this specific case?' (Miles et Huberman,

1994). This cross case comparison also enables a fundamentally deeper understanding and explanation (Glaser and Strauss, 2017) of the effects of doing co-design.

All three case studies showed that participants confidence had grown in very similar areas even though the enactment of co-design was significantly diverse. This was also true of awareness and mindset although these themes included more nuanced effects for example, enthusiasm and togetherness. The fourth theme, emotional responses, showed a variety of different effects that were particular to each of the case study situations. The emotional responses were generated during the co-design projects and were temporary, there is no evidence that emotions travelled beyond the project as data were not collected in the time after the project. Understanding the effects beyond the project were not in the scope of this case study.

The three comparison groups help to establish, under what situations or conditions the effects of participation most effectively or least effectively flourish. Section 8.3 explores the effects of explicit and implicit effects.

Table 8.2 shows the effects that were not found in the data gathered from the three case studies. These effects have not been the focus of this thesis however the data might be used in further research discussed in Chapter 11.

Cross case analysis matrix	**The effects not present in doing co-design with participants Themes and codes**				
Case Study	**Confidence**	**Awareness**	**Mindset**	**Emotional Response**	**Effects beyond the project**
Leapfrog Chapter 5	To be mischievous			Fear	
Empowering Design Practice Chapter 6	To be; Mischievous Wrong Decisive Disruptive		Risk taking Experimental		Anger
Re-envisaging Infection Practice Ecologies in Nursing Chapter 7	To be; Decisive Disruptive Irreverent Mischievous Wrong	Of; Conflict Space	Risk taking		Anger Excitement

Table 8.2 Cross case analysis matrix, effects that were not present in the case studies

8.3 Effects that are explicit

Experienced designers use a process that is not a series of separate steps or instructions Van Dooren *et al* (2014) state that the process is undivided with automatic, unconscious steps, actions based on practice and routine interspersed with moments of reflection and exploration.
Schon (1987) explores the paradox of design in education, discussing that students are asked to practice something that they do not in fact know how to do. In an interview with Goldhoorn (1991) Schon suggests that designing is complex, it's about different kinds of knowledge and it is about a personal system of preferences, using specific language of sketching and modelling. Van Dooren et al (2014) write that to understand design, these elements need to be made explicit for teaching and learning. The co-design process is an exchange of knowledge and similarly requires the implicit processes of design to be made explicit (Van Dooren et al., 2014; Clarke et al., 2019). This section considers the visible and the hidden aspects of the case studies used in this thesis.
This section compares the explicit effects that were present in the four key themes (explained in depth in Chapters 3 and 4) that are outlined in the far-left column of Table 8.3.

Cross case analysis matrix **Explicit effects**	Leapfrog Chapter 5	Empowering Design Practice Chapter 6	Re-envisaging Infection Practice Ecologies in Nursing Chapter 7	Findings
Confidence to Communicate	'I think speaking truth to power, questioning, challenging. I think because the process of the co-design very much instilled that within people'	'I have gained skills and confidence to help lead a design process and engage my community in it'	'I think what it allows people, especially maybe more introverted people. To feel more Confident in a group'	Confidence to communicate increased in each varying enactment of co-design
Awareness. Of Agency and own voice	'Tools like that enable you to kind of have subtle conversations about power'	'I think now we are a bit informed when we speak to our architects, we can work with them, as opposed to one way traffic, I think we can have input into the process.'	'The whole process has identified how nurses can and do have a key role in AMR/ICP change.'	Awareness of agency and participants own voice were very similar, despite the diversity of context and dynamics of the groups.

Mindset Enthusiasm and togetherness	'So, I snapped that opportunity up'	'We five chatted all the way back home about form, function, and resolving our problems for the future. We sounded like a group of architects!'	'We are unanimous that in-person encounters and work activities between team members were, by far, much more productive, enjoyable and effective than anything done remotely'	Participants mindset varied due to the context of each enactment of co-design. EDP and RIPEN similarly found the group itself a key component of success
Emotional Response. Surprise, joy, excitement, reliance, frustration, anxiety.	'we hadn't really thought about how you properly engage with communities, made me step back a bit and think we're about a million miles away'	'So there was things like my child died and this place was where I last saw him, the last time so I need to, we need to preserve that space.'	'they felt that they were having to make very critical decisions on their own. And there was a sort of anxiety.'	Multiple emotional responses were experienced due to the context of each enactment of co-design. Participants needed varying levels of emotional support

Table 8.3 Cross case analysis matrix. Explicit effects

The confidence to communicate increased with participants across all three cases, even though each enactment of co-design took place in a different context. In two of the cases, participants were professionals working with designers and researchers, in one case participants were community members who were not in a work environment. All these individual participants clearly had varying levels of confidence prior to taking part in the project, however, many participants recognised that their confidence to communicate had increased and that their capability was clearly observable and valued. The Leapfrog project encouraged participants to challenge existing situations, the EDP project taught participants skills and knowledge that supported them to connect with wider audiences and the RIPEN project nurtured those participants who found communicating an obstacle, through a sense of belonging, sensitivity and co-operation. Participants recognised these changes in confidence at different stages of the project. The PI interviews suggest that this confidence was a slow burn and was incremental across the projects building as the co-design experience progressed.

Awareness of agency and own voice, the power to act and being aware of one's own value in the group varied slightly across the cases due to the confidence in the group dynamics. The two cases

where the majority of participants were professionals working with designers and researchers had a greater awareness of their agency and power to act and do. Whereas the participants from the community faith groups became more aware of their own voice in the group and the potential for them to act and do (Chapter 6). This was a more tentative and gentler shift however and was due to the extended pre-design period that provided pastoral support. The professional participants were able to envisage the application of these effects. This might be due to having purposeful professional roles with clear aims and objectives. This clarity of future purpose is not as clear in the non-professional community context.

Mindset, enthusiasm and togetherness were more specific to each of the contexts in the case studies. The Leapfrog project participants valued the co-design process, recognised that it could help to create future opportunities and outcomes and enthusiastically engaged with them. The mindset of the participants in EDP and RIPEN were aware of the togetherness of the groups that they were working in, they valued the intimacy and knowledge sharing in a gentler way, with less immediate impact than Leapfrog participants, however the togetherness mindset has been sustained over time and continues socially (with the RIPEN participants), this has been corroborated by the co-investigator. It is worth noting that Leapfrog participants occasionally communicate with researchers in a more professional context.

Emotional response, surprise, joy, excitement, reliance, frustration, anxiety. Emotional responses to doing co-design varied considerably due to the context of the enactments of the co-design projects. Participants in the Leapfrog case study reacted with surprise at how, by doing co-design, their practices had been positively disrupted, this prompted reflection and realisation that they had more choices than they were currently considering in their practices. Participants in the EDP case study who were all from faith communities often had very strong emotional attachments to their places of worship, these participants had a reliance on the researchers and designers to lead them through the co-design process in a sensitive and empathetic way. Their emotional journey was very different from the other case study participants. The RIPEN participants became aware that enacting the co-design process allowed them to share responsibility for idea generation and the implementation of practice. Their emotional response also included frustration and anxiety at their existing practices which they felt that they did in isolation and in a disjointed way from their peers and supervisors. An observation about the RIPEN participants and researchers was that they quickly began to work independently, the participants confidently worked through the co-

design process with little support, not needing to be led. Researchers quickly became onlookers/observers.

8.4 Effects that are implicit

This section compares the, less visible, implicit effects that were present in the four key themes. They were; confidence, awareness, mindset and emotional response (explained in depth in Chapters 3 and 4) that are outlined in the far-left column of Table 8.4. These implicit effects can be hidden and problematic to recognise, these effects were searched for by studying what Light and Akama describe as microdynamics (Light and Akama, 2012; Salmi and Mattelmäki, 2021) of the individual participants and their behaviour in relation to the co-design groups that they were associated with. Implicit effects were also identified by participants searching for explanations to describe something that had impacted their behaviour or way of thinking but were unable to account for the change. For example, when participants knew that a change had occurred but were unable to say what the change was or what had triggered it.

Cross case analysis matrix **Implicit effects**	Leapfrog Chapter 5	Empowering Design Practice Chapter 6	Re-envisaging Infection Practice Ecologies in Nursing Chapter 7	Findings
Confidence to think differently and have ideas	'Leapfrog changed the way we think about working with the community'	'I learned how vision must impact design and function. Can't just do something to update building – far deeper than that'	'I've really enjoyed the creativity and the lateral thinking, and how to put science and art, joining the two together'	Thinking differently was common across all cases.
Awareness of self and the process (reflection)	'So, the impact was phenomenal really. The impact on me was huge because I've entered into a whole new body of work that really captures the essence of what young people think'	'It was a bunch of people who knew what they were doing, confronting a bunch of people who haven't got a clue! If we'd met in a room without those people we would still be going around in circles'	'I think to have such a spread of different backgrounds all approaching a problem from a variety of perspectives has helped me think about this (and other problems) in a wider way'	A reflective process that recognised and valued the participants and process was common across all cases

Mindset. Openness to new ideas and ways of working	'For 20 years I've been doing arts projects with young people using a wide range of visual arts materials, but I've never ventured into the world of technology, and probably would have described myself as a technophobe prior to the Leapfrog'	`It's the mental attitude to it which I think was influenced by Sheffield [Design training]- that was the big thing. Previously we thought "that would be nice but it's not really possible". We think much more things are possible.'	'Working with the arts-based method really makes you think about what you are doing and probably challenges, maybe people like me who probably think about things in a kind of probably one-dimensional method whereas this has made me think on a much wider scale and really made me think about what we are going to do in future.'	An openness to new ideas and new ways of working was common across all cases.
Emotional Response. No implicit emotions observed	Emotional responses were explicit and situated in the co-design projects. No implicit emotions were observed or recorded.			

Table 8.4 Cross case analysis matrix. Implicit effects

The implicit effects seemed to be present in all three case studies and were similarly recognised as significant enough to impact behaviour and practice.

The confidence to think differently, have ideas and use imagination; Participants in all of the case studies recognised that taking part in the projects had allowed them to change the way that they thought. However, this change is not easily articulated by the participants or the researchers, for example many Leapfrog participants clearly and confidently stated that they had changed the way they think at a fundamental level but were unable to say where their thought process had shifted from and where it had shifted to, they were unable to describe what they meant when they said 'it changed the way I think'. Participation had changed the way they thought about the way they approached their practice in a holistic way, not just about the project they were involved with at the time.

The EDP participants were clear that they had learned how envisaging a future outcome could help them to change the buildings that they were working on within the project, there was little reference to how they might use these learned skills in the future beyond the project. The RIPEN participants similarly to Leapfrog recognised the potential of the co-design process to make systemic improvements to theirs and nursing practices on a wider scale, notably they refer to their intimate knowledge exchange and working methods as the catalyst for this. They used the co-design tools and methods without really discussing the process, they adopted them easily with competence (Luft and Ingham, 1961), it was just a tool for this group.

The participants across all three case studies recognised the changes in thinking that occurred these moments varied depending on the individual. There is no evidence from the data that suggests what that change was in any greater depth other than that it occurred, even though it seemed to have significant and lasting impact. Some participants did try to describe this change but were unable to find suitable language or understanding of 'how' they were thinking, when describing the design process. They were able describe what they were doing and when they were doing it, but they were unable to describe how they were doing it. It seems that this change in thinking, could be due to a combination of effects.
There is evidence to suggest that some participants changed the way they were thinking at the early stages of the project. Others experienced a gentler shift in thinking with multiple experiences of co-design.

Awareness of self and process; Participants in all three case studies recognised that their input into the co-design process was valued and they were able to recognise their self-worth. They also recognised that participating in the co-design project was a worthwhile and beneficial process. This awareness triggered reflective behaviour and thinking. Participants in the Leapfrog project recognised that the impact of the project was significant and that because of this experience they had reflected on their existing practice and made changes to the way they approached and implemented their future practices, this is seen in section 5.7.2 These participants stated that this reflection had helped them to understand and recognise the very essence of what was needed in future projects within their practice. They showed a clearer understanding of the fundamental problems that were present in the social issues that they were focussed on. The EDP participants recognised the worth of the process and the role that they played very differently, shown in 6.7.2. They reflected more significantly on the process rather than themselves; they identified that through the co-design process the experts would be able to lead them towards outcomes

initially by helping them to identify what they wanted. RIPEN participants became aware of the process and started to reflect, at an early stage in the project and they reflected in a holistic way, valuing the diversity of participants backgrounds and perspectives, linking multiple strands of the process and methods used to see their future potential and how they might apply this in future projects, see section 7.6.2. The reflective thinking that occurred does seem to have supported participants to engage in the co-design process providing them with an understanding of how to use reflection as part of the iterative design process, as a tool.

Mindset, openness to new ideas and ways of working; Participants in all of the case studies reported changes in mindset, those changes were, for the most part, being open to new ideas and new ways of working and that they were more comfortable embracing changes in their practices, which they had not previously done. Leapfrog participants reported that they had shifted from being quite set in their ways to embracing new technologies that they might have previously been uncomfortable or even scared to adopt into their practices and that they felt able to and did adapt, change or discard existing tools and methods. The EDP participants shifted in their mindset in a slightly different way. They were able to visualise alternative 'what if?' approach, they adopted a mindset that focussed on possibilities which became a shift toward a more positive position that could be achieved as opposed to a 'wish list' that probably would never happen or be realised as an outcome. RIPEN participants recognised that using creative art and design methods, they were able to visualise alternative futures and turn abstract ideas into tangible outcomes, this is seen in the visual documentation in, section 7.5. They recognised by amalgamating these with scientific approaches to problem solving, they were able to consider issues more deeply and with greater scope. They paid particular attention to the importance of understanding and comparing contexts that became tangible by using visualisations and historical documents. It was stated that by participating in co-design, the collaborators were challenged to think in a more open way and to be open to new ways of working if they wanted to consider the issues that they were faced with more deeply. Confidence and awareness/reflection provided the scaffolding for participants to make changes in mindset or more accurately, disposition.
There is a connection that emerges here with 'Thinking differently, having ideas and using imagination' and 'Openness in Mindset', Bateson (2013) discuss, that when people say they are using their imagination, what they really mean is, that they are being open minded. This is discussed in greater depth in section 8.5.

Emotional response; notably there were no implicit emotional responses that were reported or recognised by participants or researchers, they all seem to be explicit and freely conveyed. Participants seem to understand the emotional responses that they had to taking part in the projects. They used appropriate language to explain the emotions and recognised the triggers for those emotions and were able to identify at what moments in time they occurred.

