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MOBILE LEARNING FOR CIVIC FOOD LITERACY ENGAGEMENT

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To Betsy, Henrietta, Agatha and Punk for sowing the seeds of this work: To Jim for the nurturing necessary for its completion.

Certificate of original authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Student:

Date:

Acknowledgments

Writing a PhD is one thing, but describing how you did it is another. Within the graduate studies support literature, PhDs are routinely described as mountains, marathons, roller coasters, journeys and occasionally something to be 'survived'. Though the odd person will tell you that it is 'just a project' and something to be scheduled and time-managed into submission (quite literally), there is a kernel of truth behind the metaphors. Like a marathon, PhDs are an endurance sport; like a roller coaster they are exciting, as well as unnerving, and characterized by highs and lows. However, my favourite of all they hackneyed doctoral journey stuff has to be the image of a mountain. When I was little I used to go hill walking with my family in the Lake District (UK). To this day I can remember my first hill – Old Dungeon Ghyll. I would have been about eight or nine when I walked up this with my mother. It was not, by any means, particularly high or difficult. But at the time it was challenging and, though certainly not mountainous, as the very first 'peak' it remains the most memorable achievement from that part of my life.

Old Dungeon Ghyll – Not Everest

I can still remember reaching the top and seeing a small flat tarn covered in mist. Standing there it was possible to see where you were. Looking down you could see the

Langdale valley. Looking up you could see higher peaks, crags and sky. There were many similarities between that first hill climb and this PhD – the excitement at the beginning, the moments of exhaustion, the potential to get lost, the joy at seeing the world from a different perspective, and the humbling feeling that comes with recognizing that your childhood mountain was, by even the best standards, very much a hill. However, the most striking parallel between hill climbing and thesis writing is that both are impossible for the single uninitiated person to achieve alone. I would like to thank the many people who, in one way or another, helped to write this thesis.

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Abstract

As escalating rates of dietary disease and environmental degradation are increasingly associated with the contemporary agro-food system, food literacy, that is the knowledge and skills that relate to food, is being recognized as of growing importance. However, such learning remains, for the most part, informally learnt and, to date, poorly understood. This thesis explores informal food literacy acquisition through the lens of mobile learning, which is both a way of learning and a field of inquiry. This perspective can inform the interpretation of existing phenomena, as well as aide in the design of educational initiatives to address new problems. Situated within an interpretivist research paradigm this research uses emergent, qualitative, multidimensional approaches within the context of a case study of a participatory food literacy project, Red Hen Recipes. This project allowed adult learners to explore food provenance by creating and sharing augmented recipes that trace ingredients from 'farm to fork' through text, image, video and GPS map data. The Red Hen Recipes project facilitated food literacy development through learner-centered approaches that were supported by conversational and participatory structures that privileged learner agency. The research used interview and survey methods to explore how people learnt and made meaning through praxis (what people did) and multimodal analysis to examine the semiotics of learner-generated content (what people created). Web and social network analytics data supplemented this and demonstrated wider engagement. Findings from this thesis characterize participants' mobile food literacy learning as one that is situated and embedded within daily life and spans traditional and digital technologies. Mobile devices were critical for people in creating content for their recipe and typically functioned as a satellite to other devices in the individual's wider ICT ecology. Mobile learning was found to be not 'anytime anyplace' but rather a specific time and a specific place within a learner-generated context. This interdisciplinary study contributes to existing mobile learning theory by extending this to new learner cohorts (adult informal learners outside the education system) and new learning problems (food literacy). Since no previous research into mobile learning and food literacy has been undertaken this can be considered a novel contribution. This study also demonstrates the value of slow philosophy within mobile learning, especially for fostering reflection on complex issues such as food provenance. Furthermore, the study develops the construct of a mobile continuum that enables researchers to articulate the ways that learners exercise agency through appropriating personal devices for different tasks in varied contexts.

x

Table of contents

Appendices

List of Figures

List of Tables

Chapter 1: Introduction

> One day the Little Red Hen found a Seed […] she made many inquiries as to what it might be. She found it was a Wheat Seed and that, if planted, it would grow up and when ripe it could be made into flour and then into bread. When she discovered that, she knew it ought to be planted (White Williams 1918, p. 1)

1.1   Chapter introduction

This introductory chapter sets the scene for research into mobile learning as a means of food literacy acquisition with adults in informal settings. The chapter establishes the research problem and rationale by first illustrating the academic and social context into which this study is positioned. Thus, research does not exist in isolation but engages in dialogue with both an existing corpus of scholarly work and a range of pragmatic concerns. After establishing the research problem, the theoretical foundations on which this research is based are introduced. The chapter details the research questions that this doctoral work explicitly addresses and its significance in making sense of mobile learning from a new, and hitherto unexplored, perspective of informal food education. The chapter concludes by outlining the structure of the dissertation.

1.2   Background

> The use of "mobile learning" – learning that is supported across contexts and life transitions – is what learners have always done, using the conventional technologies of books, pencils and notebooks […] Given that learners have had mobile learning for so long it is surprising, then, not that it should be worthy of research now, but that it should *not* have been *until* now. Digital technologies have the effect of acting as a catalyst to a new awareness of the role a technology plays in teaching and learning (Laurillard 2010, pp. ix-x).

In the words of Laurillard (2010) mobile learning is not a new phenomenon, however the ubiquity of mobile devices has not only generated a 'new awareness' of the ways in which learning occurs in mobile contexts, but has led to the emergence of a dedicated field of scholarly interest. In delineating itself through the feature of 'mobility' the field of mobile learning (m-Learning) has provided the conceptual tools for understanding learning that occurs *across* settings (Brown & Sharples 2011) in 'new contexts' (Pachler et al. 2010a) that are often outside the usual jurisdictions of the classroom and aligned with informal learning (Kukulska-Hulme 2005; Laurillard 2010; Pachler 2009). This focus recognizes the ways in which learners 'come to be' in the world (Ranieri & Pachler 2014). Learning that occurs outside the classroom has become a focus within the mobile

learning research literature (McFarlane, Roche & Triggs 2007). Despite its significant accomplishments, mobile learning remains a young field and one that is characterized by a convergence of different research traditions (Pachler 2009), most notably education, computer science and educational technology. To some extent the field inherits not only methodological traditions but also areas of focal interest. Empirical studies, though acknowledging the presence of informal learning contexts, typically have focused on learner cohorts enrolled in primary (e.g. Nordmark & Milrad 2012; Sharples 2000), secondary (e.g. Anastopoulou et al. 2009; Vavoula et al. 2009) or tertiary education (e.g. Beckman 2010; Dyson et al. 2015; Dyson et al. 2009; Taylor et al. 2010) and in supporting Indigenous learners in remote communities (e.g. Hooley, Watt & Dakich 2013; Wallace 2011). Though such studies may explore distance education or the ways in which mobile learning bridges formal and informal contexts, the learners remain tied to a formal program of study. However, with its ability to make sense of learning in informal contexts, the field has expanded to tackle issues with informal learner cohorts in community learning (e.g. Traxler & Dearden 2005; United Nations Education Program 2011), workplace learning (Kondratova & Goldfarb 2006) and citizen inquiry (e.g. Aristeidou, Scanlon & Sharples 2014). Research with learning in the community has begun to explore the ways in which concepts, theories and practice of mobile learning can be used to address and understand the learning needs of those outside of formal education where mobile learning is 'a part of everyday learning' (Kukulska-Hulme & Sharples 2009, p. 159).

This doctoral research explores mobile learning in the context of food literacy acquisition through a case study with members of an online community. Food literacy is a recent term used to describe the knowledge and skills needed to source and prepare food (Vidgen & Gallegos 2011, 2012) and the wider understanding of the impact personal food choices have on individual health, the environment, and the wider community (Food Literacy Center n.d.; Harvard Food Literacy Project 2013). Though food is an essential physiological, cultural and social component of human life, public understanding of food and the wider agro-food system varies. Within the agricultural-food system literature, the mainstream food system has been described as in a state of break down (Blay-Palmer & Donald 2008, p. 1): 'escalating rates of diabetes, cancer, obesity, food miles, farm income crises and growing food insecurity are just some of the

problems identified with the current food system.' Despite the host of societal implications, understandings about food are typically garnered through informal means. Community initiatives have attempted to address some of these issues, with food literacy becoming an explicit educational goal for programs across Europe (e.g. BEST Institut für berufsbezogene Weiterbildung und Personaltraining 2006), the USA (e.g. Food Literacy Center n.d.; Harvard Food Literacy Project 2013; The Food Literacy Project 2010) and Australia (Cullerton, Vidgen & Gallegos 2012). Though face-to-face and community learning are important for addressing food literacy, such initiatives have their limitations and often lack the theoretical or conceptual basis from which to understand learning that typically occurs across contexts and life stages of the individual.

In attempting to understand the ways in which this learning occurs across and within different contexts this research extends our understandings of mobile learning and food literacy development. The benefits of this approach are twofold. In a socio-technical environment, where people are learning about food informally, the field of mobile learning offers researchers the conceptual and linguistic platform from which to explore *how* such informal food literacy occurs and to what extent this is technologically mediated. Secondly, by extending mobile learning research to new unchartered territory this research offers a way to explore a burgeoning discipline with new contexts, new learner cohorts and new problems.

1.3 Theoretical foundations

Within this study mobile learning is conceptualized as a social, cultural and contextual phenomenon (see Pachler 2009) and food learning characteristically situated and embodied (Lyons 2009), and occurring in everyday contexts (Jubas 2011). Conceptualized in this way, the focus is on the individual's lived experience and the learning processes, not the technologies that they use. The researcher argues that the phenomenon of interest is best addressed through interpretative and qualitative methods of inquiry that privilege human meaning making (Schwandt 2000) over quantitative metrics. This research paradigm best suits the needs of the study. The interpretivist theoretical foundation allows the researcher to contribute rich descriptive

understandings about mobile learning and food literacy development in ways that acknowledge the agency and perspectives of individual learners. Secondly, in using qualitative methods the researcher is better able to explore new and unchartered territory, where the important variables still remain unknown. The epistemic foundations of this study assume that knowledge is unavailable for empirical collection and only understood (*interpreted*) as a construction formed by all social participants, including the researcher (Orlikowski & Baroudi 1991). Congruent with this theoretical commitment, the study adopts emergent research design practices (Lincoln & Guba 1985), in which methods are developed sequentially and iteratively in response to what is learnt at each stage of inquiry. Research questions are not static but evolve through 'progressive focusing' (Stake 2010), which is a recursive process by which findings and research questions iteratively inform one another over the duration of the study. This approach acknowledges that the researcher cannot know in advance what they do not know, while recognizing that findings derived through the dialogic interaction between researcher and participant may legitimately change the course or direction of the study. This approach is responsive to the human interactions and conversations that are at the heart of this research (Erlandson et al. 1993).

1.4   Motivations and aims

The study orientates itself within the scholarly fields of mobile learning and food literacy research. Data is framed and understood in terms of meaning making and learning. Though, like most research, the research problem and questions are derived from gaps in the literature (Chapters 2 & 3), this study is not solely driven by intellectual curiosity but rather recognizes the pragmatic need for more 'food literate' communities. As such, this project, like many educational research projects, can be considered to be both basic and applied research (see Blaikie 2010). This means that the research aims to generate outcomes that contribute fundamental knowledge of the social world and educational approaches ('basic') and knowledge that is applicable to practitioners ('applied'). Though this project focuses on food literacy education, in exploring environmental concerns around food provenance its findings may have relevance to practitioners working on other environmental awareness programs.

1.5   Research methods

This research explores mobile learning of food literacy with an informal adult learner cohort. Empirical research takes place in two stages: a preliminary study (Chapter 4) and a main case study (Chapter 5). The exploratory preliminary study was used to generate broad and grounded understandings of the problem area and context and was comprised of fieldwork, interview research and design methods. The preliminary study was also used to generate tentative research questions through which the main case study was guided. Emerging from the preliminary study and design work was Red Hen Recipes, a food literacy project that allowed individual members of the public to create and share user-generated, multimodal, augmented 'farm-to-fork'[1] recipes. Participants were recruited through print, broadcast and social media, with public interest in the project *preceding* the launch of the project. As part of the Red Hen Recipes project, participants created 'Red Hen Recipes' using a browser-based authoring tool through which they could chart the story of a single ingredient from 'farm' to 'fork' using map data, photos, videos and written text. The Red Hen Recipes project was treated as a case study, the bounds of which allowed the researcher to address the amorphous phenomenon of informal mobile learning that is characteristically difficult to research due to its informal, personalized and situated nature (Traxler 2009). The single case was explored through several different data sources that aimed to understand how learning occurred through *creating* and *sharing* user-generated content *and* through *viewing* content generated by others in the online community. In line with the emergent research design, each stage of data collection was informed by findings from previous stages. The case study included: survey instruments, semi-structured interviews, multimodal artefact analysis, and data from web and social media analytics. Analysis of text data was typically by thematic coding (e.g. Bazeley 2013; Saldaña 2009) and supported using traditional handwritten methods and QSR NVivo software. Interview transcripts were also subject to narrative analysis and interview case comparisons. Multimodal analysis of visual images and user-generated content was supported by

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[1]   Farm-to-fork: This concept is about following a single ingredient from its origins in farms or gardens through to its use within a prepared dish.

Kress and van Leeuwen's (2006) visual grammar. Understandings from both the preliminary and primary case study were further supported by an ongoing literature review (Chapters 2 and 3) and continual reflective researcher practice (Chapter 7).

1.6　　Research questions

Derived from the research topic and problem, and developed through progressive focusing *throughout* the study, this dissertation addresses the following four research questions:

1. What is the impact of the Red Hen Recipes project on enrolled participants' understandings and beliefs about food provenance and their wider food literacy?

2. How do adults within informal settings acquire food literacy through the practice of mobile and non-mobile learning?

3. In the context of the Red Hen Recipes project what role does the mobile device and the wider ICT ecology have in facilitating or shaping this learning experience?

4. How can we best describe adults' mobile meaning making within the contexts of this project?

1.7　　Contributions

The main contribution of this thesis is the extension of mobile learning research to new learner cohorts and learner problems. In addressing the four research questions (Chapter 8), findings from this study both *support* and *extend* concepts and theories from both the mobile learning research agenda and early understandings of food literacy. Each of these contributions is briefly described in the following sections.

1.7.1　　Extension of existing mobile learning theory

This study supports and reinforces existing concepts of mobile learning, albeit within the unique conditions and context of this study. Concepts such as conversational learning (Crompton 2013; Sharples 2002) and socio-ecological frame of mobile learning (Pachler, Bachmair & Cook 2013; Pachler et al. 2010a) provide the best theoretical constructs for making sense of the data that emerged from this study. Findings support

existing research from mobile learning theorists and demonstrate the applicability of these concepts and frameworks to alternative contexts and problems.

1.7.2　Perspectives of alternative learner cohorts

Mobile learning has often been linked to informal learning. However, studies with exclusively *informal* learner cohorts, that is persons who are not affiliated with a formal educational program, have been peripheral to the main mobile learning research agenda. This study contributes to the growing body of knowledge that seeks to understand mobile learning with informal learner groups.

1.7.3　Mobile technologies and the continuum of devices

In adopting an ecological concept of digital devices (Brady & Dyson 2010) and its application to mobile learning and new literacies (Frawley & Dyson 2014a) this study was able to focus on the relational properties of different technologies. Findings from the empirical study formed the basis for the development of the aerospace metaphor of the 'mobile continuum' described in detail in Chapter 8. This contribution provides the language for describing the different functions and appropriations of different learner-owned devices and navigates the problematic territory that mobile learning routinely faces when attempting to discuss the mobility of devices without resorting to earlier technocentric mobile learning definitions. In presenting the concept and metaphoric language for talking about devices' relational properties, this study offers an approach that acknowledges both the device's affordances and how it is appropriated within the life world of the user.

1.7.3.1　Slow learning philosophy

This study explores the value and challenges of slow philosophy within mobile learning. Though this concept has been previously explored in other disciplines, as far as the researcher is aware, it has not been discussed in relation to mobile learning. This study of mobile learning and food literacy is an appropriate point from which to commence consideration of slow learning, given the origins of the Slow Philosophy in counter-cultural movements such as the Slow Food Movement (see Petrini 2001). Furthermore,

since time is a fundamental component of existing mobile learning, concepts around fast and slow learning are valuable points of discussion. Though this study is cautious of using terms like 'fast' and 'slow' as polar concepts, this is an area that constituted a significant outcome of this particular study and highlights the ways in which individuals experience time as 'fast' or 'slow' within mediated and blended learning environments.

1.7.4   Food literacy acquisition

There has been very little in the way of research into the acquisition of food literacy, through mobile or incidental learning approaches. This study explores the social phenomenon of incidental learning in this place and the role that technologies have in supporting this. Since, no study into mobile learning and food literacy has been undertaken this can be considered a novel contribution.

1.7.5   Application of a multimodal analytic approach

With notable exceptions (Frawley & Dyson 2014c; Pachler et al. 2010b) the majority of visual and multimodal analysis has been conducted on expert-generated content. In doing this, existing research continues to privilege expert-generated content in a user-generated world and surreptitiously reinforces research into learning that emphasizes the educator's role in didactic transmission models. In applying multimodal methods to user-generated content within an educational setting this research demonstrates how such methods can be employed to make sense of what learners *make* or *create* within participatory communities of practice.

1.7.6   Educational food project: infrastructure and technologies

This study has contributed the technologies and initial resources for an ongoing food literacy project, in both the project design, website, Facebook page and initial momentum. Though not a research outcome, this can be seen as a practical contribution to addressing food literacy within communities, and one that can be extended to future learners and cohorts.

1.8   Dissemination and research output

Since the study began in March 2012, research relating to informal m-Learning, multimodal analysis and food literacy has been disseminated in six peer-reviewed publications, four media broadcasts and a public lecture. The researcher has also received nine awards and commendations. This dissemination and recognition is included in full in Appendix A of this dissertation.

1.9   Dissertation structure

This dissertation is organized into the following chapters:

- Chapter 2 reviews the literature on food literacy and the wider agro-food system and establishes the problem context for the research. In particular, this chapter focuses on approaches that understand how *individuals* make sense of food information within the wider context on the contemporary food system and how concepts of 'food literacy' herald the introduction of learning and education in this area. The chapter reviews the existing definitions and applications of food literacy learning and highlights the gaps within the literature.

- Chapter 3 reviews the literature on mobile learning, focusing on approaches relevant to understanding mobile learning's role in supporting informal and incidental forms of learning. As such, it sets forth an understanding of the proposed tool for tackling the problem of food literacy detailed earlier in Chapter 2. Gaps in the literature are presented at the end of this chapter.

- Chapter 4 describes the research methodology. This chapter presents the research topic and problems, theoretical commitments, and the empirical research design for a preliminary and a major case study. The chapter also describes the ethical risks associated with the research and the approaches used to manage these risks over the lifetime of the project.

- Chapter 5 presents findings from the preliminary study and demonstrates how these findings informed the design and development of the Red Hen Recipes case study.

- Chapter 6 presents findings from the main case study. This includes survey and interview data, multimodal analysis of the user-generated content, and analysis of data from web and social media analytics.

- Chapter 7 presents relevant findings from the researcher's reflective practice. This chapter accounts for the position of the researcher within the study. Though short, this chapter is a critical component for a study orientated within an interpretivist research paradigm.

- Chapter 8 concludes the dissertation by presenting a discussion of the findings from the study and how they address the four research questions. This chapter relates the findings from the study to the research from the wider body of literature on food literacy and mobile learning. The chapter highlights the study's contributions to the body of knowledge, its limitations and offers suggestions for future work.

1.10   Chapter conclusion

As an introduction, this chapter zooms out so as to afford the reader a roadmap to the topics, research problems and written structure that this doctoral dissertation explores. Contrary to this, the following chapter requires the reader to zoom back in, so as to begin the research narrative. In depicting the landscape of the contemporary food system and the challenges of food literacy Chapter 2 goes back to the problems and relevant scholarly literature that first precipitated this research.

Chapter 2: Food and everyday learning

The emergent industrialization of the food process leads to an iteration between increased urbanization, growing distances between people and their food, and the scaling up of what will become the food industry. It emerges that as the industry grows, so do the problems. As a solution, the abiding faith in technology leads to more growth and consolidation (Blay-Palmer 2008, p. 18).

2.1　　Chapter introduction

> Culture is ordinary: that is where we must start. To grow up
> […] was to see the shape of a culture, and its modes of
> change. I could stand on the mountains and look north to
> the farms and the cathedral, or south to the smoke and the
> flare of the blast furnace making a second sunset. To grow
> up in that family was to see the shaping of minds: the
> *learning* of new skills, the shifting of relationships, the
> emergence of different language and ideas (Williams 1989,
> p. 3)[2].

If culture is ordinary, so too is food. Though embedded within commonplace experiences of shopping, cooking and eating, food surreptitiously positions the individual at the cross-section of a series of complex natural, biological and industrial systems. In opening this chapter with a quote from Williams' (1989) essay 'Culture is Ordinary' the researcher re-appropriates the image of one person standing at the intersection of the natural, pastoral, industrial and domestic contexts and the informal learning that occurs within and across such spaces. This image conveys the essence of what it means to talk about 'food literacy' and the ways in which this is depicted through the literature. What this chapter routinely emphasizes is the dual role of food, both as part of an integrated, global network of agribusinesses, suppliers, distributers and retail industries (Ilbery 2005) and as part of a set of personal, social, subjective and embodied experiences fundamental to activities such as eating (Fischler 1988). How individuals construct knowledge and learn about food is something that has received attention from researchers and practitioners across several fields of scholarly inquiry.

This chapter reviews literature relevant to food literacy development and aims to orientate the reader to the academic and social context in which this dissertation is placed. Literature in the chapter is reviewed in two parts, each with a different focus. The first provides a broad illustrative overview of the contemporary agro-food system, its primary issues, and the way it has come to be conceptualized. This affords the reader a topographic overview of the agro-food system in order to better understand the landscape that learners inhabit. In covering a wide and varied field of interest, this

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[2] Researcher's emphasis

section forsakes depth over breadth. Having established the context and problems associated with the agro-food system, the chapter then demonstrates a shift in the literature towards 'learning', as indicated by the emergence of the term 'food literacy'. This section provides an in-depth review of food-literacy definitions and existing educational programs. Structured in this way, the chapter adopts both broad and narrow foci so as to best position this research within its wider academic and social context. The chapter closes by highlighting gaps within the literature and areas for future work.

2.2 The agro-food system

The contemporary food system is one of increasing paradox. Whilst becoming increasingly global and industrialized, so too there is a growth of counter-trends towards local food (Mirosa & Lawson 2012) and 'alternative' food systems that, with labels such as 'organic', 'free-range' and 'artisinal', differentiate themselves from a mainstream system increasingly seen to be in a state of crisis (Blay-Palmer & Donald 2008). A range of social, environmental, ethical and dietary concerns with the mainstream agro-food industry has given rise to 'alternative' food choices and food networks (Anderson 2000; Magdoff, Foster & Buttel 2000; Maye, Holloway & Kneafsey 2007; Whatmore & Thorne 1997). However, the division between the two is not always straightforward, with alternative food systems often struggling to escape some of the problems that they initially set out to counter (Guthman 2003). This section illustrates the ways in which people in neo-liberal communities come to understand the agro-food system, and how alternative food networks, systems and discourses emerge from existing concerns with mainstream food provision.

2.2.1 The mainstream food system

The contemporary food system is described as one that has gone through a steady industrialization process. Within the agro-food literature, this system has been described as in a state of break-down (Blay-Palmer & Donald 2008, p. 1): 'escalating rates of diabetes, cancer, obesity, food miles, farm income crises and growing food insecurity are just some of the problems identified'. Though public interest in food has

gained momentum over the past thirty to forty years, the modern food system and its problems are uniquely contemporary (Blay-Palmer 2008). As world population increases agriculture is under increasing pressure to produce more food to feed more mouths, and consumer expectations for cheap food drive supermarket competition and intensive farming methods (Anderson 2000). Industrialization of food, and the 'scientific turn' in agriculture has meant that agriculture has often taken a scientific path and solved discreet problems without considering some of the ethical problems emergent with this (Zimdahl 2012). Intensive farming, chemical inputs, machinery, and agricultural science have allowed farmers to increase their productivity: as the system becomes more industrialized it becomes more internally connected with agribusinesses (Kneafsey et al. 2008). By contrast, public feelings of disconnect are a product of this system, with a divide in knowledge between the majority of consumers and the people and places that produce their food (Kneafsey et al. 2004). Though part of an industrialized system, food production and consumption remain organic and metabolic in nature (Fine 1994).

2.2.1.1 The socio-geographic landscape

Within the mainstream food system of a developed 'post-industrial' country, such as Australia, the interface between the personal experience of food preparation and the origins of the food, its 'pre-supermarket story', is made more oblique by wider changes in lifestyle. Though not to be seen as causal determinants, contextual factors nevertheless influence and shape how individuals perceive and engage with food and the wider food network. Major contextual factors, the *where* and *how* people live, are described here.

Where people live

Urbanization means that an increasing number of people are dependent and reliant on others to supply food (Anderson 2000). However, to understand what this means we need to define urbanization and its particular affect on the mainstream food system. Australia, like many other developed countries, has undergone a steady process of urbanization. In 'the 1930s agriculture accounted for about one-quarter of Australia's employed and gross domestic product [...] by the 1980s no more than one-fifteenth of

the Australian society was rural' (Symons 1982, p. 242). Australia is described as an increasingly urbanized country (Australian Bureau of Statistics 2010; Pink 2012), with 68% of the population living in major cities (Australian Bureau of Statistics 2008). Though the Australian Government uses population density as the main marker for formally defining the urban from the rural (Pink 2012), static markers such as these often fail to account for the interaction, interlinkages and movement of people and resources between the two (Tacoli 1998): people living in urban settings rely on rural resources whilst those in rural areas do not always participate in agriculture (Tacoli 1998).

Though statistical definitions of rural, urban and peri-urban environments suggest clear categories that may be problematic, there is still utility in these terms, especially in discussing what changes in living might do to people's perception of food. Margaret Fitzsimmons (1989, p. 108), a sociologist, defines urbanization differently from the statistical approach in her seminal paper 'The Matter of Nature':

> Urbanisation is a process of reconstitution of the relationship between humans and the material world of everyday life, just as it is a process of reconstitution of social space. I refer here to that great historical and geographical differentiation which is, particularly in capitalism, a crucial aspect of the movement of history and the construction of geography, as we know it.

Understood in a way that accounts for how people *experience* the world around them, and how urbanization affects the individual, we can see that in increasingly urban countries like Australia, individuals construct urban relationships with the world around them, which may distance them from nature. Urbanization thus not only spatially distances populations from the source of their food, but also culturally distances such populations. From this perspective, food may often be *perceived* to be a rural issue and agriculture an increasingly specialized activity (Pothukuchi & Kaufman 1999).

How people live

Populations may not only be geographically separated from the origin of their food, but may also be separated from the preparation of their food. Anderson (2000) argues that

as the number of families where both parents go out to work rises, people may be less likely to prepare their own food with basic ingredients. In addition to a wider trend of women entering the workplace and an increase in families with two parents working, in the past decade Australia has seen an increase in mothers in the workplace (Baxter 2013). This change in lifestyle means that many people are time poor. The 1960s and 1970s saw a shift in cooking from out of the home and into the factories of multinational food corporations (Symons 1982). New 'convenience' foods such as snacks, quick meals and 'fast foods' entered the market and disrupted habits focused on three main meals (Symons 1982, p. 228). Though time saving foods such as fast-food have, more recently, been negatively associated with the rise in health problems such as obesity (Kouris-Blazos 2011), it is important to recognize the ways in which such foods empower people, with food production and preparation now occupying a smaller proportion of individuals' daily work and time compared to previous epochs (Laudan 2001).

Changing family structures and food habits have evolved simultaneously with changing household expenditure on food. In developed countries the proportion of household income spent on food has declined (Appleby et al. 2002). Though current consumer demand for cheap food is one factor (Anderson 2000), the individual member of the public is not the sole driving force for this change. Rather, changing household expenditure is also driven by public policy that has supported cheap food and emergent 'competition between producers and between retailers' (Appleby et al. 2002, p. 396).

2.2.1.2   The system and the individual

Though within the agro-food literature there has hitherto been a tendency to study the food system and the consumer separately, the literature demonstrates a turn towards a focus on interactions between these parties (Lamine 2005). Frequently adopting actor network theory, this literature emphasizes how individuals interact with the food system (Goodman 2004; Goodman & Watts 1997; Lamine 2005; Lockie & Kitto 2000; Marsden 2000; Whatmore & Thorne 1997). This means 'looking at how buying, cooking and eating practices can be taken into consideration simultaneously with modes of producing and selling, thereby affecting the configuration of production and distribution networks' (Lamine 2005, p. 325).

A complex commercial multi-agent system

Structurally at least, the contemporary food system can be described as highly integrated in its network of agribusinesses, suppliers, distributers and retail industries (Ilbery 2005). Large supermarket chains are increasingly connected to producers and other actors in the commercial food system. In Australia, supermarket and grocery expenditures have historically accounted for the majority of total retail expenditure on food: with Woolworths, Coles Wesfarmers, and the Independent Grocers Association (IGA) dominating the market (Department of Agriculture Fisheries and Forestry 2013)[3]. Whilst IGA's independence allows individual stores more freedom to source local produce and work with smaller producers, the duopoly of Coles and Woolworths works largely with industrial producers or agri-businesses. Australia's food retail industry can be described as an aggregate of Australian and global produce. Despite the fact that the majority (98%) of *fresh* food sold in Australian supermarkets is grown and produced domestically (Department of Agriculture Fisheries and Forestry 2012) there is an increasing dependence on *processed* foods (e.g. canned, tinned and prepared food) produced overseas (IBIS World 2015). The food sector is thus affected by 'increasing globalization of food production and retail markets' and 'the effects of the economic situation' (Spencer & Kneebone 2012, p. 4). However, as with all aspects of the agro-food network, this system is also affected by what individual consumers do: their sentiments, spending trends and preferences (Spencer & Kneebone 2012). Though consumer food choices may reflect a wide range of tastes, values, beliefs and cultural preferences that are discussed in more detail throughout the chapter, these consumer choices necessarily engage in decisions that are bound by cost constraints (Lyons 2009) that a commercial system imposes. Whether resulting from public policy and market competition (Appleby et al. 2002) or consumer pressure (Anderson 2000), drivers towards cheap food ultimately affect how food is sourced, produced and the types of food made available for consumption through mainstream retailers.

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[3] For readers outside of Australia, some suggested equivalents to these large supermarkets are: Tesco and Sainsbury's (UK); Albertsons and Trader Joe's (USA); Auchan (Europe and other parts of the world).

Food fears

Specialization, globalization and industrialization have combined to distance people from the intellectual, geographic and cultural origins of their food. As a result of this the public necessarily consumes food that, as Cook, Crang and Thorpe (1998) identify, often has a biography too complex to be practically traced, rendering the public dependent on a system necessarily governed and ensured by others. However, public confidence in this largely invisible system is frequently disrupted by high profile food scares such as the 1996 BSE crisis ('mad cow' disease), the 1999 dioxin contamination of poultry in Belgium, debates over the safety of genetically modified crops. More recently, in 2015, Australia suffered an outbreak of Hepatitis A resulting from frozen berries sold sourced from South America and China (Department of Health 2015). These scares undermine public trust in a system that is largely obscured from view (Anderson 2000). As Anderson (2000) notes, the arrival of BSE in the UK in the 1980s was a turning point in consumer awareness:

> Few urbanized consumers realized that intensive agricultural practice involved using animal derivatives in feeds for herbivores. For many consumers this may have been the first time that they had considered the ethics and manner that their food was produced in, despite the work of environmental pressure groups.

In 1996 the UK government announced the link between BSE and the human version *Creutzfeldt-Jakob disease* (CJD). News articles are windows for what can be seen as a public awakening to food concerns. *The Times* article entitled 'What have we been fed?' (Scarfe 1996) reflects both a questioning of the assurances of the food regulatory bodies and a certain unquestioning passivity in public eating habits. Anderson (2000) notes that the *perceived* health risks posed by high profile food scares may be disproportionate to the *actual* health risk posed. However, the affect of health scares that originate from agro-food production undermined public trust and emphasized the gulf between the food industry and the lay public (Anderson 2000).

Though many food scares hinge upon a perceived risk to human health, others threaten cultural identity or religious practice. Most recently, European beef was found to be contaminated with horse meat, pork and chicken (Food Safety Authority of Ireland 2013). In this example, public reaction to this food scare was not motivated by

concerns around personal health (e.g. horsemeat is dangerous to eat) but cultural norms (e.g. *we* do not eat horsemeat). As James (1996, p. 78) notes:

> acts of consumption register ideas of edibility through delimiting conceptual boundaries around that-which-can-conceivably-eaten within any particular culture, which is but a selection made from all-that-is-possible-to-eat. Through this, cultural differences of identity are mapped out: '*we* eat horsemeat they don't; they eat grasshoppers *we* don't'.

From this perspective, the 2013 horsemeat contamination can be seen as a food scare that threatens individual cultural identity over health concerns.

Whether provoking health or cultural anxiety, food scares raise questions within the public consciousness over the methods of food production. Responses from the food industry and government bodies through public communication are typically aimed at 'educating' the public (Anderson 2000). However, this education is largely didactic in nature: it is 'as if a simple statement of the facts is all that is required to get them to see the scientific point of view. All parties will only understand the concept of risk if they enter into *dialogue* with each other and *participate* in the risk evaluation process' (Anderson 2000, p. 260)[4]. The need for civic participation is further emphasized by Jasanoff (1997) who highlights that approaches that leave little room for lay inputs can arguably 'carry the seeds of civic dislocation' as citizens, distrusting experts and public bodies, look to other sources of information for reassurance (Jasanoff 1997).

Subjectivity and situated knowledges

Though agriculture and food production have taken a 'scientific turn' (Zimdahl 2012) individual understandings of food are not solely shaped by scientific knowledge. The human relationship to food has long been complex and bound to concepts to concepts of self and identity. Individuals and groups construct themselves biologically, psychologically, and socially by the food they choose to incorporate (Fischler 1988). The act of eating crosses the barrier between 'outside' world and 'inside' body: 'we become what we eat' (Fischler 1988, p. 279). Individual food choices have continually reflected

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[4]   Researcher's emphasis

cultural, social, and economic values (Ferguson 1998; Guthman 2003) with tastes frequently defining social rank and individual identity (Bourdieu 1984). For the individual the experience of food, especially the act of eating, is a personal and embodied one, with acts of consumption embedded in 'relatively inconspicuous routines occasioned by the characteristically mundane socio-technical systems of everyday life' (Shove et al. 2007, p. 10). Food reinforces individual and collective cultural identity (Hartwell, Edwards & Brown 2011), elicits emotional responses such as memories of home, holidays, or nostalgia for past times (Verbeke & López 2005) and is constructed through individuals' diverse identity roles as parents, food-shoppers, cooks and gardeners – and thus shaped by a range of non-scientific knowledge claims and embodied experiences (Lyons 2009). Individual food interactions can encompass situated knowledges. Situated knowledges are defined by Donna Haraway (1988) as knowledge that is embodied, partial, and embedded in language, culture, traditions, and community. In contrast to the disembodied objectivity of scientific knowledge that is often presented as emerging from nowhere, situated knowledges are 'views from *somewhere'* and constructed by the 'joining of partial views and halting voices into a collective subject position' (Haraway 1988, p. 590).

The personal and situated nature of food interactions has implications for the ways that people seek out or avoid information around food. Cook, Crang and Thorpe's (1998) empirical study with twelve households in London (UK) found that there was an ambivalence towards knowing the biographical and geographical origins of food: consumers felt they needed to know the origins of their food but also had an impulse to forget. The complexity of the food system meant that the biographies of the food we eat are often opaque, meaning that ascertaining the biography of any given food is difficult (Cook, Crang & Thorpe 1998). Similarly, whilst agricultural practices are typically informed by science Lyons' (2009) found that Australian adults' reasons for buying organic food were motivated by concerns for the environment, which was often conceptualized by participants *symbolically* (e.g. raw, healthy, political) in ways that represented values and beliefs about food, over the biophysical markers (e.g. water, soil, biodiversity) of the environment that are prevalent in environmental public policy and discourse. What is important to recognize is the disconnect that can occur as information shifts between these two spheres.

Dietetics and food modernism

The word 'diet' comes from the Greek *diatia* meaning 'way of life'. The science of dietetics has existed since Hippocrates. In the Middle Ages, cook books combined dietary advice with recipes, 'since health depended on the proper use of food' (Toussant-Samat 2009, p. 680). Within Australia diet and nutrition are treated as a public, as well as a private, issue. In 1936 Australia established the Commonwealth Advisory Council on Nutrition specifically to undertake scientific investigations into human nutrition in Australia: this has been described as 'a major milestone in the history of nutrition in Australia' as it demonstrated government concern for the issue (Clements 1986, p. 86). The research undertaken by the Advisory Council on Nutrition comprised of examining: 1) domestic food consumption 2) nutritional status of children living in inland Australia 3) the nutritional status of children living in Sydney and 4) the chemical composition of food. The results of this was that the Australian people, with the exception of some cases of rickets in some children living in the capital cities, were largely found to be 'well nourished and well developed' (Advisory Council on Nutrition 1936, p. 5).

In matters of health and nutrition there have been noticeable shifts in the type of nutritional health issues that receive attention. The main concerns of the 1950s sought to prevent dietary deficiencies and under nutrition (Wahlqvist 2011). However, contemporary dietary advice is largely focused on the prevention of chronic diseases such as diabetes, heart disease, obesity and cancers, many of which are the major cause of morbidity and mortality in affluent societies (Wahlqvist 2011). In the last complete Australian National Health Survey 27.5% of the population was found to be obese, as defined and judged through the use of the Body Mass Index (BMI)(Australian Bureau of Statistics 2013). First results from the 2014-15 National Health Survey show this increasing by 0.3% to 27.9% (Australian Bureau of Statistics 2015)[5]. This prevalence of

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[5] BMI is defined as 'a simple index of weight-for-height' that is commonly used to classify underweight, normal weight, overweight and obesity' (Australian Bureau of Statistics 2013). This is calculated using the formula weight (kg) divided by the square of height (m). The simplicity and widespread usage of the BMI makes it a useful indicator for health risk across large populations. For this reason it is cited here. However, it should be noted that this measure is just one measure. As an indicator it is not without criticism, with alternative, though less widely used, measures available.

obesity places Australia in the top tier for overweight nations. The growth of obesity since the 1970s, amongst other factors, has been 'attributed to changes in both physical activity (TV viewing, sedentary jobs, fewer opportunities for sport) and diets favouring takeaway and pre-prepared foods' (Kouris-Blazos 2011, p. 528).

Recently, in 2012, concerns around the amount of time that food occupied within daily life have led to the development of the powdered nutritional food replacement Soylent™ (Twilley 2014). Desires to 'make food disappear, if not from the land at least from the consumer consciousness' and the emphasis on the chemistry of cuisine has been identified as a hallmark of 'modernist' food (Belasco 2006, p. 187). Though fast food has occasioned derision by the popular press, historian Rachel Lauden (2001) cautions against culinary 'ludinism' that scorns industrialized food in favour of nostalgic imaginations of past diets and cuisines. In her essay *A plea for culinary modernism* Laudan (2001) illustrates the ways that modern food has empowered individuals by not only offering diet choices but options as to what to do with their time. In regards to this last point, taste and personal preference often determine what foods people eat and how much time they devote to it.

Ethical awareness

Whilst 'food ethics' is now considered a distinct field of applied ethics (e.g. Gottwald, Ingensiep & Meinhardt 2010; Mepham 1996) moral concern over food has a history that can be charted back to classical antiquity (Zwart 2000). Indeed in ancient Greece food ethics, or *dietetics*, was no less prominent than sexual and medical ethics (Foucault 1990). The Greek philosopher, mathematician and astronomer Pythagoras even founded a cult, one of whose central tenets explicitly forbade the eating of beans (see Russell 1946). Since Ancient Greece the morality of food production and consumption has undergone change. Jewish food ethics distinguished between legitimate and illicit food products; however it was early Christianity that, in stripping food of its moral significance, came to set the dominant landscape for contemporary western culture (Zwart 2000). In his brief history of food ethics Zwart (2000) notices key differences and shifts, from the pre-modern focus on the ethics of food *consumption* to the modern focus on the ethics of food *production*. Similarly there is a shift between the ancients' focus on the *private morality* of the individual to the more recent focus that has a

distinctly social dimension, manifest in works such as Singer and Mason's (2006) *The Ethics of What We Eat*: 'Our focus is on the impact of your food choices on others'. It is perhaps only in the past thirty years that the ethics of food has reasserted itself more prominently in western discussion, not only on the moral implications for the individual eater but on how this affects others. 'Nowadays countless initiatives in the realm of food ethics actually aim at reducing (at least to some extent) the ever-increasing distance between the production and the consumption of food products – a distance that is both concealing and disquieting' (Singer & Mason 2006, p. 119). Underpinning such discussion is the Hippocratic concept that 'a truly human life is not a life of passive consumption' (Foucault 1990).

Whilst ethics primarily involves itself with *de jure* questions, the ideal of what ought to be, the *de facto* conditions remain. In their book *The Ethics of What We Eat* Singer and Mason (2006) adopt an inherently practice-based approach to identifying ethical problems within the food system. In this work the authors trace the food of three different families and attempt to identify ethical problems along the way. Throughout, we come to know three families comprised of individuals with different levels of knowledge about the food system, different socio-economic backgrounds and attitudes (Singer & Mason 2006). However, though not made the explicit focus of the book, the stories of each individual's and family's journey to their stance on food is an idiosyncratic narrative of personal experiences and moments that shape their learning and subsequent attitudes and behaviours. The outcome of this process is a substantive contribution to food ethics that demonstrates problems with both mainstream and alternative approaches to food. Singer and Mason outline five ethical principles for considering food choices:

1) Transparency: we have the right to know how our food is produced
2) Fairness: producing food should not impose costs on others
3) Humanity: inflicting significant suffering on animals for minor reason is wrong
4) Social responsibility: workers should have decent wages and working conditions
5) Needs: preserving life and health justifies more than other desires.

Food ethics and animal agriculture

With respect to the role of animals in food, the ethics of animal agriculture has been widely discussed (Cavalieri 2001; Rollin 1995; Singer 1975; Thu & Durrenberger 1998; Varner 1998). Though these approaches differ, they all arguably are founded on an assumed definition of what a non-human animal *is*: its ontology. Such definitions are typically partly scientific and partly anthropomorphic (Zwart 1997). Within animal agriculture non-human animals are legally identified as property (livestock, live stock) but, unlike 'things' such as screwdrivers, are entitled to legal rights (Grandin 2002). That animals should have rights is largely uncontentious, and is supported by Australian law (Department of Agriculture Fisheries and Forestry 2008). What is debated is the extent of this moral responsibility and what is acceptable within the system.

These debates take different philosophical orientations, but essentially continue to explore the extent to which animals have rights. Two different philosophical approaches can lead to the same practical and advocated outcome or solution. Orientated within normative ethics and utilitarianism, Singer (1975) argues against 'speciesism', which is defined as a discriminatory preference for one species, in this case *Homo sapiens,* over another. Alternatively, approaches from critical theory, such as the feminist vegetarianism coined by Adams (2010) in *The Sexual Politics of Meat,* does not focus on a divide between species, but instead suggests that the subjugation of animals for food is an extension of patriarchal oppression. Both these approaches see eating meat and animal products as morally wrong, but each approach is underpinned differently. Practical outcomes from both approaches empower the individual to not consume animal products as part of a wider animal rights movement.

Alternatively, such debates may explore geographic limits of animal welfare, as in the recent public debate in Australia over live exports of animals to countries whose animal welfare is neither of an Australian standard nor under the jurisdiction of Australian law. In 2011, the Australian Broadcasting Corporation's investigative TV program Four Corners' ran an exposé entitled *A Bloody Business* (Ferguson 2011) reporting on Indonesian abattoirs' treatment of Australian cattle. This caused a public outcry and legislative intervention. In 2013 the Australian federal government ceased live exports to Egypt, following a similar investigation into claims of animal cruelty in Egyptian abattoirs (Australian Government 2013). Lobbies from environmental groups

(Animals Australia 2013) have engaged the public through online campaigns to cease all live export. This issue is still being debated within Australian parliament. Essentially, the issue surrounding the rights of non-human animals is not whether they have rights or not, but the extent of their rights, and the boundaries of moral responsibility of humans to either extend an ethical framework (Adams 2010; Singer 1975) or extend a country's moral responsibility, and code, to other countries (Animals Australia 2013; Australian Government 2013). Like much within the agro-food system literature, such issues are neither solely institutional nor solely personal, but play in the continuum, the space between. However, in making decisions at a personal, industrial or governmental level, transparency is increasingly recognized 'as an important ethical principle and a safeguard against bad practice' (Singer & Mason 2006, p. 247).

2.2.2   Alternative systems and approaches to food

> While food fears have precipitated new market opportunities for selling alternative food, they have also laid the foundation for consumer confusion. This confusion has arisen in part at least, from points where alternative and industrial food systems interact and blur (Blay-Palmer & Donald 2008, p. 5)

Despite the omnipresence of food within contemporary culture in the form of celebrity chefs, cookery programs, artisanal produce and farmers markets (Kneafsey et al. 2008; Wright 2006) 'consumers are often accused of having "lost" their cooking skills and knowledge about food origins, preparation and nutritional values' (Kneafsey et al. 2008, p. 3). Literature on the food system thus suggests a paradox: that though food permeates culture there is perceived to be a fundamental disconnect between the people, places and cultures that produce food, and those that consume it. There are several concerns about this knowledge gap. Members of the public may make decisions on foods to consume based on 'long-held stereotypes of agriculture as a tranquil, bucolic "lifestyle"' (Specht, McKim & Rutherford 2014, p. 64), fail to understand the risks of food safety (Anderson 2000) or ignore food ethics (Singer & Mason 2006).

In addition to complexity of the system, and consumer ambivalence towards knowing food origins, is reluctance from suppliers to participate in detailing the practices of food production. In writing *The Ethics of What We Eat,* Singer and Mason (2006) initially planned to trace the foods of three families and write to 87 corporations

in order to identify how the product was produced and any ethical issues associated with it. Out of the 87 corporations approached, only 14 indicated willingness to participate and the bulk of these were small producers of organic foods (Singer & Mason 2006). Agriculture, especially animal agriculture, may benefit economically from its own distance from the public (Cheeke 2004) as: 'There is a gulf between the reality of animal production and the perception of animal production in the non-farming American public […] you're not going to see a beef-packing plant be transparent. They can't. It's so shocking to the average person' (Wes Jamison cited in Singer & Mason 2006, p. 9).

2.2.2.1   Changing landscape of discussion

Within popular culture, concerns surrounding food are reflected in a host of popular non-fiction books and motion pictures that have come to be part of a clarion call within food activist discourse. Popular non-fiction books, such as *In Defense of Food: An Eater's Manifesto* (Pollan 2008), *Fast Food Nation* (Schlosser 2002), and   film documentaries such as *Super Size Me* (Spurlock 2004), *Food, Inc.* (Kenner 2008) and *King Corn* (Woolf 2007) have, with many others (Cook 2004; Pollan 2006; Roberts 2008; Singer & Mason 2006) popularized discussion around the political and dietary problems originating from the food industry. The titles and content of such popular works reflect the personal (i.e. *Super Size Me*), the political (i.e. *Food: An Eater's Manifesto*), the industrial and commercial aspects of food (i.e. *Food Inc.*) and the power dimensions (i.e. *King Corn*) of these discussions. Though such calls are largely directed at a US market, on which the stories and investigations are focused, these books and films have had a wider impact. Largely investigative in nature such cultural artefacts are expositional and investigate different problems inherent within the mainstream food system or suggest alternatives. These popular works can be seen as a public response to 'well documented injustices' (Guthman 2007) and arguably push agricultural issues into the public eye for discussion. However, these works of popular journalism are not without criticism. Guthman (Guthman 2007) in the journal *Agriculture and Human Values* highlights some of the problems in popular works, whereby the complexities of the food system are often simplified into polemical positions of 'good' and 'bad' – with responsibility for this system devolved from regulators and policy to private individuals and their dietary choices.

2.2.2.2   Alternative Food Networks (AFNs)

> New and rapidly mainstreaming spaces in the food economy defined by – among other things – the explosion of organic, Fair Trade, and local, quality, and premium specialty foods. In these networks, it is claimed that the production and consumption of food are more closely tied together spatially, economically, and socially; however, the politics and practices of alternative food networks have more recently come under critical scrutiny from geographers and others as a narrow and weakly politicized expression of middle- and upper-class angst (Goodman & Goodman 2008, p. 1)

Within a mainstream food system perceived to be in a state of 'break-down' (Blay-Palmer & Donald 2008) consumers and producers have sought out or created 'alternative' (Maye, Holloway & Kneafsey 2007; Whatmore & Thorne 1997). Alternative networks or systems not only address consumer anxiety about safety, dietetics, taste and ethics, but may also resolve producer uncertainty around variations in production and sales (Lamine 2005). Such 'choices' can fall under a range of different approaches, terms, labels, and respond in a variety of ways to specific issues perceived with mainstream food options. Clearly defined movements such as the 'Slow Food Movement' movement (Petrini 2001, 2006, 2007) build communities between 'grower and eater, agriculture and market, community and world' (Slow Food Australia n.d., para 1). Practical movements have been established to connect consumers to producers through community networks (e.g. Youth Food Movement 2015) or educational programs such as the school kitchen-garden programs (e.g. Block et al. 2012; Stephanie Alexander Kitchen Garden Foundation n.d.; The Edible Schoolyard Project 2014) and school (e.g. Thorp & Townsend 2001), university (e.g. Harvard Community Garden 2015) and community (Holland 2004; Wright 2006) gardens. Though learning initiatives are discussed later in the chapter, it is worth pointing out the trend by which food concerns are addressed via approaches that *connect* production to consumption.

2.2.2.3   Mainstream and alternative permeation

The divide between mainstream and alternative food systems is increasingly blurred. The presence of labels such as 'organic', 'fair trade', 'artisanal', 'local', 'specialty', within mainstream supermarkets demonstrate that there is more widespread interest in food

origins. These terms linguistically and semantically mark a food item by its origins. Research from the UK found that there was appropriation of 'alternative' food discourse by mainstream food providers (Jackson, Russell & Ward 2007). Similarly whilst movements, such as 'organic', may have originally derived from a reactive counter-culture to the mainstream food network (Belasco 1989), as growth in the organics sector becomes more widespread the dichotomies between a mainstream industrialized food system and alternative food systems, and the cultural associations affixed to both these terms, becomes unstable and problematic (Guthman 2003). Furthermore, there are problems with approaches that privilege nostalgic versions of the food systems of the past over those of the present. Such approaches are reliant on dichotomies that depict 'a past sharply divided between good and bad, between the sunny rural days of yore and the grey industrial present' (Laudan 2001, p. 36). As history shows, the conception of the food system as a disaster narrative is not reflective of food history demonstrable in the archives (Laudan 2001). Thus, it is important not to center discussion of alternative food networks on good/bad dichotomy between mainstream and alternative food systems, since such approaches gain 'credence not from scholarship but from evocative dichotomies: fresh and natural, versus processed and preserved; local versus global; slow versus fast; artisanal and traditional versus urban and industrial; healthful versus contaminated and fatty' (Laudan 2001, p. 36).

2.2.2.4   The political consumer

Consumers frequently use their buying power as a means of social agency and political action (De Tavernier 2012). 'By accepting certain labels and rejecting others, the contemporary food consumer is allowed to develop a moral Self, to live a morally examined life and to take sides in the political conflicts of the present' (Zwart 2000, p. 123). Furthermore, dietary choices may allow individuals to align themselves, either formally or informally, with ideological stances (e.g. veganism, vegetarianism, organic preference) that shape what they will or will not eat or buy.

Lack of information

Though the concept of the political consumer is alluring, however there are problems with placing all the responsibility on the individual, especially at point of sale. As Appleby et *al.* (2002, p. 396) note:

> the emphasis on the 'political consumer', one who exercises power through what they buy, is, to a degree problematic. It is inappropriate to put responsibility for protection of animals and the environment on customers at point of sale, when they have other priorities to juggle and can see others around them buying the cheaper products

Problems with political consumption are aggravated by the complexity of the agro-food system and the limited information available to individual consumers. Food labels have a limited space (Australia and New Zealand Food Regulation Ministerial Council 2011) and though definitional terms such as 'organic' and 'free-range' linguistically mark a food by *how* it is produced, such definitions diverge widely in how they are implemented by individual farms and providers (e.g. Gardiner 2011). In Australia, such confusion can be readily observed within the egg industry, where consumer expectations of 'cage', 'barn' and 'free-range' often do not necessarily match real world farming conditions. In the case of free-range eggs, Australia only adopted a legal definition in 2016. Prior to this, a voluntary code of conduct drafted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO 2002) advocated a stocking-density of 1500 birds per hectare. Then in September 2011 the Australian Egg Corporation drafted a report advocating that free-range stocking limits be increased from 1,500 hens per hectare to 20,000 hens per hectare; this standard was rejected by the Australian Competition and Consumer Commission (ACCC) (2012). The debate within both the egg industry and the public domain, led to wider media attention and consumer concern surrounding consumer expectations of the free-range label. This 'to and fro' between consumer and industry representatives can arguably be seen as a central part of the narrative leading up to the Australian Government's adoption of a legal definition for free-range eggs in March 2016 (Dominello 2016). However, this legal definition, in by-passing the CSIRO model and setting the stocking density at 10,000 birds per hectare (as opposed to 1,500) has led to further consumer backlash from the consumer advocate group Choice, who urged consumers to continue buying off producers who followed the CSIRO model code and boycott egg brands that didn't meet this code (Day & Patch 2016).

'Moral consumption'

Recently, the concept of linking morality to what you buy or consume has been seen as problematic. Whilst class distinctions in gourmet food were previously about the chef's skill, emphasis on source ingredients and agricultural heritage of food shifts the problem from skill to one of access and the ability to purchase the 'right' products (Pearlman 2013). As a review of Pearlman's (2013) *Smart Casual: The transformation of gourmet researturant style in America* by US Magazine *The Slate* summarized: 'The food movement ran into trouble when it began insisting that good taste was also capital-G *good*: food that is good for the environment, for animals, for workers, for community-building, and for health will also taste the best' (Anderson 2013, para. 14). In gourmet food built on ingredients, as opposed to skill in the kitchen, what appears to be a celebration of the natural and the simple is more constrictive, less attainable, and less accessible (Pearlman 2013).

Though the critique in Pearlman (2013) is focused on gourmet dining, the same criticism is found within Guthman's (2003) research into the organic industry in California. In both cases the method of farming and access to purchasing it is aligned to a moral goodness, that is not only related to availability and economic access (Pearlman 2013) but, in the case of organics, may be simplistic gloss for a lot of other ethical problems (Guthman 2003). What these authors point out is that 'moral consumption', followed to its ultimate conclusion may allow for a situation in which moral goodness becomes a commodity that can be bought by some and not by others.

An alternative approach that aims to boycott this problem is Freeganism, also referred to as 'dumpster diving'. This movement shuns the entire consumer system by living off edible food that has been disposed of (Freegan.Info 2008, para 1):

> all the products we buy will have detrimental impacts most of which we may never even consider. Thus, instead of avoiding the purchase of products from one bad company only to support another, we avoid buying anything to the greatest degree we are able.

Freegans have community groups in Australia and throughout the world that take food from supermarket bins to avoid buying anything at all from a system perceived to be corrupt.

2.2.2.5   New digital technologies and sustainable HCI

Concerns relating to the sustainability and ethics of the industrial food system have not only spurred alternative food networks and practices, but interest in digital technologies that can support more sustainable food systems and food cultures. For example, human-food interactions have emerged as a distinct area for Human Computer Interaction (HCI) research (e.g. Choi, Foth & Hearn 2014; Choi et al. 2009; Comber et al. 2012). Currently, individuals are afforded with a wide range of digital and non-digital technologies that support them in how they shop, cook, or eat their food. Choi, Foth and Hearn (2014) note that the growth in public awareness around the food system has been paralleled with development of Web 2.0 technologies and mobile devices that support cultures of participation and creativity. There has been a notable focus on approaches that promote civic participation and farming within urban environments and community gardens (e.g. Heitlinger, Bryan-Kinns & Jefferies 2013; Heitlinger, Bryan-Kinns & Jefferies 2014; Lyle, Choi & Foth 2013; Odom 2010). Such initiatives are, arguably, powerful ways of re-engaging individuals and communities as 'participants in agriculture' (Berry 1990). However, within Australia urban agriculture still remains supplementary to the main commercial sources of food production. Thus, there is still a need for approaches that can foster dialogue and learning between different individuals from *across* this wider agro-food system.

2.2.3   Agro-food summary

In summary, within the agro-food literature there is a tension between a multi-agent agri-food system that is *perceived* to be increasingly scientific, economic and complex, and the personal, sometimes intimate experience of food preparation and consumption in which every person engages. Public anxiety and concern typically occur when fears and risks emanating from the external food system breach the internal spaces of domestic homes and personal bodies. The threat of such risk is compounded by the fact that the production system is largely unknown. Viewed statistically, food scares pose a low risk. However, public perception does not align with statistics. Despite public anxiety, there remains a widespread lack of awareness and civic disconnection around *where* and *how* food is produced. Alternative food movements, and ideological stances such as veganism, vegetarianism, organic and biodynamic farming can be seen as

reacting to perceived problems within the mainstream food system. Such approaches frequently aim to provide connection and ethical transparency. However, whilst there may be the beginnings of a 'new awareness' of the ethics of what we eat (Singer & Mason 2006) many of these are peripheral to the mainstream food system and the lines between mainstream and alternative food networks are increasingly blurred. Furthermore, the concept of 'moral consumption' is problematic in its commodification of morality. Currently alternative approaches are either peripheral to the mainstream agro-food system, or appropriated within the mainstream, and thus subject to some of the problems they originally tried to resolve. In short, whilst the need for increased understanding of our food is recognized from a variety of perspectives, how we set about doing this within a complex system is incredibly difficult.

2.3 Food literacy – shifting to an educational focus

So far this chapter has explored the contemporary food landscape and the informal networks and ways in which people have produced, consumed and come to understandings about food. As people have become aware of the issues, concepts such as 'food literacy' and 'agricultural literacy' have been coined to refer to the perceived knowledge and skills necessary for individuals to negotiate and possibly, through civic action, address issues within this system. This section of the chapter focuses on the ways in which terms, such as food literacy, have been defined and conceptualized. In rendering food learning explicit through the language of 'literacy', scholars, educators and community initiatives highlight the importance of this form of learning and build a conceptual premise for future educational interventions.

2.3.1 Concepts and definitions

Before detailing the specific definitions of food literacy it is worth taking a moment to understand the ways in which literacy, as a term, has come to be used. In its original sense, literacy refers to the '*ability* to read and write' (OED). Though written language has roots dating back to the Phoenicians (see Kress & van Leeuwen 2006, p. 21) 'literacy', as a means of referring to these skills, only emerged in 1880 (OED). In this

case the skill of reading and writing *preceded* the language used to refer to the learning or acquisition of such skills. Since 1943 the term literacy has been applied more broadly to different areas, demonstrating competence or knowledge in forms such as 'economic literacy', 'media literacy' or 'digital literacy' (OED). For any term bearing the literacy affix, the competency (e.g. reading and writing) typically existed *prior* to the terminology (e.g. literacy). Thus, the emergence of any given type of 'literacy' does not necessarily herald *new* learning but rather the overt recognition of the importance of a particular skill and the need to attend to its cultivation and development. It is possible to see the advent of the concept of 'food literacy' within academic and community literature as demonstrative of a new pedagogic awareness. In affixing 'literacy' to food, scholars and community initiatives draw attention to the *learning* necessary to engage with food in this particular epoch. Unsurprisingly, just as food literacy emerges, so too does its presumed counterpart 'food illiteracy'; this term and concerns around it have found their way into research reports (Australian Food Sovereignty Alliance 2012) and the popular press (Beeby 2012).

Despite its prevalence, food literacy, like its reading and writing counterpart (see Barton 2007), does not have a singular unified definition. This is not only reflective of an emergent term but mirrors the breadth of issues within the agro-food system *and* the multidisciplinary focus that is characteristic of the field. Within the literature terms like 'agricultural literacy' (Doerfert 2011; Hess & Trexler 2011; National Research Council Board on Agricultural Education in Secondary Schools 1988; Specht, McKim & Rutherford 2014), 'food literacy' (Cullerton, Vidgen & Gallegos 2012; Harvard Food Literacy Project 2013; The Food Literacy Project 2010; Vidgen & Gallegos 2012), and 'multidimensional literacy' (Cardwell 2005) are used to refers to different aspects of the same phenomenon. Though all definitions have a learning and competency basis, the focus and motivations of each varies subtly. From a review of the literature, the researcher identified three focal points (Fig. 2.1) within the definitions:

1. Health and diet focus
2. Community focus
3. Agricultural focus

By identifying these different threads in the discussion, the aim is not to say that each is discreet – for example that health and diet focused definitions would never include

incidental reference to agriculture or vice versa. Rather such definitions are marked by their difference in emphasis. These are discussed and illustrated with examples from the literature below.
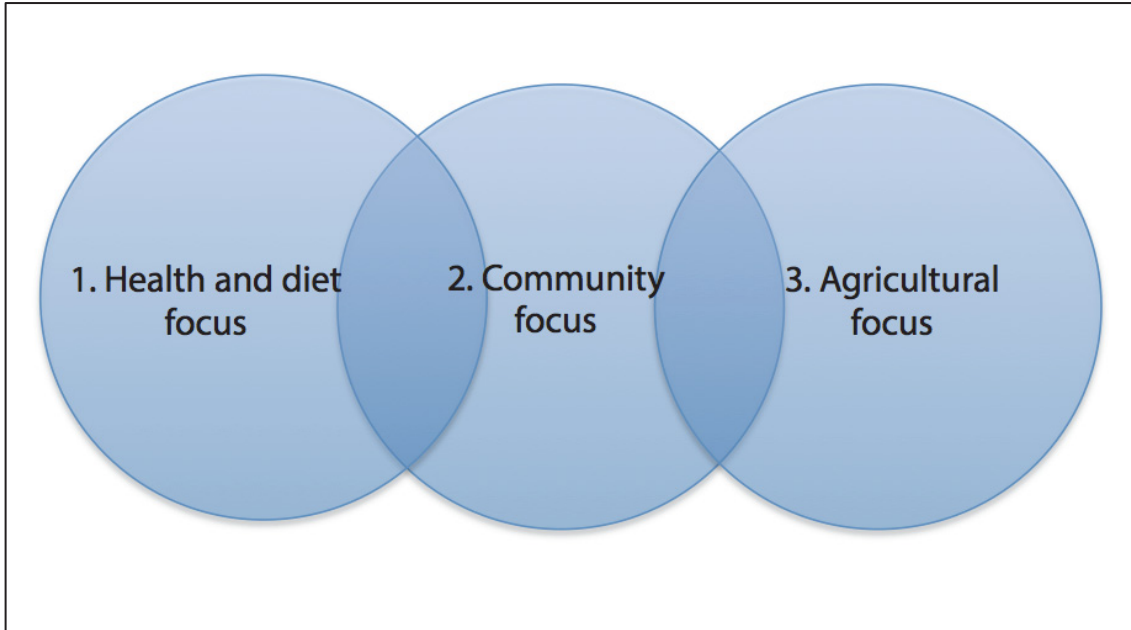
Figure 2.1 Focal points in divergent definitions of food literacy

1. Health, nutrition and dietary focus

> Food literacy is the scaffolding that empowers individuals, households, communities or nations to protect diet quality through change and strengthen dietary resilience over time. It is composed of a collection of inter-related knowledge, skills and behaviours required to plan, manage, select, prepare and eat food to meet needs and determine intake (Vidgen & Gallegos 2014, p. 54).

Definitions that focus on a diet and nutritional knowledge (Nowak et al. 2012; Vidgen & Gallegos 2012) define food literacy as the knowledge and skills needed to source and prepare food to address dietary and health needs. Though Vidgen and Gallegos' (2012) construct of food literacy acknowledges other variables, dietary and health understandings are emphasized over those relating to provenance or other factors. Vidgen, Gallegos and other researchers from the Faculty of Health at the Queensland University of Technology (QUT) have made a significant contribution to conceptualizing food literacy from a nutritional and health perspective (Cullerton, Vidgen & Gallegos 2012; Vidgen & Gallegos 2011, 2012, 2014). In a field where many food literacy initiatives are under-researched, the value of Cullerton, Vidgen and

Gallegos' (2012) meta-analysis of existing food literacy interventions is incredibly valuable and demonstrates a comprehensive overview of more initiatives than can feasibly be discussed in this chapter. Another significant contribution is the team's focus on understanding food literacy with disadvantaged young people in the community (Vidgen & Gallegos 2012). This study is important in that it recognizes food literacy learning that occurs outside of formal educational programs (Vidgen & Gallegos 2012) and highlights the ways in which skills like cooking are learnt and acquired within the home. However, it is important to remember that in being health and diet-centric, such studies overlook wider issues in the food system.

Community focus

> Education focuses on four integrated areas of food and society: agriculture, nutrition, food preparation and community. Ultimately, the project goal is to promote enduring knowledge, enabling consumers to make informed food choices (Harvard University Centre for the Environment 2015, para 1).

Community programs, especially those from the US, have typically adopted a wider definition, in which food literacy refers to the understandings of the impact personal food choices have, not only on individual health, but on the environment, and the wider community (Food Literacy Center n.d.; Harvard Food Literacy Project 2013). In contrast to definitions stemming from nutrition and health sciences, community foci are rarely defined in the academic literature. However, these expansive conceptualisations of food literacy are important as they underpin existing projects, programs and charities throughout the US and also align with the philosophies that underpin Alternative Food Networks (AFN) and that were discussed earlier in this chapter. In summary, the definitions of food literacy adopted by community groups are more holistic and inclusive of understandings of diet, provenance, the environment and other aspects of the wider food system. Such definitions and approaches cohere with understandings stemming from the agro-food literature, covered earlier in the chapter, that recognise the way environmental, political and ethical concern factor into individuals' understandings of food and subsequent decision making (e.g. Guthman 2003; Lockie et al. 2004; Lyons 2009).

Agricultural focus

The United States' National Research Council first coined the term agricultural literacy in 1988. Research reflecting agricultural interests (e.g. Doerfert 2011; Hess & Trexler 2011; Specht, McKim & Rutherford 2014) has conceptualised agricultural literacy as understandings of 'agriculture's history and current economic, social, and environmental significance' (Doerfert 2011, p. 11). The aim of literacy definitions stemming from agriculture may be to bridge the 'agrarian divide between farmers and consumers' (Specht, McKim & Rutherford 2014, p. 65) and counter public confusion or unrealistic expectations that may, in turn, have knock-on impact on consumer behavior or agricultural policy (Doerfert 2011).

Though there is a degree of overlap in the focus of each definition, the literature in each area advocates that such skills and understandings are necessary for *all* members of the public, and not solely experts. Programs adopting a health focused definition, may aim to address specific issues such as obesity (e.g. Nowak et al. 2012); programs adopting an agricultural definition may aim to educate people about food production (e.g. Hess & Trexler 2011); programs adopting a community-based definition embodying broad, social, community, environmental and health aims typically connect these two spheres (e.g. Wright 2006). What is routinely emphasized throughout such literature is the recognition that better understanding and development of food related skills and knowledge is important for individuals and communities, and worthy of pedagogic focus.

2.3.2 Educational initiatives and empirical studies

A review of educational initiatives and empirical studies demonstrate two key trends. Firstly, different research traditions emerge around different conceptualizations of food literacy, with community food literacy projects typically being under-researched in comparison to projects with a nutritional or agricultural focus. Secondly, researchers from adult education have come to recognize informal and incidental learning, with research in this field identifying consumer spaces and food interactions as legitimate sites of learning. Literature relating to these educational initiatives and empirical evaluations are discussed below.

2.3.2.1 Educational research traditions for nutritional, participatory and agricultural food literacy initiatives

Out of the three 'schools' of food literacy identified within this chapter, educational studies hailing from a nutrition and health focus leave a larger academic trail of evidence than those from an agricultural or community background. Studies documenting the contributions to health education of nutrition programs (e.g. Foley & Pollard 1998; Rawl et al. 2007) cooking classes (e.g. Brown & Hermann 2005), learning gardens (e.g. Nowak et al. 2012) and home economics programs (e.g. Pendergast & Dewhurst 2012) demonstrate established research traditions for nutritionally focused food literacy scholars. Cullerton, Vidgen and Gallegos's (2012) detailed meta-analysis of the literature demonstrates an active educational research agenda in this domain.

Though studies with an agricultural focus are less prevalent, research around 'agricultural literacy', has a long tradition that can be chartered back to 1988 (National Research Council Board on Agricultural Education in Secondary Schools). Summative literature reviews of pedagogic and learning contributions to the field of agricultural literacy (see Trexler & Hess 2004) demonstrate that these projects typically take place within taught school curriculum and are largely aligned with science subjects (Trexler & Hess 2004). This body of research has demonstrated the value of learning when 'teachers teach using the world around them as context' (Doerfert 2011, p. 13) and that learning about agriculture can be an authentic way of learning key scientific and mathematic principles (Doerfert 2011).