8.5 What is needed to help facilitate these effects?

The co-design processes were shown to unlock knowledge and lived experiences, this culminated in a transition from intangible to tangible outcomes. For example, in the RIPEN project the co-investigator that was interviewed, recognised and placed importance on this unlocking or freeing of implicit or hidden thought process. In this instance the outcomes were not tools or objects but the delivery of workshops that heightened awareness to draw out and focus on 'what if' futures for infection control. The seminal moment for this freeing of hidden knowledge was when participants used historical documents to position themselves and 'reflect'. The participants in this case gathered momentum very quickly becoming independent from the researchers. The visualisation of context and position played a significant part in stimulating reflection. The context shifted between abstract or not tangible, to tangible.

The actors in this project found themselves in an environment where they were comfortable to share personal, intimate stories with each other, establishing friendships. This level of intimacy seems to have provided an environment that led to less inhibition and shared responsibility and trust, relieving the group of personal responsibility or blame culture. Notably the participants did not seem to discuss 'design', they adopted the methods and process of co-design without explicitly attributing it to design. There was a war (Waters *et al.*, 2010; Schofield and Beek, 2014) between the participants and researchers and they spoke fondly of each other. This co-design project did impact participants practice in a gentler way perhaps than the other case studies with less emphasis on design and more on relationship building of the team with shared knowledge yes, but also shared responsibility and shared accountability. This togetherness combined with the competence to reflect has contributed to the unlocking of hidden knowledge and experience which provided the kindling for creative, designerly thinking.
The data that is available for this project does not allow insight into participants behaviour beyond the project. However, conclusions could be drawn from the participants future intensions that behavioural changes and changes to practice would be long lasting.

The Leapfrog participants had reflection built into the project and were aware of this way of working as part of the design process from the very beginning, which they experienced in the interviews that took place before and during the project. They embraced reflective approaches as part of the iterative process of co-design. These participants did discuss the design process and were aware that their behaviour and thinking was changing throughout. They attributed this change to the whole process, the combination of methods and the effects of those methods. Their awareness and competence to think reflectively was apparent at a very early stage in the workshops, notably co-design was explicitly described to them by the PI. Particular emphasis was placed, by them, on their ability to be open to new ways of working and new ideas, they were surprised at the positive disruption to their existing practices and ways of thinking.
The Leapfrog participants became aware of their reflective competence, shifts in awareness of competence can be seen in Johari's window of competence, Figure 8.1.

Unconscious Incompetence You are unaware of the skill and your lack of proficiency. ⇩	**Unconscious Competence** Performing the skill is automatic.
Conscious Incompetence You are aware of the skill but not yet proficient. ⇨	**Conscious Competence** You are able to use the skill but only with effort. ⇧

Figure 8.1 Adaptation of Johari's window of competence (Luft and Ingham, 1961).

This happened in an impactful way, far less gently than the RIPEN project, there were 'wow' moments for participants, particularly when they were able to attribute the process and their own value to tangible outcomes. The participants of RIPEN experienced a change in thinking and disposition that underpinned the design process, that fell into place, as they enacted the co-design activities but also, they recognised that this disposition was a pre-design state of mind and would be needed for future adaptations to practice. Shifting to a designerly disposition before and during designing was something that happened in this project. There are no data available

for further study at this time, however, participants indicated that they would adopt this approach in future practices and some participants became advocates for the process, one participant then went on to undertake a PhD in co-design.

EDP participants were led through a co-design process that was more focussed on teaching and learning co-design methods and process. The EDP participants had strong emotional attachments to the places and buildings that were the focus of the projects. What happened outside the workshop program was a vital part of the co-design process in this instance, creating security and safety, initially in a similar way to the 'magic circle' (Salmi and Mattelmäki, 2021) and which recognises the unique situation that co-design creates. However, in the EDP project and the RIPEN project a process was at play that provided emotional support and mindset that supported participants to be exploratory. This approach is exemplified in the field of psychology to support children who are looked after. These children often find themselves without the resilient mindset that enables other children to explore and discover the world around them. The 'secure base model' (Schofield and Beek, 2014) shown in Figure 8.2 provides a psychological framework that helps to develop relationships that promote exploration, learning and emotional well-being. The individual elements in the model are easily adopted and adapted for collaborative design situations. Trust, self-esteem, well-being, valuing own voice and feeling effective, feeling valued as part of the team are essential elements for individuals in the co-design process. Notably in this model they combine to provide the security needed. Similarly, the combination of effects in co-design provides a secure base for participants.

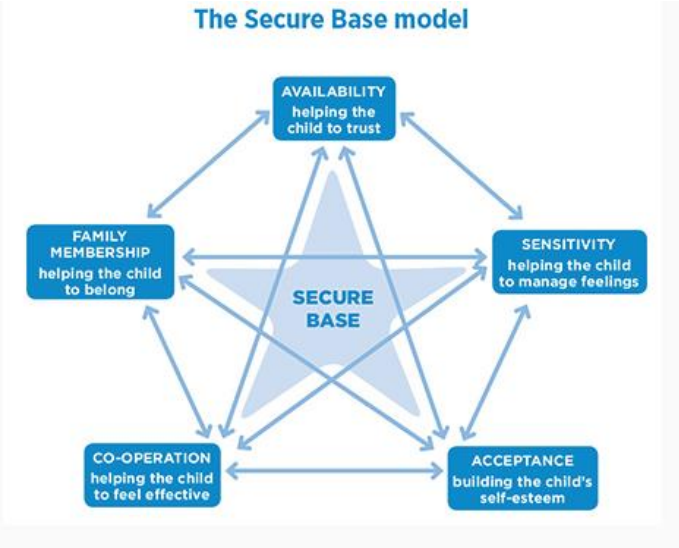


Figure 8.2 'Secure base model' (Schofield and Beek, 2014, p.5).

Designers use models to understand the emotions of participants in the design process and behavioural models such as the 'Fogg behavioural model' (2021). Fogg describes how elements converge from a mass of psychological theories into something that is systematic and organised. There are other academics working on psychological frameworks for persuasive design that are multidisciplinary and are used in design, however this thesis focusses on understanding equitable processes that consider care and shifting relationships, which is why the secure base model is favoured as an example.

The EDP PI reported that the researchers had worked with many of the participants for a period of two years before the project funding began. They needed emotional support and reassurance throughout the projects and there was a reliance on the researchers that might not have been seen in the other case studies, this is in no way a criticism, it is intended to establish the level of emotional support diverse group might need to undertake the co-design process and shift to a designerly disposition. The participants reported that they found comfort knowing that they had found competent experts to lead them through a process, they had begun to build emotional attachments (Bowlby, 1969; Hughes, 2004), they still approached the process timidly. Providing this emotional support for the participants was reported by the PI as very difficult for the researchers and that it had consequently resulted in emotional fatigue for them. The project was successful and the outcomes meaningful due to the researchers providing step by step guidance and an emotional safety net. The researchers facilitated numerous group session where participants were encouraged to share their thoughts and emotional journeys. The EDP project seemed to provide a safe transition into designerly ways of thinking if participants wanted it, but it is unclear if there were changes in participants disposition or if what they had learned was carried forward into any other aspects of their lives. The EDP participants showed less confidence than participants in the Leapfrog and RIPEN projects. The emotional support required in the co-design process highlights that often participants flourish when they are provided kind and careering environments. In the case of these projects this has been facilitated by either researchers (EDP) or participants (RIPEN) or perhaps both (Leapfrog). It is notable that the caring and kind nature of the RIPEN project consisted mainly of nurses and professional care givers.

Section 8.4 introduced the idea that, imaginative, creative thinking was attributed to having an open mindset, this section will expand the notion that this was true in the co-design case studies. The literature provides multiple instances of playfulness being an essential element of creativity

(Huizinga .J, 1949; Rieber, Smith and Noah, 1998; Bateson, 2014). There are six key criteria that help to recognise playful behaviour, they are paraphrased as follows;

1. The behaviour is rewarding and fun to the individual
2. The individual is protected from normal consequences of serious behaviour.
3. Behaviour consists of actions or thought expressed in a novel combination and social situations may change for example normally dominant individuals may become subordinate. Play is a generator of novelty.
4. Individual actions or thoughts are performed repeatedly, they may be incomplete or exaggerated.
5. The behaviour is sensitive to prevailing conditions and occurs only when the individual is free from stress. Play is an indicator of well-being.
6. Playful play is accompanied by a particular positive mood when individuals will be more inclined to think in a spontaneous and flexible way.

(Bateson, 2014).

These criteria re-occur across the case studies used in this thesis, often in combination. They describe similar conditions for playful mindset that are seen in the conditions that enable collaborative design. They provide evidence to suggest that when participants have discussed that, they have changed the way they think, what they meant was, that they had adopted a playful approach, signified by a combination of the criteria above. This suggests that participating in the co-design case studies enabled some participants who experienced the key criteria, to adopt a designerly disposition due, in part, to their playful approach. The reason that this has not been described as an explicit effect by the participants or researchers might be due to the complexity of the criteria, the lack of recognition that they work in combination or part combination and that it is problematic observing or recognising the final criteria, positive mood.
Each cluster of effects seems to unlock access to the next level. There are levels of design competence throughout the projects (Lawson and Dorst, 2013), some achieved competent awareness (Luft and Ingham, 1961).

8.6 Clusters of effects

This section brings the insights from the cross-case analysis together, into a table that provides a way of visualising the analysis and the occurrence of the shift in designerly disposition. Table 8.5 shows clusters of effects that had a positive impact on participants shifting to a designerly disposition. Expanded definitions for the terms used in Table 8.5 can be seen in Chapter 3.

Doing co-design

This cluster of effects draws on the framework 'effects of doing co-design' used in this thesis to establish the themes and key indicators uncovered in the literature review and through the experiences of the author. This framework is discussed in depth in Chapters 3 and 4. The four key indicator themes are confidence, awareness, mindset and emotional responses.

Capability to reflect

The awareness and competence to think reflectively seems to come as result of a combination of effects. Using the cross case analysis, it is shown that not all co-designers were able to think in a reflective manner. Those that showed confidence and awareness in reflective thinking found it easier to move towards a designerly way of thinking and those that were emotionally secure, were more confident. These effects have been discussed in sections 8.3, 8.4 and 8.5.

Designerly thinking

This is a combination of effects from the process that were present with the participants whose behaviour or practice had been impacted by the co-design process. Having an openness to new ways of working and thinking developed during multiple co-design sessions. Having a feeling of emotional security and the togetherness that the co-design situation provided was a key element in achieving a designerly way of thinking. These effects have been discussed in sections 8.3, 8.4 and 8.5.

Impact

Changes in practice were seen in the leapfrog and RIPEN participants. They shared their intentions to change their approaches to future practice Two of the Leapfrog participants changed their career paths. Some of the EDP participants began to engage with the wider community and became more openly outward facing. The participants sought to engage with wider community outside the places of worship, an example being the organisation of a literary event to share poetry. The participants showed some surprise that they were able to do this as

they said previously, they would not have attempted to engage with others outside of their place of worship in this way. Table 8.5. shows the cluster of effects that impacted participants.

Effects that had a positive impact on participants			
Doing co-design	**Capability to reflect**	**Designerly thinking**	**Impact**
Elements in the 'effects of doing co-design framework' (Chapter 3) overlap and combine to provide a secure base.	Awareness and competence to think in a reflective way using context and positioning as reference. For example, The RIPEN project used historical research and narratives to achieve this (chapter 7)	Togetherness and emotional security. Openness to new ideas. Experiencing tangible outcomes. Freedom to be creative without fear. (Suspend normal consequences) Playful. (imaginative) Experiencing multiple co-design sessions.	Changes in practice; For example, some Leapfrog participants engaged with digital production techniques, others changed career path. Changes in behaviour; for example, some EDP participants independently organised community events

Table 8.5 Cluster of effects that impact participants

8.7 Introducing the insights that shaped the test bed projects

Taking part in the collaborative design projects, case studies 1-3, showed that there were multiple effects experienced by the participants, three insights were drawn from the cross case analysis, they are as follows;

Insight 1 Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.

There were two main effects that contributed to confidence and awareness they are as follows;

1. During the co-design process participant's confidence to communicate more effectively and actively engage in doing co-design activity. This shift was observed when participants

were encouraged to challenge existing situations, when they were taught new skills and supported to connect with wider audiences in a sensitive and co-operative way. This confidence grew in participants throughout the time of the projects that they were involved, helping to mitigate anxiety and reliance on facilitators and professional co-design actors. Participants were more able to share their ideas and exchange knowledge.

2. Participants experienced increased awareness of themselves and the value of their voices, discussed in section 8.4, in relation to the co-design groups this also helped to bolster a confident approach. The recognition of the co-design process, having been shown tangible examples, clearly provided further momentum and helped to position the individual as a valued member of the co-design team.

Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.

There were two main effects that contributed towards a shift in collaborative designerly thinking

1. Shifts in mindset occurred throughout the co-design process, for some participants it was it was at the beginning of the project when collaborative working methods were explained (Chapter 5 Leapfrog) and for others it was a slow burn, gentler shift of how to think differently. This had the effect of supporting participants to be experimental in their approach, widening their horizons in creative activities. This shift stimulated enthusiasm of participants during the projects that they were involved with.
2. There were emotional responses to the co-design process in the thesis case studies. Participants experienced a disruption to their expectations and existing beliefs which enabled them to think beyond their boundaries of normality. For example being able to envisage future scenarios, seen in the EDP case study in section 8.4, this supported 'what if?' questions to be asked by participants. The creative, collaborative approach brought joy and excitement which contributed to momentum and participants well-being and good mood, essential for creative thinking.
3. Participants who felt a sense of togetherness and emotional security before and during the case study projects experienced the capability to be creative and imaginative thinkers. They achieved a designerly way of thinking in a fluid and free way.

Insight 3 Suspending normal consequences helps to unlock participants creative potential, for example, participants being able to experiment with ideas that might not be used, without being held to account.

There were multiple effects that combined to support a shift towards having a designerly disposition and thinking in a designerly way.