In contrast to nutritional and agricultural focused 'schools' of food literacy, community and participatory initiatives, though prevalent across Europe (see BEST Institut für berufsbezogene Weiterbildung und Personaltraining 2006) the US (e.g. Harvard Food Literacy Project 2013; The Food Literacy Centre 2015; The Food Literacy Project 2010) and Australia (Youth Food Movement 2015), are under-researched from a pedagogic perspective. This gap in the literature is problematic for several reasons. Firstly, community definitions of food literacy better reflect the holistic, situated and embodied ways that people come to understandings about food, as defined by researchers of agro-food systems (see Fischler 1988; Lyons 2009). These participatory community projects may make sense of the situated knowledges (see Haraway 1988) that characterize public

food understandings (Lyons 2009) and align with existing knowledge of agro-food systems that was discussed in the first half of this chapter. Food literacy defined solely by nutrition *or* agriculture fails to acknowledge the civic, cultural, economic and ethical concerns that individuals in the community negotiate through Alternative Food Networks (Goodman, DuPuis & Goodman 2012) or other participatory projects, whose existence arguably demonstrate a public interest and need for this kind of learning. Secondly, as research highlights the issues with adults' lack of knowledge about the food system, and call for more food literacy education programs (see Australian Food Sovereignty Alliance 2012) it is important that we understand how such learning takes place. Though human praxis within the agro-food system may be explored from social science perspectives detailed earlier in the chapter, such studies are not framed or conceptualized in terms of learning.

2.3.2.2   Informal learning: situated, everyday, and hidden

Learning that is informal, incidental or community based is often overlooked. Food education is often disregarded or viewed as less weighty than other subject disciplines as academia's dualism of mind over body has cultivated 'disdain for something as mundane, corporeal, even "animalistic" as eating' (Belasco, 2008, p.2). Though referring to formal education, Pendergast and Dewhurst (2012) highlight the ways in which curricula that concentrate on the public sphere of men may be privileged over curricula, such as Home Economics, that are historically associated with women. Food preparation, cooking skills, knowledge of food and nutrition and its related themes are consequently devalued, even trivialised, with stereotyped gender roles playing a part in the dynamic (Pendergast & Dewhurst 2012). In addition to potential power structures that are specific to food learning, are wider discussions on informal learning. Scholars in adult education have long recognised that the incidental, mundane and everyday nature of informal learning can lead it to be overlooked and undervalued (Colley, Hodkinson & Malcolm 2002; Hrimech 2005; Marsick & Watkins 1990) in contrast to its formal counterparts. Participatory and community food literacy development programs are, unlike nutritional and agricultural food literacy, not always affiliated with a formal curriculum. As such the learning that takes place, like much informal learning, may be

unacknolwedged by either learner or the person who fulfills the role of the educator (Foley 2001).

Recently, researchers have begun to explore learning that takes place around consumer behaviours like shopping (Jubas 2011; Ozanne, Adkins & Sandlin 2005; Sandlin 2008), with Sandlin (2008, p. 48) calling for adult educators to take 'consumption seriously as a site of learning and education'. One paper that responds to this call is Jubas' (2011) *Everyday scholars* that focuses on the ways in which adults' learn through shopping for food. This study (Jubas 2011) re-iterates the need not to conflate 'important learning with formal learning' (p. 229) and highlights the ways in which adults who were 'critial shoppers' engaged in research practice, identity formation, and understandings of the politics of globalization and consumption in order to buy more ethical produce. Studies like this explore activism and civic participation as a form of 'critical public pedagogy' (Sandlin 2007). As continued calls for food literacy development (Australian Food Sovereignty Alliance 2012) are made, there is a need to understand the existing phenomenon of food literacy acquisition whilst also developing new ways of meeting the needs of a diverse adult population. Though existing research demonstrates that adults already use technologies to support self-directed learning around food (Jubas 2011) and recognises the potential for social media technologies to support public understandings of agriculture and natural resources (Doerfert 2011), such work stops short of any concrete empirical or theoretical approach to understanding this in terms relating to educational technology. Perspectives from this discipline have not been applied to this context. In summary, there is a need to better understand the ways in which people learn about food in the community and the ways in which technologies support this.

2.4   Chapter summary and gaps in the literature

A review of literature relevant to the study of food learning demonstrates the complexity of the agro-food system and the many ways that individuals make sense of this system in situated and embodied ways. The many environmental, economic, health, and social implications that food has for both producers and consumers has fueled calls from

experts in different fields for better understandings about food. These understandings may revolve around agriculture (Doerfert 2011; Specht, McKim & Rutherford 2014), nutrition (Wahlqvist 2011), food ethics (Singer & Mason 2006), or historical understandings that counter culinary ludditism (Laudan 2001). Demands for members of the public to acquire better knowledge and practices around food come from a plethora of popular, commercial, industry-based, and academic voices. However, fostering dialogue and public learning around an increasingly complex food system is difficult in the context of post-industrial countries, where urbanization and lifestyle factors intellectually, culturally and spatially distance the food consumer from the people and places that produce their food. Thus, the context and expectations of public learning are numerous and complex. Despite these difficulties and the extensive expectations placed on the individual learner, it is only very recently that research has begun to frame the food problem in terms of learning. Though there is no singular definition, the coinage of the terms such as 'food literacy' demonstrates early recognition of food as a learning problem. As food literacy is conceptualized and researched several gaps in the literature emerge.

- The agro-food literature largely depicts human interactions with food as a combination of scientific and situated knowledges. Thus, food understandings include both subjective and scientific knowledge. The agro-food systems literature is typically not focused on the pedagogies or practices of learning. Likewise research with a food literacy focus, has, in being largely nutritionally or agriculturally focused, occasionally overlooked the situated knowledges that may shape informal learning and food interactions.

- The literature has demonstrated the potential ways in which digital technologies may support food learning (Doerfert 2011; Jubas 2011). Secondly, researchers also recognise the way that food connects classroom and community learning spaces (Wright 2006). Despite this, there is no established research tradition to make sense of technologically mediated learning that occurs across and within and across different contexts.

- Of the different ways that people learn about food, those that are informal, incidental and potentially technologically mediated receive little to no research. Though formal educational initiatives, such as School Gardens (Block et al. 2012; Jaenke et al. 2013) are typically inclusive of constructivist pedagogies that acknowledge the learner's world outside the classroom, such studies typically return to the classroom and those engaged in it. In contrast, literature from adult education demonstreates the importance of informal learning (Jubas 2011) and community programs for food education.

- This literature review demonstrates that food literacy definitions have different focal points depending from which discipline they hail. Though educational initiatives and programs exist for all types of food literacy development, agriculture and nutrition have more established research agendas and means of evaluating food literacy initiatives that fall within their scope. However, community programs that adopt broad and inclusive food literacy definitions are rarely researched from a pedagogic perspective. This is a significant gap in the literature and an especially important area for future research since there are already a host of food literacy initatives in existence, as well as calls from special interest groups for further work (Australian Food Sovereignty Alliance 2012). Community and informal food literacy learning requires further research and theroetical perspectives.

In a highly challenging learning context that places different demands and expectations on the learner it is increasingly important that such gaps in the literature receive attention. Whilst the literature presented in Chapter 2 has tended to dwell on descriptive accounts of the problem, the following chapter aims to balance this by drawing on the literature of more interventionist fields – principally that of mobile learning. The following chapter introduces the scholarly literature of mobile learning, as a body of literature that provides conceptual foundations and practical approaches for addressing some key aspects of food literacy highlighted in this chapter.

Chapter 3: Mobile learning for civic participation in informal contexts

Can new interfaces contribute to social and environmental improvement? […] can they actually make things better – better in the sense of public good – not merely lead to easier to use or more efficient consumer goods? (Jeremijenko 2010, p. 183)

Mobile learning – as we understand it – is not about delivering content to mobile devices but, instead, about the processes of coming to know and being able to operate successfully in, and across, new and ever changing contexts and learning spaces. And, it is about understanding and knowing how to utilize our everyday life-worlds as learning spaces (Pachler et al. 2010a, p. 6).

3.1   Chapter Introduction

In engaging with individuals in their daily life worlds, mobile learning has long been aligned with informal (Pachler 2009) and lifelong (Sharples 2000) learning that spans contexts often outside the classroom. Having established the motivations for improving food literacy development (Chapter 2), especially with individuals not enrolled in formal educational programs, this chapter reviews the literature on mobile learning, as a potential tool for addressing food literacy concerns. Though a relatively young discipline, mobile learning offers a conceptual lens by which to understand learning, like food literacy acquisition, that takes place *across* contexts and life stages. In addition, research from the field of mobile learning offers approaches to how learning might be fostered with individuals who are not always able to participate in formal face-to-face programs. The ubiquitous uptake of digital technologies offers potential for mobile learning to address the needs of 'a broad range of learners in a variety of settings' (Kukulska-Hulme & Sharples 2009, p. 160). In addressing the challenging contexts and needs for food literacy development, this chapter reviews literature that makes sense of mobile learning, specifically those studies that focus on informal learning applications. So as to be accessible to readers with expertise in other areas, this chapter moves from 'general' to 'specific', beginning with a short history of mobile learning as a discipline and outlining key definitions, constructs and theories that have defined the field. The chapter then turns to research that specifically generates understandings of mobile learning with informal learner cohorts: this section focuses on characteristics of the socio-technical landscape and the ways that these have been utilised to meet a range of learning needs. The chapter closes with a summary and highlights gaps in the literature into which this, and future work, could extend current knowledge.

3.2   m-Learning, a discipline with a long past and a short history[6]

> Hasn't learning always been mobile since the "creation" of man (or even before), thanks to the fact that we (as well as other animals) carry in our skulls a supercomputer we call brain? Don't we really learn at all times, wherever we are, whatever we do, simply because the learning machine is always "on", even during sleep when we re-organize and sort out experiences and knowledge acquired during the day? (Laouris & Eteokleous 2005, p. 1)

Mobile learning is a type of learning and field of disciplinary research, that has a long past but a short history. Broadly defined, mobile learning is 'learning that is supported across contexts and life transitions' (Laurillard 2010, p. ix). Researchers have repeatedly recognized that learning whilst mobile, irrespective of technology, is something that people have always done (Crompton 2013; Dyson, Litchfield & Raban 2010; Kukulska-Hulme & Sharples 2009; Laouris & Eteokleous 2005; Laurillard 2010). Though readily supported with conventional technologies such as books, pens and paper, digital technologies have acted as a catalyst for changes in mobile practice and researcher focus (Kukulska-Hulme 2010b). Digital mobile technologies and the wider socio-technical infrastructure have facilitated different kinds of social networks, interactions, and learning (Castells et al. 2007). In this environment the phenomenon of mobility is thrown into sharp relief and brought to the forefront of educators' and researchers' consciousness. Though reviews of the field have often traced the history of mobile learning back to Alan Kay's visionary Xerox Dynabook (1972), a concept of personal portable computing for learning, it was not until the early 2000s that mobile learning really began to gain traction as a discipline in its own right, with the HandLeR project (Sharples 2000) taking the first steps towards realizing Kay's (1972) Dynabook vision. In 2002 the IEEE hosted the first international conference on Wireless, Mobile Technologies in Education (WMTE); later changed to the Wireless Mobile and Ubiquitous Technologies in Education (WMUTE). That same year saw the first, of what

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[6] The expression 'a long past but a short history' was used by Vera Centeno (2011) to describe lifelong learning. The researcher has re-appropriated this expression to describe the ways that mobile learning is an old practice with a relatively new research agenda.

is now the World Conference on Mobile and Contextual Learning (mLearn), hosted in workshop form at the University of Birmingham. 2002 was also the year for the first book on mobile and contextual learning to be published (see Gayeski 2002). Since then the field has continued to carve out a specialist niche in the form of dedicated journals (e.g. International Journal of Mobile and Blended Learning, International Journal of Mobile Learning Organisation), books (e.g. Berge & Muilenburg 2013; Pachler et al. 2010a; Vavoula, Pachler & Kukulska-Hulme 2009) and numerous educational innovations and research papers that are reviewed throughout this chapter. As this buoyant field expands, several authors have paused to review its history (Crompton 2013; Parsons 2014), with several *dedicated* literature reviews capturing specific aspects of the discipline's focus and identity (see Frohberg, Göth & Schwabe 2009; Naismith et al. 2004; Parsons 2014; Wingkvist & Ericsson 2011). Of these Parsons' (2014) *Mobile Learning Overview by Timeline and Mindmap* offers the broadest and, at the time of writing, most up-to-date perspective on the field's development. Using a timeline and a concept map to review notable firsts Parsons (2014) demonstrates the expansion and growth of a field populated with a plurality of theories, research methods, foci and applications.

As the field of mobile learning forges its own identity, it is important to ask, not only what the research tells us, but the character of the field and discipline as it currently stands. Firstly, mobile learning, as its name suggests, focuses on learning over teaching (Kukulska-Hulme 2010b). Secondly, in exploring mobility, the discipline necessarily includes learning that takes place beyond the walls of the classroom. In being embedded within users' life worlds, mobile devices allow individuals to 're-interpret their everyday life contexts as potential resources for learning' (Pachler 2009, p. 5). It is not surprising then that the field should frequently sit at the nexus of informal and life-long learning research interests (see Pachler 2009; Pachler, Seipold & Bachmair 2011; Sharples 2000). Furthermore, in bridging disciplines such as computing sciences, cultural and media studies, and subfields of education, to name but a few, mobile learning is characteristically a multi- and inter- disciplinary field of inquiry (Pachler 2009).

As today's suite of mobile technologies see Kay's (1972) self-described 'science fiction' not only come to fruition, but manifest in different formal and informal learning practices, the discipline demonstrates its ability to provide theory and frameworks for

understanding complex and ill-defined learning problems that occur across contexts, disciplines, and diverse learner cohorts. Mobile learning thus has a broad applicability to addressing complex learning issues such as food literacy. However, its breadth of scope and relevance mean that the area of interest is much larger than researchers to date have reasonably been able to cover. For all its growth, conceptualizing and understanding mobile learning from different perspectives remain pertinent. There remains the need to understand 'the boundaries of learning that the 'm' in m-learning forces us to explore' (Cook, Mor & Santos 2015, p. 1). The remainder of the chapter orientates the reader to the ways in which a new field has come to understand old learning, and the ways in which technologies feature in this narrative.

3.3   Foundational concepts and theories

Having established the disciplinary identity in which this dissertation is located, this section reviews literature that defines mobile learning and its foundational concepts. What do we mean by mobile learning? What is mobility? What concepts, theories or pedagogies has the discipline defined or adopted to make sense of this phenomenon? Answers to such questions are foundational to *any* mobile learning study, independent of the specifics of the learner cohort, learning aims or socio-geographic context. This section, illustrates the core concepts that have framed both research and practice in the area.

3.3.1   Key definitions

If mobile learning is not really a new concept, why then bother with a new definition? (Laouris & Eteokleous 2005, p. 1). As a relatively new discipline, mobile learning has had to assert its own boundaries and establish what constitutes the phenomenon of interest. This is reflective in early definitional literature on the subject (e.g. Laouris & Eteokleous 2005; Traxler 2005, 2007; Winters 2006) that has repeatedly posed the single question: 'what is mobile learning?'. Answers to this question, either implicit or explicit, vary. Whilst many early definitions of the field were either: technocentric, relational to e-learning, augmenting formal education, or learner centered (Winters 2006). Techno-centric definitions focused on mobile devices' convergent features (Livingston 2004),

hardware portability (Quinn 2000) or mobile learning as an extension or redefinition of e-learning (Kinshuk, Sutinen & Goh 2003). Traxler (2005) posited that mobile learning could 'include mobile phones, smartphones, personal digital assistants (PDAs) and their peripherals, perhaps tablet PCs and perhaps laptop PCs, but not desktops in carts and other similar solutions' (Traxler 2005, p. 263). Though Traxler (2005) suggests this definition as one way of distinguishing m-learning from e-learning, he also acknowledges, within the same paper, that such definitions may not focus sufficiently on either the learner or the learning. Though the early literature is characterized by a prevalence of techno-centric definitions, these have always been countered by perspectives that emphasized learner mobility (O'Malley et al. 2005; Winters 2006), conversational and communicative learning processes (e.g. Crompton 2013; Nyiri 2002; Sharples 2002) and, more recently, socio-cultural perspectives (e.g. Pachler, Bachmair & Cook 2013; Pachler et al. 2010a). Though there has been some recent recourse to definitions of mobile learning as 'learning with mobile devices' (Traxler 2011, p. 4) these fail to capture mobile learning's pre-digital past. Rather, definitions that adopt a humanist focus better privilege the learner and the learning over the device or mode of delivery. Though definitions within the literature vary, the two dominant definitions that underpin a significant amount of scholarly work frame mobile learning in terms of conversational theory (Sharples 2002) and socio-cultural ecologies (Pachler et al. 2010a). Both approaches assist in making sense of the ways mobile learning occurs within informal settings as a situated and communicative act. These are discussed below.

Mobile learning as conversational learning

> The technology provides a pervasive conversational learning space (Sharples 2002, p. 5)

m-Learning has been described as 'the processes of coming to know through *conversations* across multiple contexts among people and personal interactive technologies' (Sharples, Taylor & Vavoula 2007).[7] Derived from Conversation Theory (see Laurillard 2002; Pask 1975) this concept of mobile learning was first coined by Sharples in 2002, and further refined by Sharples, Taylor and Vavoula in 2007. It has

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[7] Emphasis added

been an oft-cited definition within the mobile learning literature since. In this definition learning conversations occur through 'some activity in the world' (p. 507). Learning is thus constructed as an exploratory, conversational, and collaborative knowledge building process (Sharples, Arnedillo-Sánchez & Milrad 2009) that recognizes contexts that lie outside the jurisdiction of formal educational institutions. For understanding food literacy as an experiential and situated construct, conversational m-Learning definitions may be important in recognizing the ways in which food is experienced within the world whether working on a farm, growing vegetables in the garden, or shopping, cooking and eating. These activities are not, like institutional learning, contained within a classroom that is a 'sealed environment, with all outside interventions being carefully regulated by the teacher' (Sharples 2002, p. 3). The image of a *learning conversation* draws attention to the ways in which mobile learners may engage in new meaning-making practices. A conversation is, by its nature, dialogic. This reflects a perceived shift in the power dynamics within educational processes. New technologies and new literacies, by allowing conversations between different contexts, different people and different modes, disturb traditional formal didactic teaching models: 'Central to these learning conversations is the need to externalize understanding. To be able to engage in productive conversation, all parties need access to a common external representation of the subject matter that allows them to identify and discuss topics' (Sharples 2002, pp. 506-7).

Mobile learning as socio-cultural ecological phenomenon

> Mobile learning – as we understand it – is not about delivering content to mobile devices but, instead, about the processes of coming to know and being able to operate successfully in, and across, new and ever changing contexts and learning spaces. And, it is about understanding and knowing how to utilize our everyday life-worlds as learning spaces (Pachler et al. 2010a, p. 6).

Socio-cultural perspectives on mobile learning are not in opposition to conversation theory though the theory is broader, using terms like 'communication' over more specific terms like conversation. Spearheaded by Pachler, Bachmair and Cook (2010a) with contributions from the London Mobile Learning Group

(www.londonmobilelearning.net) this approach identifies mobile devices as 'cultural resources' that emerge from something the authors refer to as the 'mobile complex' (Figure 3.1). This emphasis on the wider socio-technical landscape and its vast networks of technologies and cultural structures, attempts to avoid technological fetishization of specific types of device. What the authors refer to as the 'mobile complex' is comprised of specific *structures, agency,* and *cultural practices* that make up the socio-cultural ecology of everyday life. This approach to mobile learning emphasizes individuals' 'lifeworlds' and the ways in which, through *agency,* individuals' expertise is appropriated in relation to personal definitions and experience. *Cultural practices* refer to the social interaction, communication, and sharing afforded by mobile devices and the way that learning is viewed as a 'culturally situated meaning-making' process that occurs in formal and informal settings and in everyday life (Pachler et al. 2010a, p. 25). *Structures* acknowledge the wider infrastructures; social stratifications and curricula that guide individuals in how new cultural resources may be used for learning. These key components of the mobile complex are not stable entities but are 'in perpetual flux' (Pachler, Bachmair & Cook 2013, p. 159) marked by provisionality and the ways in which mobile learning is embedded into learners' everyday lives. In this construct identity is fluid (Bauman 2000) and context interactional (Dourish 2004).
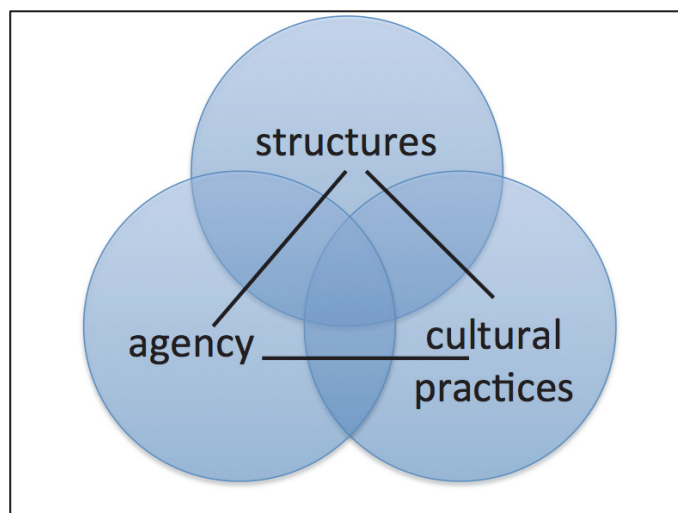
Figure 3.1 Key components of a socio-cultural ecological approach to mobile learning – a typology (Source: Pachler et al. 2010a, p. 25)

This wider theoretical concept, in emphasizing mass communication structures, provisionality and learner agency, may be especially suited to understanding everyday

learning such as food literacy acquisition that is experienced personally in the context of a structured and fluctuating wider agro-food system.

These approaches to defining mobile learning are complex and theory laden. Though conversational and socio-cultural ecological definitions of mobile learning are prevalent in literature from leaders in the mobile learning field, Pachler et al. (2012, p. 707) note that a great deal of work remains characterized by 'techno-centric discourse largely underpinned by a deterministic understanding of the relationship between society and technology'. Didacticism focused on the delivery of content to mobile devices still pervades much of current practice.

3.3.2   Technologies

> the use of mobile learning activities should be driven by specific learning objectives. The use of (mobile) technology is not the target but rather a means to enable activities that were otherwise not possible, or to increase the benefits for the learners. Thus, the use of mobile technologies may only be suitable for part of the activity, with other parts being better supported by other technologies, or by no technology at all (Sharples, Arnedillo-Sánchez & Milrad 2009, p. 239)

As contemporary definitions move away from technocentric definitions, there remains a need to understand the role that technologies play within this learning. New technologies undoubtedly afford (see Norman 1988) different behaviors. Even studies that adopt a humanist, as opposed to techno-centric, definition typically often delimit the study based on specific types of hardware. For example, in Pachler et al.'s (2010a, p. 7) work on socio-cultural ecologies the authors state that they 'consider laptops to lie outside the range of devices we focus on'. Defining the scope of any study, whether by device, geographic region or type of learning is standard for all research. All research is limited. However, attempts to designate what is or is not a mobile device are increasingly problematic in the face of technological change (Kukulska-Hulme et al. 2011). Furthermore, hybrid and modular devices blur the boundaries between previously established categories. Hybrid devices such as 'phablets' (phone-tablets) and 'notebook-tablets' challenge older device categories. Modular devices such as the Fujitso Lifebook 2013 (Figure 3.2), a conceptual design by Prashant Chandra shortlisted for the

2011 Fujitsu Design Competition, merge different devices in one modular unit. As devices, real and imagined, blur the divide, there is a need for mobile learning to simultaneously recognize the ways in which devices afford new types of learning without prescribing which devices are included or excluded. Concepts like BYOD (Bring Your Own Device) have offered one approach to meaningfully exploring mobile learning whilst privileging learner agency.

Figure 3.2 Modular Fujitsu Lifebook concept (Source: Prashant Chandra, cited in Fincher 2012)

Alternative ecological approaches mitigate some of the difficulties in talking about technologies in mobile learning without being bound to a specific device or group of devices. Within the literature there has been a turn towards definitions and conceptualizations that acknowledge the device and the learner within their wider context. Devices and technologies are not separate from a wider ICT ecology. The term personal ICT ecology refers to the unique combination of devices that an individual has access to. This concept recognizes learning 'as a dynamic process that cannot be studied in isolation from its surroundings, animate or inanimate' (Brady & Dyson 2010, p. 73). In mobile technology research within the community Brady and Dyson's (2010) ICT Ecology has made sense of the ways in which individuals use more than one device in

their own suite of technologies to accomplish specific tasks in and around different contexts; This concept has been applied to mobile learning (Frawley 2011; Frawley & Dyson 2014a) and aligns with Pachler et al.'s (2010) definition of mobile learning as a socio-cultural ecological phenomenon that avoids technological fetishization. This approach to understanding hardware usage in mobile learning offers a non-exclusionary way to talk about technologies' role within learning, but so far it has had little uptake in mobile learning research and studies. As such further empirical work adopting this construct constitutes an area for more research in the field.

3.3.3 Mobility, context/s and context-making

As technical features and functions converge within the mobile device, so too do contexts and usage converge outside the mobile device. Leisure and work, private and public, virtual and real, 'off' and 'on', social and individual (Baron 2008; Castells et al. 2007; Ling & Donner 2009; Pachler et al. 2010a) are increasingly blurred or mediated within a mobile culture. There is an 'interpenetration of the real world and the digital world' (Pachler et al. 2010a, p. 49). In contrast to other ICTs, one of the defining features of the mobile device is its mobility (Laurillard 2010; Pachler 2009): 'mobile technology is substantially different from desktop computing in its essential connection to mobility and the contexts in which it is used' (Kukulska-Hulme 2010a, p. 11). Though lay understandings of mobility focus primarily on movement across physical or geographic locations, Kakihara and Sørensen (2002, p. 1756) argue that mobility 'should not exclusively be linked to human corporeal travel' but also recognize movement across spatial, temporal, and contextual factors.

The role of context in mobile learning is significant and constitutes a central construct of the discipline. Within the mobile learning literature, interactional views of context have been appropriated and developed. In contrast to post-positivist perspectives of space, context is conceptualised as something that is not stable or fixed, but arises and is sustained by embodied activity (Dourish 2004). Context can be both static and dynamic, as static elements interact dynamically (Luckin et al. 2009). Interactional views of context allow mobile learning researchers and practitioners to make sense of the unbounded learning that takes place over conceptual and social spaces, and dispersed over formal and informal settings over time (Kukulska-Hulme et

al. 2009). Frequently contexts are seen to be learner generated (Pachler 2009). As concepts around context become more complex it is important to go beyond the 'anytime and anywhere' epithet (Frohberg, Göth & Schwabe 2009) that was widespread in the early literature.

3.3.4 Theories of learning

In its breadth as an area, mobile learning has seen a plurality of pedagogic approaches adopted. Naismith *et al.* (2005) identify the underlying pedagogies of mobile learning initiatives as falling into six areas: 1) behaviourist 2) constructivist 3) situated 4) collaborative 5) informal and lifelong learning, and 6) support for learning and teaching. Exempting contradictory pedagogies such as constructivism and behavioursism, there is potential for overlap in this typology. An instance of mobile learning 'could be both constructivist, situated, informal and collaborative at the same time' (Frohberg, Göth & Schwabe 2009, p. 313). A more detailed overview of theoretical perspectives is available in Parsons' (2014) creative visualization of the field. This shows that mobile learning research has been underpinned by: activity theory, cognitive science, psychological theory (principally behaviorism), constructivism, constructionism, connectivism and experiential learning (Parsons 2014). There is not space, nor would it be appropriate, to discuss every pedagogy in its entirety here. Rather, what this section aims to do is discuss the dominant pedagogies that underpin learning across contexts and might be applicable to conceptualizing informal food literacy acquisition.

Pedagogies are reflective of the ways in which mobile learning has been defined and conceptualized. As context and contextual learning take center stage, theories of situated learning (e.g. Brown, Collins & Duguid 1989; Lave & Wenger 1991) are appropriated to make sense of contextual phenomenon (e.g. Miura, Ravasio & Sugimoto 2009). As mobile learning aligns with social networks, (e.g. Pachler et al. 2012) pedagogies such as connectivism (Siemens 2005) make sense of the ways multiple individuals learn through communities and knowledge distributed across information networks. In crossing contextual, social, physical and virtual boundaries mobile learning has often been associated with the term 'seamless learning' (Wong & Looi 2011). As technologies became more interactive across multiple channels (e.g. Dyson et al. 2009;

Litchfield et al. 2009; Litchfield et al. 2007) in and out of class environments, theories of active and experiential learning (e.g. Dewey 1966; Itin 1999; Kolb 1984) become frameworks for understanding. As school field and museum trips (Sharples et al. 2007), and civic science (e.g. Anastopoulou et al. 2009; Aristeidou, Scanlon & Sharples 2014) became contexts for mobile learning, theories like inquiry based learning make sense of the phenomenon. In illustrating this pattern the researcher does not suggest any particular directional or causal relationship, or that different theories are mutually exclusive. Researchers often stitch together several congruent educational theories to make sense of student learning (e.g. Dyson et al. 2009). However, what this pattern demonstrates is mobile learning, in shifting the emphasis from teaching to learning, has shifted towards more learner-centered pedagogies. Mobile devices disrupt traditional forms of classroom learning (Sharples 2002) whilst the mobile complex (Pachler et al. 2010a) disturbs traditional notions of power, knowledge and participation. Learners are afforded increasing agency and tools through which to engage in participatory cultures through user-generated content platforms (see Jenkins et al. 2009). As these user-generated spaces become part of the increasingly visual semiotic landscape (Kress 2003) mobile devices afford learners with alternative modes and media by which to construct knowledge (Frawley & Dyson 2014a; Frawley & Dyson 2014c). In this environment, learner-centered theories such as constructivism better acknowledge the ways in which learners construct and create contexts and learning in different settings.

3.4 Mobile learning in informal and community based contexts

In placing mobility and context at the center of analysis, research across the field has continually recognized the importance and legitimacy of learning that 'occurs without the presence of externally imposed curricula criteria […] in any context outside the pre-established curricula of educative institutions' (Livingstone 2001, p. 4). m-Learning is frequently recognized as having unique attributes that align well with the needs of informal (Pachler 2009; Pachler et al. 2010a; Traxler 2007) and lifelong (O'Malley et al. 2005; Sharples 2000) learning. Learning is almost poetically described as flowing 'across locations, time, topics and technologies' (Sharples, Arnedillo-Sánchez & Milrad 2009, p.

235), In exploring the ways that mobile devices enable individuals to 're-interpret their everyday life contexts as potential resources for learning' (Pachler 2009, p. 5) this part of the chapter focuses on relevant concepts, structures and practical applications of m-Learning in informal and community contexts.

3.4.1   Informal learning

Rresearchers in adult education have long recognised that, though formal and informal learning intermingle, informal and tacit learning are more appropriate than formal schooling for solving some problems related to practical life or the home (Scribner & Cole 1973). In contrast to formal learning that 'occurs under management of a teacher (and generally in a purposefully built environment) […] informal learning occurs under self-management of the learning and in *ad hoc* environments' (Wang & Shen 2011, p. 3). Recognition of this by m-Learning researchers and practitioners has been critical to establishing the discipline's practice and research agenda. In valuing informal contexts as legitimate places for learning, m-Learning has gone beyond the adoption of constructivist pedagogies to specifically design technologies and learning for spaces outside the classroom. Initiatives frequently act as an interface by which to bridge formal and informal learning contexts (Anastopoulou et al. 2008; Cook, Pachler & Bradley 2008) or connect in-class learning with outdoor field trips (e.g. Miura, Ravasio & Sugimoto 2009) and museum visits (e.g. Sharples et al. 2007; Vavoula et al. 2009). These approaches often support contextual and situated inquiry based-learning with learner cohorts already enrolled within a formal school (e.g. Anastopoulou et al. 2008; Sharples et al. 2007) or university program (e.g. Cook, Pachler & Bradley 2008; Dyson et al. 2008). In facilitating learning that draws on different contexts, field and museum trips have become a perennial feature of the mobile learning research literature.

More recently, the mobile learning literature has turned its attention to understanding informal learning that occurs independently of the structures of institutional programs. Though the first mobile learning book (see Gayeski 2002) explored the ways that mobile devices could support organizational and workplace training, momentum towards an exclusively informal m-Learning research agenda did not gain traction till later in the field's development . This is not to say that mobile learning is *not* occurring informally through social networks and new cultural practices:

the omnipresence of mobile devices makes this highly unlikely. This point is underscored by Sharples *et al.* in the Open University's 2013 Innovation Report *Innovating Pedagogy 2013*. Key trends such as 'crowd learning', 'maker culture' and 'citizen inquiry' are 'innovations that are already in currency but have not had profound influence on education' (Sharples et al. 2013, p. 3). The possible lack of research into current informal m-Learning phenomena is unsurprising. As several authors have noted, this kind of unbounded and informal m-learning that takes place within everyday settings present numerous methodological challenges to the researcher (Sharples 2009; Traxler 2009). Even overlooking research challenges endemic to mobility, informal learning is difficult to research since it remains often unacknowledged, even by the learner (Foley 2001; Hrimech 2005). Though researchers have distinguished between informal learning that is intentional and that which is tacit or incidental (Livingstone 2001) the boundaries between these categories are blurred and reliant on individuals using the language of learning. In the case of food literacy, individuals may say they were 'looking online for ways to bake a cake' – this is intentional behavior but not described as learning. Challenges like these problematize research in the area. Furthermore, adult educators have long recognized that, historically, informal learning has the tendency to be overlooked and undervalued in comparison to its formal counterparts (see Colley, Hodkinson & Malcolm 2002; Marsick & Watkins 1990). As mobile learning research acknowledges the significance of learning and mobile learners, the field starts to explore the ways that m-Learning connects not only formal and informal learning contexts, but different types of contexts for learners who may no longer have a classroom to return to.

3.4.2   Participatory culture

> New converged media and associated cultural practices are having transformative effects on learning outside formal learning institutions. New technologies, such as the mobile/cell phone, and their widespread availability and use, affect cultural practices and enable new contexts for learning (Pachler et al. 2010a, p. 13).

Changes to the socio-technical landscape, principally through the emergence of the World Wide Web, have given rise to different social structures such as the 'networked society' (Castells 2000), whose construct differs from the traditional geographic or

sovereign-based societies that educational theorists of the past had previously conceptualized. Mobile devices are linked to enacting change through communities of practice and extending the networked society. As technologies allow for interactivity 'the users become the producers of the technology in their actual practice' (Castells et al. 2007, p. 2) with social networks and user-generated content platforms being significant characteristics of Web 2.0. Participatory culture has emerged around tools such as YouTube and Facebook (Jenkins et al. 2009), offering contexts in which people can not only create content but converge new and old media to form new meanings (Jenkins 2006) in increasingly visual and multimodal ways (Kress 2000; Kress 2003; Kress & van Leeuwen 2006). New mobile technically convergent devices allow people to participate in this culture by producing and publishing text, image, audio, video and multimedia culture and meanings (Dyson, Litchfield & Raban 2010). The mobile complex has come to disturb traditional notions of power, knowledge and participation. However, van Dijck (2009, p. 45) urges caution against 'the presumption that new networked technologies lead to enhanced involvement of recipients as well as to active cultural citizenship'. Online communities are marked by participation inequality. Nielsen's '90-9-1' rule suggests that out of a group of 100 people online, 1 will create content, 9 will contribute intermittently and 90 will read and observe but not contribute (Nielsen 2006). Whether or not individuals are creating or observing we should not 'underestimate the mobile phone's ability to help effect large-scale political change' (Katz & Aarkhus 2002, p. 2). Mobile phones have played a pivotal role in the 2011 Arab spring uprising in the middle east (Duffy 2011) and, more nefariously, in orchestrating the 2011 London riots and mass looting (Holehouse & Millward 2011). Though participatory culture can manifest in both positive and negative outcomes, there is no denying its power. Research from participatory design has often explored the ways in which participatory spaces enable experiential learning through the meeting of different voices (Ehn 2008; Ehn, Nilsson & Topgaard 2014; Lindström & Ståhl 2014). Whether deemed positive or negative, it is possible to see in participatory spaces members of the public engaging in dialogue and conversation around 'complex issues that cannot easily be resolved by experts or institutions' (Lindström & Ståhl 2014, p. 307). Though participatory spaces do allow for political forms of citizenship, Burgess, Foth and Klaebe (2006) caution against views that position conventional political notions of citizenship

in opposition to things such as entertainment, leisure and consumption. The authors note that everyday creativity in the form of user-generated content is a form of cultural citizenship in which individuals contribute to new forms of civic engagement and participation in local and global public spheres (Burgess, Foth & Klaebe 2006).

3.4.3　Synergies and parallels between m-Learning and new socio-technical cultures

The participatory, multimodal character of participatory culture finds its parallels within applications of mobile learning. What can be seen within the literature is a pattern whereby m-Learning applications mirror or directly parallel key features of the current socio-technical landscape. An exemplar of this can be seen in the way that m-Learning's educational use of *student-generated* content (Dyson et al. 2009; Frawley et al. 2015; Lee, McLoughlin & Chan 2008; Litchfield et al. 2010; Wakefield et al. 2011) mirror *user-generated* practices. Though these studies of student-generated content that are conducted *with* students enrolled in either school or university education, they nevertheless draw attention to the way in which generating content may be linked to learner outcomes, such as metacognition (e.g. Litchfield et al. 2010), knowledge creation (Lee, McLoughlin & Chan 2008), engagement (Wakefield et al. 2011) and graduate attribute development (Frawley et al. 2015). Thus, these studies can be seen to re-appropriate aspects of new converged media and cultural practices for educational purposes and, through evaluation, demonstrate the learning potential. What this research asks is how individuals who have no course or class learn through similar practices. As concepts like crowd-learning and citizen inquiry (Sharples et al. 2013) reflect the new social structures of the 'networked society' it is important to ask how mobile learning occurs with alternative informal learner cohorts. This area of m-Learning is under-researched. However, notable studies, presented under the next heading, shed light on m-Learning that takes place with members of the public.

3.4.4 Informal m-Learning: key applications, strategies and findings

Having described some of the key features of the context through which informal learners navigate, this section zooms in to focus on *specific* studies and strategies that shed light on the ways m-Learning occurs with learner cohorts not enrolled in formal educational programs. Studies have explored this issue in several ways, both in attempting to understand how informal m-Learning already occurs in online communities (Clough et al. 2009) and through targeted educational interventions focused on addressing a range of public issues.

3.4.4.1 Studies of informal learner cohorts

m-Learning projects have been used to support public health and environmental education (United Nations Education Program 2011), context aware learning in outdoor tourist sites (Naismith, Sharples & Ting 2005), cultural heritage (Alkhafaji, Fallahkhair & Cocea 2015), art and museums (Greenwald et al. 2015), foreign language learning (English in Action 2016; Fallahkhair, Pemberton & Griffiths 2007) science literacy development (Aristeidou, Scanlon & Sharples 2013, 2014) and agricultural lifelong learning (Balasubramanian et al. 2010). Though studies of informal learners are more sparse than those conducted with formal learner cohorts, these initiatives demonstrate the ways in which m-Learning can address complex real-world problems in a variety of contexts.

This is especially pertinent for communities and individuals who do not have access to education, either in the developed or developing world. In such cases informal m-Learning can empower people and address serious community issues. m-Learning approaches have been used to educate people in sub-Saharan Africa about the environment and HIV/Aids prevention (United Nations Education Program 2011), support rural women from resource poor communities in India to run viable goat rearing enterprises (Balasubramanian et al. 2010) and promote Indigenous representations of knowledge and identity in remote parts of Australia (Hooley, Watt & Dakich 2013; Wallace 2011). In each of these projects, simple and existing technologies proved most suitable within a low ICT infrastructure (Wallace 2011) with learners who may not have any advanced IT skills (United Nations Education Program 2011). An

example of this can be seen in the UNEP's community learning about HIV/Aids. Learners engaged in making interactive ('choose your own ending') stories, accessible via a local or toll-free number:

> This approach is promising because many developing and threshold countries have a rich culture of knowledge acquisition through story based learning. The learners then experience the consequences of their own decisions: they decide in place of the protagonist via keypad entry ("If you X should do this, press 1…"). This level targets the use of GSM phones' (United Nations Education Program 2011, p. 1).

A similar approach was used by Balasubramanian *et al.* (2010, p. 194) with 'over 500 audio messages of about 60 second each on topics such as buying goats, feed management, disease and health management, and marketing management'. As collaborative community educational projects, these approaches facilitate learning interactions designed for the particular context and problem area. Thus, mobile learning design must be supported by wider structures.

3.4.4.2   Citizen inquiry and participation

Crowd learning and citizen inquiry are learning innovations that, though not exclusively tied to digital technologies, are reinforced by aspects of participatory culture. The characteristic convergent features of mobile devices allow individual members of the public to not only access, but contribute content about the world that they inhabit in different forms such as still or moving image, GPS map data, and written text. Individuals can then share this information with and through online communities. This fundamental participatory dynamic of user-generated content and crowd engagement has been appropriated for learning and science. Mobile devices increasingly facilitate individuals in inquiring about the world around them, whilst a wider network and community allows this data to be interpreted and shared. This process has been linked to 'inquiry-based learning' which is 'a powerful generalized method for coming to understand the natural and social world through a process of guided investigation' (Sharples et al. 2013, p. 36).

Explicit interest in inquiry-based learning can be charted back to the 2007 – 2010 UK based multi-researcher study 'Personal Inquiry (PI): Designing for Evidence-

Based Inquiry Learning Across Formal and Informal Settings' (http://www.researchcatalogue.esrc.ac.uk/grants/RES-139-25-0382/). As key findings from this project are disseminated (e.g. Anastopoulou et al. 2012; Mullholland et al. 2012; Sharples et al. 2015) inquiry-based approaches may receive wider uptake within m-Learning research and practice. To date, findings have demonstrated the power of mobile learning technologies to support learning of, among things, healthy eating, diet and food packaging (Anastopoulou et al. 2012). However, though this approach supports learning about something like diet from both scientific and personal perspectives (Sharples et al. 2015), the research differs to that pursued in this dissertation in several ways. Firstly, the Personal Inquiry project, like many other m-Learning initiatives, bridges formal and informal learning contexts with learners already enrolled in education (11-14 year olds). Secondly, in concentrating on science learning, inquiry-based approaches orientate themselves to knowledge specifically orientated within a scientific research paradigm. For example, citizens can 'spot' different species to contribute to biodiversity science (Silvertown et al. 2015) or identify different rocks to contribute to geology (Aristeidou, Scanlon & Sharples 2013, 2014). Though researchers acknowledge the complex embodied and situated learner-experiences involved in scientific pursuit (Kerawalla et al. 2012) these approaches still generate scientific knowledge as opposed to the situated knowledges frequently aligned with human experiences with food and food literacy (see Chapter 2).

Though citizen inquiry is commonly associated with scientific knowledge *and* digital technologies, such practice is dependent on neither. Citizen inquiry 'can also be carried out in the human and social sciences'(Sharples et al. 2013, p. 37). Indeed the very first project adopted neither digital technology nor scientific method. Starting in 1937, the Mass Observation project is the longest running citizen-inquiry project in existence. It began as an advertisement in the *New Statesman* for volunteers to record the social habits and opinions of ordinary people. Though the name of the project has unfortunate Orwellian overtones, the aim of the project was to create a British 'anthropology of ourselves'(Mass Observation 2015), a picture of the people by the people through communities of observers and diarists:

> In Bolton, a team of investigators went into a variety of public situations: meetings, religious occasions, sporting and leisure activities, in the street and at work, and recorded people's behaviour and conversations in as much detail as possible. The material they produced is a varied documentary account of life in Britain. The National Panel of Diarists was composed of people from all over Britain who either kept diaries or replied to regular open-ended questionnaires sent to them by the team in the London office (Mass Observation 2015, para 4).

As projects such as Mass Observation and, more recently, the Family and Community Historical Research Society (http://www.fachrs.com/) continue to explore social phenomena using digital technologies, there are opportunities for future work to use this approach to support learning around situated knowledges and cultures. If citizen science inquiry projects can be part of public science literacy development (Aristeidou, Scanlon & Sharples 2013) then there is no reason why social science alternatives may not be used to support a food literacy equivalent. As these learning innovations are predicted to gain wider influence in the future of education (Sharples et al. 2013) there is an opportunity to extend mobile inquiry based learning to support food literacy understandings and present a qualitative narrative of human learning around food with individuals not enrolled in formal learning programs.

3.4.4.3 Mobile storytelling and creative user-generated content

> Of real significance here for us are the multimodal affordances and characteristics of mobile devices, in particular how images and sound-related functionality impact on both the input and output dimensions of interactions as well as the representation of information and knowledge (Pachler et al. 2010a, p. 70)

Just as forms of citizen science draw on features of participatory culture like online communities and user-generated content, so too do creative approaches like mobile digital storytelling. Though often situated within a less public forum than citizen science, digital storytelling allows individuals in a community to create a short multimedia story using images, video and words that shares aspects of their own life story (Lambert 2002). Pioneering work on digital storytelling has demonstrated the empowerment that such approaches can have for people (Lambert 2002; Meadows

2003). Digital storytelling allows people to creatively construct a healthy individual identity through which they may be part of social change (Lambert 2002). Identity construction is an important part of lifelong learning and development (Sinnott 2009; Su 2011) and in facing the challenges and uncertainty posed by 'liquid' modernity (Bauman 2000). Thus, constructivist notions of identity formation see identity as a fluid construct which is influenced by context over the course of a lifetime of learning (Sinnott 2009). New technologies have a significant role to play in this identity construction. As the features of technically convergent mobile devices allow for individuals to consume and generate multimodal content, learners can choose the modes, media and literacies through which they construct knowledge and identity.

Digital user-generated storytelling has been used to support learning in formal and e-learning settings (Smeda, Dakich & Sharda 2012, 2014), and, more recently, in m-Learning initiatives in *informal* settings (Frawley 2011, 2012; Frawley & Dyson 2014a; Frawley & Dyson 2014c). Being able to engage in m-learning through the creation and sharing of image and audio texts has been shown to empower disenfranchised learners in community initiatives in the both Australian (Wallace 2011) and European (Ranieri & Bruni 2013) contexts. Studies of mobile storytelling have demonstrated the ways that learner-generated content can acknowledge learner agency, support creative practice and situate learning across contexts (Frawley 2011, 2012; Frawley & Dyson 2014a; Frawley & Dyson 2014c). A large European study MyMobile-Education found that mobile devices could be a 'resource for identity formation and self-representation' and enable transformative learning experiences (Ranieri & Pachler 2014). In enabling learners to construct narratives using modes and media best aligned to their own needs, digital and mobile storytelling allows not only for self-expression and reflective practice but for the emergence of idiosyncratic storytelling structures that may differ to dominant structures (Frawley & Dyson 2014a; Frawley & Dyson 2014c) such as the such as the narrative arc commonly found in western film and literature (Vogler 1998). Such approaches to learning may better recognize the visual (Kress & van Leeuwen 2006) and multimodal literacies (Jewitt 2005; Kress 2000) that permeate individual learners' lifeworlds.

In summary, educators have recognized the affordances of user-generated and learner-generated content in supporting mobile learning. Approaches such as citizen inquiry, citizen science and creative digital storytelling draw on features within the socio-technical landscape and may facilitate learning in informal contexts. Multimodal and multimedia content practices can be considered to be part of the literacies (Greenhow & Robelia 2009; Lankshear & Knobel 2008; Merchant 2009). It is argued that to understand these literacies and meaning-making processes we need to account for both the process (how people make it) and the semiotic or semantic product (what people make) (Andrews & Smith 2011; Kress 2003). However, with notable exceptions (Pachler et al. 2010a) very few m-Learning studies involving multimodal learner-generated content analyse this and instead focus on learning processes and praxis. This can be considered a significant gap in the literature and an opportunity to extend research into informal learning that adopts learner-generated content approaches.

3.5 Chapter summary and gaps in the literature

Mobile learning is a way of learning, a field of inquiry and a perspective that can inform the interpretation of existing m-Learning phenomenon as well as aiding in the design of educational initiatives to address new problems. In the previous chapter (Chapter 2), literature on agro-food systems and food literacy presented food learning as something that spanned different spaces (Wright 2006), and occurred in informal (Jubas 2011) and community settings. This chapter puts forth mobile learning, as both a discipline and perspective by which to interpret and enhance the everyday food-literacy learning that spans shops, community gardens, farms, markets, kitchens and dinner tables. As documented civic mobile learning initiatives demonstrate the power of mobile learning within public and informal learning contexts, the researcher argues that m-Learning has a much wider potential for application than has already been demonstrated. Despite the natural alignment between food literacy and mobile learning research agendas, to date no study has explored this context. This literature review establishes areas of theory and practice that could feasibly be applied to foster situated, collaborative and experiential learning conversations within mobile and informal learning environments.

- The humanist turn in mobile learning concepts and definitions makes sense of the complex ways in which people learn across contexts and life stages. Though the field has turned away from technocentric definitions, mobile learning still needs to account for the technologies that support such learning. As the boundaries of what constitutes a mobile device change and individuals adopt multiple mobile and non-mobile devices in tandem, the concept of personal ICT ecologies being applied to mobile learning research may generate fruitful ways to honor both user and device in a non-prescriptive way.

- Despite the fact that Pachler, Bachmair and Cook (2010a) question how useful it is to enforce a conceptual division between formal and informal learning, there remains a need to identify what types of learning or learner a particular research project is targeting. Thus, although there may be overlap between the *learning* that takes place within or without the educational institution, the term 'informal learning' remains useful in orientating a study, clarifying the research focus, identifying the learner cohort and talking to the existing disciplinary focus in the field. Though the field of m-Learning already embraces informal learning, there is a need for further work with learner cohorts who are not affiliated with any educational institution at the time of the study.

- As mobile devices become more ubiquitous there is a need for understandings from mobile learning research to be 'disseminated and examined from new perspectives' (Kukulska-Hulme & Sharples 2009, p. 159). Understanding mobile learning within informal and incidental contexts constitutes a significant gap in the literature and an area for further exploration.

- m-Learning offers viable ways to both conceptualize and address issues of public food literacy development. m-Learning has yet to be applied to this specific learning problem. Applying empirical research into this area may benefit practitioners and researchers within the fields of m-Learning and food literacy.

In extending research and applications of mobile learning to new contexts and new problems, different fields of interest stand to benefit.

- Citizen science and digital storytelling both revolve around user-generated content and learning associated with this. User-generated content has been demonstrated as a way to promote learning of both narrative and scientific knowledge. Both types of knowledge are relevant to food understandings. Applying user-generated content approaches to support mobile learning around food issues would be one way of extending this research agenda.

- In understanding participatory learning that happens in mobile spaces, the majority of studies focus on students' practice or learning outcomes. As recent research begins to explore the artefacts that learners create, be it images, video or written text (see Frawley & Dyson 2014c) there is an opportunity to use existing methods of multimodal analysis to understand learner-generated content from a different perspective.

In summary, this chapter's review of the mobile learning literature offers concepts, definitions and existing empirical studies that have contributed to understanding the way that adults may learn across informal contexts. This chapter closes by highlighting gaps in the literature into which this, and future work, could extend current knowledge and offer potential solutions for understanding and improving civic food literacy. Chapters 2 and 3 provide the scholarly foundations upon which empirical work can be based. The next chapter, the research methodology, builds on this by presenting the research design which draw the fields of food literacy (Chapter 2) and mobile learning (Chapter 3) to present a coherent methodological strategy for future knowledge.

Chapter 4: Research methodology

Although learning across contexts, which, it is argued here, can be seen to be a key characteristic of mobile learning, is not a new phenomenon, researching such learning in relation to the role of new mobile digital devices exposes methodological complexities that need to be addressed. Adding to this complexity is the interdisciplinary (or multi-disciplinary) approach required, including various sub-fields of education, computing sciences, and cultural and media studies, each with their own research traditions (Pachler 2009, p. 2).

To us it seems clear that research is actually more a craft than a slavish adherence to methodological rules. No study conforms exactly to a standard methodology; each one calls for the researcher to bend the methodology to the peculiarities of that setting (Miles & Huberman 1994, p. 5).

4.1 Chapter introduction

Having established both the research problems and disciplinary fields to which this study is orientated (*Chapters 2* and *3*) this chapter describes and justifies the research methods adopted and the epistemic foundations on which this work is premised. Mobile learning, as a relatively new discipline, is characteristically multidisciplinary and formed through a convergence of different research traditions (Pachler 2009). Unlike other disciplines, m-Learning has no dominant 'go-to' method or assumed method of best practice, with methodological pluralism rendering decisions in research design increasingly complex. The complexity of research design for this field is further exacerbated by the typically informal nature of m-Learning that lacks the typical boundaries of classroom, teacher, learner, curriculum and syllabus. This absence of clear boundaries poses the legitimate question: 'how is it possible to do rigorous research on mobile learning?' (Laurillard 2010, p. xi). This chapter aims to answer this question in relation to the specific needs of this study and its focus on the informal mobile learning of food literacy in adults. Embracing the multi- and inter-disciplinary nature of m-Learning research this research design is informed by research methods and understandings from both the m-Learning literature (e.g. Vavoula, Pachler & Kukulska-Hulme 2009; Wingkvist & Ericsson 2011) and that of the wider body of qualitative (e.g. Creswell 2003; Silverman 2010; Stake 2010) and multimodal (e.g. Kress & van Leeuwen 2001; Pachler et al. 2010b; Spencer 2011) methods. The focus on interpretative and qualitative methods aligns with recent definitions of mobile learning that emphasize social and cognitive aspects of mobile learning (see Sharples, Taylor & Vavoula 2007) and 'contexts, context generation and context crossing' (Pachler 2009, p. 5). This contrasts sharply with previous, and now outmoded, models of mobile learning that have privileged the device over the user, the technology over the learning, and emphasized content provision and transmission.

The chapter begins by taking a methodological perspective of the research context. In this section the researcher identifies the *specific* methodological and conceptual premises that a study of informal mobile learning and food literacy may need to account for. Following this, the chapter then proceeds to detail the research design from the 'ground-up'; firstly, by revisiting the research topic and problem and

secondly, by illustrating how this problem has been operationalized into meaningful research questions. Theoretical commitments and motivations are then detailed; these include the epistemic stance of the study, and the role and position of the researcher. Though this study adopts an interpretivist stance, it is not exempt from issues relating to methodological validity. Indeed, given the diversity of methods and paradigms that populate the field of qualitative and interpretivist research, there is a greater need to be explicit about how a given approach can be expected to generate knowledge that can be shared with academic, and other, communities of inquiry. To address this, a section of this chapter is devoted entirely to defining methodological validity and demonstrating the ways in which this is ensured throughout the research process. The chapter proceeds to outline how data is collected and analyzed within both the minor preliminary study (*Chapter 5*) and the major case study (*Chapter 6)* that comprise the empirical components of this research. In addition to highlighting the philosophic, theoretic and methodological motivations for this research design, this chapter also recognizes the role that practical constraints (e.g. time, resource, access) have in informing methodological decisions. In highlighting both the theoretical and pragmatic moves of the researcher, this chapter aims to more honestly depict the research story and convey the strengths and limitations that result from such an approach. The chapter includes a section on research ethics that describes the practical measures taken to limit risk to both researcher and participant. The chapter ends with a short conclusion.

4.2   Revisiting the research topic and problem

In designing a research methodology to address this specific research topic and problem, it is necessary to be explicit in how we define the subject under investigation; such definitions will determine the methodological choices most appropriate for examining the phenomenon of interest. This research explores adults' informal mobile learning within the context of food literacy. The research problem is motivated by both the research literature presented in *Chapter 2* and *Chapter 3,* as well as a preliminary empirical scoping study presented fully in *Chapter 4.* Both the social problem of understanding and improving public food literacy (which is typically informally

acquired across contexts and life periods) and the need for further research into mobile learning with informal learner populations motivate this research.

4.2.1 Methodological challenges

In contrast to formal education whose curricula, lesson plans, learning activities and classroom walls act as boundaries through which the field of research can be located, the mobility signified by the 'm' in m-Learning presents several methodological challenges. For example, what is the phenomenon of interest when learning may be extended or interleaved with other daily activities and how do we research learning when learning is set by the learner (Sharples 2009)? Since human-food interactions span many contexts and life-stages, the researcher necessarily engages with informal and life-long learning that occurs in and across contexts and technologies. Food literacy is thus a typically mobile pursuit, whether supported by technology or not. It is the mobile and unbounded nature that makes understanding and evaluating such learning experiences especially difficult. Mobile learning creates new contexts for learning through interactions between people, technologies and settings within an increasingly mobile society (Sharples, Taylor & Vavoula 2007). For the researcher this means there is no fixed context from which to observe the learning (Sharples 2009). Similarly, since learning may be interwoven with other everyday activities it may be difficult to identify when it occurs: there may be 'no fixed point to locate an observer, the learning may spread across locations and times, there may be no prescribed curriculum or lesson plan, the learning activity may involve a variety of personal, institutional and public technologies, it may be interleaved with other activities, and there may be ethical issues concerned with monitoring activity outside of the classroom' (Sharples 2009, p. 17). Furthermore, mobile learning that is informal, personalized and situated may present too many variables: 'too much "noise", or too little "signal"' (Traxler 2009, p. 160). The amorphous quality of informal situated mobile learning is further complicated by something such as food literacy and food interactions that occur in a range of contexts and are highly personal, subjective and entangled with personal identity (Fischler 1988). The nexus between these two fields presents numerous epistemic and practical challenges for the researcher.

4.2.2   Assumptions and definitions

Finding an appropriate methodological approach to mobile and informal food literacy means first clarifying what we mean by such terms, since the terms we use and the meaning we give them delineate the scope and foci of the research. Definitions, and the agreed assumptions upon which this study is premised are detailed below.

Mobile learning

This study adopts a less techno-centric definition of mobile learning, in which mobile learning is as a 'process of coming to know through conversations across multiple contexts among people and personal interactive technologies' (Sharples, Taylor & Vavoula 2007, p. 225). Such a definition privileges the 'cognitive and social aspects over technical considerations [and] perspectives that foreground content provision and transmission' (Pachler 2009, p. 5). People create opportunities for learning through conversations that are enacted through 'mobile devices, context-based search and retrieval of information, and exploration of real and virtual worlds' (Sharples 2009, p. 18). In adopting a definition of mobile learning that emphasizes the mobility of the *learner,* and the wider socio-cultural context into which they are situated (Pachler et al. 2010a) over that of the device, the unit of analysis becomes the human person or the learning process, not the technology. In adopting this position, the researcher conceptually makes room for mobile learning that may be inclusive of other, potentially non-mobile, technologies that comprise an individual's personal ICT ecology of devices and facilitate learning (Brady & Dyson 2010; Frawley & Dyson 2014a). This concept of mobile learning falls within a broader concept of learning, in which constructivist assumptions frame learning as 'a process of mental inquiry, not a passive reception of transmitted content' (Knowles, Elwood & Swanson 2005, p. 35).

Informal learning

This research focuses on informal learning. Since informal learning has different facets and definitions within the literature, for the purposes of this study it is necessary to stipulate *how* this learning is conceptualized and defined. Firstly, this research focuses on informal everyday learning. This focuses on learning that is intentional in which individuals 'engage either individually or collectively without direct reliance on a

teacher or mentor and an externally organized curriculum' (Livingstone 2009, p. 43). However, this research recognizes that there is a degree of overlap between intentional and incidental informal learning (Marsick & Watkins 1990), recognizing that incidental and tacit forms of learning are especially important for food literacy understandings (Jubas 2011). The researcher thus includes both within the scope of the research.

Context as an interactional construct

Research focusing on informal dimensions of learning will 'be concerned with the social and cultural contexts activities are located in' (Pachler 2009, p. 5). Here the focus is on context, context generation and context crossing (Pachler 2009). This concept treats context as something that is interpretively generated by the individual or group and their interaction with the world (see Dourish 2004; Luckin et al. 2009). This study adopts an interactional view of context over one that is defined solely by geographic location.

Food literacy

This study focuses on participatory and community concepts of food literacy (see *Chapter 2*) and how learning about this takes place in community environments. Food literacy has been defined as 'understanding your food choices on your health, the environment and our community' (Food Literacy Center n.d., para 1). Food literacy also entails skills, such as cooking, that support people in translating understandings into useful practices (Vidgen & Gallegos 2012). This study explores food literacy as a holistic construct that embraces 'farm-to-fork' understandings; that is the connection of where and how a food is grown, to how it can be cooked, prepared and eaten. This concept is identified as personal and inherently subjective (Fischler 1988). This research specifically focuses on food literacy as a form of 'situated knowledge' that is defined as an individual's subjective, embodied and constructed account of truth (Haraway 1988). This type of knowledge epitomizes the quotidian ways that individuals experience food within their daily lifeworlds (Lyons 2009). Thus, this research is not concerned with measuring how many facts people accrue about food, be it nutritional or environmental information, but rather how they construct personal and situated understandings through a mobile learning process.

4.2.3   Research questions and purpose

Derived from the research problem are research questions. Research questions make explicit the intellectual puzzle or problem that a research project aims to address. However, in writing research questions the researcher makes decisions about the focus of interest, the scope and scale of a study, and the practical limitations of time and resources that affect all research (Cohen, Manion & Morrison 2000). Research questions need to be clearly formulated, intellectually worthwhile and epistemologically and practically researchable (Mason 1996); In other words, a 'research question must be answerable' (Andrews 2003, p. 2). In addition, these questions must be positioned in conversation with the broader aims of the study so that they do not emerge out of 'thin-air' but respond to a particular problem context or situation (Andrews 2003). As such, research questions are not abstractly derived from gaps within the literature but are embedded within each component of research project, from its adopted ontology and epistemology through to the practicalities of data collection.

Table 4.1 Tentative Research Questions

Research Question	
RQ	How can mobile learning be applied to improve food literacy with adults in informal learning contexts?

⬇ ⬆

Subsidiary Research Questions	
S1	How do adults within informal settings acquire food literacy through the practice of mobile and non-mobile learning?
S2	What is the impact of the Red Hen Recipes Project on enrolled participants' understanding and beliefs about food provenance and their wider food literacy?
S3	In the context of the Red Hen Recipes Project what role does the mobile device and the wider ICT ecology have in facilitating or shaping this learning experience?
S4	How can we best describe adults' mobile meaning-making within the context of this project?

Initial research questions (Table 4.1.) were derived from gaps in the literature, practical considerations and theoretical commitments. One research question was generated and further operationalized into four correlating subsidiary questions (Table 4.1), these were used to structure the study, which was predominantly focused on the Red Hen Recipes

(RHR) food literacy project. The language of each research question identifies whether its research aim is exploratory, explanatory or descriptive whilst the interpretivist nature of this study is also reflected through questions that focus on the *impact* of mobile learning on human attitudes and understandings of their food, and where it comes from. The choice of the word 'impact', over 'effect', is deliberate. Focused on broader aspects of the influence mobile learning may have on people's informal understandings of food this word avoids any attempt to measure any particular 'effect' of any one variable, and the associations this has with the scientific method or studies that adopt positivist or post-positivist research paradigms. Within emergent and interpretivist research design, research questions are not static but evolve with the study through progressive focusing of the research resulting from the researcher's accumulated knowledge (Stake 2010). Thus the questions posed at the beginning of the study (Table 4.1) are tentative and anticipated to deepen and change over the duration of the research project.

4.3 Theoretical motivations and commitments

Theoretical motivations and commitments refer to the specific ontological and epistemic assumptions on which a study is foregrounded. Ontology refers to what is knowable, whilst epistemology refers to how it can be known by the community. Within the research methodologies literature these epistemic assumptions are referred to as philosophical perspectives (Myers & Avison 2002a), philosophical worldviews (Creswell 2009) and research paradigms (Guba 1990; Lincoln & Guba 2000; Yin 1994). These form the basis for underlying assumptions about what constitutes 'valid' research (Guba 1990). Such worldviews must align with the specific research questions and determine the methods to be used within a study (Myers & Avison 2002b). Though often hidden, philosophical worldviews or paradigms underpin how we conceptualize the world around us and how we come to know it (Silfe & Williams 1995). Qualitative methods may be grounded in many different research-paradigms or philosophical perspectives. Therefore, for a predominantly qualitative research project such as this one, it is necessary to be transparent about the theoretical motivations and commitments that

underpin the study and on what premise we assume this study to be able to make valid contributions to human knowledge.

4.3.1   Interpretive inquiry

> The scientific point of view is itself an abstraction from it[self]. The scientific angle is the one from which we attend only to certain carefully selected abstractions which are meant to be the same for all observers. When we move away from that specialized angle to the wider, everyday point of view we are not 'being subjective' in the sense of being partial. Instead we are being objective – ie. realistic – about subjectivity, about the fact that we are sentient beings, for whom sentience is a central factor in the world and sets most of the problems that we have to deal with. (Midgley 2002, p. 101)

In focusing on mobile learning that is conceptualized as a social, cultural and contextual phenomenon (see Pachler 2009) it is necessary to clarify what is knowable about such phenomena. Interpretive and contextual inquiry is one philosophical perspective that aligns with researching the subjectivities of the social world. While positivism and post-positivism emerged from the natural sciences and discourse in the philosophy of science, interpretivism emerged from human-centric studies in sociology and history. Interpretivism is, as a result, less concerned with the causal behaviour of physical objects than it is in understanding human meaning-making (Schwandt 2000). Human meaning-making is cast by the interpretive researcher as a reality that is unfixed, only accessible via interpretation and mediated by social constructs such as language, consciousness and shared meanings (Myers & Avison 2002a). The interpretive researcher's goals may focus on interpreting the intentions behind social actions (Schwandt 2000). Epistemologically the outcome for interpretivism is that knowledge is perceived to be mutable, unavailable for empirical collection, and only understood (*interpreted*) as a construction formed by all social participants, including the researcher (Orlikowski & Baroudi 1991).

Within this particular paradigm qualitative methods predominate. Qualitative research is 'exploratory and is useful when the researcher does not know the important variables to examine' (Creswell 2009, p. 20). Such approaches may be necessary when the topic is new, the topic has never been addressed with a certain sample or group of

people, or existing theories do not apply with the particular sample or group under study (Morse, 1991). Though qualitative data in the form of interviews, focus groups, participant writing and text based approaches has come to characterize interpretative inquiry, Yanchar (2011, p. 180) cautions against the total exclusion of numeric data: 'Is it possible, however, that a strong emphasis on well-accepted qualitative forms of inquiry can lead to its own one-dimensional research tradition?'. However, for this study the use of numeric data must continue to cohere with the interpretivist philosophy adopted and admitted without necessarily introducing some of the problems associated with orthodox quantitative methods. Numbers, where occurring naturally within the study, are therefore used 'to enrich and clarify explicitly interpretive accounts of human phenomena' (Yanchar 2011, p. 181). This approach means that we do not have to exclude or ignore numeric data, but rather can encompass this meaningfully within both the philosophy and aims of the study.

4.3.2   Methodological validity

Interpretative approaches do not adhere to the same methodological validation, such as objectivity, repeatability and generalizability, as found within scientific or post-positivist research paradigms (Crotty 1998). This does not mean that the question of methodological validity and research rigor is redundant, rather, given the diversity of research paradigms and methods that comprise the domain of interpretative inquiry it is especially important to clarify and justify specifically how the criteria are being used to assess the success of any research project. In other words, on what premise can we assert that the results of this research constitute knowledge and are valid 'according to criteria of *appropriate* rigor […] that lend themselves to intellectual debate with academic (among other) communities of inquiry' (Schön 1995, p. 27).[8] In ensuring the validity of a given method to generate legitimate and meaningful knowledge, it is necessary to define what constitutes knowledge and how such methods lead towards this goal. Several approaches are taken to ensure validity of method: internal consistency and transparency, emergent research design practice, multidimensional perspectives, and researcher reflexivity. These approaches are discussed below.

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[8]   Researcher's emphasis

4.3.2.1   Internal consistency and transparency

There are many ways to design and conduct research, each with its purpose, strengths and limitations. Rather than engaging in a debate on the 'best' type of research, such as that of the Two Culture debate (Snow 1990) or pitting one research paradigm against the other, this chapter proposes that research be assessed on its own terms. This is important since research has to be responsive to the problem it is trying to solve. One framework suggested for evaluating the quality of qualitative research is that of internal consistency between epistemologies, methodologies, methods and analysis (Carter & Little 2007). Though epistemological and methodological commensurability do not guarantee the research's utility, it does ensure internal consistency. In order to judge this consistency, it is necessary for the researcher to be explicit in describing 'their own conceptual and analytic moves' to allow others to 'judge the utility of the work and to profit from it' (Huberman & Miles 2002). Though this chapter specifically addresses the research design and how particular research paradigms, methodologies and methods are used to address the research topic and problem, the concept of internal validity and transparency can only be gauged by understanding the entire thesis. What this means is that a claim towards interpretivist research in the Methods Chapter must be congruent not only with *how* the methods are used, but how that analysis is treated within both the Findings (*Chapter 5, 6 & 7*) and Conclusions Chapters (*Chapter 8)*. Only in this way can research claim to be internally valid.

4.3.2.2   Emergent research design

All research is, in some way designed. Research design is 'about making choices, ensuring those choices are epistemologically and methodologically commensurate, defensible and clearly understandable' whilst forming a 'strategy for action: organizing, undertaking, managing, and assuring the quality of a research study'(Williams 2012, p. 17). Though not always rendered explicit outside of the social sciences, emergent design is integral to qualitative research and research approaches situated within an interpretivist research paradigm (Pickard 2013). The concept of emergent research design is based on the belief that the researcher 'doesn't' know what he or she doesn't know' at the beginning of the study (Lincoln & Guba 1985, p. 209). Since findings generated from an interpretivist study are derived from a dialogic interaction between

researcher and participant, a research strategy that is iterative and responsive is better able to adapt to the human interactions and conversations that are at the heart of the research (Erlandson et al. 1993).