1. Participants who were able to suspend normal consequences were able to have a wider scope of creative discovery. For example, suspending an individual's accepted boundaries and behaviours removing responsibility and fear of failure, freeing participants to think differently. This helped to remove anxiety and stress adding to the sense of participant well-being.
2. Shifts in responsibility and consequence freed participants to think in a playful imaginative way, unlocking their creative capability and enabling them to discover new ways of working.
3. Openness to new ways of working and new ways of thinking enabled participants to discover unexpected and unplanned ideas and outcomes that disrupted their existing expectations and beliefs.

8.8 Conclusion

This section brings together the effects that impacted participants across all three case studies. It provides evidence of the effects that were present in the case studies and also identified the effects that were not found to be present in the case study data. The tables help to categorise the effects into explicit effects and implicit effects. The situations during each of the co-design projects when effects were present have been scrutinised and discussed. This provided an opportunity to explore what it was in the co-design processes that enabled participants to experience or not experience the identified effects. The chapter concludes with the identification of three insights that were drawn from the cross case analysis. These are accompanied by the effects that contributed to their construction.

The next chapter will focus on observing these effects in two co-design situations. This will help to establish if the effects seen in the case studies 1-3 can be built in and observed in other co-design situations.

Chapter 9 Insight testing

9.1 Introduction

This section focusses on two test bed projects that were used to test the insights from the case studies 1-3 discussed in Chapter 8 section 8.7 and the reflective sessions that were undertaken by the multidisciplinary research team between the projects and at the end of the project. The first project was 'Project in a Box' this involved initially five hundred children and their families from three schools and increased to two thousand in a dispersed co-design project. The second project was 'Fuse' involving sixty primary school children and staff in three face to face co-design workshop, these were delivered in ImaginationLancaster. The test bed projects were used to trace and observe the insights. These test bed projects were designed and delivered by a multidisciplinary team made up of design researchers, design practitioner, university outreach staff and a linguist whose research focus was education.

9.2 Test bed project 1: Box Project

The role of the insights in the project

The insights were designed into the project using collaborative design methods (Chapter 2). The design briefs that were given to participants encouraged them to work together exploring playful ideas and generously contributing to others creative solutions and ways of working. The co-design interactions were planned to run across three sessions, each session linked by using the 'design for real' model (9.3 and 9.4). The workshops in the project were designed to help participants to suspend normal consequences, firstly by helping participants to establish what normal consequences were, for example comparing their work to others and the evaluation and criticism of ideas at the early stages of the project. Secondly by encouraging participants to exaggerate ideas, explore outrageous ideas and experiment with ideas not grounded in common sense.

Insight 1 Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.

Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.

Insight 3 Suspending normal consequences helps to unlock participants creative potential, for example, participants being able to experiment with ideas that might not be used, without being held to account.

The insights helped to shape and adapt processes in the delivery of the workshops. Situations where they occurred during the project were observed. This is explained further in table 9.2.

Introduction to the project

During lockdown situations in 2020 children and their families were unable to leave their homes for 23 hours a day leaving children isolated and disconnected from their teachers, peer groups and families. This project is an example of how an interdisciplinary team of researchers, designers, linguists and university outreach staff were able to come together to co-design a response to some of the systemic inequalities in education that were exacerbated by the global pandemic, for example many families lacked resources like computers, internet access, materials for making, paper and drawing and writing equipment. Many families even after being given computers and internet access lacked the skills and knowledge required to use them.

This project sought to help children, who became isolated in their homes, re-connect with their teachers and classmates. The intention was to find stimulating non-prescriptive playful activity that would give children the opportunity and motivation to take control of their experiences. There might also be the potential through joyful and imaginative activity for the children to find out that learning was a consequence of playful, creative discovery (Samuelsson and Johansson, 2006; Whitebread *et al.*, 2012), however, this is not in the scope of this thesis. With this in mind a call went out across the university to academic staff and PhD researchers for project ideas, generating responses from design, computing, science and engineering departments. The responses varied in complexity and specification. For example, one suggestion was to explore the coastline to find flora and fauna. This required getting to the coast, which required supervision from an adult, travel on buses, equipment in the form of a bucket and so forth. This project was also reliant on weather conditions and suitable clothing. The team made the decision that many of these projects would be too complicated and too prescriptive for many children working in a

disconnected and unsupported home environment. As this was the case it was decided to use these responses to influence and inspire less prescriptive projects.

Research objectives

The research objectives focused on the effects of the co-design process and activities on the participants of the multidisciplinary team who formed the inner circle (McKercher, 2020) and the teachers, children and families that formed the outer circle of the co-design alliance.

Process and approach

This project was, due to Covid-19 restriction, a distributed co-design project (Walsh *et al.*, 2012; Galabo, Nthubu and Cruickshank, 2020; Davis *et al.*, 2021; Brewster *et al.*, 2022), between the designers, researchers, linguist, teachers, children and the wider network of actors. They relied on multiple communication channels such as Microsoft Teams, Zoom, email, text and telephone rather than more traditional face to face meetings and workshops. The situation was unprecedented and the project approach emerged during the process rather than following a preconceived route.

At this time approximately a thousand people a day were dying and many thousands more were suffering from the effects of Covid-19. This prompted great anxiety and stress for many people who were experiencing unprecedented measures to slow the spread. This was a state of emergency that prompted immediate responses that developed as they played out. This project was one of those situations.

To help visualise the structure of the project and the position of the stakeholders and participants Figure 9.1 shows the inner and outer rings (McKercher, 2020; Salmi et Mattelmäki, 2021) of the dispersed nature of the co-design network. There was a bidirectional flow in communication between the participants through the communication channels. Members of the core team took responsibility to communicate with, teachers, families and academics and so forth.

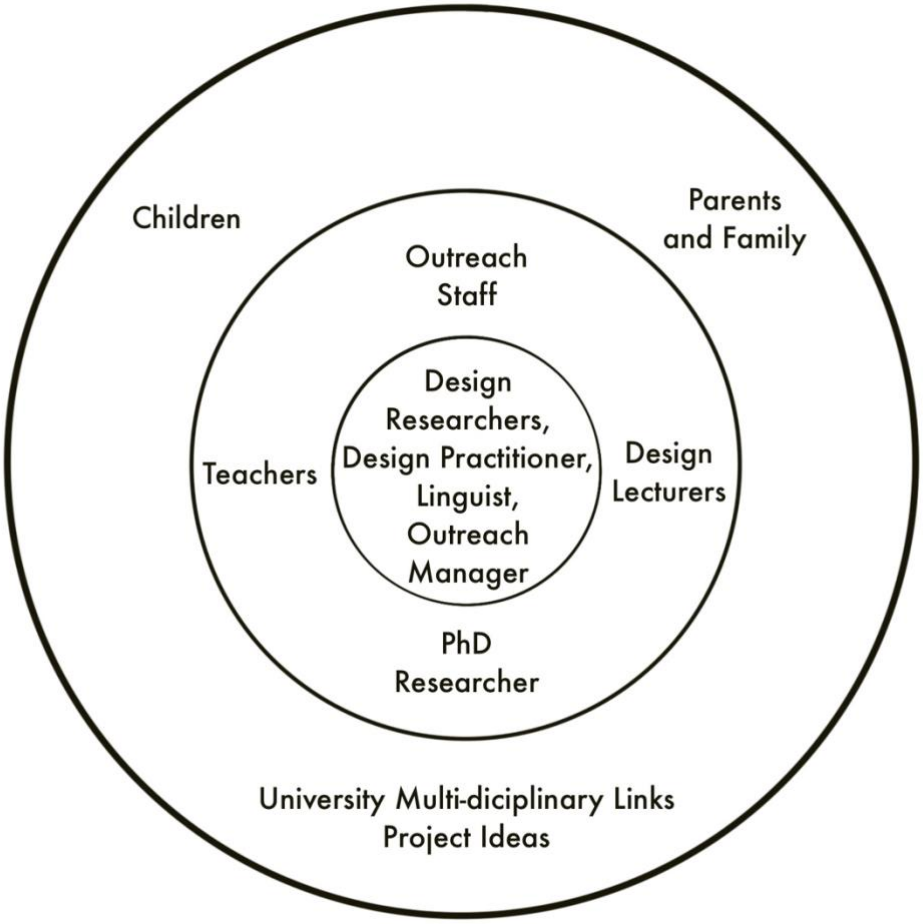


Figure 9.1 shows the inner and outer circles of the co-design project

The insights 1-3 (section 8.7) helped to shape the structure and design of Project in a Box, Table 9.2 shows how the insights were applied. for example, emphasis was placed on suspending normal consequences by ensuring that the resources that were designed were not prescriptive. This helped participants think creatively, experiment, explore and discover without, in this case, being assessed, marked by teachers or compared to other students. The sections in red in Table 9.2 show how processes were modified to reflect the insights, each section notes the insight that it relates to.

Insights from the thesis case studies and their application in Project in a Box		
Doing co-design	**Capability to reflect**	**Designerly thinking**
Confidence to; Communicate. Do. Multiple open communication channels, phones for images and video, postcard, hand delivered outcomes, photos and models to school. No assessment of work to encourage engagement and playfulness. **Insight 1** **Awareness of;** Own voice. Self and process. Invite feedback from participants and act on it. For example, what other materials would you like to have? **Insight 1** **Mindset;** Experimental. Enthusiastic. Openness to using materials and prompt poster in non-prescriptive way. Make activity fun and playful to do. **Insight 1** **Emotional response;** Surprise, disruption to expectation and beliefs. Joy. Excitement. Reliance. Provide good quality resources and materials without caveat, encouraging openness to new way of working. Ownership by child not school. **Insight 1**	Awareness and competence to think in a reflective way using context and positioning as reference. (Tangible Examples) Children encouraged to use household objects and known environments as the foundation of each activity. For example, using furniture and bedding to construct shelters and dens. The box of resources providing all the connecting and fixing elements of the project. **Insight 2**	Togetherness and emotional security. Openness to new ideas. Experiencing tangible outcomes. Freedom to be creative without fear. (Suspend normal consequences) Playful. (imaginative) The projects were not marked by teachers, they were not compared to other children's work. No aims or objective or criteria were imposed on the participants. There was no right or wrong way to do the projects. The use of images and language encouraged a playful approach with no consequences or fear of failure. Non prescriptive language used **Insight 3**

Table 9.2 Applying insights to the 'Project in a Box'

Development

There was a messy beginning to the project, this shaped the playful vision and tone that was carried throughout. The initial idea for this interaction was a sheet of paper describing a step by step easy to follow project that would have its roots in science, engineering or design. The intension, a sheet paper would be packaged and delivered to children in a cardboard box. This seemed like an elaborate way of sending school worksheets home to children. The collaborative research team used this as a starting point only. The iterative process found the team imagining

and empathising with what it was like being a child in multiple scenarios in the home. Through communications with the schools and drawing on the extensive experience of working with children and communities the team started to identify the barriers that prevented children connecting with their schools and extended networks.

The following insights helped to identity potential issues in the project,

Insight 1 Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.

Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.

Insight 3 Suspending normal consequences helps to unlock participants creative potential, for example, participants being able to experiment with ideas that might not be used, without being held to account.

Issues that were identified were; A lack of communication channels, disconnected wider networks, lack of resources for creative activity and lack of skills and knowledge to access activities all contributed to the situation, exemplified in the following statement from a head teacher in one of the schools;

> 'A lot of our children are creative, but they don't have the resources at home, they don't have access to that sort of thing' Interview with Head Teacher (Appendix 4).

This process fore-fronted, at an early stage of the project, the insights. This impacted how the collaborative research team designed resources for the children and not for schools or parents. The focus was on giving children the means to engage and connect on their own terms, in their own way and using their own language.

Through the ideation sessions the team distilled the essence of each project sent back from departments across the university. From this emerged, what began to be referred to as 'prompts', which were two or three words accompanied by a cartoon graphic image showing a person engaged in an activity. The semiotics of text, image, facial expression and gender-neutral figure

all contributed to communicate the idea on each prompt poster. This helped to provide context and an example of a tangible outcome for children who had limited ability to read and follow written instructions, see Figure 9.2.

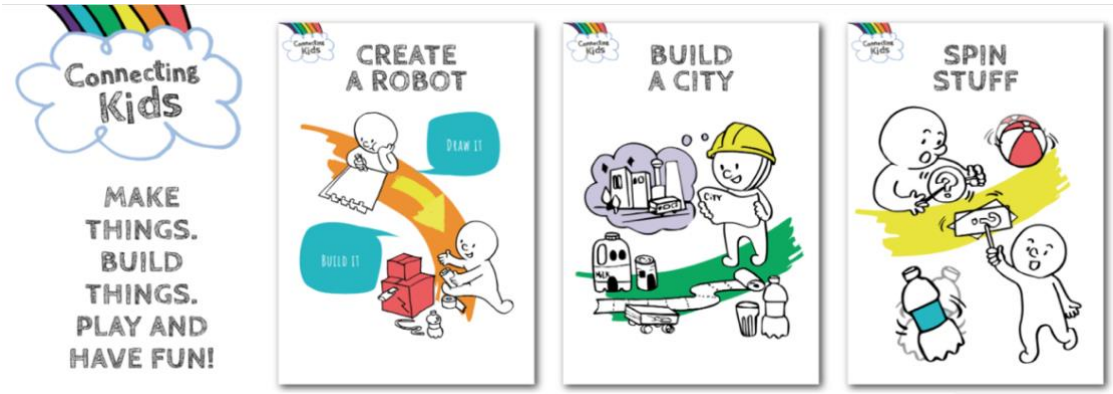


Figure 9.2 Prompt posters

As the team developed the Box and the materials in it, they discussed the resources that would be available to the children in their home environments, for example furniture, empty food packaging, bed sheets, water and sinks. They knew from past experience and communication with schools that many children might not have access to items like string and sticky tape, pencils and scissors. They began to explore what materials and tools would be available to them in their houses by identifying utilitarian items initially and consulting with teachers and outreach workers who had contact with families. These resources might include such items as kitchen implements, bed sheets, furniture, food packaging and structures in the house such as banisters and door handles. The materials that went into the Box were chosen because they could be used in partnership with the existing resources in the homes of the children receiving the boxes. String could be tied to a door handle and a chair and a bed sheet could be used to make a tent. Empty packaging could be used to make a robot or a city of buildings if there were fixings to join them together. The team included materials to complement existing structures and resources. By visualising scenarios through the lens of a six-year-old they curated Project in a Box. The team played with the materials in their own homes with limited resources. What could I do if I had…? This approach helped to identify the initial stock of materials in the box, see Figure 9.3.