4.3.2.3   Multidimensional perspectives

The use of different methods and perspectives to investigate a single case or phenomenon is an approach that is often used to strengthen research validity and reliability. Such approaches can include the admission of multiple sources of evidence (e.g. surveys, interviews, observations), as well as different and alternative analytical perspectives (Yin 2009). This approach lends itself well to case study research which, though limited to a single case, often 'inherently deals with a wide variety of evidence' in contrast to other methods (Yin 2009, p. 115). Within the social sciences the use of multiple data, methods and analytic techniques have been referred to under a range of terms that express both the research aims *and* its epistemic outlook.

This term triangulation is a term commonly used to describe the use of multiple methods to research social phenomena. Triangulation, as a method, was originally derived from geography, in which a geographer would use different points on the earth's surface to *fix* the subject of interest (Blaikie 1991). Though in social research triangulation is used less literally, emphasis on the fixing, positioning and capturing of an external reality are problematic when adopting an interpretivist stance (Wolfram Cox & Hassard 2005). Recognition for the need to emphasize the position of the researcher has led to redefinitions of triangulation or alternatively shifts in nomenclature. Wolfram Cox and Hassard (2005) suggest reconsidering the concept of triangulation from a metaphor that focuses on 'triangulation of distance' to one that encompasses the researcher's stance. Richardson (2000) takes this concept a step further in her adoption of the term crystallization that, contrary to triangulation, shifts discussion from one of fixed spaces to a metaphor that accounts for the position of the researcher as well as the potentially mutable and evolving nature of the subject of interest. Studies that go under terms such as 'multidimensional' (e.g. Alyousef 2013) can be seen to achieve a similar outcome. Where triangulation attempts to 'ground' a singular truth from multiple viewpoints', multidimensional research approaches use

multiple viewpoints to describe the phenomena along multiple dimensions without the necessity of reaching a singular common understanding.

Whatever the terminology or research aim, the use of multiple sources or types of data is one way to widen the exploration of a single phenomenon and acknowledge that each data source has different properties (Miles & Huberman 1994, p. 267). In this particular study the different methods of data collection and analysis are chosen as part of an emergent research design which enables the researcher to stress 'the importance of letting one's subject unfold in its nature and characteristics during the process of investigation' (Burrell & Morgan 1979, p. 6). Included within these different methods is the ongoing process of researcher reflection, which is expanded upon below. In adopting multidimensional perspectives this study aims to explore the case study with greater depth and rigor than could be achieved using a single method. The inclusion of researcher reflections as a legitimate perspective and source of data ensures that methodological discussion of interpretivist research paradigms are not just given 'lip service' within the methods chapter but are, instead, fully manifest in the practical day-to-day running of the research project. In summary, the use of multiple methods within this study is not adopted as a means of to stabilizing, fixing or silencing, but rather as a means for opening-up and exploring the phenomenon of interest from its many different facets and perspectives.

4.3.2.4   Researcher reflection – accounting for the researcher

Reflective practices have arisen in response to doubt over the ability of competent observers to be able to 'with objectivity, clarity, and precision report on their own observations of the social world' (Denzin & Lincoln 1994, p. 11). Reflective analysis has become a dominant feature of critical and interpretive research that conceptualizes social reality as a constructed, rather than discovered, phenomenon (Alvesson, Hardy & Harley 2008). Its roots can be traced back to arguments within the philosophy of science that recognized the interpretative jump from data to theory (Popper 1959) and the historically situated nature of knowledge (Kuhn 1970). In acknowledging that the human researcher brings their own, necessarily limited, constructs, thoughts and feelings to the research process, it follows that researchers need practices and methods to accommodate this within the research design. The concept of reflexivity relates to the

ability to turn back upon and take account of the self (Holland 1999). However, this general definition of 'looking back on the self' may be expressed and practiced differently across different research paradigms. For example, in a positivist or post-positivist research, reflexivity may be used as a means of reducing bias. Conversely, this study adopts reflective research practice as an ongoing engagement with the dynamic and dialogic interactions between researcher and participant. Conceptualized this way researcher reflexivity is not an bolt-on component used to further validate an existing methodology, but rather a holistic and embedded practice that comes to characterize the entire research process. Within this study, researcher reflection is primarily supported through the use of journal and memo writing. Journal and memo writing are undertaken *throughout* the duration of the research project, from literature review, interviews, data collection and analysis, and theoretical discussions. Since reflections were captured at different stages of the research, different tools were used to document these including: a private online PhD project wiki and blog, a traditional paper notebook, and specific memo writing tools within qualitative analysis software (i.e. QSR NVivo). In accepting that the researcher cannot be an objective and detached observer of the world, but is instead engaging in an act of constructing his or her social reality (Holland 1999) this research is better able to understand the inherently interpretative and subjective nature of informal mobile learning and food interactions.

4.4   Empirical research design

Progressing from the research aims, questions, and theoretical and practical scope are the empirical research components – that is those aspects of the research design in which data is collected and analysed. This research is undertaken in two parts: a preliminary scoping study and a major case study. In keeping the research open, the preliminary study took a largely grounded approach and worked with field research, interview data, and secondary sources through a review of existing technologies and the academic literature. This study ensured that the research aims were rooted within legitimate 'real world' needs, as well as scholarly ones. Results from this study were coupled with an ongoing review of the literature to inform the design of the central case study that is the main focus of this doctoral dissertation. Figure 4.1 illustrates how these

studies relate to the wider research project. This section of the chapter describes and justifies each stage of the research design relating to these two empirical studies.
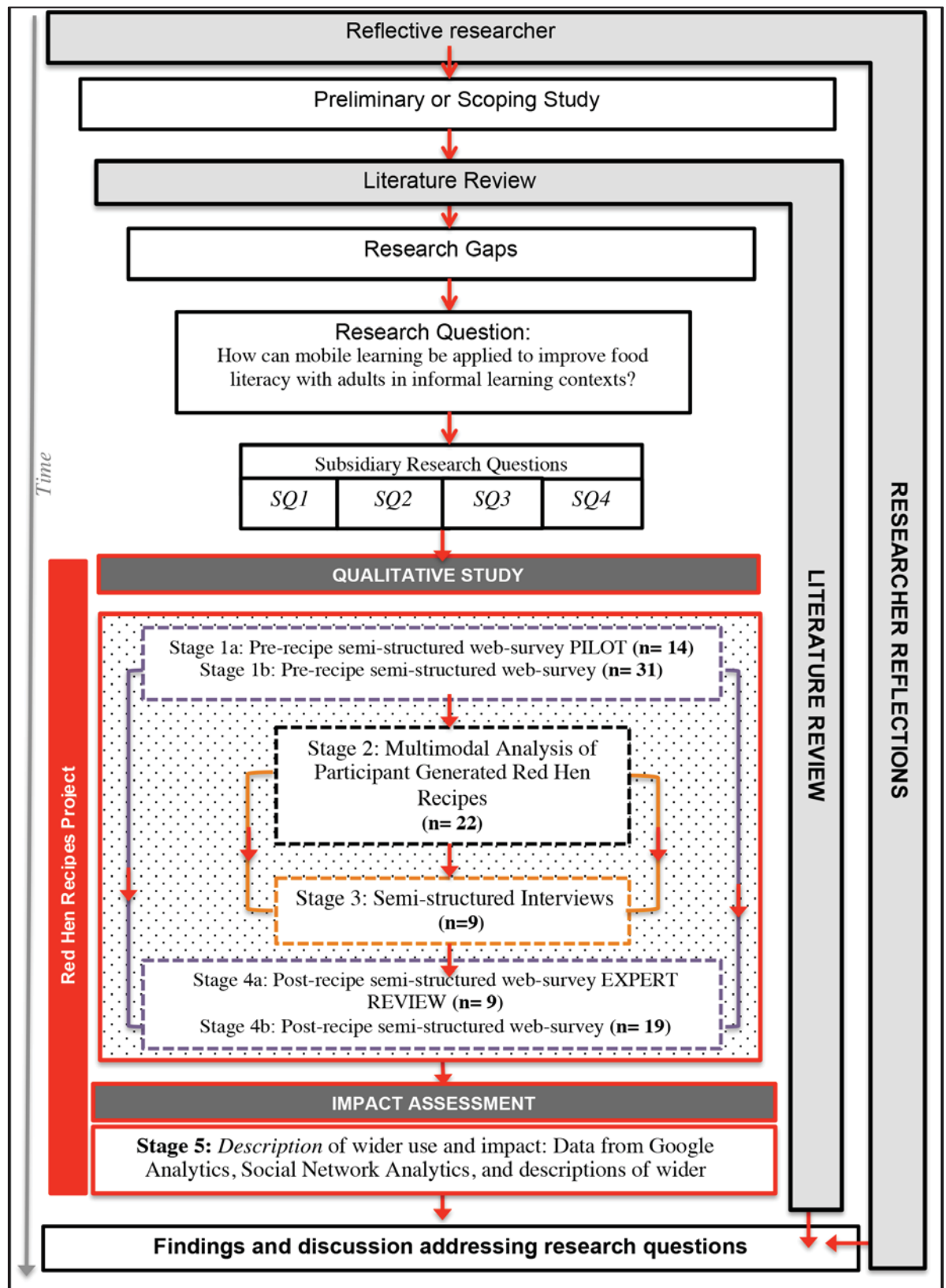
Figure 4.1 Research Design

4.4.1 Preliminary scoping study

In 2011, an exploratory study was undertaken. The primary aim of this short field-study was to explore human-computer food interactions from the perspectives of both commercial producers and individual consumers. The design of a system for supporting producer-consumer interactions was also foregrounded. Though somewhat structured by these two broad aims, the study adopted an open grounded approach that sought to further identify a focal point through an abductive research strategy that worked from the voices and concerns of people up to abstract or conceptual ideas. From this research design work was undertaken.

The research was largely exploratory and was undertaken in four interdependent stages (Figure 4.2). From broad exploratory field work the scope of this research was iteratively narrowed down. Secondary research into surrounding literature and existing technologies was conducted throughout all four stages, and all primary research was conducted by observation and interviews. Due to the exploratory nature of this project, interviews were unstructured and informal. Interview questions were analyzed thematically and all interviews were recorded and transcribed.
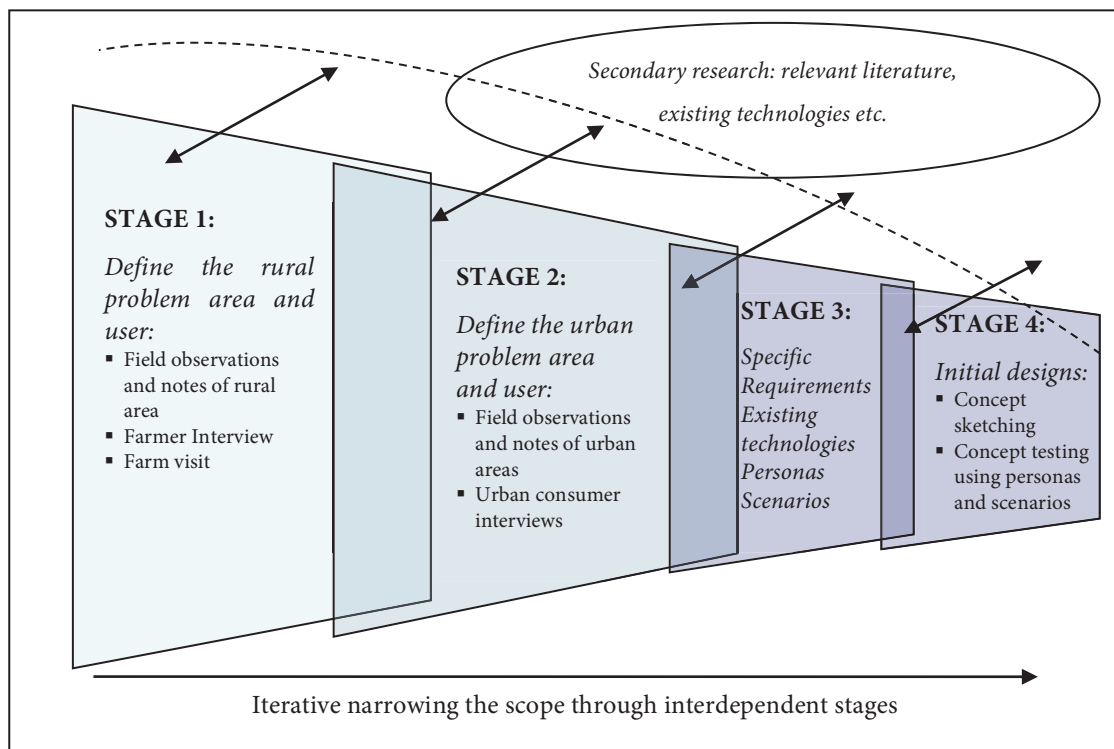
Figure 4.2 Defining the problem through stakeholder and user research

4.4.1.1   Stage 1: Define the rural problem area and user

Fieldwork was conducted in September 2011 in rural NSW in the area of Bowral and Berrima. This fieldwork included the following data collection and analysis.

Researcher Observations

Researcher observations were conducted in several different food-related contexts: a growers' market, a supermarket, a local café, and a restaurant and a supermarket. Observations were supported by: note taking, diary writing and taking photos.

Farm Visit and Interview

An exploratory case study with a single farm was undertaken. Three methods of data collection were used within the boundaries of a single case:

- Observations
- Exploratory unstructured interview (1hr 45mins)
- Artefact Analysis (e.g. website, social media engagement, farm book and egg cartons)

4.4.1.2   Stage 2: Define the urban problem area and user

Interviews and observations with urban user groups were conducted September 2011 in urban and suburban Sydney. This research included the following data collection and analysis.

Unstructured interviews

Six unstructured interviews were conducted with persons living in an urban setting. The interviews focused on food and technology and were analysed thematically using NVivo software.

Researcher observations

Researcher observations were conducted in a domestic kitchen of *one* interview participant who used technology in her cooking process. Since the individual did not wish to be photographed or videoed, sketches and notes were taken. These sketches and

notes were used to inform design of the Red Hen Recipes' project and technologies, which are described in further detail in the section below.

4.4.1.3   Design work

Findings from the preliminary study were used to inform the design of Red Hen Recipes (henceforth abbreviated to RHR), a participatory user generated content platform that would enable consumers and producers to write and share 'extended' farm-fork recipes. The concept of an extended recipe was to connect the action of the producer in the field with the consumer in the kitchen. Design and development work was rooted in the human-centered design methods from participatory design (e.g. Bannon & Ehn 2013; Simonsen & Robertson 2013), Human Computer Interaction (Rogers, Sharp & Preece 2011) and principles from the more recent field of sustainable HCI (Blevis 2007; Brynjarsdóttir et al. 2012; DiSalvo, Sengers & Brynjarsdóttir 2010; Dourish 2010; Pierce et al. 2013) and its subsidiary field Human-Food-Computer Interactions (e.g. Blevis & Morse 2009; Choi et al. 2009; Comber et al. 2012; Hirsch et al. 2010).

4.4.1.4   An emergent food literacy project

Though only in prototype form and not live, media interest in the research and project drove public interest in the Red Hen Recipes project. Using an expression of interest page (Figure 4.3) the project received 40 expressions of interest from the public through local and national print media (Berriman 2012; Frew 2013), and local and national ABC radio (Jacobs 2012; Wilson 2012). This project and the participants who comprise it form the Red Hen Recipes Project and case study, whose research methods are detailed in the next section of this chapter.

4.4.2   Red Hen Recipes case study

Stemming out of the preliminary study, Red Hen Recipes (RHR) is a food literacy project that allows individual members of the public to create and share user-generated, multimodal 'farm-to-fork' recipes. From a methodology perspective, the RHR Project is treated as a case study. Case study research is less concerned with *how* research is conducted as it is *what* is researched: in case study research 'the case is a specific one' (Stake 2000, p. 436). However, the focus on a specific, allows a phenomenon to be investigated 'in depth and within its real-life context, especially when the boundaries

between phenomenon and context are not clearly evident' (Yin 1994). As such, case study approaches are particularly useful for researching specific but multifarious phenomena such as the amorphous phenomenon of informal mobile learning that Traxler (2009, p. 160) characterizes as informal, personalized, situated, with too many variables, and 'too much "noise" or too little "signal"'. In this instance the single case is the RHR project, which acts as a 'functioning specific' (Stake 1994, p. 236) and provides the boundaries through which to investigate the problematically unbounded nature of informal mobile learning. Thus, the phenomenon of interest can be investigated through multiple sources of evidence (Yin 2009) and the research specifically focused on food learning and learner mobility. There are, like any research approach, limitations to this method, most notably the lack of breadth in the study and the inability for researchers to generalize from a single case. However it is worth remembering the role case studies have within their wider research community:

> The advantage of large samples is breadth, while their problem is one of depth. For the case study, the situation is the reverse. Both approaches are necessary for a sound development of social science (Flyvbjerg 2004, p.432).

Individual case examples, like 'black swans', can bring significant understanding to the field of enquiry (Flyvbjerg 2004).

Within the context the field of mobile learning and food literacy the Red Hen Recipes Project contributes the main case study on which this doctoral thesis is based. Case studies, unlike other methodological approaches, such as ethnography or experimental studies, are not associated with any specific research paradigm or methodological approach, and can adopt quantitative, qualitative or mixed methods (Pickard 2013). Consistent with the research aims and needs of this study (that are detailed earlier in the chapter) interpretative methods are adopted. The study is primarily a qualitative one, but admits numeric data where appropriate or necessary. In exploring mobile and blended learning within the parameters of the RHR case, this study uses survey, interview and multimodal analytic approaches. Each stage is described sequentially in the order that they occurred in (as illustrated in Figure 4.1).

4.4.2.1   Participant involvement

In an informal learning project, it is necessary consider how participants are involved and managed. Participant involvement covers everything from outreach, participant recruitment, incentives and any necessary contact and support that may be provided throughout. These forms of involvement are important to note since they will shape who comprises the final participant cohort and how they are supported in what they do. Furthermore, issues, questions and interests may be reflected in ongoing informal communication between researcher and participant.

Recruitment

Recruitment was undertaken in several stages using different strategies to gauge participant interest. Since this research focuses on informal learning the study targeted individuals who were not involved in any formal food education (e.g. cooking courses, permaculture design etc.). Participants were recruited using a combination of different channels and supported by several online platforms. These are detailed below.

Collecting and recording early expressions of interest

Prior to the launch of the RHR project and website, early expressions of interest and public feedback from print and radio press were gauged through sign-up webpages hosted by two different platforms: *LaunchRock* (LR) and *Call For Participants* (CFP) (Figure 4.3). Both webpages operated allowing individuals to indicate their interest by submitting their email address.
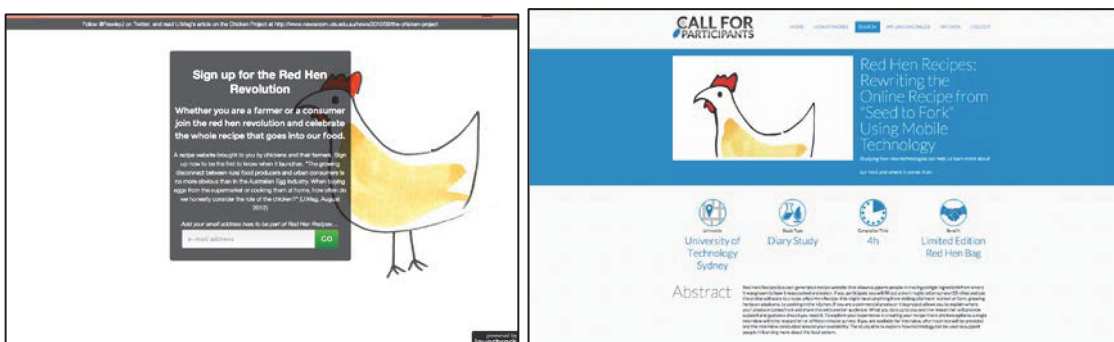
Figure 4.3. Signup web pages

These two pages served slightly different purposes. LaunchRock was a simple sign-up page generated to gauge general interest during the early stages of the project. In

contrast, Call for Participants allowed potential participants to gauge their interest in participating as both a user and a research participant; CFP was used after the website had launched. Links for both LR and CFP were able to be shared using social media. In the case of CFP, the unique CFP URL was integrated into a paper pamphlet that was part of a face-to-face recruitment strategy. The amount of exposure and expressions of interest recorded by these pages is detailed in Table 4.2. Not all signups or expressions of interest translated into active participants.

Table 4.2 Participant recruitment

	Views	Expression of Interest	Participants
LaunchRock	177	70	2
Call for Participants	1067	16	22
Direct Email		8	8
Total	**1244**	**94**	**32**

Exposure

These sign-up pages were used in conjunction with wider project discussion and exposure. Amongst this coverage was:

- ABC Radio National's *Bush Telegraph* (Radio Interview and Online Recording)

- ABC Canberra's *Afternoons* (Radio Interview and Online Recording)

- U:Mag's web-article *The Chicken Project,*

- Sydney Morning Herald's *Brink Magazine* article.

These forums also connect more widely with Facebook, Twitter and other social media. The URL for the CFP page was also included on fliers that supported face-to-face discussions with participants in community gardens, supermarkets, academic conferences, writing groups and other community venues. Though the CFP web page was promoted, many participants got in contact with the researcher directly using her email address, as this was also included on the flier.

Incentives

Small incentives were used to express gratitude to people who had given up their own time to complete surveys or take part in survey and/or interview research. Different

incentives were provided for different levels of participation. Participants who completed two surveys received a Red Hen Recipes shopping bag. Participants who agreed to be interviewed, were given a book on Australian cooking and were also catered with morning or afternoon tea during the interview. Though interviewees who had to travel were offered a reimbursement of the cost of their travels, no participants made use of this offer. All incentives and catering were cleared with the UTS Human Research Ethics Committee prior to the start of research.

4.4.2.2   Pre-recipe survey (Survey I)

Unlike formal education environments which may have a time period such as a term or semester for which enrollment is set at a fixed date, enrollment in the Red Hen Recipes project was ongoing. Web-surveys, unlike more time-constrained methods of data collection such as interviews or workshops, are a pragmatic way of capturing ongoing enrollments over an extended period of time. At enrollment, and prior to creating a Red Hen Recipe, all participants completed a preliminary survey. This is then coupled with a 'post-recipe' survey that is discussed later in this chapter.

Survey design and development

We know, from the literature of adult education, that adult participants do not enter an educational project as 'blank slates' but bring existing skills, knowledge, learning, interests and motivations to the project (Knowles 1980; Lindeman 1989). Though the research foci on adult learners and ethics clearance necessitated that participants be over the age of 18, there were no other formal entry requirements.[9] In a voluntary and informal learning project the learner is in control of constructing their learning environment, negotiating the local context and defining their own goals, practices, and collaborations (Laurillard 2010). It is therefore important to understand the aims and expectations of a potentially heterogeneous group in order to contextualize and make sense of their learning and practices within the Red Hen Recipes project.

A semi-structured survey was administered to all participants who signed up to the Red Hen Recipes project. In addition to demographic data and contact information,

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[9]   18 years is the legal age of adulthood recognized by Australia and many other countries.

the latter being used for administrative purposes, the preliminary survey was designed to capture a snapshot of *who* was participating in the Red Hen Recipes project, their existing interest and practices, and their motivations for participating in the project. The survey was piloted with ten people, and revised prior to being administered to participants who would enroll in the project.

Data collection and analysis

The survey tool was designed using three sources: the literature review, findings from the pilot study and the research questions. The survey is comprised of both closed and open-ended questions and is made available in *Appendix 5*. Closed-ended questions allow for a quick collection of descriptive nominal and ordinal data whilst limiting the cognitive load borne by participants. Findings from closed-ended questions are presented in descriptive frequency tables or bar graphs. However, the number of participants, the crude and inexact nature of categorical data (as opposed to numerical data), and the philosophical foundations of the study mean that statistical tests are meaningless. Rather, this descriptive data is extended and coupled with exploratory open-ended questions that generate written responses that can be thematically coded in NVivo. Consistent with the rest of this study, the survey is thus treated as a qualitative and interpretative instrument.

4.4.2.3 Multimodal artefact analysis

As part of the RHR project, individual participants created Red Hen Recipes by using different modes and media to document an ingredient's journey from 'farm to fork'. This user-generated content and the wider website in which it sits, are important digital artefacts that are central to understanding the Red Hen Recipes project and case study. Analysis of this digital content can give us important insight into the resources that participants created and the role these artefacts have in new multimodal meaning-making processes, user-generated content and peer learning. It is argued that to understand these literacies that we need to account for both the process (how people make it) and the semiotic or semantic product (what people make) (Andrews & Smith 2011; Kress 2003). Whilst survey and interview methods can help the researcher

understand the former, an alternative approach is required to understand the latter. Artefact and content analysis offers one approach to this problem.

However, in choosing an appropriate analytic method it is necessary to ask: 1) what are we analyzing?; 2) what do we want to know?; and 3) what is the most appropriate analytic method to address these questions'?. In the case of RHR, the content, that is the recipes, are formed using a range of multimedia. Thus any analytic method must reflect this. Historically content analysis has been strongly affiliated with the analysis of written texts, typically via thematic coding. However, understandings stemming from social semiotic theory (Halliday 1970, 1978), and new literacies and multimodal literacies research (e.g. Coiro et al. 2008; Greenhow & Robelia 2009; Knobel & Lankshear 2007; Kress 2003; Leu et al. 2007; Livingstone, van Couvering & Thumim 2008) provide both concepts and analytic tools for making sense of the new multimedia content. Such frameworks are especially important if we are to understand the new multimedia content and practices that technically convergent mobile devices support (Frawley & Dyson 2014c). Indeed, there has recently been a fruitful precedent of applying social semiotic and multimodal theory to mobile learning (Frawley & Dyson 2014a; Frawley & Dyson 2014c; Pachler et al. 2010b) particularly in understanding *how* people meaningfully engage in such semiotics and practices within a mobile context. Following this precedent, participant generated Red Hen Recipes are analysed in a way that is reflective of their inherent multimodal and multimedia characteristics. Analysis is conducted through both a summative overview that accounts for the number of type of recipes on the site, and though selected close-readings of participant generated recipes. Close readings are facilitated using discourse analysis stemming from Kress and van Leeuwen's (2006) seminal *Visual Images: the grammar of visual design.* This analysis aims to account for the semiotic products that are generated from the participant cohort and describe not only what people made but also which modes and media are used. Understandings from this stage of research are then used to inform the interview research described under the next heading.

4.4.2.4   Interview research

> More inclusive approaches to informal learning that attempt to identify tacit knowledge through such means as direct observation in situ or in-depth interviewing may serve to sensitize both learners and researchers to previously taken-for-granted learning processes. (Livingstone 2001, p. 5)

'Interviews are not neutral tools of data gathering but active interactions between two (or more) people leading to negotiated, contextually based results' (Fontana & Frey 2000, p. 646), in which participant actively construct knowledge in response to the questions and responses posed to them (Holstein & Gubrium 1995). Conceptualized in this way and orientated within an interpretivist research paradigm, interviews are identified as a dialogic, constructivist text in which meaning is co-constructed between interviewer and interviewee. Interviews not only offer a method of exploring individual perspectives and interpretations of participants, but allow the researcher to explore phenomena that the researcher is unable to observe themselves (Stake 2010). This is especially useful in the case of informal mobile learning, where it is neither possible nor desirable to monitor the mobile and personal space of learners, whose self-directed actions derive their meaning outside of the all seeing eye of a teacher or researcher.

Interviewee selection

Since the data collection for this project was undertaken sequentially, timing was an important factor in shaping *who* was selected for interview. Unlike formal education environments which may have a time period such as a term or semester for which enrollment is set at a fixed date, enrollment in the Red Hen Recipes project was ongoing. In a context in which the final participant number is not fixed, a sampling procedure to select participants is, from a pragmatic standpoint, unsuitable. Instead interviewees were selected based on their early completion of their Red Hen Recipe and their indication, on their first survey, that they would be available for interview. From this data a second qualitative survey can be developed to extend our understandings to participants who joined later in the project or who, for whatever reason, did not want to participate in interview research.

Like any method of data collection, there are limitations to the utility of data that stems from these interviews. In selecting interviewees based on their time of submission and willingness to be involved, the interviewee sample may be over representative of certain types of participants: participants that heard about the project earlier through one particular recruitment channel, are more enthusiastic, tend towards early adoption of new technology, or simply have more available time to do their recipe. There is a clear potential bias in the sample. However, there is no *intrinsic* problem with the sample or the findings that derive from it. Rather, it is the risk for how those findings are used within the wider study. Findings from these interviews cannot be used as the sole means of understanding the wider participant group or for creating fixed constructs necessary for a quantitative survey tool. By accepting the limits of this interview data as imposed by the interviewee selection, we are able to use such findings appropriately through more open qualitative methods that can extend our understanding of the non-interview participant group.

Interview structure and conduct

In an attempt to understand the complex practices and perspectives of participants, interviews were kept semi-structured; suggested open-ended questions were generated through the *etic* issues of the researcher, thus questions that stem from the research question, literature and field of inquiry (*Appendix 10*). These questions were personalized to the individual interviewee through the use of data from *Survey I* and looking at the artefact of the recipe that the individual participant created. For example, if a participant had created their recipe using images and text, questioning the respondent on why they chose this approach, as opposed to doing a video. This would be an informed and legitimate question. However, though initial questions were generated the structure was left open and unstructured to allow for the interviewees to narrate and construct their stories around their own issues and concerns. This approach is well suited to understanding complex human narratives that resist *a priori* categorization.

Interview analysis

Interviews were audio recorded, transcribed and coded sequentially by the researcher. Initial coding was first undertaken using pen and paper methods that allowed for first impressions to be rapidly recorded through annotations, drawing, note taking and highlighting sections of text (for an example, see *Appendix 12*). However, long-term management of the *amount* of data lent itself to a computerized and database solution. QSR's NVivo software was the main tool used for organizing and managing this analysis. However, where pen and paper methods allowed for alternative, and often more flexible, approaches to exploring the data these were also used. These included diagram drawing, hand-written memos and the use of post-stick notes to play and explore different categories. As the data changed through each semiotic stage, from the embodied conduct of the interview through to coded themes, different degrees of analysis were undertaken. Each stage of analysis is detailed below.

In situ member checking and post-interview note taking

Interpretation of interview data first occurs *in situ* during the conduct of the interview. The dialectic nature of qualitative research means initial themes are co-constructed between researcher and participant early on. Researcher questions that ask 'this appears to be a theme?' allow for a form of early 'member checking' (Stake 2010) in which the researcher can check an early interpretation of what a participant says with that participant *in situ.* Whilst not the standard form of member checking in which participants are presented with 'a recording or draft copy of an interview' (Stake 2010, p. 126) this approach provides a quick way to involve participants whilst avoiding the potential issue of the member or participant having 'little interest […] or no free- time to examine the excerpt' (Stake 2010, p. 127) An example of this initial member checking, as undertaken in this study is detailed below.

Extract Interview Transcript 3: 16:29 – 17:07

> **Researcher [16:29]:** And when you were writing the content (.) did you do it in Word first (.) and then move it over? (.) or did you just do it straight onto the [recipe] (.) or did you do it on a laptop? (.) or::
>
> **Zoya [16:36]:** I did it straight onto Word at my computer (.2) just cause it's quick and easy (.1) there's a theme isn't there? ((laughter)) Quick (.) Easy (.)
>
> **Researcher [16:47]:** And plans? ((suggested as a theme))
>
> **Zoya [16:55]:** Yes (.) yes (.) because I know the recipe in my head so:: (.) [hm:: [so it's quick and easy too (.) even including (.) even having to go back and remembering things that I forgot to include (.) it's still relatively a quick and easy progress (.) because it's a meal we make weekly

In this example excerpt the interviewee identifies a recurrent theme of 'Quick' and 'Easy' as being things that are important to her. Planning was also suggested as a theme since the participant, in this example, emphasized the use of weekly cooking repertoires and shopping lists to plan what they eat in advance. This initial analytic strategy was further supported by the researcher's use of a post-interview diary that allowed for rapid impressions about other factors that shaped that conversation. Such notes allowed the interviewer to capture potentially non-verbal dynamics such as the participant's ability to articulate themselves (did the participant struggle to articulate themselves), how comfortable they were in the interview setting (did the participant appear shy or awkward), and whether there were any technical issues with video-conferences, such as latency or delay, that might lead to more pauses or changes in conversational patterns within the transcript.

Audio Recording and Transcription

Audio recordings were taken of all interviews. These recordings were transcribed by the researcher, since the act of transcription is itself an interpretative act that requires the researcher to be 'as true to the conversation as possible, yet pragmatic in dealing with the data' (Bazeley 2013, p. 73). Transcription of this audio artefact into a written text permits the researcher to anonymise, analyse, cite and share the interview conversation with a wider audience. However, in transcribing the interview conversation it is

necessary to adopt some symbols to account for features that distinguish spoken language (e.g. pauses, intonation and emphasis) from its written counterpart. To capture conversational elements, complete with repetitions and linguistic fillers such as 'umms' and 'errs', transcription was undertaken using classical Conversation Analysis (CA) notation that accounts for pauses, emphasis and conversational overlaps. This approach not only better captures the spoken form of the interview but also better represents the dialogic and co-created narrative that results from a conversation between researcher and participant. All interview transcripts adopt a simplified form of CA transcription notation, as defined by Silverman (2010, p. 430):

(.)	A tiny gap, probably no more than one tenth of a second
(.1)	Numbers in parentheses measure pause in seconds
Word	Emphasis, either by pitch or amplitude
.hh	A row of h's prefixed by a dot indicates an inbreath; without a dot an outbreath
ver::ry	Colon use indicates prolongation of the immediately prior sound.
(())	Double parentheses contains author's descriptions, rather than transcriptions
?	Question or marked rising intonation
.	Falling intonation
,	Flat or rising intonation

Interview transcriptions were taken manually; pauses and intonation were approximated by the human ear. This approach translates features of oral language and conversational elements interview better than standard written punctuation. Annotations were also added to convey emotional overtones, nuances of expression, significant non-verbal expressions or events that took place within the time and space of the interview. Since no interview is separated from its socio-physical context, a brief description of the interview setting and the interviewee's age, sex, occupation and gender precede each transcript; this interview metadata is available in *Appendix 9*. All interview transcripts are anonymised to protect the individual participant identities. A complete transcript of Interview 1 is included in *Appendix 11* as an example.

Thematic coding

There are many ways to analyze, interpret and manage interview data. Codes are described as 'a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data' (Saldaña 2009, p. 3). In assigning a code to a portion of data we may be summarizing or condensing that data, observing qualities or patterns within the interview transcript. Assigning codes is not only a summative act but an interpretative act, through which the researcher can navigate from data to ideas (Richards & Morse 2007). Though encoding data in this way is not the only way to analyse qualitative data, this approach, nevertheless, provides a systematic way for managing, locating, sifting, sorting, querying and exploring (Bazeley 2013) large amounts of data generated through an empirical study whilst retaining the link between raw data and research interpretation. However, as Saldaña (2009, p. 4) points out 'coding is not a precise science [but] primarily an interpretative act'. The way in which coding is conceptualized and undertaken, feeds back into the ontological and epistemic foundations on which the study is based (Creswell 2009) and cannot be separated from the 'constructs, concepts, language, models, and theories that structured the study in the first place' (Merriam 1998, p. 48). Thus, within an interpretivist research paradigm the coding process cannot separated from the subjectivities and idiosyncrasies of the individual researcher (Sipe & Ghiso 2004).