Figure 9.3 Project in a Box prototype

Outputs

Five hundred Box resources were initially distributed to three primary schools in the North West of England, this grew to two thousand in the following months of 2022.
The initial feedback from teachers was that they had observed the excitement of the children because they could see the materials inside the box as it was handed to them. Some of the children held the boxes close to them with both hands as they took ownership **o**f them.

The prompts were released to the children in staggered intervals so that they did not receive them all at the same time. Teachers reported that children were asking when the next prompts would be sent to them as they had completed the ones they had and were excited and impatient, looking forward to receiving the next.

Feedback

Video and photos taken on phones were a popular way to share the projects by children and some chose to take their models into school. This dialogue enabled children to identify and

request new materials and the replenishment of used materials helping to shape the resource for further participants in the project.

Some of the finished projects, Figure 9.4 had comments that accompanied them from parents.

- "She has really enjoyed the box! Thank you so much, I will get a pic of 'C' with her makes as well send in."
- "A' has really enjoyed making things out of his craft box. Thank you, here are some of the bits he's been busy making."

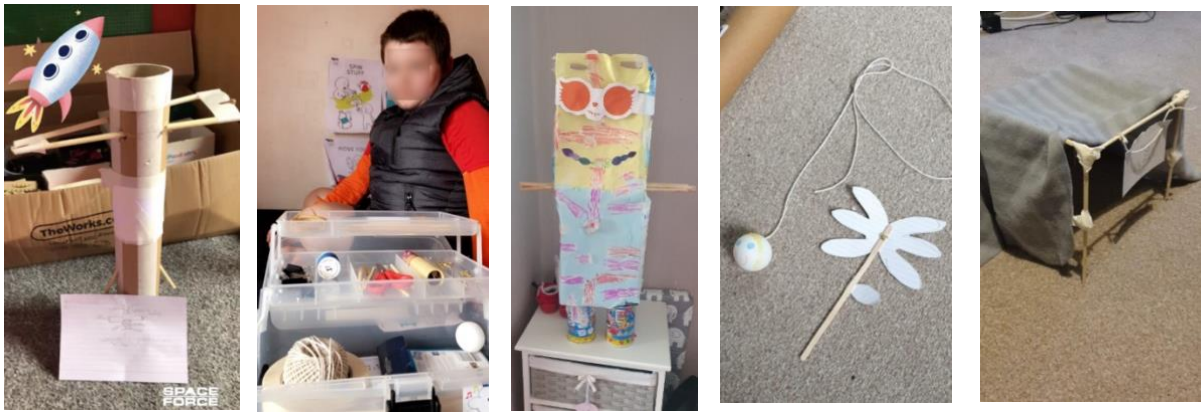


Figure 9.4 Experimental outcomes returned by children

One head teacher placed emphasis on the infrastructure that the schools already had in place as providing an integral role to deliver this project. Project in a Box was given out in school, the children were invited to attend a 'handing out day', along with their parents. They were presented with the box and the prompts, which were addressed to them in an envelope.

Results

Three interviews took place to discuss the project and its impact with head teachers and transcripts were made. Photographs of the projects that the children made were collated. Statements and transcripts were also received from members of the outreach team.

From the interviews teachers reported that the key effects that they considered had contributed to children adopting a mindset of creative discovery. The list below is in the order that the head teacher listed them, although this is not in any order of importance. Insight 2 is not included here as the children were not experiencing multiple co-design experiences due to the Covid restrictions.

- Embracing and valuing failure
- Being comfortable with uncertainty
- Being experimental
- Being playful
- Informality
- Nonprescriptive
- No assessment
- No comparison to others

Insight 3. Suspending normal consequences helps to unlock participants creative potential. Experimenting with ideas that might not be used.

- Self-directed
- Joyful

Insight 1. Participating in co-design increases self-confidence and self-awareness. Better able to value their own voice and communicate their ideas in the co-design group.

One of the Head teachers discussed in detail the benefits of the holistic approach that this co-design project had, the following quote exemplifies this;

> 'From a creative, learning, social and emotional point of view the box really, really worked' Head teacher interview (Appendix 4).

This suggests that within the insights gained from the thesis case studies there are multiple nuanced effects that can contribute, in combination, to support a shift in designerly thinking and a discovery mindset.

There were some challenges for the design team, they needed to work quickly, flexibly and adapt to changing situations. At times communications and ideas within the design team were turbulent. However, everyone involved acted kindly to each other, scaffolding each other's weaker skill sets and letting others lead who were strong in specific areas (Cross, 2023). stepping forward when they felt strong and stepping back when they felt weaker. This became a dynamic of the group and for the most part, it was implemented gently and effectively.
Although this was a challenging situation the project has strengthened networks and laid a foundation for the project to continue into the future.

> 'The children are using the boxes and materials again and again after the prompts had been completed' Head Teacher interview (Appendix 4).

The schools that were part of the project requested further 'Box' resources and other schools in the area requested that they be included in the project. During this stage of the project two thousand resources had been distributed to children.
The children were aware of their valuable outcomes which they were confident enough to share via the return channels of photographs and physical objects taken in to school (Insight 1). The children were asked to share their outcomes but this was also true of homework tasks, which they chose not to engage in or share. The children were able to value their own voice, they were confident to communicate about the materials they would need in future, they were also confident to take an autonomous approach to the activities that they were being encouraged to engage in.

The children had shown that they had shifted from being stilled to unlocking their creative thinking and engaging in creative activity (Insight 3). Suspending normal consequences, in this case identified by the teachers, teacher assessment, comparison to other children and a prescriptive activity that was marked against a criterion, enabled children to unlock their creative potential.
The teachers who participated in the project did show that they were thinking reflectively and that they had experienced a shift towards a collaborative designerly way of thinking (Insight 2). This is evidenced in the interviews that took place and the quotes used in this chapter.

9.3 Multidisciplinary team: Reflection and development workshops

This section discusses how the main multidisciplinary research team (MDT) paused to reflect on the Box Project.
The MDT consisted of two design researchers, a design practitioner (the author of this thesis), a linguist and a university outreach manager. The MDT reflected by using Insights 1-3 (section 8.7) to help them scrutinise the test bed projects.
For example, the team looked at situations where children and parents were able to better communicate their ideas and value their own voices. They looked at changes that developed gently over a period of time as the prompt posters were released and new materials were requested. And they looked at situations where parents, children and wider family members were able to suspend normal consequences, freeing creative activity.

The team met every week for the next 12 months initially reviewing the responses from the children, their families and the teachers that had been involved in the project. An example of this can be seen in one of the authors publications following the project, as follows:

> Parents of the children who used the 'Box' resource fed back that they had observed their children working with siblings on projects and that this was unusual, they reported that existing bonds between parents and grandparents had been strengthened, in part because parents and grandparents were not intimidated by the prompts, often they did not do homework with children as they thought they would not be able to do it. The prompts were not recognised as schoolwork (Brewster et al., 2022 p.6).

It was notable that the language and presentation of the resources also enabled the children's extended families to suspend normal consequences. This shows the value of Insight 3 and the impact that it had on participants unlocking creative and collaborative activities. Children and their families did not see the prompt posters and box of resources as school homework, seen in the quote above. Due to this they engaged enthusiastically with the children.

This collaboration enabled the participants to communicate in a way that that their parents said had not occurred previously. Suspending normal consequences seems to have impacted this relationship as well as enabling two participants to be creative and experimental with their ideas and construction techniques. The children and their families showed that those who shared their making projects were able to think in a designerly way, experimenting with new ideas and creatively using materials. The projects were shared after the release of each prompt poster over a period of weeks. This was linked to Insight 2 as the children were working collaboratively over extended periods of time.

Bringing the processes from this project closer to existing theory on design practices, discussed in Chapters 2 and 3 and valuing the expertise of the individuals within the interdisciplinary team, provided a rich mixture of perspectives.

The importance of language and images (Kress, 2009; Deni and Zingale, 2017; Potts, 2018) had been recognised by the researchers at an early stage in the project. Initially the scrutinization of each word in the prompt posters was to ensure that children who would in all likelihood be reading the prompts on their own were able to grasp a concept without having the ability to read more complex instructions. The visual that accompanied the prompt was there to offer a spark for an idea an example and context. It quickly emerged that the designers on the team used what

they considered to be everyday language and actions but for others were not explicit (Van Dooren *et al.*, 2014).

The team set about demystifying this language and looking more deeply at the tacit and implicit knowledge (Polanyi, 2009) that they had accumulated over many years. Figure 9.5 shows part of the process that was used to help uncover the implicit thought process used by the designers to think in a designerly way. The diagrams were the beginning of an iterative process to provide visual context for this. This process was developed in response to Insight 3 and intended to provide an accessible pathway to suspending normal consequences and unlocking creative potential, enabling participants to experiment with ideas without being held to account.

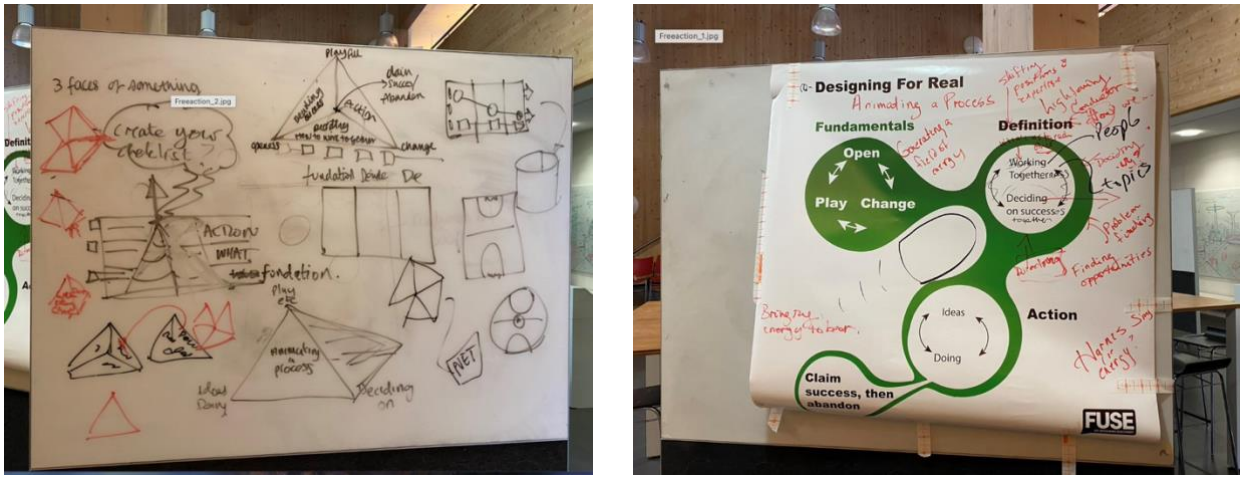


Figure 9.5 White boards showing the iterative process of the multidisciplinary research team

The team often worked on Saturdays on the project and at the time of these discussions it seemed a little novel to be in a deserted studio. This brought into sharp focus the benefit of suspending normal consequences from Insight 3. The team all commented on this at the time, the atmosphere was different. The pressures of normal working conditions were temporarily paused, no one needed to answer emails or looked at their watches to see if they were on time for their next meeting. The author notes that they had said 'it felt like being on holiday' and that this had brought a sense of stress-free well-being. This situation triggered other changes in normal working conditions. The team baked cakes to bring in and share, they brought coffee and equipment to make good quality coffee not the usual instant, quick and make do approach. Time was taken to prepare a joyful, comfortable and calmer environment. This caring creative environment increased over a period of weeks. The team experienced a gentle shift towards a collaborative way of working and also shifted towards a designerly way of thinking (Insight 2). Notably, teachers had emphasised the value of suspending normal consequences as a significant effect of supporting child participants, recorded in section 9.3. This suspension of normal

working practice was pivotal in the design of the projects to enable participants and researchers to unlock new ways of thinking (Insight 1).

The researchers began to look at design models, discussed in Chapter 3, models such as the Double Diamond (DesignCouncil, 2021a) which explain what to do and in what order and there are models (Dubberly, 2004) that explain when to carry out activities and what order you should expect them to happen. The researchers looked more deeply at how to do design, what do designers mean (Frauenberger *et al.*, 2015) when they say use your imagination, think outside the box, be innovative. They realised through these discussions and workshops that these terms were in fact vague and had many different meanings to individuals, even within the team. The team developed a model that was, in this case, specific to co-design, but might be adaptable for design in general.

It is notable that some members of the co-design inner circle were unfamiliar with co-design. The Linguist likened co-design to an 'apprenticeship in design' on a number of occasions. The designers in the group always challenged this, guiding the theoretical stance back to equality and valuing lived experiences, not lifting the unfamiliar designer up to the level of the designer (chapter 2). This became less of an issue as the cycles of ideation, prototyping and reflection continued.

There were three strands in parallel at this time. Firstly, the researchers were focussing on the effects of demystifying design further and developing language that would be more accessible to participants unfamiliar with design. Secondly, they were considering the effects that uncovering ways of thinking that the designers were employing had. Up to then, this thought process was considered tacit in nature. As the meetings progressed what was thought to be tacit knowledge shifted to implicit actions which became tangible. This meant that the designers were able to more easily explain their designerly thinking. Thirdly, the emotional state of mind and sense of well-being that the team had was not accidental but was to some extent played down, the designers were used to shifting to this state of mind and helped set the mood for the others in the interdisciplinary team, this combined with the timing of the workshops and the venue (Insight 1). The linguist commented on many occasions how they looked forward to the sessions even though they sometimes became heated the mood was always playful and ideas could be taken to extreme places (Insight 3).

The researchers focussed on embedding the insights and methods of application from table 2. into a diagram/model. The weekly workshops over a period of twelve months that the research

team undertook were critical in establishing the organisation of the insights and the emphasis of their importance.

The first iteration of the model emerged, at this stage, as 'Design for Real', this is seen in Figure 9.6.

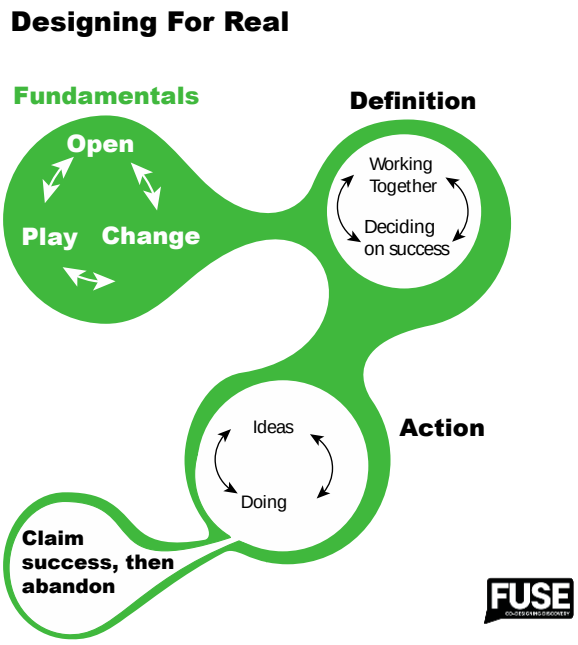


Figure 9.6 Design for Real model

The green section of the Design for Real diagram suggests the fundamental mindset or disposition that can be used for design in general. The sections that are in black and white are specific to co-design.

The insights are embedded into the diagram and highlighted in the sections below.

The **Fundamentals** section included what the team had identified to support designerly thinking (Cross, 1982), playfulness, openness (Huizinga, 1949; Bateson and Martin, 2013; Nitecki and Chung, 2016) and the ability to make and accept change (Steen, Manschot and de Koning, 2011; Bjögvinsson, Ehn and P.-A. Hillgren, 2012; Manzini, 2015). The green section of the diagram indicates that these elements are essential in all of the other sections. The fundamental elements describe the disposition required to think in a designerly way. Other models, discussed in Chapter 3, suggest using imagination or divergent thinking, ideation and creative responses. The fundamental section from this model suggests the mindset that is required to follow the guidelines of other models, the pre-requisites' of doing design, it is posited that these are always at play, this is distilled from (Insight 3). Suspending normal consequences helps to unlock

creative potential, for example, participants being able to experiment with ideas that might not be used, without being held to account.

The **Definition** section suggests that co-designers should decide before they begin designing how they might work together, who has what expertise, where and when will they collaborate (Johansson and Linde, 2005; Slegers *et al.*, 2016; Johnson, 2017). They should also decide on criteria, how will they recognise if what they have done is good, has it achieved what it set out to do (Bratteteig and Wagner, 2016b; Drain and Sanders, 2019). And, have the conditions that enable co-design to flourish been established, this is distilled from Insight 1. Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.

Action suggests an iterative process (Whitfield *et al.*, 2018; Olesen, Holdgaard and Løvlie, 2020) that includes generating ideas and then prototyping them (Hillgren, Seravalli and Emilson, 2011). This is a cycle of activity that continues until the team decide that the design is a success and for now can be abandoned. The word abandoned was carefully chosen at this point to suggest the design process might not be finished but for now is successful.

It is notable that the 'Fundamentals' elements apply to all the sections throughout the co-design process. Table 9.2 showed that playfulness and openness for example was running through each section of the insights table. This model was used alongside the insights of the other effects that had emerged from the thesis case studies, the Box Project and the reflection workshops carried out by the team, to shape the Fuse workshops that followed in March and April 2022.

Reflecting on the insights 1-3

This section is reflecting on the project by using the insights and how the multidisciplinary research team used them to influence the processes used in the project. The reflection provides examples of how the insights played out during the project. It highlights Insight 1 showing that participants and their wider networks are better able to communicate their ideas and find value in their own voices, leading to increased confidence and self-awareness in a situation where they were isolated and detached from normal social activities. The reflection also highlights Insight 3 showing that participants who engaged with collaborative working methods shifted towards a designerly way of thinking, experimenting and thinking in a creative way. Finally, this section shows how suspending normal consequences from Insight 3 helped the children and families and also the research team unlock their creative potential, freeing them to have ideas and think creatively, knowing that they would not be held to account for each and every idea.

9.4 Test bed project 2: Fuse

Introduction

The 'Fuse' project follows on from 'Project in a Box'. The findings from the Box project and the reflective development workshops help to shape this next stage.

A series of three workshops took place with two primary schools in March and April 2022, Teachers, Teaching Assistants and 60 year 4 and 5 children were invited to the design studio in ImaginationLancaster at Lancaster University.

Process and approach

The combination of effects from the thesis case studies, the Box Project and the reflective workshop that the interdisciplinary team explored were brought together to provide shape and structure for the Fuse test bed project. Table 9.2 provides an organised combination of these insights, included in the table. The multidisciplinary research team adapted process to provide pathways for participants to experience situation where the insights came into play.

Insights 1-3 helped shape the Fuse workshops			
Insight 1 Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group. **Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.** **Insight 3 Suspending normal consequences helps to unlock participants creative potential, for example, participants being able to experiment with ideas that might not be used, without being held to account.**			
Insight 3 Use explicit language to help participant's unlock creative thinking potential.	**Insights 1, 2, 3.** Each of the 3 workshops focussed on areas of the Design for Real diagram. 1. Open, play, change. Insight 3 2. Working together deciding on success. Insight 1 3. Ideas and doing. Insight 2 Explore each of the design for real sections 1-3 above. Use explicit language to define each word or phrase.	**Insight 1** Focus on; Open and playful approach. Use the design for real model to establish and develop this disposition/mindset **Insight 3** Suspension of normal consequences and boundaries. Bring participants into a new environment of university studio. Encourage participants to challenge normal behaviour. encourage irreverence. Emotional well-being. Encouraging self-directed activity, agency and decision making. Being explicit about the importance of the activity being fun and joyful. Prompting; What if? Why not?	**Insights 1, 3.** Provide; Hospitality (McKercher, 2020) Choice of abundant materials. Choice of spaces to work. Choice of refreshments

Table 9.2 Insights that shaped the Fuse workshop sessions

Development

The Insights 1, 2, and 3 were being tested in this project. The research team used the insights to help structure the project and then scrutinised the situation within the project workshops where they found participants were better able to communicate their ideas and value their own voice and position in the groups, they worked in. They looked at the behavioural changes that occurred as the multiple workshops were delivered and the team paid attention to situations

where participants were able to suspend normal consequences and begin to free creative and experimental approaches to the work that they were engaged in.

When staff and children arrived at Lancaster University's design studio they were greeted and then separated, this helped children to think and act outside the normality of school, suspending normal consequences and formalities that children might normally be expected to adhere to.

The author prepared a series of design briefs that they called secret missions, they described the children as agents of change on a secret design mission, they were promised an agent of change pack at the end of the missions which would have an agent of change shield for them to wear, Figure 9.7. Figure 9.8 shows an example of the brief that was given to the children.

Figure 9.7 Agent of change shield

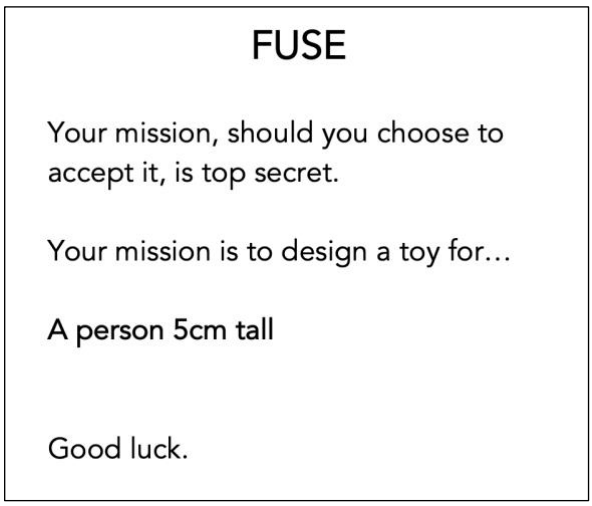


Figure 9.8 An example of the secret missions given to children

Workshop 1 Open-Change-Play

The first workshop focussed on change, being open minded and playful. This was based on Insight 3 and suspending normal consequences. However, there were aspects of Insight 1 building confidence and valuing participants voices and Insight 2 the benefits of multiple interactions. As it was the beginning of a cyclical process and observations were made as participants were increasingly able to communicate and value their ideas in the co-design groups. Children were split into groups of 5 or 6 and there were approximately 6 groups per class. After the initial introduction children were asked to pick a sealed envelope with a mission (design brief) inside it. The groups worked in secrecy from each other so that they did not compare their work with other groups, one of the identified elements of Insight 3 suspending normal consequences.

The abundance of materials that were provided and freely accessible and the space that was available to work in was an immediate talking point for the children, their surprise was noticeable. Surprise having been identified as a disruptor of accepted ways of thinking (Chapter 3).

There was some conflict in most groups and it was often at this point that a group member would start to draw or make something separately. This separation from the group at the beginning of the first co-design session helps to underpin insight 2. These participants had not yet experienced a shift towards collaborative, designerly thinking, this became apparent in the sessions that followed.

Figure 9.9 shows a co-design group designing in response to their mission brief, 'design toys for pirates'.

Figure 9.9 Co-designers working on a toy for a Pirate

The Fuse rockets were designed and made by the MRT and given to each child, one per workshop to help prompt the themes for each workshop, seen in Figure 9.10. Notably the children didn't use the rockets they continued to use the larger image of the model pinned at the front of the studio.

Figure 9.10. Fuse Rocket

Instead of defining when break times should be, they were given options, they were allowed to eat and drink at their tables and carry on working or they could stand around in groups and chat about the project or just socialise. They chose all of these options; it was a calm time. The creative activity and experimentation that children began to adopt was apparent as These small changes in the suspension of normal consequences were facilitated.

Workshop 2 Together-Success

The mission for this workshop was to think about play, what makes play good? Instead of, design play equipment. This session focussed on identifying the criteria, what the children wanted from play.

The whole group discussed what they wanted. Scary, risky, exciting, dangerous, unexpected, unsupervised, were the key words/criteria generated from this session. This second workshop saw participants moving towards designerly thinking and envisaging alternative outcomes linked to Insight 2. The co-designers imagined scenarios to compare and reflect on, for example, climb a tree or climb a climbing frame. All but one child wanted to experience risk and danger and the uncertainty of climbing a tree. Insight 1 was observed as participants in the project increased self-confidence and self-awareness the children were valuing their own voice and confidently communicating their ideas. During these group discussions the children were also comfortable to share experimental ideas and think creatively, out loud. Suspending normal consequences, in this case by suspending a common-sense approach, promoted by teaching assistants, to problem solving, enabled the children to share their ideas without being held to account, Insight 3.

Their creative thought and designerly thinking really came into play at this point, they became aware and they became confident to suspend normal boundaries and consequences and challenge what already existed in their minds about play. The quote in Figure 9.11 shows this, it is also stated as a demand, a confident voice speaking to power.

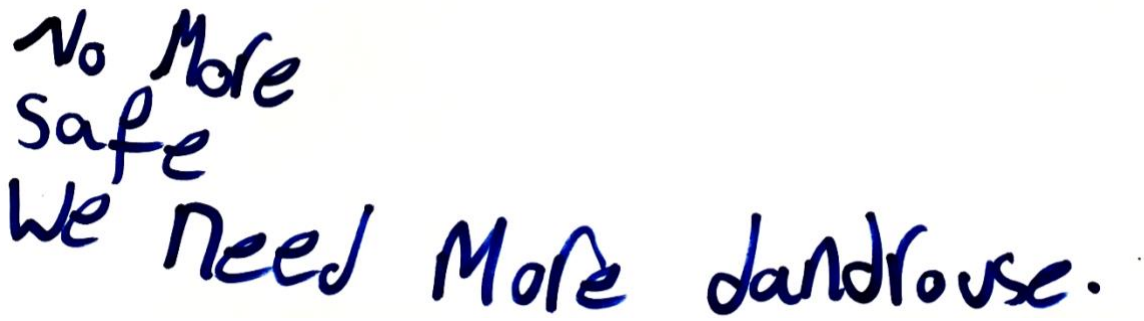


Figure 9.11 Quote from a co-designer age 9

Workshop 3 Ideas-Doing

Workshop 3 focussed on ideas and doing. Researchers used the third workshop to observe potential changes in behaviour over the course of the other workshops, Insight 2 and continued to scrutinise the situations where participants were confidently communicating their ideas and valuing their own input in the co-design team Insight 1. They also looked closely at the situation when Insight 3 came into play and participants were able to suspend normal consequences and playfully explore ideas with an open approach to new ways of thinking. The workshop brief looked at designing shoes. The majority of the children gained in confidence, working bigger and bigger and across multiple media using white boards, rolls of paper and A1 paper on the table and the floor. This underpinned Insights 1 and 2 the participants were gaining in confidence, the awareness of their own voice within the co-design group and they were gently shifting towards a collaborative and designerly way of thinking as the cyclical workshops progressed.

Figure 9.12 A researcher and children adding to the author's explanation board for workshop 3

They then began to make improvements but continued using the previous workshops to inform their process, they were playful and open minded and kept referring to this as they worked Insight 2 showed that the multiple workshops provided participants with refence position and they were able to build on each session. Figure 9.13 shows participants developing ideas in this workshop.

Figure 9.13 Co-designers working iteratively through ideas

There was some friction and arguing about design decisions but that is part of co-designing (Bodker, 2009; Steen, 2013; Lloyd and Oak, 2018). They helped each other discover new ways of working.

Demonstrating how the insights played out with individual participants.

This section looks more deeply at three of the participants who took part in the Fuse co-design workshops, the observations and reflections from the researchers made during the workshops and the fifteen minutes immediately after the workshops were used to inform this section. There were sixty children taking part in the workshop program, it was not possible within the scope of this research project to study all of the data from all of the children. For this reason, this section focuses on three of the participants to demonstrate how the insights from the thesis case studies 1-3 and the reflective workshops carried out by the interdisciplinary team played out. These participants were chosen as they represented three diverse perspectives, one participant seemed to understand the model in the first part of the first workshop, one participant had a gentler experience and adopted the model components over three workshops and one participant was unable to work as part of a team in the first workshop at all, they separated themselves and declined to work on the project.

The insights that were observed in the Fuse workshop participants are as follows:

Insight 1 Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.

Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.

Insight 3 Suspending normal consequences helps to unlock participants creative potential, for example participants being able to experiment with ideas that might not be used, without being held to account.

Participant 1

The researchers noted that this nine-year-old student was very negative in their use of language and self-deprecating and also lacked confidence to do any work or be involved in a positive way. They seemed anxious and scared to commit to working in case they did it wrong or felt inadequate amongst their peers. The support researcher who noted this was an experienced teacher who now worked as a researcher at ImaginationLancaster. They suggested that this negative mindset manifested in what some might consider, bad behaviour.