Acknowledging the human and subjective nature of qualitative analysis does not, by default, mean that 'anything goes' but rather that researchers have to be reflective of their position throughout this analytic work. By highlighting the human and variable nature of this process, this study can avoid being part of the rising trend in, what has been termed, superficial 'scientism' (St. Pierre & Jackson 2014, p. 715), in which participants' words are treated as 'brute data' that is waiting to be counted and reduced to numbers. As St. Pierre and Jackson (2014) point out, such approaches rest on a Cartesian ontological realism that assumes that data is 'out there', waiting to be found. Rather, by acknowledging the inherently human aspect of coding we can make this process more transparent, honest and thorough. Thus, the process should not be viewed as a definitive act, but rather as a recursive and cyclical process (Miles & Huberman 1994) through which the researcher is able to pore over the data by annotating,

describing, linking, bringing theory to bear, recalling what others have written, and seeing things from different angles […](MacLure 2008, p. 174). In this study, coding is conceptualized as a means of *opening up* inquiry (Strauss 1987) and linking data to ideas (Richards & Morse 2007).

Derived from grounded theory (Corbin & Strauss 1990) thematic coding can largely be seen to happen in three stages: 1) identifying themes; 2) forming definitions and categories of themes and 3) forming understandings of how different categories and themes relate to one another. Analysis can *largely* be thought to move from recognizing and identifying themes (Stage 1) to understanding how those themes relate to each other (Stage 3). For the purposes of written clarity the researcher presents these stages in this order. However, it is worth remembering that the messy human practice of interpreting data is more recursive and prone to shuttle back and forth across these stages.

- *Stage 1: Initial coding – Coding to identify and describe themes*
  Initial coding identifies themes, primarily noun or adjectival words or phrases. The semi-structured and conversational nature of the interviews meant that it made more sense to treat each transcript as its own entity. This contrasts with structured approaches that might, for example, begin by analyzing all responses to question one. Analyzing each transcript separately and in order of which they were conducted aimed to preserve the integrity of each individual conversation and their story. Also practically, working chronologically allowed analysis to begin prior to concluding data collection. Codes were initially generated through micro-coding of the data. This is where the researcher codes each line of the interview transcript, for example, codes might include each instance a participant refers to a recipe book, particular emotion, or the place where they shop. Over three hundred codes were developed out of analyzing the interviews in this way. As synonymous or similar codes emerged micro-codes were grouped, deleted, consolidated or relabeled to make sense of the data. In the example in Figure 4.4 the researcher identifies *places* that the person shopped at. These were grouped into a larger parent node called 'Purchasing places'.

- *Stage 2: Axial coding – Coding to explore relationships between themes*

  Axial coding attempts to further explore codes generated by identifying categories that these descriptors might fall into. This might group initial codes by categories such as context, emotions, social actors or processes (Figure 4.5). As with initial coding, categories were subject to continual revision.

- *Stage 3: Selective coding – Coding to describe or present a theory*

  Though referred to as 'Selective Coding', this stage bears little resemblance to the descriptive and categorical activities that we typically come to think of as coding. Rather, this stage of analysis refers to the final stages of data analysis in which those discreet concepts and categories that were previously identified are refined and consolidated to tell a larger story, or theory, about the data (Price 2010). Furthermore, in creating a theory, or a story about why the data behaves that way it is sensible to include not only interview data but data from surveys and other methods. Whilst NVivo is part of this process, the alternative nature of this stage of analysis means that the researcher used other tools such as post-stick notes, handwritten notebooks and diagramming (Figure 4.6.).

		(.h) shop for food each week
00:35	**S**	Um::: er::: (.1) I usually shop at the IGA which is just down the road (.) an::d um:: (.) that's for grocery-type shopping (.) but for fruit and vegetables I usually go to a (.h) fruit market (.) [oh okay [um:: or um::: (.h) Thomas Dux sometimes (.) [yeah [(.) is that like a local market? That's [yeah there's a fruit market just down the road in um (.) yeah I think it's Addison street? (.) [yep [there's a fruit market there (.) and it's quite reasonable (.) or I go to Harris Farm which is in Cammeray (.) [hm [an::d um:: buy fruit and vegetables there as well
01:09	**J**	O::kay so you've got a combination of the IGA, the Fruit Market (.) occasionally Thomas Dux (.) occasionally Harris Farm (.) [hmm [Why would you go to these places

IGA

Markets

Thomas Dux

Proximity

Cost

Harris Farm

Figure 4.4. Initial coding: excerpt from interview 6

Figure 4.5. Axial Coding: NVivo Screenshot
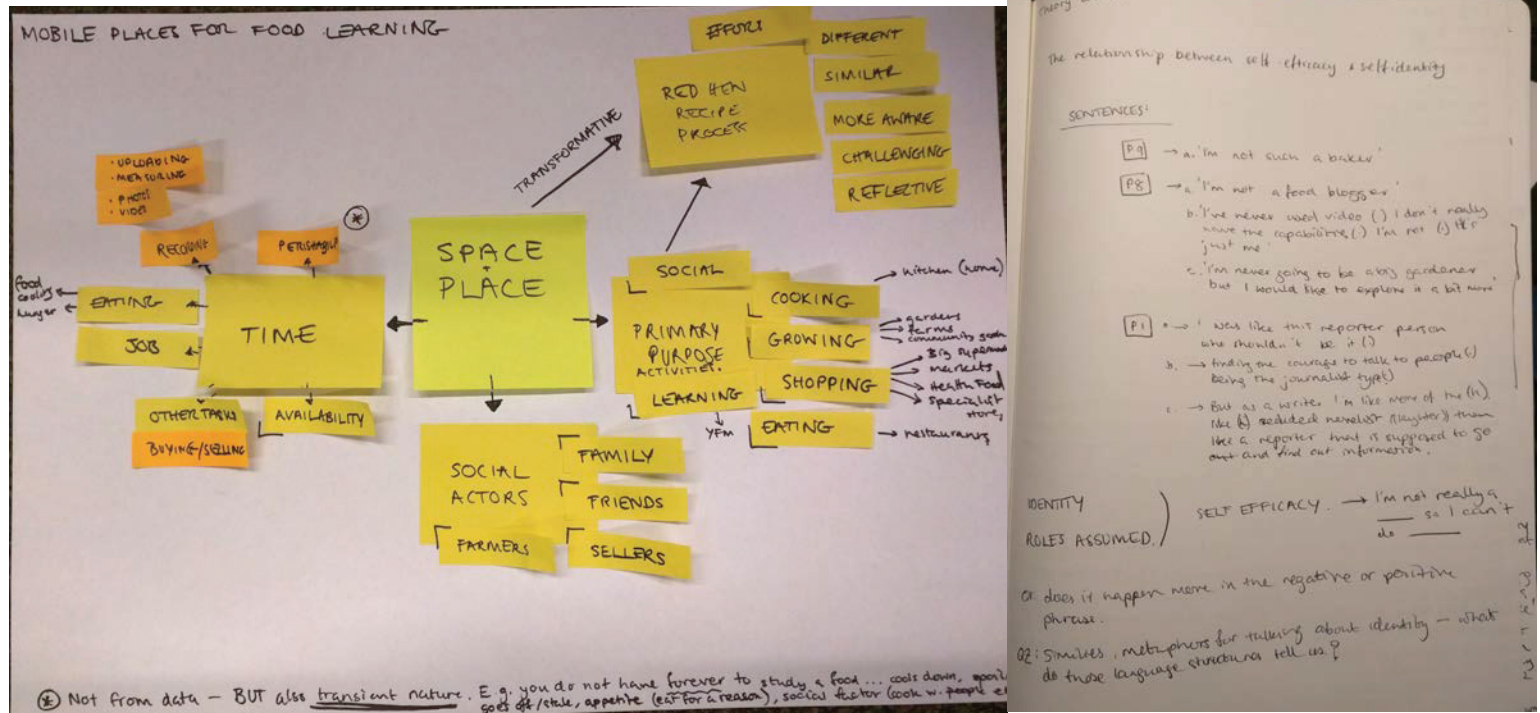
Figure 4.6. Describing and presenting an early theory using Post-it® notes and handwritten note taking

Narrative analysis: Patterns of storytelling and case comparisons

Lastly, whilst thematic coding formed the dominant method of data analysis, individual summaries of each individual participant and their narrative were also included in the form of short vignettes. This approach was taken for several reasons. Firstly, during the coding process the sense of pulling apart the data left the researcher concerned that each individual and their specific narrative might end up lost within the analytic process. Secondly, short vignettes serve as a practical and legitimate way for the researcher to communicate and illustrate narrative structures without recourse to long and unwieldy transcripts. The use of individual vignettes does what coding doesn't do, in that it allows the researcher to see each individual participant as a holistic case and to compare one case with that of another. This is just one additional way in which the data is explored and opened up to new interpretations.

4.4.2.5   Post-recipe survey: Survey II

A final qualitative survey tool was used to extend findings from the interviews and recipe analysis to all participants, including those who had viewed, but not contributed, recipes to the site. As has been highlighted previously, the participant-directed nature of this project and the usual time constraints of a research project make qualitative web-surveys an ideal method for capturing data from a temporally dynamic participant cohort. Findings accrued from the preliminary study, literature review, interviews and content analysis are used to inform the development of this final survey. The survey instrument is included in its entirety in *Appendix 15.*

Survey design and development

This survey aims to evaluate how all participants on the Red Hen Recipes project learnt about food and engaged with the online community. Since the design of this survey drew on findings from several methods, the survey tool was constructed over four iterations that started by mapping findings from the preliminary survey, interviews, recipe analysis and website data analytics to each subsidiary research question. This approach not only allowed the researcher to use existing research understandings to inform the design of the survey tool, but to also identify gaps in the existing case study research that the survey could potentially address.

Since the post-recipe survey entailed some participation in the project it was not possible to pilot this survey with non-participating laypersons. Rather than using some of the valuable, and small number of participants, to pilot this survey the survey was refined iteratively through expert evaluation documented in *Appendix 14*. As part of this process, nine expert evaluators with a background in qualitative research were approached and supplied with: 1) a brief background on the survey's aims and target participant; 2) a description of the research aims; 3) a link to the Red Hen Recipes website and 4) suggested questions to guide each expert in providing feedback, these included things like 'were the questions clearly worded?', 'did you understand them?'. These questions were taken from Peterson's (2000) *Constructing Effective Questionnaires.* In lieu of a pilot survey, this expert evaluation provided an alternate means for seeking feedback and improvement on a survey tool.

Data collection and analysis

The survey focuses on what participants learnt about food and how their technology assisted in facilitating this learning. Administered as a web survey, the survey captured the learning experiences of individuals who had participated in the Red Hen Recipes project both those who had created a recipe and those who had viewed or used the site. Website usability is not explicitly evaluated since this is better assessed through usability testing and other observational methods from HCI, methods that were conducted previously as part of the original system design and development process. However, though not explicitly assessed by the survey, it is accepted that usability issues may emerge as a natural like/dislike in some participant responses.

As with the pre-recipe survey, this survey was comprised of both closed and open-ended questions. The rationale for this was to use closed-ended questions to both guide participants through the survey and allow quick collection of descriptive nominal and ordinal data whilst limiting participant cognitive load. Findings from closed-ended questions are presented in descriptive frequency tables or bar graphs and open written responses that can be thematically coded in NVivo. Consistent with the rest of this study, the survey is thus treated as a qualitative and interpretative instrument.

4.4.2.6   Memo writing and researcher reflections

As part of the framework for this study there is a commitment to the principle and practice of researcher reflexivity. Though the rationale and theoretical motivations for this were detailed earlier in the chapter, this section lays out how such principles are supported within the day to day running of the research project. Researcher reflection was supported through several different tools, each of which afforded slightly different practices. These tools, and their place within the project are briefly described below.

Research project wiki

Both a tool for project management and reflective practice, a project wiki was set up early into the doctoral project. This wiki's blog tool allowed the researcher to form a repository of reflections on the literature and fieldwork that supported both image, video and written reflections.

NVivo memo and annotation tools

Since all qualitative text data is eventually consolidated within the QSR NVivo software it made sense to use the NVivo memo and annotation tools for some, if not all, of the researcher reflections. NVivo memos were used to capture first impressions, analytic decisions and researcher reflections throughout the coding process. The researcher wrote separate memos for each interview transcript, annotations on important parts of transcripts, and particular themes. NVivo software supports written reflections and the ability to sort and search these reflections at a later date.

Handwritten notes and paper tools

Though digital tools make ongoing reflection easier, there is still space and necessity for handwritten note taking. Handwriting was used on printed transcripts (see *Appendix 12*), and in the form of a researcher diary that proved especially useful in latter stages of the research where the focus was on understanding how different themes relate to one another. In this instance pen, paper and post-stick notes better afforded diagrammatic work and exploration of how themes relate to wider theories of learning.

Using these different tools and strategies allowed the researcher different means of engaging in reflective research practice. A summary of these reflections and understandings are presented separately within *Chapter 7* of this thesis.

4.4.2.7   Web analytics and behaviors

Though qualitative approaches predominate case study research, 'quantitative data and its analysis can add to the overall picture' (Gillham 2000, p. 80). Within the Red Hen Recipes case study, focus on the human participant's food learning and subjective experiences have led towards largely qualitative methods. However, these phenomenon do not occur in isolation but within the context of the wider space of the Red Hen Recipes website. To understand what this looks like means exploring how people behave and interact with the website and potentially its Facebook page. Such behaviors, typically from anonymous website visitors, are best observed via web analytics and social media metadata. The form that this data takes is numeric and can, if treated appropriately, help us understand what impact this small project has within a wider context.

It is important to clarify how this data is treated, what we believe we can learn from it and how this method integrates with the wider research project and methodology. Firstly, web analytics can offer a snapshot of how people engage with the website. This snapshot offers a wider perspective on the Red Hen Recipes project than previous methods, in that it captures certain behaviours of the website's *entire* user group, which is much more extensive and anonymous than those participants who engaged in survey or interview research. This snapshot is of certain types of behaviour. We can learn which countries users come from, which platforms, devices, browsers and operating systems they use. We can see which content is popular and how long individual users spend on different pages. Web analytics' focus on user behavior over user attitude, makes it more reliable than using participants' self-reported use.

However, as with any method there are limitations to this. Primarily we must recognize that though this data showcases particular types of behaviours it does not give us a full understanding of the learning process (if any) or the context in which these things occur. Similarly, by finding out what is clicked on and what is not we may be able to infer what content is popular on the Red Hen Recipes website but not how this fits

into a wider interaction. What other resources or technologies are in use? What learning processes, if any, is that individual going through? These are questions that we cannot answer through web analytics or social media metadata. However, by understanding the nature of the data we are in a better position to use it appropriately.

In summary, this study uses numeric data from Google Analytics and Social media metadata (shares, likes, tweets, etc.) as an additional and complementary perspective through which to comprehend the Red Hen Recipes project and a better understanding of the landscape into which the project's participants were situated. Analytics data is thus treated descriptively.

4.5 Ethical issues

Any research involving human participants will pose some degree of risk to both the participants and the researcher. In addition to the general research risks, such as participant confidentiality and data security, are those that are endemic to the specifics of the research topic or field. For example, mobile learning poses a particular ethical problem in that it frequently occurs in public sites or personal spaces where monitoring is inappropriate (Sharples 2009). In the case of food literacy learning, these spaces are likely to include private domestic spaces such as homes, kitchens and gardens, and public spaces such as shops and markets. Food not only transgresses different contexts but can be a deeply personal issue that is entwined with identity (Fischler 1988), class (Bourdieu 1984) and an individual's ethics (Food and Agriculture Organization of the United Nations 2001). Food literacy also touches on issues such as animal welfare and food safety that may be anxiety provoking for someone to learn about for the first time. In addition to the specifics of the subject matter, are ethics relating to projects that take place in a public and online environment. User generated content and the publication and discussion of this online content presents a high degree of risk; such risks include the abuse or misuse of publication tools to publish explicit content, engage in cyber bullying, or breach system security. Though these risks can never be entirely eliminated, website moderation, encrypted storage of user data and regular site maintenance and backup procedures can limit the severity and likelihood of the risks posed. Several

measures, both formal and informal, were taken to identify and mitigate the risks posed to participants and researcher within the study; these are detailed below.

4.5.1   Ethics clearance

Research plans need to be 'reviewed by the Institutional Review Board (IRB) on their college or university campus' (Creswell 2009, p. 89). A process of ethics application and institutional review provides a form of risk assessment for the physical, psychological, social, economic and legal harm to both the participants and the researcher (Sieber 1998). Approval and clearance to commence research was granted by the University of Technology Sydney's (UTS) IRB for research that involves human participants, the Human Research Ethics Committee (HREC). The HREC is a Vice-Chancellor's committee established in accordance with the requirements of the National Statement (see National Statement on Ethical Conduct in Human Research 2007) to 'ensure that all research undertaken by UTS staff and students conform to the highest ethical standards and to the guidelines of the Australian Health Ethics Committee (AHEC), which is a principal subcommittee of the National Health and Medical Research Council (NHMRC)' (University of Technology Sydney 2014, p. 4). Ethics approval was granted in December 2013 (UTS HREC approval reference number 2013000702) and covers the duration of the research project. As part of the conditions, the researcher must provide an annual report and update to the HREC to ensure that any changes in the methods or approach are approved. Though ethics clearance is necessary it is not sufficient to ensure ethical conduct throughout an extensive study. Ongoing reflection and commitment to ethical research practice is needed. To ensure this, several principles and practices were put in place. These are detailed below.

4.5.2   Voluntary participation and informed consent

All participation in this research is voluntary. The principle of informed consent is defined as a procedure that *informs* participants of the research and provides individuals with a means of agreeing and opting into this. Informed consent can be more problematic when working with vulnerable populations (e.g. children, persons with disabilities etc.). This research does not target vulnerable populations. To facilitate informed consent participants were provided with an information sheet and consent

form that was approved by the HREC. Opting into the research happens at several stages. Participants initially 'opt in' to the research by completing a web-survey; information on *how* the data will be used and handled is provided at the start of the survey, and taking part in the survey will indicate informed consent. Participants who also engage in interview research sign a consent form. Since registering to use a website and participating in a research project are two different things, processes that were part of opting into research were handled separately from user registration. To reinforce this web-surveys were created and hosted on the UTS Survey Manager Website, and *not* embedded as a form within the Red Hen Recipes website. All participants were informed that they could 'opt out' or withdraw from the research at any time during the study.

4.5.3   Data handling and confidentiality

In collecting data *from* people that is *about* people (Punch 2005), researchers need to be mindful of how this data, and the people who provided it, are protected. Since interviews and website registration are used, it is not possible for participants to be entirely anonymous. However, by ensuring confidentiality we can ensure that 'nobody will be told the identity of the participant' (Pickard 2013, p. 93), giving the participant a degree of freedom to express their own attitudes and beliefs in either survey or interview scenario. Confidentiality in this research is ensured through several different practices including: data storage, data handling and participant options for how they decide to use or represent themselves on the Red Hen Recipes website.

Data storage

For administrative purposes it is necessary to collect personal and identifying data such as names and contact details. Protection of participant identities is ensured both for digital (e.g. survey responses) and non-digital files (e.g. signed consent forms). Digital files are stored on the researcher's password protected home external hard-drive which only the researcher has access to. Signed consent forms are stored in a locked cabinet in the researcher's university office.

Data usage

A common tactic used in social research to provide confidentiality is the use of pseudonyms, or codes, when referring to individual participants (Pickard 2013). In this dissertation and any publications that derive from it participants are referred to by pseudonyms (e.g. Sarah). Pseudonyms better retain the personal element of the individual and may be more useful for conveying narrative patterns (e.g. David describes his life on the farm).

Options for anonymous site use

Participants were informed at the outset of the project that they could use the site anonymously under a user name of their choosing. Many participants did not want to use the site anonymously, whilst this may render their participation in the research not entirely confidential the use of pseudonyms and code mean that it is nearly impossible to trace individual comments within the data to specific users on the site. The only instance where participants' confidentiality is waived is in the multimodal artefact analysis of participant-generated recipes. All participants were approached before this was done, with findings presented in aggregate form so that research focused on trends within the total data-set over approaches that singled out individual recipes and content.

4.5.4   Website and content management

The Red Hen Recipes website (www.redhenrecipes.com) was the platform through which all participants create and share their recipes. As a context it thus presents a significant risk for both participants and researcher if not managed appropriately. Management of the website, like any piece of software, includes regular maintenance, backups, and software updates. In addition, since the site allows users to create and publish content, site moderation is also necessary to prevent misuse of the site to publish offensive, illegal or libelous content or engage in cyber bulling behaviors. These risks are minimized through several strategies.

Terms and conditions of use

Terms and conditions of use for the website state that the individual user is responsible for their own content. These terms and conditions are available to all users on the

website and were written succinctly in plain English to allow for lay understanding. Should a user contravene the Terms and Conditions of Use, the site administrator (who is in this case the researcher) is able to remove any offensive content and revoke the individual user's rights to use the site.

Guidelines for creating content

The user is further supported in identifying what is appropriate to post through guidelines on creating a recipe that lay out principles for what content is and is not appropriate.

Content moderation

Website users are protected against inappropriate or offensive content through content moderation that is also managed by the website administrator and researcher. Should content be uploaded that infringes copyright law, is of a libelous or false nature, is offensive, or engages in bullying behavior, it will be removed by the administrator. Where appropriate the administrator will communicate the reason for content being removed to the user. Content moderation extends to: recipes, user profiles, and the comment feature.

Website security

System security is a discipline in its own right and one that can easily expend large amounts of time and resources of a developer. However, simple features and practices can make a site more secure towards malicious attacks and limit the amount of problems an attack would cause. Most important to protect is user information. This is done through the encrypted storage of user passwords. User passwords are stored in encrypted form, using an algorithm. This means that even in the case that the site was hacked users' passwords are protected, even administrative users, including the researcher, are unable to see a user's password. Regular site backups mean that should an attack on the site ever occur, that the site could be restored after the event – with users recipes and settings unaffected.

4.6 Chapter summary – research methodology

This chapter presents each step, both theoretical and practical, that shapes the conduct of this doctoral research. This chapter has been careful to highlight the concepts, philosophical assumptions, and theoretical commitments that shape each stage of the research process, from how this research frames and phrases its research questions through to how these are best addressed within the practical constraints endemic to all research. Each method and approach is designed explicitly to address the human issue of mobile learning within the context of food systems and food literacy. This is undertaken within two studies that adopt multiple methods. For the purposes of clarity and transparency, findings from each method (e.g. survey, interview etc.) are detailed separately within *Chapters 5, 6* and *7*. However, the sum of these methods is greater than its parts and in *Chapter 8: Conclusions* findings from different perspectives and methods are drawn together to make a significant and meaningful contribution to the fields of mobile learning and food literacy development. Still, it is important to recognize that such contributions cannot be separated from the research design and perspectives that generated it.

Chapter 5: Preliminary study and project design

[…] it would be nice to start a trend or a culture of knowing where your food comes from

Bea, Egg Farmer from Rural NSW

It might be nice to know which farm it came from but it won't make that much difference unless I know something about that farm.

Benedict, Computer Science Student, Sydney

5.1   Chapter introduction

In the previous chapter, the methodology, the researcher described this research as 'emergent' – something defined by the OED as 'rising out of a surrounding medium' or 'rising into consciousness'. If research is emergent then the question that springs to mind is 'where does it emerge from?'. Though motivations for undertaking research in a particular field often cite particular societal problems or gaps in the literature, it is important to acknowledge the researcher's own personal story and the way in which human interest, excitement and curiosity cohere with more formal research motivations. What drives the researcher to first explore literature on food literacy when there are many other types of important learning problems in the world? This chapter addresses this question by charting the origins of this doctoral study from early researcher interest through to a formal preliminary study whose findings were used to inform research questions, research design, and technologies that comprise the central case study on which this thesis is premised.

The chapter's narrative begins with four chickens in the researcher's backyard in suburban Sydney. Having established the conception of this research, the chapter presents findings from the preliminary study. The preliminary study involved fieldwork consisting of a visit to a food producer and five interviews with urban food consumers, thus presenting two perspectives on the food supply chain. Empirical work from this preliminary study worked in tandem with the Literature Review (*Chapters 2 – 3*) by generating broad grounded understandings of the problem area and directing future reading. The preliminary study was also used to develop the tentative research questions (presented in *Chapter 4)* that were used to focus the study. Having detailed findings from the preliminary study, this chapter describes how these were used to inform the design of the Red Hen Recipes project, the core research which is presented in the following chapter. Supplementary data relating to this stage of research is presented in *Appendices 2, 3 and 4.*

5.2 Origins of intellectual curiosity: garden and community learning

> Interpretive research begins and ends with the biography
> and self of the researcher (Denzin 1989, p. 12)

Research remains a human undertaking, and is, as such inseparable from the interests and intellectual curiosities of the researcher. This is especially true for interpetivist approaches that legitimately recognize the researcher's personal interests, beliefs and values in shaping the research. Here, the researcher explores generative personal experiences that have been fundamental to the research. Drawn from researcher reflections, this section highlights the researcher's involvement with local and community food provision that, coupled with academic work in educational technologies, has served as a kernel to subsequent, more formal, study.

5.2.1 Garden based learning

> […] gardening changes the status of food for all involved. When one gardens, food can no longer be viewed as a mere commodity for consumption; we are brought into the ritual of communal goodness that is found at the intersection of people and plants. Food that we grow with our how hands becomes a portal for *personal transformation* (Thorp & Townsend 2001, p. 357).

The space of the back garden has been a microcosm for building early interest and understandings around the food system. Within the researcher's own lived-experiences this environment, and the learning that occurs in it, has evolved incrementally in what is both natural and man-made environment. In 2010 the researcher acquired a worm farm and in 2011 a largely unsuccessful vegetable garden and four egg laying chickens. In 2014 she introduced a hive of native (stingless) bees to the garden. These practices have afforded her opportunities to think and learn through a microsystem that mirrors aspects of the larger and more complex agro-food system. These small attempts to produce food, whether by growing or cooking, triggered interest in the ways in which learning, outside of the classroom, can occur informally in response natural and organic phenomena. This can be illustrated with some of the knowledge and skills necessary to care for hens. Over three years the researcher has learnt how to clip wings, treat ill birds

and manage the way that these animals co-exist with other wild fauna in the area, some of whom are predatory. Though experts, such as vets and botanists, have been part of this learning process, the majority of skills were acquired online through Internet forums, videos, images and responses to community questions. These experiences enabled the researcher to reflect on the difficulties of food provision.

5.2.2 Educational technologies and community learning

Personal interest in local food provision and learning cohered with the researcher's professional and academic work in the field of educational technology. The researcher has worked on mobile learning projects for tertiary education since 2008 and has both experience and interest in this area. As the researcher started to think about how learning about the food system might be improved, educational technologies and mobile learning appeared as viable strategies for conceptualizing the issue and exploring interventionist solutions. Over the duration of the PhD, the researcher has engaged with community food groups and networks as a way of exploring this community based learning.

5.3 Fieldwork: Rural free-range egg producer

> On arriving at the farm, we were chaperoned by about four livestock guardian dogs who immediately set to barking to alert the farmer to our arrival. As we drove from the farm gate to the farmhouse, these large white maremma sheep dogs ran alongside the car. As we neared the farmhouse the sound of the hens became louder. We slowed to a walking pace to avoid hitting the birds and dogs that now surrounded us. As the farmer came out, we opened the car door only to have two of the mud covered livestock guarding dogs clamber into the front seat to sniff-out the intruders.

Excerpt: Researcher Reflections

The farm on which early fieldwork was conducted is a family owned free-range organic egg farm situated in the southern highlands of NSW, Australia. It supplies to small retailers such as IGA and other local shops and restaurants. The farm is situated on 100

acres of property, has 4,500 hens and produces an average of 3,000 eggs per day. This particular farm was chosen as an exemplar of an agricultural producer who has successfully communicated farming practices to a wider audience through an innovative use of digital and non-digital technologies. Using data from interview, field notes and artefact analysis core themes are described under their respective headings and focus on the farm's values and practices, and the information resources and technologies they use.

Figure 5.1 Maremma sheepdogs in the laying shed

5.3.1   Farming philosophy, values and practice

The farm's daily practices are motivated by a wider belief system and farming philosophy. One of the major themes that came out of the interview with the farmer was the need to work *with* the land as a living organism. This theme was expressed both in isolation and in contrast to other industrial forms of farming. However, whilst values such as sustainability and organic farming may motivate the ways in which the farm operates these values can come into conflict with the realities of the contemporary supply chain. The interview narrative demonstrates the tensions between the value's ideal and realizing this within the constraints of the wider food system.

Land reparation and ecological practices

Free-range farming practices are ecologically regenerative to the land. The farm, which now has 4,500 hens, started with 30 birds that were introduced to improve the soil:

> The only reason we got chickens is that the land here is so crap that I had difficulty even putting a crowbar in it (.) all our soil tests came up zero (.1) Then once you've put your minerals in that's fine (.) but you still don't have life (.) you need bacteria (.) If you don't have bacteria (.) and you get that from the chook manure (.1) so that was the original intent.

The hens sleep in five mobile hen houses that are moved regularly to allow rotation and reparation of the soil. The chickens are trained to lay their eggs in the laying shed, and return to the coop to sleep at dusk. One of the key issues with free-range farming is the loss of life from predators such as foxes and birds of prey. Approaches that manage this through firearms and baiting can be inefficient whilst also damaging to the native fauna that forms part of the local ecosystem. Instead the farm uses five Maremma sheepdogs (e.g. Figure 5.1) to guard the flock from predators.

Animal Welfare

In addition to rejuvenating the land, these methods also allow the chickens to exhibit natural behaviours, such as dust bathing, wing flapping, feeding and exploring. In this farm's model of farming, the animal is identified as a stakeholder in a co-operative farming process. In describing this in the interview the farmer explains:

> Farming (.) to me is agriculture (.) agri means the land right? It's running cattle on the *land* (.) It's running sheep on the land (.) it's running horses or goats (.) *that's* farming (.) working with the soil (.) Not taking an animal and making it into a machine

Animal welfare not only extends to existing hens on the farm, but also has included the care of ex-battery farm hens. The farmer explains that when she received the hens, many of them had brittle bones and feather loss. However, these animals, with assistance, recovered sufficiently to be part of farm life. Laying hens are commercially viable for 18 months, after which the farm tries to rehouse the hens with local families.

Conflicting values and the realities of the wider food system

Environmental sustainability was an important issue and frequently emerged in discussion around organic farming practices. The farm's organic certification was staged. First the land was certified organic for 6-8 years and then the chickens were certified organic three years later. Whilst the farmer believes that 'the world has to go back to it before we completely destroy ourselves' the practice of organic farming is rendered difficult by the certification process and issues within the supply chain. Highlighting this is an example from the interview where the farmer details the less than sustainable origins of organic feed.

> What did upset me was that it was trucked all the way from the farmer in western Australia all the way to us, and I was thinking 'how is that sustainable' you know we talk about sustainability and I'm thinking how is this sustainable

Farming and variability

The way in which food is produced is dependent on a combination of factors that are highly variable.

> […] It seems to me that we've put the whole onus of our food production on a few people who happen to have land but they have to wear all the variabilities- it's not like a factory and you're making a can of beans and then with machines you can decrease risk (.) decrease variability (.) become more efficient- you can't do that with the land you're working *with* a living organism.

Such variability means that there is no single answer to the question 'how was my food produced' since factors such as climate, weather, soil, farming approach (e.g. free-range, organic) may differ on a farm by farm basis. Designing an approach to food learning that goes *beyond* general facts such as 'milk comes from cows' may need to account for the specific and situated nature of food production.

Promoting a Culture of Openness

The farm regularly opens itself up to school visits, visitors, and collaboration with researchers. The farm also engages people through formal programs such as food tours conducted through a secondary organization. The theme of openness emerged as a core

theme within the interview. Such practice is rooted in the belief that there needs to be a culture of openness in order to improve farming practice:

> If people want to Google us, if people want to come out and visit they can…I've got nothing to hide at all […] it would be nice to start a trend or a culture of knowing where your food comes from, so you don't have to deal with those others *[battery farmers]* and so you leave those who are not open behind.

5.3.2   Information resources and technologies

The farm adopts storytelling as a means of sharing its practices with customers and the wider public. Storytelling is done through the chicken persona of Isobel, the Hen House CEO. These stories form part of online and offline interactions that communicate the workings of the farm. In adopting the animal persona the role of the animal is made visible. This approach sets itself up in direct opposition to battery farming methods. Here the chicken is recognized as a stakeholder within a co-operative farming system. This representation occurs in the following artefacts: 1) egg-carton stories 2) a book and 3) web and social technologies.

Egg-carton stories: connecting farm to kitchen

Non-fiction stories are put into the egg carton with updates from the farm. The stories are told from the persona of Isobel, the Henhouse CEO, a black Australorpe chicken (Figure 5.2). Each story is written in an epistolary style and contains news that makes reference to both the events on the farm and wider news, such as regulations and research findings, that plays into the running of the farm. These events include tales of chickens who have crawled under the electric fence to eat vegetables from the vegetable patch, and the presence of factors that affect 'the desire to lay' such as weather and attacks from predators such as foxes and hawks. The stories are especially reflective of the wider ecosystem in which the farm is situated. Stories frequently feature interactions between the chickens, the farmers and other animals including dogs, magpies, wombats, snakes, foxes and hawks. In this style the egg-carton stories become a vehicle for sharing the practices of the farm and emphasizing the role of the animal stakeholder.   The farmer explained the motivations behind this approach:

So it's all about that connection (.) I knew when we started this part of business says that we have to do a newsletter but most of the newsletters I've ever come across, from anywhere, are too long, they're too boring, I haven't got time and I can't stand anything (even on the internet…with links…don't expect me to go tramping off to other websites (.) especially when you're on a slow connection). I thought, for my purpose it was just a quick thing that a mum has to be able to open the egg carton, see it there […] read it in a minute and not burn the dinner. So that's how that part of it started, and it was an intentional way of trying to connect.
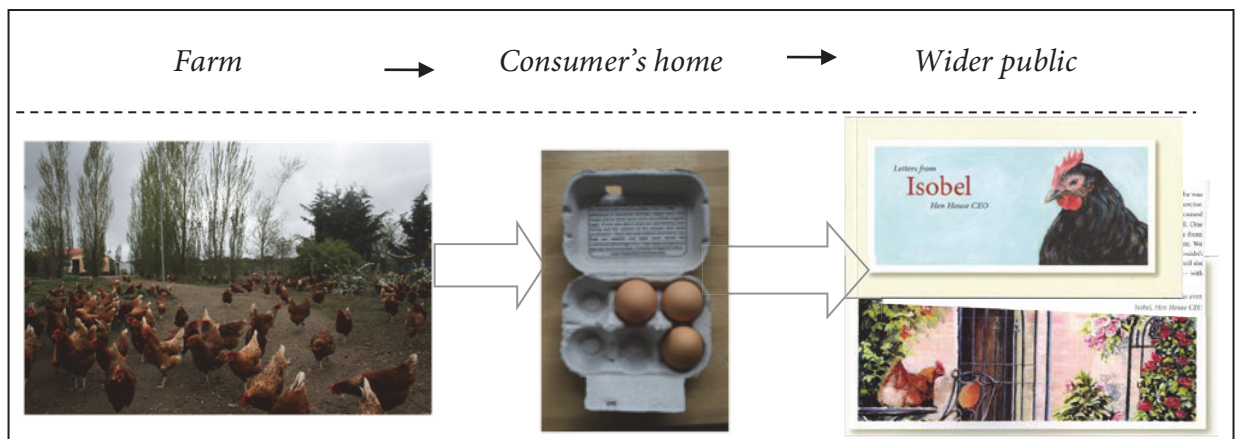
Figure 5.2 Engaging consumers

Book: Isobel – Letters from a Henhouse CEO

The egg carton stories were so successful that in 2011 they were turned collated into an illustrated book. The farm self-published the book, but recouped 25% of the publishing costs within the first month. The book was featured in the Sydney Morning Herald and a local community newspaper awarded Isobel a lifetime achievement award.

Website and social media

The farm has a static website which has pictures and a small amount of written information about the farm. This website is maintained by a contractor and was launched in 2011 to coincide with the publication of the *Isobel* book. The farmer recognizes that that technology is important, but in running the farm has limited time. The following interview excerpt highlights the user's experience with the website, her attitudes to technology, and her perceptions and attitudes around this.

> I'm beginning to realize that that's the way of the world and if you want to be part of it you have to do it. […] I didn't realise that it was all sub-contracted out to the Philippines…and sub-contracted to someone else, and sub-contracted to someone else and there are emails going back and forwards and I don't know who I'm supposed to pay …and you send emails and you find this is done, this is not done and you're having to tell them again […] And everyone says 'just go to the internet, just go to the internet' but the TIME, the TIME and understanding it! It's like medical terminology…it's all very well putting words up but what's a gateway? You know? I felt like saying 'I've got a wrought iron one, will that do?'

This part of the interview demonstrates that the user, though receptive and willing to engage in using new technologies, does not always have time to do this. In addition to the website, the farm also has a Facebook page and entries on this page are also conducted in the voice of Isobel. However, updating and maintaining this technology is described as time consuming and, on occasion, confusing.

5.4   Urban and suburban participant interviews

As a counterpoint to the fieldwork and interview undertaken on the farm, urban user research was undertaken through interviews with five individuals living in the city and suburbs of Sydney (Table 5.1). Interviewees were selected via snowball sampling to represent a diversity of household types across the Sydney area. Interviews were recorded and key themes were summarized; interview questions and full summary notes can be found in Appendix 3. Interviews explored shopping habits, cooking, technology use, and engagement. Within the interviews were both overarching trends that were common within all interview narratives and significant differences in people's attitudes and behaviours surrounding food. Trends within the data are summarized under each heading below.

5.4.1   Motivations for sourcing food

Price, convenience, accessibility and consumer trust frequently determined *where* people shopped. Everyone used the large supermarkets for some, if not *all,* of their

shopping. However, people would supplement their shopping by other means – for example by going to a farmers' market (Carly, Benedict) or ordering vegetable boxes directly from the grower online (Bea, Carly). Online ordering was useful for both stay at home mothers when the children were very young and they found it difficult to leave the house. All people visited specialist stores such as butchers and bakers. These were often associated with higher quality produce or for special meals and occasions. Where people used farmers markets there were often reasons other than convenience or quality.

> **Researcher:** What would you get when you meet him and buy things from him? [the grower at the Organic markets]
>
> **Carly:** Um… I guess what's in season, what he grew himself, and sort of where it came from, it was usually not a big conversation because it was lots of people shopping but yeah (.) I found out when he didn't have garlic that he said (.) 'Garlic's not in season but we're getting garlic shoots next week' (.) and I guess if you just shop at the supermarket all the time you wouldn't really *know* that because you don't know what the seasons are

In this case attending the markets offers the interviewee *more* information about the food that she is buying. Additional information is not only supported through interactions at farmers markets but through specialist stores such as butchers where people frequently talk about finding out what is good that week and how to prepare or cook it (Aaron, Benedict).

5.4.2   Information resources and technologies

Interviewees referred to various resources and technologies through which they found out information about food. In discussing different technologies and resources, the interviews demonstrated the extent to which particular technology used was prevalent, why they used it, and their attitudinal response to particular information. Key themes are summarized below.

Table 5.1. Interviewees

Interview No.	Participant Pseudonym	Age	Gender	Characteristics
1	Bea	30	F	Bea is a stay-at-home mother to two young children aged 2 and 3. Bea does a large food shop every ten days and a daily shop for milk, bread and small additional items. It is difficult shopping with the kids. She lives in a house with a garden and is a short walk away from a large shopping center and mall. Organic produce was important to Bea when she first had children however the increased cost means she does not buy as much organic food as she used to.
2	Carly	36	F	Carly is a stay at home mother to one 1-year-old child. She works as a part-time management consultant and a part-time PhD student. The majority of her work is done from home. She lives in a two bedroom flat in a bustling Sydney suburb with walking access to a weekly growers' market and several large Coles supermarkets.
3	Danielle	30	F	Danielle is a Science Communications Expert who is married to Aaron, a sales consultant. They live in a two-bedroom apartment in a Sydney suburb. They have no children and return from work at 7:30pm most evenings. With the exception of special occasions, in which they will visit a specialist store such as a butcher or baker, Danielle and Aaron do all of their shopping in a large supermarket that is a short drive from their home. Danielle has a high degree of trust in foods that are sold in the big supermarkets and government oversight of this. Aaron is skeptical of labels like 'free-range' and 'organic' but Danielle feels that this information is 'better than nothing'. They like sticking to a set routine of meals that can be prepared within 15 minutes.
	Aaron	37	M	
4	Benedict	28	M	Benedict is a computer science student who lives by himself in a one-bedroom flat in central Sydney. Benedict uses the supermarkets for convenience and for having 'everything he needs' from food to toiletries. Benedict will visit specialist food producers when he wants something of a higher quality. He is skeptical of labels like 'free-range' and 'organic' as these terms can be used to sell a product for a higher price and cannot be verified.

5.4.2.1   The ubiquity and power of the recipe

Though individuals used them to a greater or lesser extent, *all* interviewees used recipes in the form of recipe books (Bea, Carly, Danielle and Aaron) or online recipe websites (Bea, Carly, Danielle, Aaron, Benedict). One person (Bea), who was a heavy user of mobile apps, also used a mobile recipe app. In addition to their ubiquity, recipes were also powerful ways of facilitating people in engaging in *new* practices. For example, Bea will use a recipe to do a specific meal and then go to the shops to buy special items for this. Alternatively, if Carly receives produce in her home-delivery vegetable box that she hasn't cooked before, she will search for a recipe online using her computer. Benedict, though not a big recipe user, will sometimes search online to 'get an idea' or use a recipe that someone has given him. In the case of Danielle and Aaron, who, out of all the interviewees, stuck most rigidly to a set repertoire of food for the week, recipes were used primarily for dinner parties and doing something different. Aaron often searched for recipes on his mobile phone when he was out shopping. He used the recipe to structure cooking something new as he says he is not the kind of person to 'open up the kitchen cabinet and think "what should I do"?'. Recipes were used to research and plan something new.

5.4.2.2   Labels and terms signifying provenance

Labels and terms signifying provenance emerged within discussions around what people bought and why. The two most heavily referenced terms were 'free-range' and 'organic'. Individuals with children were more concerned with organic food: both mothers (Bea and Carly) had raised concerns about hormones and non-organic produce. However, cost prevented both Bea and Carly from buying all organic groceries. By contrast, cost is not the only limitation to individuals buying organic produce. For Danielle, appearance mattered: Food that *looked* better and was perceived to *be* 'better'.

> **Danielle:** I'm aware of organic (.) I know that organic is better and I know it doesn't matter if it looks knobbly, but when I'm buying I still want the 'hero fruit'- I want my capsicum to look like a capsicum (.) I want them to look perfect (.) I still pick through the capsicums to find the most symmetrical one (.) even though I know it doesn't matter.

With the exception of Benedict all consumers interviewed stated that they bought free-range eggs and poultry. However, whilst poultry and eggs were often associated with labels like 'free-range', other animal produce was not. Within her interview Danielle reflected that this might be the result of the media attention that egg and poultry farming has received through advocates of free-range practices such as Jamie Oliver. In cases where provenance related labels were avoided, this was often the result of distrust around what, if anything, that term meant (Aaron, Benedict).

> **Benedict:** Free-range and organic are labels that can be put on products to sell them for a higher price…when you're dealing with a supermarket chain that processes thousands of nominally free-range chickens you have no way to verify whether the free-range chicken has been free-range its whole life, or with an organic chicken whether it has been organic its whole life. Because of other issues like interbreeding and cross contamination (particularly with crops) you can't really tell for sure.

What this demonstrated was that some people had a clear opinions on whether a particular farming method (e.g. organic) was 'better' whilst other people were distrustful and unsure of what the term's significance. Secondly, even when people did have a preference towards a certain type of produce, factors like cost would limit this belief being followed up by a purchase.

5.4.2.3   The affordances and constraints of mobile technology

Bea and Aaron both referred to using their smartphones to support them in their food practices. Aaron would use his smartphone to search for recipes when he was out and not near a computer, typically whilst shopping for food. Bea used several mobile apps to help her both shop and cook. She used the Aldi iPhone app to find out when cheap deals are on and the Woolworths app, which allows her to scan barcodes of produce in her pantry and then order these online. These apps are typically used at home instead of whilst shopping. Bea said she tried using a shopping list app but with her hands typically occupied in pushing a trolley, picking food off the shelves, and managing two toddlers she found it hard to hold the phone. Also the screen would time out so she wouldn't be able to see it. Using an app whilst shopping added unnecessary time to the supermarket shop.

5.4.3   Engagement and connection

Interviewees were asked 'what gets you interested in or engaged in food?' and, if the interviewee had children 'how do you engage your children in this?'. Interviewees were also asked what type of information they wanted to know about the food they were eating. Responses to these questions were grouped into several categories: information or properties of the produce, making or doing something, and people and community. These are discussed below.

5.4.3.1   Information about food

People felt that different information about food was important. The most desired information about food was *where* produce came from (Bea, Carly, Danielle, Aaron). The geographic origin interested people for several reasons. Firstly, it was deemed useful for particular produce like honey, wine and meat (Bea, Benedict). Others felt that knowing the geographic origin of produce was important for ethical reasons such as supporting the Australian economy (Aaron) or reducing the carbon footprint of what they bought (Danielle). Benedict was largely uninterested in information about where food came from, but would inquire about *how* it was produced if he had to cook for people following a special diet (e.g. halal, kosher, vegan). Apart from the needs of other people Benedict only cared about provenance information if it had a direct impact on the taste. He also felt that unless he knew about the farm that it came from the information would not make a difference to what he bought. Benedict also highlighted other problems in finding out about food.

> **Benedict:** More information could be useful but it's not economically viable (.) It'll either be too broad (.) 'this is an organic egg from one of our 700 organic egg farms (.) we can't tell you where or when' (.) *or* it'll be too specific and overwhelming.

In addition to discussions of *place* Carly also thought it was important to know how the food tasted, what is in season and the nutritional content. However, she pointed out that in finding about food that it was less a case of what she *wanted* to know and more about the information she *could* get: 'any information is good information'.

5.4.3.2   Making or doing something: cooking and gardening

Bea found recipes a way to become interested in food as it allowed her to 'make something different' and 'make her *own*' food. Similarly Danielle and Aaron found putting a menu together and hosting a dinner party to be a highly engaging way of connecting with food. Danielle would look at a recipe, make a plan and go and buy the ingredients and cook them. Aaron would be more experimental and go to the supermarket to look for items that were inspiring. Danielle describes her approach to food as 'functional' in contrast to her husband's 'fun' approach. However, both people are engaging with food by creating something and doing something.

Bea engaged her children in learning where food comes from through 'the vegetable garden'. The children could 'get involved in digging and gardening' and understand that vegetables from the ground can be eaten. However, living in and a suburban environment Bea said that her children believed that milk comes from the fridge. Though they have played with Coles' interactive fridge where children press a button and a cow moos they haven't ever seen a cow give milk.

5.4.3.3   Community, conversations and social elements

How people connected and engaged with food was often motivated or supported by other people. Carly liked being able to have a conversation with the farmer at the market. Danielle and Aaron, though normally adhering to a set repertoire, would cook other food *for* other people using new ingredients and recipes. Bea involved the children in maintaining the vegetable garden and learning to cook in the kitchen. Though, out of all participants, Benedict was the least interested in food the dietary needs of guests would lead him to inquire further about how a particular food had been produced. Similarly, both Bea and Carly's concern for their young children meant that they used more organic produce and expressed concerns about what was *in* food. What can be surmised from this is the importance of the social for how people engage with food.

5.5   Preliminary study outcomes

Storytelling through egg-cartons has been successful in engaging local consumers at the farm visited. These egg-carton stories were successful in the way they were able to

communicate the changing and variable nature of the farm. These stories can be seen as part of the efforts of that particular farm to promote a culture of openness between food producers and food consumers.

Interview research with five persons living in urban and suburban Sydney, and *not* employed in agriculture, found people interacted with food in a range of digital and non-digital contexts and environments. Recipes, both on and offline were found to be the most common way for participants to research ways of cooking and answer the question of 'what to eat'. A recipe, digital or otherwise, was identified as a place for exploratory interaction through which people imagined future acts of cooking and eating, and experimented with cooking *new* foods. This contrasted with supermarket interactions, which were typically more routinized and habitual. Through further design work using participatory and user-centered approaches (Frawley & Underwood 2014; Frawley & Dyson 2014b; Frawley, Dyson & Underwood 2014) the concept of the recipe as an extended metaphor for the wider food system and farming process emerged. The recipe connects the work in the field (e.g. farming) to the work in the home (e.g. cooking), and removes the divide of 'producer' and 'consumer' since people can engage with both.

Storytelling, as seen on the farm, could be extended and merged with new types of 'recipes' employing a user-generated content approach adopted to promote social and community aspects that were found to be important in the interview. In addition to informing the technical and pedagogic design of the Red Hen Recipes Food Literacy project, findings from this preliminary study were used to develop the first set of research questions (p.77) and inform the design of *Survey I*.

5.6   Red Hen Recipes Food Literacy Project – Project Design and Choice of Technologies

Stemming from the preliminary study is Red Hen Recipes, a food literacy initiative that invites individuals to trace an individual ingredient from 'farm to fork'. This section details the Red Hen Recipes technologies and the participants – the degree to which they participated, and the support and guidelines which they were given.

5.6.1   Technology
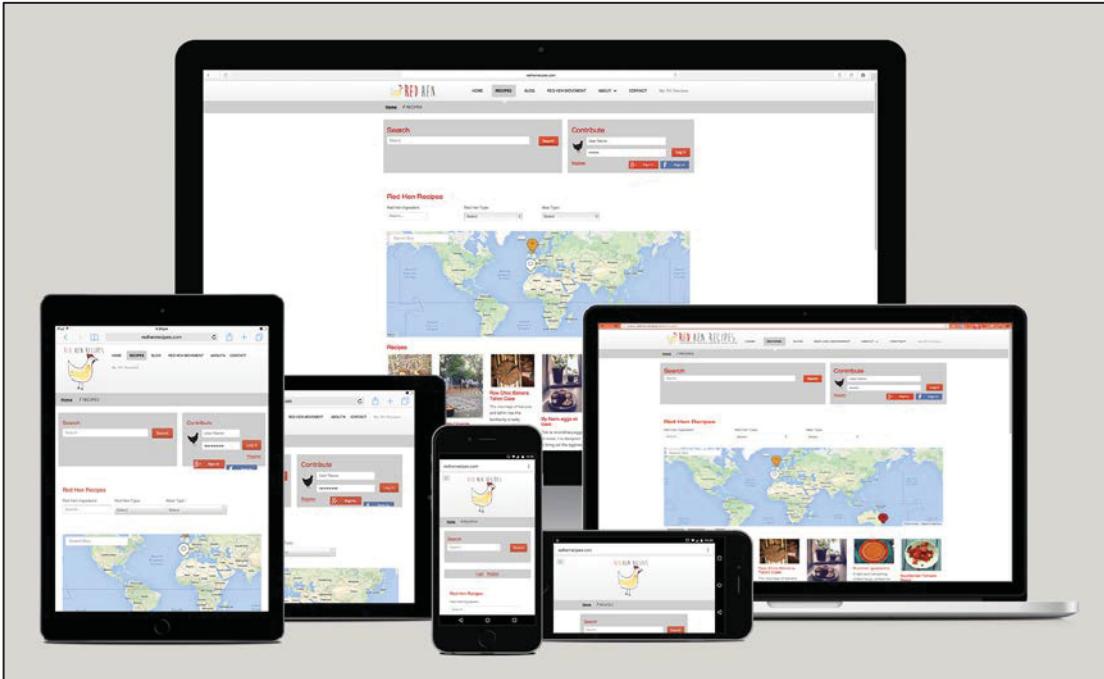
Figure 5.3 Red Hen Recipes website on different devices[10]

At the center of the Red Hen Recipes project was the Red Hen Recipes website: www.redhenrecipes.com. This website technologies were responsive, to support the vast heterogeneity of user's browsers, operating systems and devices (Figure 5.3). Decisions on the number of browser versions and operating system combinations to support were based on an assessment of what is necessary and feasible within the time frame and resources of the project. A list of supported browser and operating system combination and other technical specifications relating to the software and its development are included in Appendix 4. Though the Red Hen Recipes' technologies are still available for private use, to protect participants' anonymity the active site was retired and replaced with a research blog that aimed to communicate At the conclusion of the project the Red Hen Recipes' project website was retired and replaced with a research blog which aims

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[10] Though this image depicts the website on Apple devices, the site also works on Android and Windows devices.
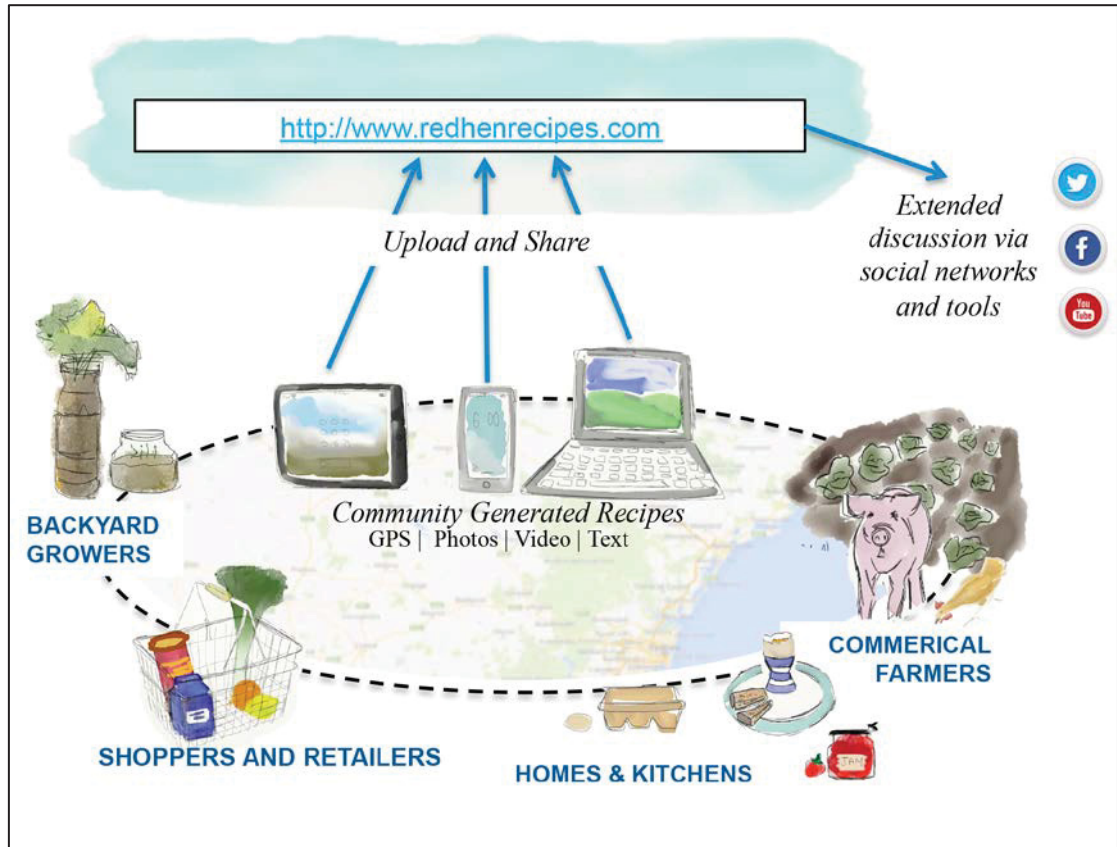
Figure 5.4 The Red Hen Recipes project

5.6.2   Creating a Red Hen Recipe

The technologies allow members of the social network that form the Red Hen Recipes group to create and share user-generated content (UGC) in the form of 'Red Hen Recipes' (RHR). A RHR (Figure 5.4) is a recipe that includes more information than a standard kitchen recipe. The recipe may include information on how an ingredient is grown, cooked or eaten. Learners *create* their multimodal and augmented recipe by tracing a single ingredient from its source of origin (e.g. a farm or garden) to a recipe that instructs readers on how to prepare this food in the kitchen. The narration of this process can include cultural, historical or personal information. The Red Hen Recipe website, as a responsive cross-platform interface, supports users in creating and sharing written text, photos, videos, and GPS map data from a range of different mobile contexts and environments. A more thorough description of what these 'recipes' look like will be detailed later in the chapter under findings relating to artefact analysis.

5.6.3   User permissions and access

Users can log in to the site using existing authentication from their Facebook or G+ logins or setup a new user account with any email address of their choosing. Members of the community and wider public can browse the site and view users' recipes and profiles. Further dialogue is facilitated through the sharing of this content through social networking platforms such as Pinterest, Facebook, Twitter and Disqus. As user-generated content and technologies pose risks to individuals, all participant content is moderated to adhere to the website's terms and conditions of use[11]. The Red Hen Recipes project is further supported by its own Facebook page.

5.6.4   Participants

This section details the degree of participation and support that participants were given during the project.

5.6.4.1   Participant Recruitment and Attrition

As detailed in the previous chapter, LaunchRock (LR) and Call for Participants (CFP) were used to recruit participants. These platforms allowed the researcher to gauge the level of interest for people to participate as both a user and a research participant. There was a high rate of attrition of 66% from those who expressed interest in participating (n=94) and those who opted into the research (n=32) (Table 5.2). Between completing the first survey and completing the final survey there was a further attrition rate of approximately 41% – with 12 participants not continuing on to complete a second survey. In cases where an individual lost contact with the researcher, data from the first survey was retained and included within parts of the data analysis unless a participant requested exemption. The final number of research participants can be described as 32, with 19 completions.

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[11] http://www.redhenrecipes.com/terms-and-conditions

Table 5.2 Participant enrollment and attrition

	Activity Completed	Participants	Attrition rate from this phase
Time	Expression of interest	94	66%
	Survey I	32	22%
	Created a User Profile	25	9%
	Created a Recipe	15	NA
	Survey II	19	NA

5.6.4.2 Participant support and guidance

On enrollment participants were provided with guidance on what to do. As this project was aimed at adult learners the project brief was deliberately kept very open to allow for self-directed learning. Participants were provided with support in the form of standardized resources developed for the project and personal communication with the researcher. These are described below.

Open project brief

All participants were briefed to look at and use the Red Hen Recipes website to create a 'farm to fork' or 'garden to fork' recipe in whichever way they wanted, using whichever devices they felt inclined to use. Though the RHR system design emphasizes provenance (e.g. where food comes from) the participants had a wide range of scope over how they themed their Red Hen Recipe, what story they told, and what modes or media they used. Participants were told that they could trace an ingredient in whichever way they wanted – through visiting a farmers' market, growing the ingredient themselves, reading labels, contacting the producer, or searching for information going online (e.g. Google search, websites etc.).

Resources

Formal support was provided on the Red Hen Recipes website through a list of Frequently Asked Questions (FAQs) and Tips. Whilst FAQs provided general answers to commonly asked questions about the project, Tips provided practical guidelines for people interested in *creating* a RHR of their own. Four exemplar recipes created by the researcher were also supplied. In addition, participants received a two-page handout

called 'Guidelines for Creating a Red Hen Recipe'. This simple document was designed to support people in setting up a profile and using the website technology.

Ongoing support from the researcher

Participants were encouraged to contact the researcher if they had questions or needed further support. The majority of participants did not do so and created a recipe and uploaded it with the website technology. However, early into the project when there were fewer participants and recipe examples, the researcher received questions by email from three participants who wanted to discuss their ideas and seek clarification on the task.

5.7   Chapter summary

This chapter presents findings from a preliminary study that supports and enriches the understandings generated by the Literature Review (Chapter 2 & Chapter 3). Within the context of this study, preliminary findings have both instrumental and intrinsic value. Instrumentally, these findings provide the foundations for the initial research questions and research design on which a wider study (Chapter 6) can be based. The preliminary study forms the basis of the technical and pedagogic design of the Red Hen Recipes technology and project, which discussed in the second half of this chapter. However, though a limited study these findings have their own intrinsic value in that they too paint a picture of how people engage with food through existing places, information resources and technologies. Thus findings from the preliminary study contribute to understanding the phenomenon of interest in food literacy explored within this dissertation.

Chapter 6: The Red Hen Recipes food literacy project

[Interview 5: 1:06:01 – 1:09:38]

I think we undersell how people continue to learn by actually talking to each other you know? (.) [yeah [(.) we pretend that doesn't happen but it does? (.) you know (.) and we should (.) in a sense (.) and that's what Red Hen's about (.) it's about people having conversations (.) I mean it's a different style of conversation but it's still a conversation

Peter, Participant 5

6.1   Chapter – Introduction

Having established grounded understandings of the research context as well as the pedagogic, technical and methodological design (*Chapter 5*), this dissertation turns its attention to the crux of the research: the Red Hen Recipes (RHR) food literacy project initiative. Focusing on the learning and meaning making that occurs within the bounds of this single case study, this chapter presents the core empirical findings on which this thesis is based. This research story is narrated with data from different sources and several different analytic perspectives. Corresponding to the study's emergent research design (see *Chapter 4*), findings from each of the five stages of data collection and analysis are presented sequentially in the order in which they were conducted (Figure 6.1). The chapter falls into two parts. The first presents rich understandings of participants' learning and semiotic contributions from varied qualitative analysis (Stages 1 – 4); The second, contextualizes this data with the broad brush strokes of quantitative web and social media analytics and basic description of further participant involvement (Stage 5). From such a multidimensional perspective, this chapter details food literacy and m-Learning as it occurs within the specific bounds of the single case.
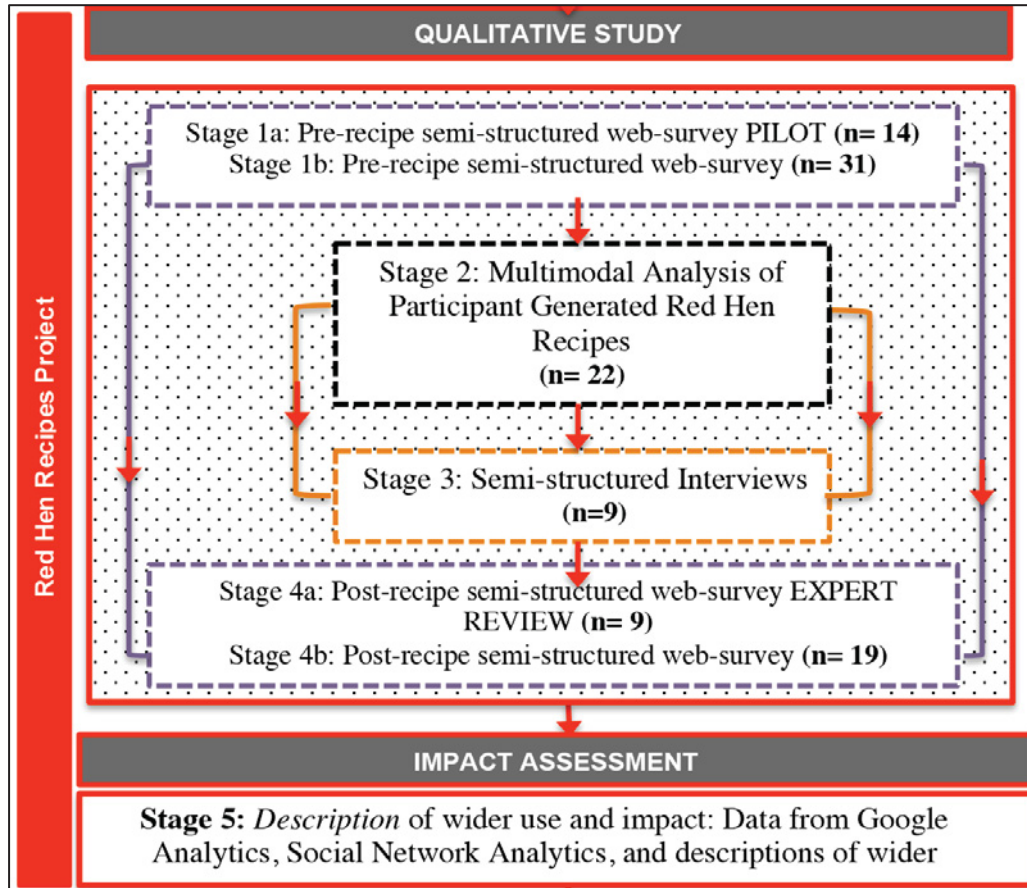
Figure 6.1 Red Hen Recipes' case study – methods and data types

6.2   Qualitative Study

This section presents the findings from the analysis of:

- Stage 1: Survey I

- Stage 2: Multimodal artefact analysis

- Stage 3: Semi-structured Interviews

- Stage 4: Survey II

Though a qualitative study, numbers are a useful way of conveying trends that emerged from thematic analysis. For example, the researcher can demonstrate the prevalence of a particular theme in the data (e.g. Economic and Commercial Factors) by indicating the number of times this theme manifest within a particular data set (e.g. 73 references) *or* by the number of people who mentioned it (e.g. n=9). References to themes or number of participants are presented in brackets throughout the text. Where specific reference to individual participants is necessary, for example within interview data, pseudonyms (e.g. Louise) are employed, the specifics of which are presented in the relevant section.

These numbers have no statistical significance, but remain an important way of demonstrating the degree or extent to which themes or trends emerge.

6.2.1 Stage 1: Survey I

Thirty-one people completed Survey I. In addition to demographic data Survey I aimed to understand individuals' pre-existing beliefs and practices around food, the technologies they own and their motivations or interests in joining the Red Hen Recipes Project. Supplementary data relating to findings for this section can be found in Appendix 6.

6.2.1.1 Demographics

Though case study research, especially that which adopts an interpretive and qualitative stance, does not aim to have a representative sample *describing* that sample is still necessary (Elliot & Timulak 2005). In the case of food literacy, skills such as cooking are historically tied to engendered 'female' spaces of the domestic home (Pendergast & Dewhurst 2012), and the way primary food provision, be it hunting or foraging, has been engendered throughout history (e.g. Adams 2010). Furthermore, findings from the preliminary study demonstrated the way that being a parent or caregiver influenced decisions of food provision (Chapter 5). In the case of technologies, fields like participatory design have routinely emphasized that information technologies are not value-free or politically neutral, but 'bear the social imprint of its authors' (Balka 2013, p. ix). Thus, when people participate in an online community using specific technologies to explore and learn about a specific topic, it is important to know *whose* voices are being heard. By asking simple demographic questions, a project adopting an emergent research design (see Erlandson et al. 1993; Lincoln & Guba 1985; Pickard 2013) can adapt subsequent methods to early findings. For example had the project been comprised solely of women, then early information about this would have been pivotal to future research design. It is important that we understand who comprises the RHR community, not so that we can see whether these individuals are representative of a wider population, but rather to acknowledge the identities and selves that people bring to the RHR community. This data is summarized in Table 6.1 and discussed below.

Table 6.1. Demographic data of the RHR participant cohort

	No. of people	% of total (_/32)
Age		
18 – 20	1	3
21 – 25	1	3
26 – 30	10	31
31 – 35	7	22
36 – 45	8	25
46 – 55	1	3
56 – 65	4	13
Over 65	0	0
Gender		
Female	24	75
Male	8	25
Country of residence		
Australia	23	72
United Kingdom	5	16
Spain	2	6
New Zealand	1	3
Thailand	1	3
Dependents		
0	25	78
1	1	3
2	5	16
3	0	0
4 or more	0	0

Gender

Out of the total 32 participants, there are more female participants (24) than males (8).

Age

Participant age ranges span from 18 – 20 through to the 56 – 65 age bracket, with no participants over the age of 65. As Figure 6.2 illustrates, age was not evenly distributed across the participant group with the majority of participants falling between the age brackets of 26 – 30 and 36 – 45.

Children and dependents

Though 5 participants had children or dependents living at home, the majority (25) did not live with children or other dependents.

Country of residence

Of the total number of respondents (n=32), the majority of participants (23), at the time of completing their survey, resided in Australia. However, as a project on the World Wide Web there were also participants living in the United Kingdom (5), Spain (2), New Zealand (1), and Thailand (1).

Language

All participants were fluent English speakers, though not all of these participants had English as a first language.