The support researcher notes that;

> On the first session when the facilitator introduced the task (here is your mission if you should choose to accept it) he retorted why would I want to do that? So, I challenged him, but what if the mission is to eat all of the chocolate? His mouth opened wide. Support researcher field notes (Appendix 5).

The mission was to design a pair of shoes and this participant was asked to think about different types of shoes. They said, 'I don't know any shoes.' The researcher prompted the child by asking what shoes he was wearing; the researcher notes that they 'shrugged' only responding when the support researcher asked them what shoes their parents wore. They began to discuss work boots and high heels, linking Insight 1 to their thought process, gaining confidence and enabling them to communicate and participate. The next moment was a key marker. It was at this point that the participant began to think in a playful and open way highlighting Insight 3. This unlocked the participant's creative thought process. The researcher notes that the child was experimenting with an idea that they might not use, when they said;

> Participant; 'Can I draw banana shoes?'
> Support researcher; 'Yes of course' (researcher enabled the participant to suspend normal consequences) Support researcher field notes (Appendix 5).

The support researcher goes on to note that;

> 'He then told me they are going to be made from banana skins. I said great, what a sustainable idea. He said yeah. He started to draw. Then another boy on his team said can I help with your design? He said yes. Then another teammate wanted to help, he also said yes. He went from working solo to leading a team' Support researcher field notes (Appendix 5).

They continued to work through the banana skin shoes ideas, this developed into shoes that overcame friction and allowed the wearer to slide, making walking more efficient, Insight 3. This participant called the researcher over whilst the facilitator was concluding the session and told them that;

> The design I've done today, I don't think I would have been able to do it at the beginning, but I can do it now' Co-designer age 9 - Support researcher field notes (Appendix 5).

They were showing that participating in multiple co-design sessions had helped the shift towards a collaborative and designerly way of thinking, Insight 2. This enabled them to be a better co-designer. The researchers asked them if they thought they would continue designing? They said yes, they would and that they liked designing. The participants were asked to write a short statement about the workshops at the end of the sessions. This participant wrote;

> 'I would not have been able to use my imagination like this before'
> Co-designer age 9 - Support researcher field notes (Appendix 5).

The student's attitude and the way they communicated at the end of the sessions was noticeably different from the start of the workshop sessions. They had integrated into and led the team that they worked with. Their ideas had been valued by themselves and their team mates and this had helped them be more confident to share and communicate their imaginative ideas, Insights 1 and 3. They were no longer defensive and they had recognised that the process had been valuable to them (Insight 2). They seemed to be happier and more joyful, with a greater sense of well-being

and they had gained agency to be a decision maker in the co-design group. Similarly, these benefits can be seen in the thesis case studies EDP and RIPEN. The EDP participants confidence and well-being were notably impacted and therefore visible and valuable insights that were emphasised in the test bed projects. These effects were also visible in the literature review, Chapter 3 (Sanders and Stappers, 2012; Tassoul, 2012). Data is not available to provide an insight to the longer-term impact on this participant, however, it was their intension to continue to design as they had enjoyed it so much.

Participant 2

Before the start of the first of the three workshops, the University outreach manager who was part of the multidisciplinary research team, informed the author that one of the nine-year-old students had just threatened to smash a chair across their face. This student found themselves often not able to work with their colleagues due to their behavioural issues.

This student separated themselves in the studio from their peers at the beginning of the first workshop. The gentle and slow approach of the cyclical workshops enabled the participants to explore ideas in their own way using their own language and in a non-prescriptive way and gradually, over the three workshop sessions they integrated themselves into the group, this underpinned both Insight 1 and Insight 2.

This student frequently asked the author questions that pushed the boundaries of their normal school activities (The student told the researcher this information). The participant expected the researcher to refuse the requests, 'Can I work on the floor?', Can I take my drink to where I'm working?' 'Can I work on this idea?' Insight 3. The author asked the student what they wanted to do and then said yes of course. This disrupted the child's expectations and instead of walking away and not engaging, which they had done during the beginning of the session they took materials to a space on their own and worked up ideas. Occasionally they would go to look at the rest of their group, talk to them and take the ideas back to their space. They were working in parallel (Insight 2). But were taking opportunities to gently shift towards collaborative working. The author notes that whilst the participant discussed with them an idea that they were focussed on, the student hugged the author and then continued working.

The last workshop session saw this student join their team and work together, they discussed the ideas that they were working up and assigned jobs to each other, Insights 1 and 3. The participants was also gaining in confidence and valuing their own voice within the co-design group. This gave them greater agency in the decision-making process.

This student seemed to have an open and playful disposition before the workshops began, they knew that challenging normal behaviour was what they wanted to do. The workshops provided an opportunity to do this. The combination of insights in section 9.2 helped release this shift in behaviour. In this case the shift required the author to say 'yes' and suspend normal consequences (Insight 3).

Participant 3

Participant three was fully engaged in the workshops from the beginning, they had a very confident and happy disposition throughout the workshop sessions. This participant did not experience changes in the way they thought about design in the same way that the two previous participants did. They experienced a change in approach after the design for real diagram had been explained (Insight 3). The pre-design stage provided this participant with a secure base (Schofield and Beek, 2014; McKercher, 2020) from which to explore multiple design scenarios.

As soon as they experienced Insight 3 the suspension of normal consequences their creative, experimental ideas, were unlocked. They shared their ideas and process of thinking freely with their group and others around them with great enthusiasm and excitement (Insight 1).
This participant, who was already confidence shifted quite comfortably towards a collaborative and designerly way of thinking during the workshop sessions. They gained in confidence and their ability to be a worthwhile decision maker in their co-design group and beyond, influencing the other groups and individuals in the sessions.

Conclusion linking insights to participants.

The data gathered through observations of these participants shows that each experienced the co-design design process differently yet each was impacted and benefitted from taking part. (Chapter 11 discusses possible future research looking at longer term benefits) The benefits of the effects were visible in increased confidence to take part and communicate and to make physical outcomes (Insight 1). Participants shifted gently and sometimes comfortably towards a collaborative and designerly way of thinking (Insight 2). Benefits of suspending normal consequences, Insight 3 were the primary benefit for participants 1 and 2 and 3.

9.5 Multidisciplinary team: Reflection and development workshops

This section looks at how the insights and continuing reflective sessions by the multidisciplinary team refined the 'Design for real' model and honed the explicit language used within it.
The team used the observations and reflections of the researchers after the workshops to establish if the language used to help guide the participants was effective and if there were specific moments that changes in thinking or approach were identifiable.
The Insights 1-3 can be aligned with the categories of the design for real model, Figure 15 as follows;

Insight 1 Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.

Definition – Working together, deciding on success

Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.

Action, ideas and doing
Claim success then abandon

Insight 3 Suspending normal consequences helps to unlock participants creative potential, for example participants being able to experiment with ideas that might not be used, without being held to account.

Fundamentals - Open, play, change

The team were able to confirm that the open and playful approach to change was learned in the first workshop and was then carried through to the following sessions. Definition and action sections were also picked up and carried on to the next workshop. This was evidenced by the participants continually referring back to the diagram and explanation boards. The research team looked closely at how the participants communicated and worked together across the sessions. Participating in multiple, in this case cyclical co-design sessions did help participants to shift towards a collaborative, designerly way of thinking. This informed and shaped the restructuring of the 'Design for real' diagram and language, shown in Figure 9.14.

The research team revisited the model and language during three further sessions after the completion of the test bed workshops. This section discusses the process and ideas that resulted.

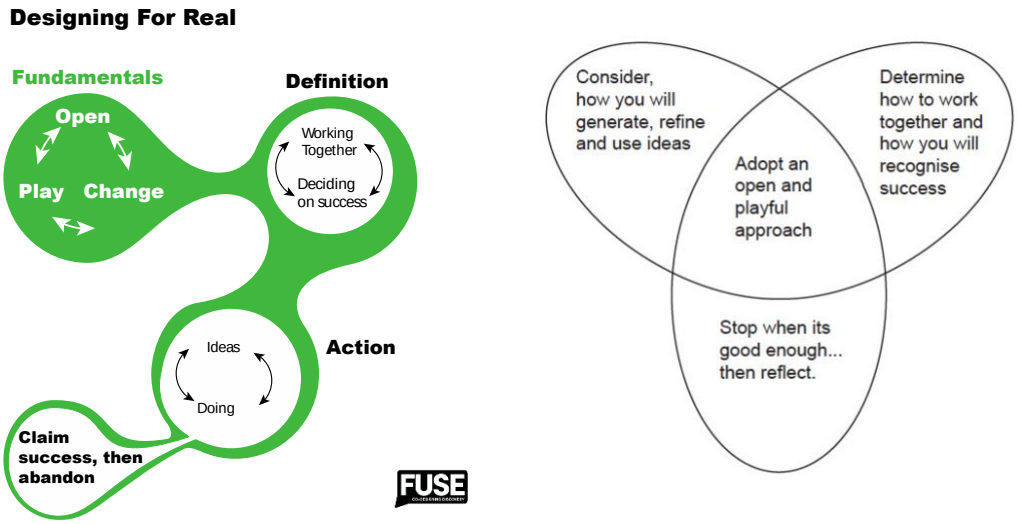


Figure 9.14 Design for real model transition

The Fuse workshops showed that making the language purposeful and explicit provided direction and prompted action. As each participant was shown to weight the benefits and experiences differently the model was developed to enable participants to experience each section to a greater or lesser extent in a less linear way.

The research team shifted from single words or phrases that could be interpreted in an ambiguous way to explicit explanations of action that were accessible for those who might not be familiar designers. The shape of the diagram and the text contained within it was distilled to its most fundamental level that could not be distilled further.

The fully formed model encourages a non-linear structure, it is intended to be applied with multiple points of entry allowing for iterative processes to flow while always adopting an open and playful approach (creative potential). Figure 9.14 shows the shift from the initial model to the fully formed one.

The model was developed with accessibility in mind, providing designers and non-designers with a tangible pre-design mindset or disposition, for entering the co-design process.

The current 'Design for real' model is being tested in a series of co-design workshops that two members of the multidisciplinary team have followed up with the Teaching Assistants from the schools who attended the Fuse test bed sessions. This thesis does not track these workshops.

9.6 Conclusion

This chapter discusses two test bed projects, demonstrating how the insights that helped to shape the design of the 'Project in a Box' the 'Fuse project' were observable throughout both projects. The impact of participating in co-design activity was shown in both projects by tracing the insights across the project activities using observation, participant feedback and semi structure interviews with some teachers who participated. Three participants were used to provide a deeper look at the effects of the co-design activities, helping to uncover the benefits of cyclical experiences, increased confidence and awareness and the impact of suspending normal consequences for individuals and the wider co-design group. This section then goes on to explore how the multidisciplinary research team reflected on both test bed projects. And using the Insights 1-3 the research team then go on to refine and develop the 'Design for real' model using explicit and non-prescription language.

The next section will discuss the research aims of this thesis and the insights that emerged.

Chapter 10 Discussion

10.1 Introduction

This chapter discusses the findings of this research thesis.
Firstly, it discusses the aims that underpinned the research, followed by how and if the research questions were addressed. It goes on to discuss the findings and how the insights from the literature review, the thesis case studies, and the test bed projects contributed to the development of two frameworks that support co-designers and co-design situations.

10.2 The research aims

This research was concerned with understanding the effects and transitional changes in the behaviour of co-designers with a view to further demystifying co-design. This research focussed on uncovering the implicit and often tacit nature of what co-designers do and what co-designers experience. This investigation used the proposition: Understanding transitional changes in behaviour of co-designers has the potential to provide deeper understanding of the implicit and often tacit nature of co-design in a community context.

With three research questions, as follows:

1. How might collaborative design effect participants in a community context?
2. How and when can the effects of co-design be recognised?
3. How do the effects of co-design impact participants behaviour in future projects and everyday activities?

10.3 Summary of the insights

This section provides a summary of the insights gained through this research investigation. There were three insights each of which were supported by eight effects (Chapter 8) that were observed during the thesis case studies in Chapters 5, 6, and 7. These are shown in Table 10.1.

Summary of Insights	
Insight 1	Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.
Insight 2	Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.
Insight 3	Suspending normal consequences unlocks participants creative potential, for example, participants being able to experiment with ideas that might not be used, without being held to account.

Table 10.1 Summary of insights

10.4 Discussion

The following section provides eight points of reflection.

1. Suspending normal consequences;

Suspending normal consequences unlocks participants creative potential, for example, participants being able to experiment with ideas that might not be used, without being held to account; An irreverent mindset helped participants in the thesis case studies (Chapters 5, 6, 7) to change the way they were thinking, this played out similarly in the test bed projects 'Project in a box' and 'Fuse' (Chapter 9).

This was evidenced by participant in the interviews carried out by Leapfrog researchers, as follows;

> 'Leapfrog changed the way we think about working with the community'

And feedback from participant 1 in the 'Fuse' test bed project below;

> 'I would not have been able to use my imagination like this before'

The irreverent mindset emerged as participants began to suspend normal consequences. In the situation of the 'Fuse' project for example, those 'normal consequences' were associated with

school environments, perhaps normal consequences might be, pressure to achieve an expected outcome or a set of boundaries for behaviour or economy of materials. In order to suspend normal consequences, it might help that facilitators should help participants to establish what, normal consequences, might be. Identifying the boundaries of acceptable ways of working and thinking will help the co-designer to purposefully suspend them during the co-design process and search for ways to achieve this. Teachers who were involved in the test bed project 'Project in a box' reported five impactful boundaries;

- Being informal
- Being non-prescriptive
- No assessment
- Not being held to account
- And no comparison to others

Those wishing to plan effective co-design enactments should engage with participants in the stages before co-design happens. Co-designing the co-design, by identifying consequences that might interrupt creative thinking, benefits participants by freeing creative pathways and contributes significantly to participants well-being by eliminating any consequence for thinking the unexpected and therefore risk failure.

Well-being and joyful frame of mind, being essential for creative thinking (Bateson, 2014) the benefit of a joyful frame of mind was evidenced in the EDP (Chapter 6) and RIPEN (Chapter 7) case studies and was observed in the project in a Box test bed project. This builds on the work of Light and Akama (2012) that pushes for greater value to be placed on the emotional contribution of participants in co-design activities. A parent in the Box project observed that their childs siblings had begun to communicate differently in a way that they had not previously seen. The suspension of normal consequences, amplified by Covid-19, providing a situation that strengthened participant's relationships. Participants in the 'Fuse' project were observed to have marked behavioural shifts as they began to suspend normal consequences and their fear of failure and anxiety diminished. The support researcher in the 'Fuse' project notes that one participant designing a pair of shoes significantly changed their behaviour and that of others around them, as follows;

> 'He then told me they are going to be made from banana skins. I said great, what a sustainable idea. He said yeah. He started to draw. Then another boy on his team said can I help with your design? He said yes. Then another teammate wanted to help, he also said yes. He went from working solo to leading a team' Fuse researcher (Appendix 2).

On reflection the participants of the thesis case studies and the test bed projects might have benefitted from the facilitator working with them to co-design the co-design project, prior to engaging in any design activity, specifically to identify boundaries, restriction and consequences of their own unique working practices and environments. Working with participants to establish clear pathways to creative thinking and behaviour would pre-arm those engaging in unfamiliar practices and establish that being irreverent and not doing or thinking what is expected is not just acceptable but is absolutely essential in envisaging the future through co-design practice (Cross, 1982, 2023). The notion of suspending normal consequences can be aligned to the notion of the magic circle (Huizinga, 1949), Salmi and Mattelmäki (2021) posit how design is a realm of play characteristic in a temporary world within the ordinary world. This playfulness is often used in co-design to support participants explore experiences, experiment and be creative. For some participants having the competence to shift between suspending normal consequences and then returning to normal working conditions happened quickly and for others it was a gentler and longer process. The EDP participants (Chapter 6) had a two-year lead in time before they began the co-design enactment for example. Weather participants become competent quickly or over longer periods they all seem to benefit from cyclic co-design activities. The 'Fuse' project showed that the competence to suspend normal behaviour became easier during each of the three workshop sessions, this is evidenced as follows;

> The design I've done today, I don't think I would have been able to do it at the beginning, but I can do it now' Co-design participant age 9 (Appendix 2).

Being a participant in multiple co-design enactments, that support those taking part, to suspend normal consequences, enables participants to shift between mindsets and gently move towards a designerly way of thinking. This competence benefitted the participants well-being and their ability to be effective co-designers. It also made the co-design activities flow more effectively as, in the case of the 'Fuse' participants, they began to approach design issues in the same creative way.

2. Adopt a playful, open approach across all aspects of co-design not just idea generation;

As participants become competent at suspending normal consequences they are freed to think creatively, what designers and design researchers might describe as designerly thinking or designerly ways of knowing (Cross, 1982; Bjögvinsson, Ehn and Hillgren, 2012).

Understanding how to think in this creative way is still very problematic. Facilitators, designers and design researchers use terms like, use your imagination, think creatively and be novel in your approach. These terms are ambiguous and not nearly explicit enough for those who might be unfamiliar with the traditionally arcane practices of design. The thesis case studies, exemplified multiple times in the Leapfrog case study (Chapter 5), evidence participants saying that participating in the co-design project changed the way that they were thinking. This change was recognised by participants and recorded by researchers, however identifying what that change in thinking was not apparent. This definitive explanation of how to think in this way during each of the thesis case studies always seemed to be just out of reach. The multidisciplinary research team who worked on the test bed cases spent a period of 12 months trying to uncover the implicit perhaps tacit knowledge of the designers in the group at the same time analysing the co-design process in the test bed projects. The designers in the group were already competent at shifting between, suspending normal consequences and returning to normal ways of working, this enabled them to adopt an irreverent mindset which made them open to any new ideas and ways of working and they approached this playfully.

The contextual review, Chapters 2 and 3, for example provided some background on being open to new ways of working and thinking and having a playful approach in the creative ideation stages of the design process, however this in not explicit.

The explicit language (Van Dooren *et al.*, 2014) of openness and playfulness have enabled the participants in the testbed cases and the multidisciplinary research team to value this designerly way of thinking, not just at the ideation stages of the design process but across all aspects of co-design practices, open to new ways of working, open to new ways of thinking and open to new ways of evaluating. The multidisciplinary team developed the 'Design for real' model which provided the scaffolding and security for co-design participants to think in a creative way and play a significant role finding a working process prior to the start of the co-design enactment.

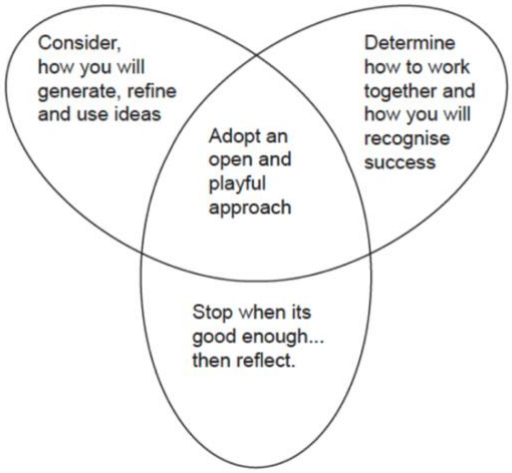


Figure 10.1 'Design for real' model.

The model was a key tool that helped alleviate the unfamiliar co-designer from fixating on the most obvious solutions (Cross, 2023) at the same time providing explicit prompts of how to shift from one situation to a future vision. (Simon, 2019). This model has the potential, pending further research and testing, to provide co-designers with a series of 'prompt' questions that will help to establish a working process. This can be employed prior to design, at the preparatory stages of the project (Yee *et al.*, 2024) and will aid planning co-design enactments for facilitators.

3. Making it easier to create a secure situation for participants; Making sure that the conditions are right for co-designers to participate effectively is essential. The 'secure base for co-designers' framework, shown in Table 10.2 gathers the many threads together that were uncovered from the contextual review (Chapters 2 and 3) the thesis case studies (Chapters 5, 6 and 7), the test bed projects and the workshops that were undertaken by the multidisciplinary team (Chapter 9). The importance of the provision of a secure base for participants is discussed in the cross case analysis in Chapter 8. This builds on the theory developed by Schofield and Beek (2014) which focuses on successful care giving environments.

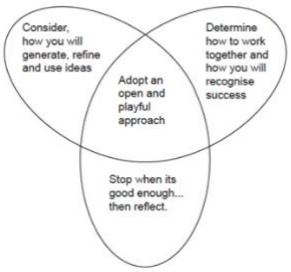
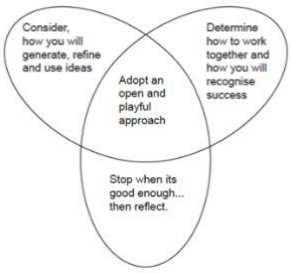
Secure base for co-designers			
Pre-design requisites **Focus on building:** Cyclical co-design activities Explicit and accessible language. Awareness and competence to think in a reflective way. Use of 'Design for real' model  	**Designerly way of thinking** **Focus on building:** Care, togetherness, well-being and emotional security. Experience of tangible outcomes. Suspension of everyday consequences encouraging irreverence. Use of 'Design for real' model  	**Effects of Doing co-design** **Focus on building:** **Confidence:** to communicate, think differently, have ideas. **Awareness:** agency, value of own voice, equality. **Emotional responses (well-being):** Enthusiasm, togetherness, Joy, surprise and excitement**.** **Mindset:** Openness to new ideas, ways of working and change. **Mitigate:** Reliance. Fear. Anxiety.	**Impact** Changes in behaviour or practice Wider horizon as a creative thinker and co-design participant Vison and aspiration.

Table 10.2 'Secure base for co-designer' framework

The 'Secure base for co-designers' supports those who wish to make it easier to plan and deliver co-design activities.

Figure 10.2 shows the 'Secure base for co-designers' framework in Table 10.2 as a distilled model.

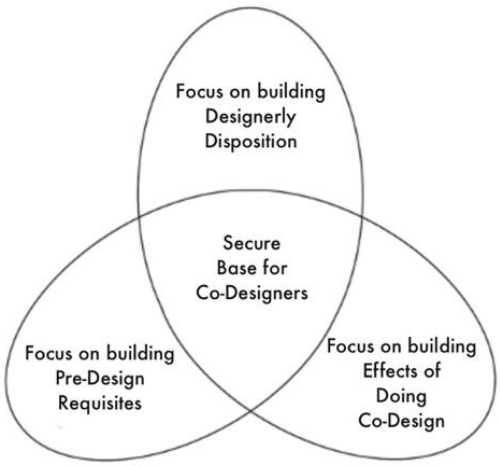


Figure 10.2 Secure base for co-designer's model

Establishing the conditions for co-designers to flourish can be done during a live, real-world project which was seen in the thesis case studies, Leapfrog (Chapter 5), RIPEN (Chapter 7) and the test bed case 'Fuse' (Chapter 9). However, as part of the cyclical co-design process, facilitators might introduce a pre-design period. This lays the foundation for co-design by focusing on removing anxiety, fear of failure and fear of uncertainty. The well-being of the participant playing a significant role in developing the competence to suspend and reinstate normal consequences. This started to be seen in the thesis case study EDP (Chapter 6). Changes in behaviour were observed in participant 3. In the 'Fuse' test bed project. For this participant it was a Gestalt moment. This participant experienced an, 'oh I get it', moment, when the design for real diagram was explained to them. The impact for them of being able to shift between knowing how to suspending normal consequences and returning to normal ways of working was a step change for them. The pre-design stages of co-design have significant impact on participants effectiveness as co-designers and their well-being.

4. Nurture slow co-design condition; Co-design increases self-confidence and self-awareness (Kolb, 2014; Zamenopoulos and Alexiou, 2018a), for some participants this happens in a specific moment all at once, seen in the Leapfrog case study (Chapter 5), for others however it is a gentler and slower realisation that their voices and ideas are valued and worth sharing, seen in the EDP case study (Chapter 6). Persevering with the gentler participants provides a secure and safe environment for challenging and disruptive thinking. The security of care and togetherness (Schofield and Beek, 2014; McKercher, 2020) enables intimate and deep relationships to develop helping to build independence and resilience which makes the co-design enactment a deeply rich activity. Participants 1 and 2 (Chapter 9) in the Fuse test bed project, both benefitted from a

gentle, cyclical approach to collaborative working methods. Being open to new ways of working enabled the participants to engage on their own terms and have agency and control of the co-design situation. Perseverance with participants was a notable feature of the EDP case study in Chapter 6. In this case there was a lead time of two years prior to the design process itself commencing. Perseverance and patience have played a key role supporting participants, enabling their qualities to unfold at a pace that not only has participants well-being in mind but also the quality of the co-design process and perhaps, with further research, the resilience of the participant in future collaborations.

5. Less prescriptive instruction; Providing less prescriptive instruction is shown to make a significant contribution to creative, designerly thinking. Working within an orderly prescriptive framework can lead to the loss of potentially radical creative solutions (Cross, 2023). Less prescriptive activity enables participants to explore and discover unexpected ideas and outcomes (Brewster *et al.*, 2022). This way of working contributes to the suspension of normal consequences. This was seen in the thesis case studies, exemplified by the development and use of open-ended tools used to engage communities and organisation in Leapfrog, (Chapter 5) and similarly developed and tested in 'Project in a Box' and 'Fuse', (Chapter 9) For example, the prompt poster that accompanied the box resource were distilled to three words in most cases.

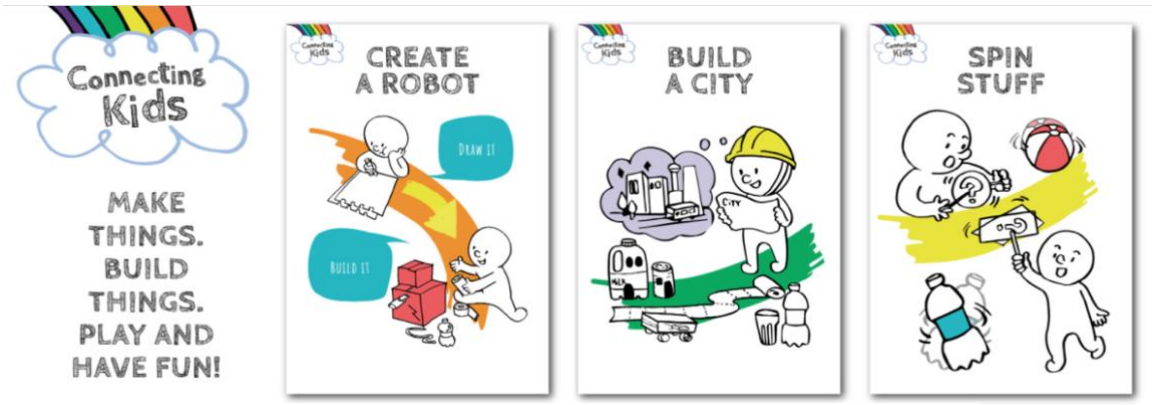


Figure 10.3 Prompt poster from 'Project in a box'

(Chapter 9). They prompted a discovery mindset and removed assessment, comparison to others and preconceived ideas for outcomes. This helped participants to explore without fixating on the most obvious solutions to the issues they faced and eased the fear of failure, making it acceptable to experiment and take risks, contributing to an open and playful disposition.

Recognising how much prescription is needed as scaffolding for the unfamiliar co-designers can be problematic. During the 'Fuse test bed project (Chapter 9) researchers observed participants working ever more independently in the context of the co-design situation. For example, 'Fuse' participant 2 (Chapter 9) began to work independently with a design brief of one short sentence, as they began to suspend normal consequences they worked in isolation. As they gained confidence with the less prescriptive approach, they began to share ideas with the team and eventually integrated fully making a significant contribution. The level of prescriptive scaffolding was right to help the group integrate and work independently and resiliently.

6. Ownership of materials; enabling participants to have control (Bødker, Dindler and Iversen, 2017) over the physical materials and space that they use was a significant benefit. The participants in 'Project in a Box' (Chapter 9) took ownership of the materials and resources that they used, they did not feel the need to ask permission to use them, they were not mindful of any reprimand if others perceived there use as wasteful or inappropriate. The 'Project in a box' participants fed back through the communication channels what other materials they might need in the future and which materials were most useful or not as the case might be. Participants did not rely on others to support their discovery mindset they independently engaged with the activities that were suggested to them enthusiastically (Brewster *et al.*, 2022).

7. Abundant materials; In a similar way to ownership of material having an abundance of materials available for participants in co-design activities relieves them of being precious with limited resources. This contributes significantly to 'suspending normal consequences' for co-designers and encourages being playful and being open to new ideas and ways of working (Ball, Christensen and Halskov, 2021; Cross, 2023). The Fuse test bed project (Chapter 9) shows that participants did not use all of the available resources however, the abundance of materials impacted their creative, designerly thinking mindset, enabling them to be experimental.

8. Freedom and options to decide; Enabling and being open to new ways of working helped to build relationships in the 'Fuse' test bed project (Chapter 9), participants who had agency to make choices about how they worked were never in a situation that they were uncomfortable with. This significantly contributed to the well-being and good mood which provided the necessary mindset for creative, designerly thinking (Bateson and Martin, 2013). As the participants shifted from working in parallel to working in the co-design team, they were able to make confident contributions. Believing in the process and creating a secure foundation for the

inner circle (McKercher, 2020; Salmi and Mattelmäki, 2021) to form naturally helps the facilitator, who might be anxious that the initial stages of the co-design activities are not immediately and obviously, collaborative.

10.5 Conclusion

This section explains how the research in this thesis has addressed the three research questions and the research proposition and has discussed the benefits of co-designing, co-design enactments.

It establishes that the research proposition has been supported and that research questions 1 and 2 have been addressed. It is clear however, that research question 3 has only been partially answered. Although participants expressed their intentions to adopt designerly thinking and co-design approaches beyond the projects this thesis has not established if changes in behaviour experienced in co-design projects do travel beyond the project. The findings from the research thesis have been discussed, their possible applications in the context of co-designing with communities and the implications of their impact.

The 'Design for real' and 'Secure base for co-designers' frameworks have provided explicit narratives that can support the design of co-design projects in the future, contributing significantly to creating the conditions for co-designers and co-design to flourish.

Chapter 11 Conclusion

11.1 Introduction

This section discusses the new contribution this research thesis has made to design theory and practice as well as the contribution to new understanding of existing issues. Following on from this it looks at the potential beneficiaries of the research, highlighting and discussing the possible applications and outcomes. The author brings attention to a number of limitations in this section that were the result of either the unprecedented situation that was brought about by the Covid-19 pandemic, the scope of this research thesis or restriction associated with the thesis case studies in Chapters 5, 6 and 7. Finally, it outlines potential further research areas that have been identified as a result of investigating the effects of doing co-design on participants in community contexts.

11.2 Contribution to knowledge

The literary landscape that is concerned with co-design was explored in the literature review of this thesis, (Chapters 2 and 3) highlighted many of the effects that impact participants in diverse and unique co-design enactments. The seminal works concerned with collaborative design by the likes of Sanders and Stappers (2008), Von Hippel (2005), Manzini (2015), McKercher (2020), and Julier (2013) Salmi and Mattelmäki (2021) all provide valuable insight for those wishing to envisage an equitable and sustainable future for communities and organisations. The co-design literature also provides insight about the value of thinking in a designerly way for business and industry (Bjögvinsson, Ehn and Hillgren, 2012; Cruickshank and Evans, 2012) Others, for example Nigel Cross (2006, 2023) have helped to highlight the lack of understanding that there is currently on how to think in a designerly way.

This research thesis has explored the effects, that taking part in a collaborative design enactment, has on those participating. The author of this thesis identified that there was a lack of understanding of the impact of taking part in the co-design process on participants. For example, participants in the thesis case studies continually referred to their experience as having changed the way that they think (Chapters 5, 6 and 7). However, participants were not able to be explicit about what this change was or what had led to a change in the way that they were thinking. Participants were often able to identify when they began to think differently, this is evidenced multiple times in the Leapfrog case study (Chapter 4) during the participant interviews carried

out by the researchers throughout the project. This section will offer contributions to new and existing knowledge based on the three insights that emerged from the research in this thesis.

Insight 1 Participating in co-design increases self-confidence and self-awareness. For example, participants can be better able to value their own voice and communicate their ideas in the co-design group.

Determine how you will work together and recognise success

Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking.

Consider how you will generate, refine and use ideas

Stop when its good enough and reflect, exit strategy

Insight 3 Suspending normal consequences helps to unlock participants creative potential, for example participants being able to experiment with ideas that might not be used, without being held to account.

Adopt an open and playful approach across all aspects of the project.

This research focussed on making visible the effects of participating in collaborative design situations.

Insight 1 Participating in co-design increases self-confidence and self-awareness. Participants who took part in the case studies 1-3 and the test bed projects showed that the collaborative design situation helped them to be better able to communicate their ideas and also to establish the value of their voice and ideas within the co-design group that they were part of. In some cases, the participants confidence and awareness not only impacted them but also the other participants in their group and participants in other groups that they were not part but who were in proximity during the co-design activities. This insight provides a deeper understanding of the micro dynamics at play in co-design situations, building on the work discussed in the literature review, by Light and Akama (2012) and Akama and Prendiville (2013).

Insight 2 Participating in multiple co-design activities enables participants to experience a gentle shift towards a collaborative, designerly way of thinking. This research has shown that participants who experienced cyclical co-design activities gained in self-confidence and self-

awareness (Insight 1). They were better able to shift competently between normal behaviour and suspending normal consequences and were more likely to adopt a collaborative designerly way of thinking and working (Insight 3). Although a small number of participants experienced a Gestalt moment when they became competent to make this shift, most participants experienced a gentler shift across multiple co-design situations. The participants in the 'Fuse' test bed projects used the cyclical workshops to cross reference learned techniques and bring them together in complex processes as they progressed. Nurturing slow co-design conditions were shown in the EDP case study, to bring crucial benefits to participants who found it challenging to find their voices, communicate and think in a designerly way. Slow cyclical co-design can provide scaffolding to participants who might need more support to engage in the process.

This thesis established that the effects of participating in the testbed co-design situation were identifiable and were able to be tangible. The result of this is two models, 'The secure base for co-designers' and the 'Design for real' model that help those concerned with co-design activities to design and co-design, co-design situations.

The models will help participants to establish a working process before selecting methods, resources and materials. In the test bed projects, in this case, participants were able to recognise and make sense of and evaluate their behavioural changes that previously were either not visible or they were unable to explain.

Insight 3 suspending normal consequences, which helps to unlock creative potential built on the work of Huizinger (1949), Salmi and Mattelmäki (2021) and Vaajakallio and Mattelmäki (2014). The value of adopting a playful approach to collaborative design situations and a mindset that enables participants to experience different worlds of fiction were already established. This thesis research looked more deeply at the effects on participants that enabled this shift from the everyday, towards a designerly way of thinking. The thesis establishes that participants who acquire the competence to shift between normal behavioural patterns and a designerly way of thinking are better able to experiment and explore ideas and then crucially, apply the most appropriate to real world situations. This research makes visible the often-hidden effects of co-design that enable participants to competently shift between worlds. This research also establishes that suspending normal consequences and adopting a playful and open approach helped to strengthen the relationships between co-design participants. In the case of siblings in the Box test bed project and participants in the Fuse project, suspending normal consequences and adopting an open and playful approach enabled those struggling to work collaboratively to find common ground and work as an effective team. This shift impacted not only the individual

participant but helped others in the team to make the shift to a designerly way of thinking and this in turn, in the case of the Fuse project, impacted other co-design groups and individual participants in proximity causing a ripple effect of designerly thinking. Suspending normal consequences also helped to strengthen the multidisciplinary research teams relationships and helped them to find common ground to more effectively work as a co-design team, this is discussed in section 9.4.

Exploring the potential impact of the 'Design for real' model (Cruickshank *et al.*, 2023) was the focus of a conference paper presented at the European Academy of Design held in Bilbao 2023. The author of this thesis wrote this paper with members of the multidisciplinary research team. The paper invites other researchers and designers, not to just adopt the model but offers it as a catalyst to prompt discussion. This paper introduces the 'Design for real' model and positions the model amongst the many existing frameworks that are offered to provide support for those engaged in co-design activities. DOI:10.5151/ead2023-1BIL-01Full-04Cruickshank-et-al

In summary, the contribution to new knowledge that this research thesis has made consists of three strands.

- Cyclical co-design situations of 3 or more enactments were shown to be beneficial for the participants of co-design groups. These benefits also affected other co-design groups in their proximity with a ripple effect.
- This research has provided a distilled, to a fundamental level, approach to doing co-design that can be applied in multiple situation (in the context of UK based community co-design projects).
- This research brings together the effects that participating in co-design can have, from across the literature, the historical case studies and the test bed projects to provide a secure base model that can be used to help design, co-design enactments.

11.3 Beneficiaries

This section suggests the beneficiaries of the frameworks that have been developed as part of this research thesis. The frameworks provide an organised and visible notion of what design is and how to engage in it to get the best possible outcomes in an inclusive and equitable way. They are as follows;

- *The author of this thesis;* The research findings, the 'Design for real' model developed by the multidisciplinary research team and the 'Secure base for co-designers' model developed by the author, have enabled the author to make sense of a process that they had been engaged with for thirty years. It has enabled the author to be a better facilitator and to define and disseminate design practice effectively.
- *Facilitators;* Facilitators working with communities who wish to engage in collaborative design activities will be able to use the 'prompt' questions from the Design for Real model to establish a working process prior to selecting resources, methods and materials. Establishing the working process will help in this selection. They will also be able to use the secure base for co-designers as a guide for establishing conditions for co-designers to flourish.
- *Educators;* Educators at all levels who focus on creative and discovery mindsets will be able to draw on the frameworks for structure and narrative, supporting teaching and learning. The Design for Real model provides explicit language and process for those wishing to explore how to use 'imagination' and be 'creative'.
- *Evaluators;* Evaluators will benefit from the models by using the narrative and the effects from the secure base model, as key markers throughout the collaborative design process.
- *Academics and Researchers;* Academics and researchers who need to understand the collaborative design process and the effects that it might have on participants, which were previously tacit or implicit knowledge held by designers.

11.4 Limitations

This section draws attention to the limitations of this research thesis.

Limitation 1 Thesis case studies

The three thesis case studies that were used in this research had limited data on the effects of the process on the participants of the collaborative design projects. The focus of the case study projects was not necessarily aligned with the research in this thesis.

The author interviewed the principal investigators from each of the three case studies. Interviewing participants however was problematic for two reasons. Firstly, the participants from the project were now dispersed and not easily contactable and secondly the principal investigator

from one of the case studies suggested that the participants had interview fatigue and it would be unfair to pursue their involvement further.

Limitation 2 Test bed cases

Project in a Box; Due to the Covid-19 pandemic this project was problematic capturing data from interviews with teachers, of which there were three. Teachers were exceptionally busy at this time, subsequently researchers had limited access to them to gather data after the project to establish if any effects had been long lasting or embedded. Data was gathered from children and parents using the return channels, usually via mobile phones. This data was also limited however due to the dispersed nature of the project caused by the pandemic situation at this time.

Fuse; The Fuse workshops engaged with sixty children and their teachers and teaching assistants. Data was gathered during the workshops by the author who planned and facilitated the workshops and one other researcher who supported them. The researchers used field notes to record their observations during the events however, the researchers were also facilitating thirty children at a time which limited their ability to make more comprehensive observations.
The limited scope of the test bed project also meant that it was not possible at this time to follow up after the workshops to establish if the effects of taking part in the co-design projects had lasted beyond the event or if the effects had impacted participants everyday lives.

Limitation 3 Coding

The coding for this research was carried out using NVivo Qualitative Analysis Software. The architecture of the codes was constructed by the author who used the literature review and their extensive experience as a practitioner as guidance. The issue of the research being independent of the researcher is recognised as problematic (Gray, 2013; Miles, Huberman and Saldaña, 2018). In this case the author was aware that their perspective might be limited by their own extensive practice working in relative isolation with participants. The author helped to address this issue by inviting the multidisciplinary team who were part of the test bed projects to contribute and critique the structure and language used in the coding activity. This provided multiple perspectives, a senior academic, a linguist, a university outreach manager and another PhD researcher helped to validate the themes and codes used for analysis.

Limitation 4 Generalisability

The claim that this research has the potential to be generalisable needs to be considered in two ways;

- The validity of the research that has been carried out
- That co-design theory is often not easily generalisable

Firstly, the reliability and validity of qualitative research can sometimes come under scrutiny (Gray, 2013). This research used multiple methods to address this issue. The thesis case studies used interviews with the principal investigators, two test bed case studies carried out separately that were unrelated, reflective developmental workshops with an interdisciplinary research team to analyse and validate the findings and five peer reviewed publications.

Secondly, co-design is always a unique enactment with diverse actors in diverse contexts it is recognised that the generalizability of co-design theory is problematic (Llewelyn, 2003; Cruickshank, 2014). This research sort to use three diverse case studies (Chapter 4), two diverse situations for the test bed projects and a diverse interdisciplinary team to reflect on and develop the findings. However, the author suggests that the 'Design for real' model and the 'Secure base for co-designers' could be used to help plan co-design enactments in multiple UK based community contexts.

Limitation 5 UK context

The case studies used in this research and the test bed projects were all based in the UK. They were all led by university researchers. The outcomes of this research have not been tested in diverse cultural conditions outside of the UK.

11.5 Further research

This research thesis has highlighted the need for further research in the following areas.

- Do the effects of co-design impact participants everyday behaviour? Establishing if adopting a designerly way of thinking helps participants to become more confident and value themselves to a greater extent. For example this could benefit those who might need support with self-esteem.
- What are the long-term effects of participating in co-design activities? From this research it has been established that participants experienced changes in their approach to problem solving and working collaboratively. Further research would help establishing if this has long term impacts on behaviour or if the impact is momentary.

- Further validation and testing of both the 'Design for real' framework and the 'Secure base for co-design' frameworks in diverse real-world situations. This research is planned by the author and one other member of the multidisciplinary research team (Chapter 9) and will be carried out in the following two years in multiple community/organisation projects.
- Further demystification of the design process will help greater accessibility to creative designerly thinking. The 'Design for real model' and the 'Secure base for co-designers' have helped to establish how to approach collaborative design at a fundamental level before the clutter of tools, methods and materials are chosen. Further research that considers the ambiguous gaps in design will help to establish equitable process in the future.
- Do the effects of co-design impact participants sense of well-being? There are extensive research projects that explore the benefits of participating in arts and crafts activities that are physical hands on experiences. These activities often help people to explore their thoughts and emotions. However, the research in this thesis has explored methods for establishing environments that help participants to shift the way that they are thinking about problem solving. Further research would help to establish if this has any long-term benefits on mental well-being.

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