In summary, demographic data demonstrates that though project participation was diverse that it reflected the project's origins and outreach to Australian and English-speaking communities interested in food. Though age and gender might stereotypically be assumed to reflect interest in digital technologies (e.g. Prensky 2001) and food (e.g. Pendergast & Dewhurst 2012), respectively, research under an interpretivist paradigm does not form causal determinant links between individual variables and instead seeks to treat the individual holistically. Therefore this data is treated as a descriptive illustration of the case study cohort and characteristics of the community, with questions relating to interest and motivations being deferred to methods that explicitly address such questions.
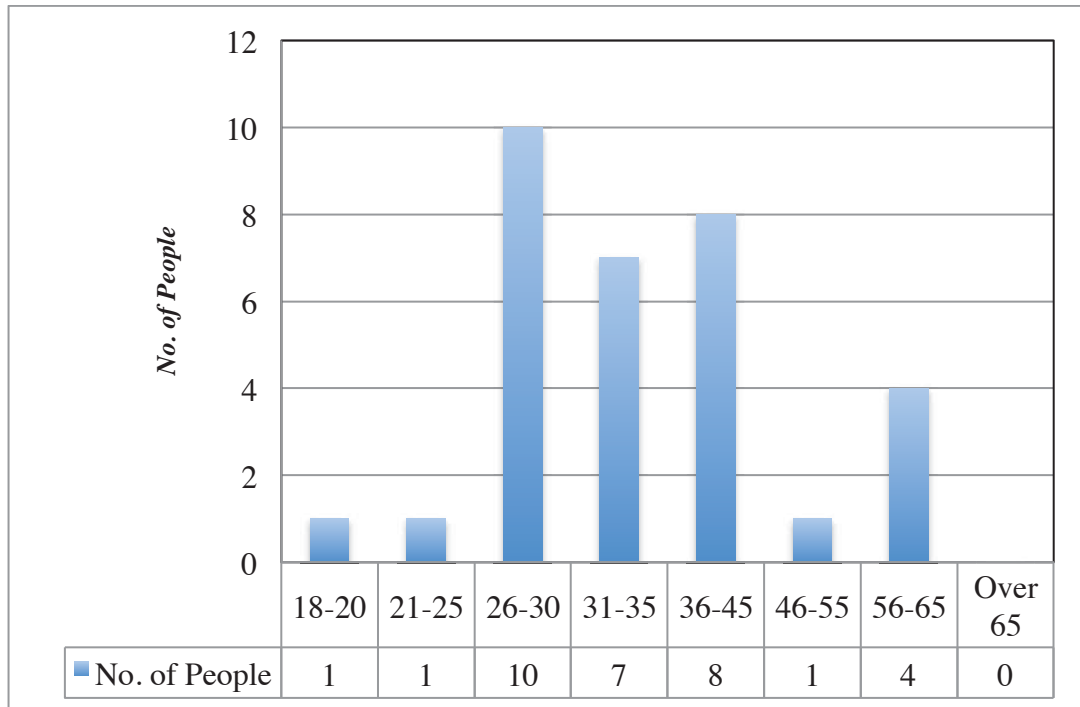
Figure 6.2 Age ranges in the Red Hen Recipes project (Total n=32)

6.2.1.2   Occupation, hobbies and interests, and motivations

Open questions were thematically coded to gauge the skills, jobs, interests and motivations participants brought to the Red Hen Recipes project. The findings and their interpretation for each question are summarized below.

Occupation

Participants' job roles were grouped into professions and industries. Four people worked in the food industry: two as farmers and two in a cooking roles – one is a food trainer and the other a professional chef. However, the majority of participants worked outside of the food industry in roles as teachers (n=4), students (n=7) and a range of commercial (n=5) and creative (n=6) roles in industry.

Hobbies and interests

There was a wide range of responses to the question 'What are your hobbies and interests?'. Hobbies and interests were coded as close to the exact words the participant used as possible, before being grouped into broader categories that were both meaningful to the participant data and the researcher's interest. There are four main categories: Food (48 refs), Multimodal Meaning Making (45 refs), Sports and Fitness (34

refs) and General Interests (33 refs). These categories and their sub-categories are described below.

Food (48 refs; 28 people)

Interest in food was expressed by 88% (28) of the participant cohort and manifest in 48 different ways. There were four individuals who did *not* cite food as an interest or hobby. Whilst these individuals were not interested in food, they typically had interests in multimodal practice (e.g. creative writing, photography, video, art) that are supported by the RHR's user-generated content approach. The theme of food was expressed in several subsidiary categories.

- *Methods of Food Production (33 refs)*
  Cooking (n=15) and Gardening or Growing (n=9) were the dominant subsidiary interests. Other less prominent themes included specific methods of food production such as bee keeping (n=2), chicken keeping (n=1), farming (n=1), food systems (n=1), foraging (n=1) and mushroom picking (n=1).

- *Food (6 refs)*
  Six people referred to food as a hobby using the generic expression 'Food'.

- *Food Types (5 refs)*
  Under this category people simply expressed interest in things like 'honey' or 'Indigenous foods' or 'organics'.

- *Nutrition or health (4 refs)*
  E.g. 'I am interested in child health and nutrition'
  'Nutrition and health'

- *Volunteering at the UTS Food Co-Op (1 ref)*
  One person cited her volunteer work at the UTS Food Co-Op as a hobby.

Multimodal meaning making (45 refs; 23 individuals)

The majority of individuals (n=23) cited a hobby or interest that is relevant to multimodal meaning making, either as a creator or a consumer. Interestingly enough, individuals (n=2) who did not mention any creative or media interests, were often employed in that sector. This effectively means that of 32 participants, only 7 (21%) had no occupation or interest explicitly stated that made them want to create something. Of those 7 individuals, 6 were interested in food in some way and 1 did not give a response. Multimodal meaning making was expressed in many different ways, most notably interests in: Art (n=6), Reading (n=6), Writing (n=6), Music (n=5), Design (n=4), Playing an Instrument (n=4), Watching Movies (n=4), Dance (n=3), Photography (n=3). Individuals (n=1 per theme) also liked: Fashion, Making Videos, Performing Arts and Raspberry Pi Development.

Sports and fitness (34 refs; 21 participants)

65% of participants (n=21) mentioned a sport or fitness activity as a hobby. Participants had a range of hobbies with walking (n=5), running (n=4) and swimming (n=4) being the most popular. Additional physical activities ranged from everything from team sports, like rugby league (n=1), to yoga (n=1) and climbing (n=1).

Environmentalism and other interests (33 refs; 17 participants)

Additional interests that did not fall into the wider categories were consolidated under 'interests'. Within this category the strongest interest or concern of RHR participants was environmentalism (n=17). There were 17 expressions that referenced the environment either in terms of 'caring for the environment' concern for 'nature' or 'sustainability'. This is especially relevant to the project, since provenance and food systems often have an environmental impact. Aside from this the remainder of this category is filled with an eclectic mix of interests such as politics, astrology, motorcycling and other pursuits that showcase the unique and diverse interests of individuals in the RHR community.

Motivations

Participants cited a variety of reasons in response to the question 'What interested you in the Red Hen Recipes Project?'. These fall into the following thematic categories: Interest in an aspect of the food system, Interest in the Red Hen Recipes Project or Concept, Community Dimensions, Skills and Activities, and Learning. Each of these themes is further detailed below and illustrated with excerpts taken from the completed surveys. Some responses expressed more than one theme and were, for those instances, included in more than one thematic category.

Interested in an aspect of the food system (15 refs; 14 participants)

- I love cooking and writing recipes

- I'm interested in food ethics, the whole food movement – local food, organic food, sustainable farming, food security, online food systems, open source networks… so of course it leapt out at me when I saw a link to the project on the Biodynamic Agriculture Australia's Facebook page

Community dimensions (13 refs; 13 participants)

- I thrive on community and food systems. I am searching for a way to insert myself into the local food industry in order to see that fair and local food from small, artisanal food makers and local producers is accessible to more people, so that more people can afford to contribute to a community based local economy and healthier environment, because I believe it has a direct impact on the health and happiness of humans.

- Friend recommended it.

- I have an interest in the source of my food and being able to promote that source via the recipes I post on my Facebook page and food blog,

Interest in the project or Red Hen Recipes concept (11 refs; 11 participants)

- It sounds interesting

- I am interested in where my food comes from

- The idea behind it

Skills and activities (5 refs; 5 participants)

Under this category individuals said what they wanted to *do* in the project this was typically skills related such as: 'I love writing', 'I love writing recipes' and 'I love to cook and thought this was something I could contribute to'.

Learning (4 refs; 4 participants)

For some individuals their motivation was related to learning or developing new skills, awareness or thoughts. For example 'I didn't have a strong topical interest, but I may learn a thing or two about my cooking motivations and practices' and 'Learning more about the project and improving awareness about where food comes from'.

6.2.1.3   Food: Attitudes, beliefs, behaviours and learning

Having built a picture of existing beliefs, attitudes and practices the survey explored how people learnt particular food-related skills and the information resources they used to find out about their food. From this combined information we can paint a picture of participants' pre-existing relationship towards food and their existing approaches to acquiring information and skills relating to this area.

Table 6.2. Where do you get your food for home consumption (e.g. in a regular month)?

	Sourcing place or activity	No. of people	% of Individuals* (Total = 32)
BUYING CONTEXTS	The Big Supermarkets	26	81
	IGA or Independent Supermarkets	10	31
	Aldi	6	19
	Farmers Markets	18	56
	Specialist Online Ordering Services	4	13
	Health Food Shops	12	38
	Specialist Shops (e.g. Butcher, Baker, Fish Shop, Greengrocer etc.)	25	78
	Speciality or Gourmet Supermarket (e.g. Harris Farm, Thomas Dux)	16	50
	Food Co-Op	1	3
GROWING OR FORAGING	Grow My Own	12	38
	Picking Wild Foods (e.g. Wild Fruits or Vegetables)	2	6
	Fishing or Hunting	2	6
	Dumpster Diving	1	3
OTHER		4	13

Sourcing food: where, how and why?

Sourcing food included shopping for food, farming, growing or foraging for food that they later prepare in the kitchen. Understanding the contexts in which people source food is important if we want to know the contexts in which individuals learn and make decisions about food, and the motivations people have for sourcing food in that way. What is readily observable in Table 6.2 is the diversity of ways in which people in the RHR group source food either through buying, growing or foraging contexts.

Shopping

All individuals sourced food through shopping, with 81% of the participant group using the big supermarkets for this purpose. However, with the exception of four participants (13%) who only used the large supermarkets to source their food, the majority of people (n=28) bought food from a range of different places including: farmers markets (n=18), specialist shops (n=25) and specialty supermarkets (n=16). In response to the open-ended questions 'For each place that you source your food from, briefly explain why you

choose to source your food from these places' people described a variety of different reasons that ranged from the pragmatic (e.g. convenience, cost) to values and belief systems (e.g. animal welfare, consumerism) that they felt were associated or supported by sourcing food in that way. A comprehensive breakdown is tabularized with themes, references and examples of participant responses in Appendix 6. Key themes are discussed in a summarized form below.

Convenience (32 refs)

Convenience was the most dominant single theme expressed by RHR participants as a motivation for sourcing food in a particular way. Though heavily expressed in relation to the Big Supermarkets (18 refs), IGA (4 refs) and Aldi (4 refs), it was also expressed as a lesser theme within Specialist Shops (2 refs) Specialty Supermarkets (2 refs) and Health Food Shops (1 ref). Often these descriptions were supplemented with statements about how the store was close to where they lived, or how they could get everything in one place. Though the theme of convenience was largely expressed within places where people did their shopping, though one participant also describe growing herbs as convenient.

Values and beliefs (24 refs)

> I heard an interesting radio program about the brothers who created the store. I am not sure how correct it was, but it seemed to suggest that the owners, if they do still own it, lived very simple lives which stands in contrast to the money that seems to be acquired by other leading chain CEO's and their managerial boards. I find it quite an interesting place because the progression/pressure of capitalist competition in this industry has lead to a chain becoming popular that actually provides less goods, less choice, so it seems as if both extreme capitalism and communism might lead to a reduction of social diversity. It is quite a soulless place and going to it helps me think that capitalism is on its way out. *(Participant, Survey 1)*

Participants' existing motivations are also influenced by particular values and beliefs relating to the wider food system. This was not associated with the Big Supermarkets except negatively, for example: 'I try to use the supermarket as minimal as possible […] I do feel they have a monopoly and want to support the smaller guys'. Participants'

concerns ranged from supporting the local economy by buying from local producers (7 refs), sustainability (1 refs), values associated with particular farming methods such as 'organic', 'ethical', 'free-range' and 'high animal welfare' (Farmers' Markets: 7 refs; Specialist Shops: 4 refs) and company values like 'commitment to community' (Specialty Supermarket: 2 refs). One participant, who is quoted in full (above), wrote about liking Aldi for its anti-capitalist stance (1 ref).

Participants do not always articulate the foundations or reasons for the formation of these beliefs, this being slightly out of scope for a survey. However, some responses highlight the ways in which these beliefs and values are supported. For example, one person heard a story about the company Aldi on a radio program (1 ref), another mentioned how they talked to their butcher about where their meat had come from to ensure it was high animal welfare (1 ref) whilst another bought directly from farmers online (1 ref) in a way that gave her a 'better idea of how its grown and a chance to support locals: seasonal eating'. This demonstrates that participants' concerns for wider issues relating to the food system was a motivator for where they went and the kind of foods they bought.

Cost and price (16 refs)

Participants cited the cost or the price of food as a motivator for shopping in certain places. Typically, in regard to supermarkets (8 refs) this was often framed simply like 'Supermarkets: convenience and price'. However, often price was discussed comparatively in relation to other places. For example one person discussing the price of food said 'I choose to go to Aldi because it is also inexpensive when compared with the big supermarkets', whilst another person discussing the specialty supermarket Harris Farm said 'It may be slightly more expensive than Cole/Woolies but not by any significance'. Another person described their use of a specialist shop as being 'much cheaper'. What this demonstrates is that the spaces in which people learn about food are to some degree shaped by what they can afford to buy in what is often a commercial environment.

Different places for different needs

People go to different places to fulfill different shopping needs. Though two people mentioned only cost and convenience as a reason for shopping in a particular place, the majority of participants choose the place for a particular need or product. What can be seen in the data is a balance between shopping for *quality* in places like Specialist Shops (7 refs) or specific hard to find produce in Health Food (6 refs) and online ordering services (2 refs), versus using the Big Supermarkets for convenience (18 refs), cost (8 refs) and particular products like 'basics' or dried goods (3 refs). Thus individuals engage in a balancing act where different foods are sourced from different places for reasons that are driven by *both* pragmatic needs like convenience and cost, *and* values like quality, taste and concerns relating to the wider food system.

Growing, foraging and sourcing food from scratch

For sourcing food from scratch, 12 people grew their own food either on a working farm (n=2) or within a non-commercial balcony, backyard or community garden (n=10). Picking wild foods (n=2) and hunting or fishing (n=2) were less common. One person used dumpster diving as one way in which she sourced her food. Dumpster diving, a sort of 'urban foraging' in which individuals aim to minimize waste and counter consumerism through taking food that is thrown away by shops but deemed edible by the individual. The category of 'Other' (n=4) in Table 6.2 was comprised of two individuals who received food from other people, namely a community garden (n=1) and parents who grew their own fruit or vegetables (n=1). Another individual from overseas used this category to explain what the equivalent stores were in Thailand (n=1).

Though only 12 participants currently 'grew their own food' the number of participants who had previous experience of sourcing their own food from scratch is much higher. In response to the question '*Do you or have you ever sourced your own food from scratch*' 87% (n=28) had at some point sourced food from scratch through either growing, rearing, hunting, fishing or foraging for food in some way. To understand what people did and why, participants who answered 'yes' to the above question were asked to 'briefly describe what food you sourced and your reasons for doing so.' The thematic analysis of these participants' responses can be split into two parts: 1) what people stated they grew or sourced; 2) the reasons or circumstances that

they state for doing this. The results of the qualitative thematic analysis are presented below.

As Figure 6.3 illustrates, the majority of individuals had experience in growing or sourcing plant-based products. Individuals had experience sourcing fruit or vegetables (n=19) or herbs (n=14). This produce was either grown by the participants themselves, or sourced from a family member's vegetable or herb garden (n=3). 8 individuals had foraged for their own food, with some people elaborating on this by saying that they picked mushrooms (n=2), berries and hedgerow fruits (n=3), wild garlic (n=1) and edible weeds (n=1). Sources for food derived from animals were less represented. Four people had sourced food by fishing and only one by hunting. The only person to have reared his own meat was a commercial farmer (n=1). One individual counted Kombucha as sourcing food from scratch; Kombucha is the cultivation of a culture of yeast and bacteria that makes a fermented beverage. One person also made honey from bee keeping.

	Fruit or vegetables	Herbs	Foraging	Fishing	Eggs	Rearing meat	Hunting	Kombucha	Bee-keeping
Series1	19	14	8	4	2	1	1	1	1
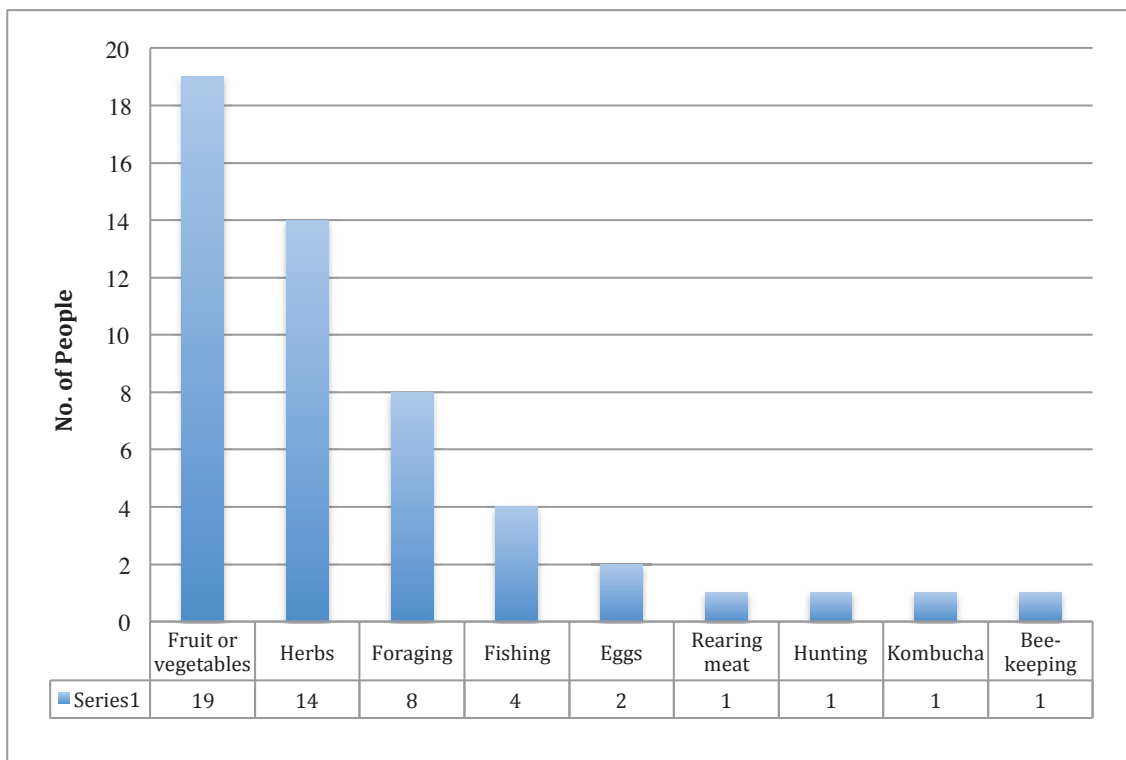
Figure 6.3 Growing, producing and sourcing behaviours

Motivations for producing or sourcing your own food

In contrast to shopping places, which often had clear themes emerge, individuals who sourced or had previously sourced their own from scratch had a greater range of reasons and motivations for doing so. Particular pragmatic qualities relating to the food itself like 'fresher food' (n=7), 'taste' (n=4), 'convenience' (n=5), being 'cheap' (n=4), 'healthy' (n=2) and 'good for cooking' (n=1) were mentioned.

However, there were wider themes such as that of motivations and opportunities provided by space and place: both at a macro and micro level. For example, in cases where people no longer foraged for food, these activities were sometimes related to that person's past, for example when they grew up in the UK or the Netherlands, and the crops that were endemic to that particular locale. For example, one person said that 'wild garlic was plentiful near where I grew up' (Netherlands), whilst another used to 'source fruit from hedgerows' (UK). Similarly, for individuals who had tried to grow herbs or fruit and vegetables, the smaller physical place was often referenced. For example individuals would reference their 'veggie garden' (n=1), their parents' allotment or garden (n=3), their community garden (n=3) or 'balcony' (n=4). Sometimes the affordances and constraints of that space accompanied these descriptions. One person said: 'Tried herb growing - but struggle due to balcony location/size' whilst another '[…] bought a farm 2 years ago to be able to learn how to grow food better and provide food for others'. Four people felt that by sourcing food themselves they were able to 'know where it came from' (n=4) or know more about the food. This was often driven by a desire for food that was organic or pesticide free (n=4), locally grown (n=2) or seasonal (n=1). Though not always explicitly stated, some individuals also referred to aspects of the wider food system, citing environmental concerns (n=4), the importance of community in community gardens (n=1), animal welfare (n=1) or reducing wastage (n=1) as a reason for sourcing food themselves. However, reasons for sourcing food from scratch were not solely motivated by concerns relating to the food system but very often had an experiential quality to them. For example, 'enjoyment' or 'fun' (n=6), 'being close to nature', or 'grow my own mostly herbs and leafy greens for convenience and to feel good' (n=1). Though the majority of people were positive about their experience in growing their own food, there was still the theme of difficulty and struggle for some people who had tried to grow their own

food (n=3). These individuals would express how growing food made them realise how difficult it was, made them more appreciative or in one case total disparagement: 'I've tried to grow vegetables but I have never been successful, they all die or don't grow...I don't have time or space or interest in growing my own food.'

Promoting awareness and learning about farming

For one participant who is a commercial farmer he not only produces food but also engages others in in understanding where it comes from. He describes what he currently does:

> For the past year I have used social media (Facebook, twitter, blogs) to follow the lives of various rare breed livestock through each stage of the supply chain ending up in nose-to-tail dining events. This has resulted in newspaper articles, talks in local primary schools and the opportunity to chat to diners at the events themselves.

Cooking Habits

All participants in the RHR project cooked food from scratch during the week. Table 6.3 illustrates the extent to which participants cooked per week.

Table 6.3 In an average week how often do you cook food from scratch?

Times per week	No. of people	% of total (n=32)
Never	0	0
1-2	2	6
3-4	10	31
5-6	10	31
Everyday	10	31

Table 6.4 Why do you cook?

Reason	No. of people	% of total (n=32)
Health or diet	25	78
Enjoyment/Fun	23	72
To know what is 'in my food'	23	72
To get nicer food	22	69
To save money	16	50
Because I have to	6	19
A good way to wind down after a day at work (*Other*)	1	3
Therapeutic reasons and/or procrastination (*Other*)	1	3

In response to question 'why do you cook?' (Table 6.4.) the majority of participants (n=29) selected more than one reason. Health or diet was a dominant reason for cooking from scratch (n=25), whilst enjoyment or fun (n=23) and knowing what was 'in' food (n=23) and get nicer food (n=22) were also important. Of the group 50% cooked to save money, with one person cooking solely for this reason. Though a small number of participants said that they cooked because they had to (n=6), this was never the sole reason. Rather cooking out of necessity was coupled with other reasons. There was no pattern between the number of times a week that people cooked and their reason for doing so.

Information resources and learning

Individuals use a range of information resources to find out about the food they are eating and buying. Food labels were the primary means for people to find information about food, but this was supplemented with information from other digital and non-digital resources (Fig 6.4).

	Food labels	Recipe books	Recipe websites	Food blogs	Social media (e.g. Twitter and Facebook)	Books or magazines	Specific social food groups (e.g. clubs or organisations)	Agricultural publications or websites	TV Cooking Shows	Mobile apps.	Other
■ Series1	27	18	17	13	13	10	7	6	5	5	5
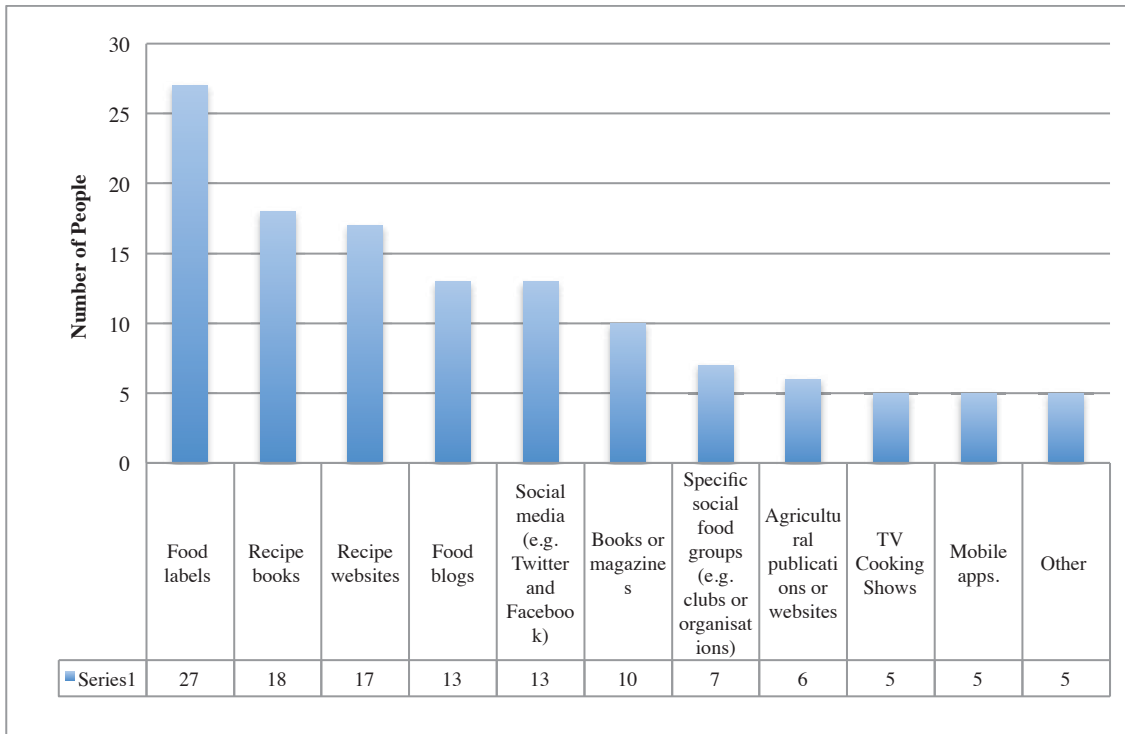
Figure 6.4 What do you use to find out about the food you are eating or buying?

Given the importance of food labeling and terminology as a resource for finding out about food, participants were asked to complete the statement '*When shopping for food I am interested in food that is…*'. In response to this question *all* participants selected more than one type of food. Results from this survey question are depicted in Figure 6.5.
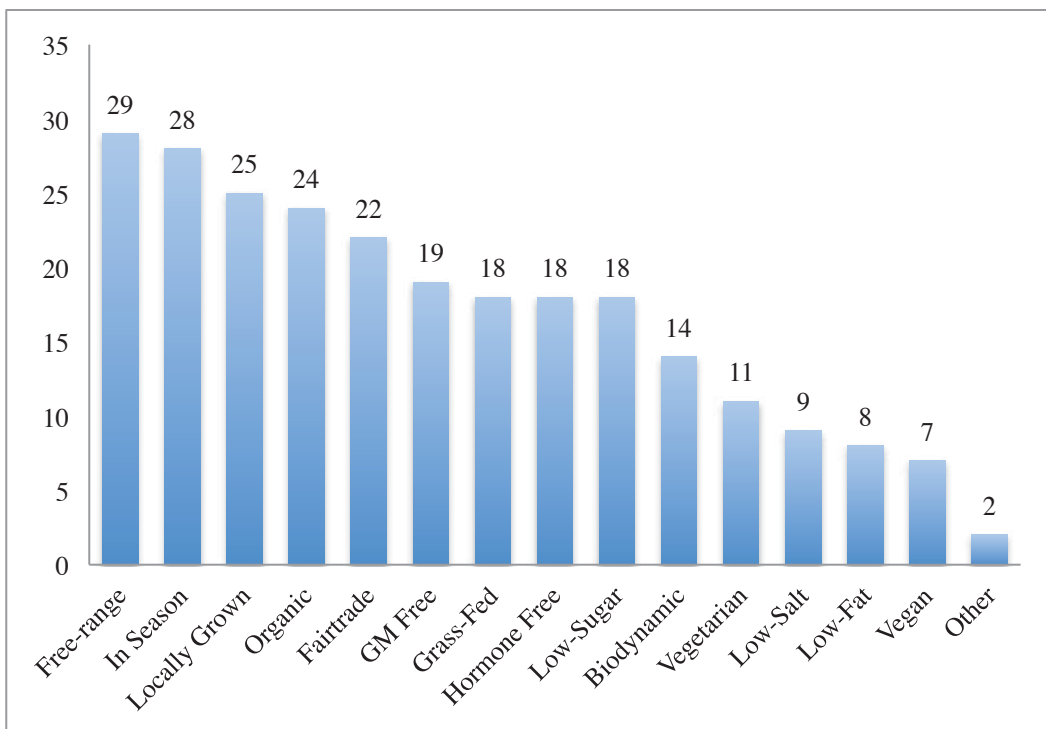
Figure 6.5 When shopping for food I am interested in food that is…

Participants were then asked to give reasons for their interest in these types of food. In response to an open-ended question '*Why are you interested in shopping for these food types?*'. In addition to the reasons such as quality (n=4) taste (n=2) and freshness (n=1) the main themes are discussed below.

Health or Diet (n=26)

Concerns about health expressed themselves in different ways. These typically were not in isolation but were part of a wider set of concerns: 'To the best of my knowledge they are ethically, sustainably grown or produced and are richer in nutrition.' Concerns about health or diet were sometimes general, such as 'I just think they're healthier', which related to free-range, organic, seasonal and biodynamic foods. Other individuals expressed specific concerns about nutritional content such as 'I think sugar is quite bad'. Some people were concerned about 'consuming harmful and unnatural chemicals in the body'.

Ethics and Values (n=21)

> Free range, I don't like the way animals (pigs and chickens) are kept for food.
>
> As a farmer I like to support other local farmers and I am confident local produce with a short supply chain tastes better. On the other hand I don't want to support big ag as the money bypasses farmers.

People often selected particular categories because of the ethics and values associated with them. These values included animal welfare (n=11), general concern for 'ethical food' (n=5), the desire to support farmers and producers (n=3) and, for Fair Trade, concerns for third world countries (n=1) and social justice (n=1). One person said that they supported local food for political and economic reasons (n=1) but didn't elaborate on this. Another concern was the idea of consumer empowerment. For three people buying into particular types of food was a way to 'vote with the dollar' and 'create a better food system' (n=3).

Green issues (n=14)

> Because these foods hopefully cause less of a destructive effect on the environment, perhaps.

> I'm interested in sustainable food systems - that includes soil, wages, community

As a theme, green issues, manifested in two terms used by participants: 'the environment' (n=8) and references to 'sustainable' or 'sustainability' (n=6). People talked about concern over the 'farming methods' and wanting to 'support farmers in creating better food systems for health reasons [and] environmental reasons'.

Awareness, knowledge and learning (n=4)

Four people felt that it was important to know where your food came from. This was expressed in terms of 'being educated on where your food comes from', 'knowledge is key' and 'we want our children to be aware of where their food comes from'.

Conflict, issues and confusion (n=5)

Though the above were the main reasons or attitudinal responses to particular labels and terms commonly used within the food system, less stable or easily consolidated themes emerged. Despite advocating for particular types of foods people were conflicted about this. One person stated that they had an interest in the derivation of food but was also conflicted about the fact that he is only now in a position where he can afford to make better food choices. Two people felt that food labels were in some ways insufficient in that they either did not reflect the actual farming method used (n=1) or was, as a label, problematic. One person said '[…] I know [organic] it is seen as a 'guarantee' status, it isn't always an accessible or profitable model for farmers. The organic industry is also misleading about non-organic produce, making it seem like all non-organic produce is low welfare'. One other person felt that despite having an interest in where food had come from and wanting to 'connect' and develop a 'moral sensitivity' that this was only possible once he started earning more money. Another individual expressed confusion in that he said he was 'not 100% sure what half of them [labels and terms] mean'.

As always, wider contextual factors shaped how people discussed these issues with the occasional reference to food's affordability ('seasonal food is cheaper') and the people in the household. For example, if individuals lived with a vegetarian or vegan then, even if they themselves did not adhere to this diet, they would look for the particular type of food. In summary, we can see that people's existing understanding and beliefs shape how they respond to different terminology and types of food prevalent within the food system. However, though people may be motivated towards labels that indicate *where* their food comes from, whether this translates into purchasing will depend on other factors. This is especially important since peoples' motivations about where and how they sourced food is influenced by qualitative information around values, ethics and concerns for the wider food system that are less verifiable than quantitative motivations like price and the convenience of the store's location.

Learning to cook

The survey sought to understand *how* individuals believed they had acquired these cooking skills. A summary of the survey responses to this question (Table 6.5) demonstrates that the majority of people learn how to cook through informal learning methods. Indeed, *all* participants had some form of informal learning with 97% of participants having self-taught themselves in some way through using secondary resources either on or offline. The single participant who had not self-taught themselves how to cook, had instead learnt informally from friends and family. Individuals who had received some formal learning, either via school (n=4), cooking classes (n=5) or both (n=1) supplemented this learning with other informal peer learning from friends and family or from TV shows, self-taught methods or online tutorials. Individuals who selected 'other' both stated means of informal learning: one person in the form of face-to-face learning from chefs in the workplace (she worked as a chef) and another through online tutorials that comprise Jamie Oliver's YouTube channel FoodTube. What this demonstrates is that the major ways in which people learn about food is through informal channels that are outside of the formal educational spaces and that much of this (n=31) is comprised of technologically mediated learning – whether through old (e.g. recipe books) or new (e.g. social media) technologies.

Table 6.5 How did you learn to cook?

Categorized by type of learning[12]		Reason	No. of people	% of total (n=32)
Formal Learning		Cooking classes	6	19
		School	5	16
Informal Learning	*Face to face*	**Learnt from family**	**22**	**69**
		Learnt from friends	13	41
		Working with Trained Chefs (Other)	1	3
	Technologically mediated	**Self-taught (e.g. recipe books, magazines, information on the internet, food blogs, experimenting)**	**31**	**97**
		TV Cooking shows	8	25
		Online tutorials (e.g. YouTube)	6	19
		Jamie Oliver & Foodtube (Other)	1	3

6.2.1.4   Technology Ownership and Use

In addition to ascertaining how participants used online and technologically mediated information to seek information about food or acquire skills such as cooking (see Table 6.5), Survey I also gauged participants' device ownership and existing usage through four closed questions. These questions sought to understand what devices participants owned, and participants' existing usage of technically convergent mobile devices, namely their mobile phone and, if applicable, tablet computer (e.g. iPad). Findings to these questions are summarized below. Additional tables are supplied in Appendix 14.

All participants had a mobile phone

In response to the question 'Which of the following devices do you own?' (Figure 6.6) all participants (n=32) owned a mobile phone. Participants were asked whether their

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[12] These categories were assigned to the data by the researcher *during* data analysis – thus participants were not exposed terms like formal and informal learning and instead selected from the list of reasons presented in column two of Table 6.4.

phone could connect to the Internet. Out of 32 participants only one person could not access the Internet from their phone. This one individual differed from the rest of the group in that their usage was limited to phone calls, text and taking photos. Conversely, the rest of the participant cohort used their phones for a variety of networked purposes.
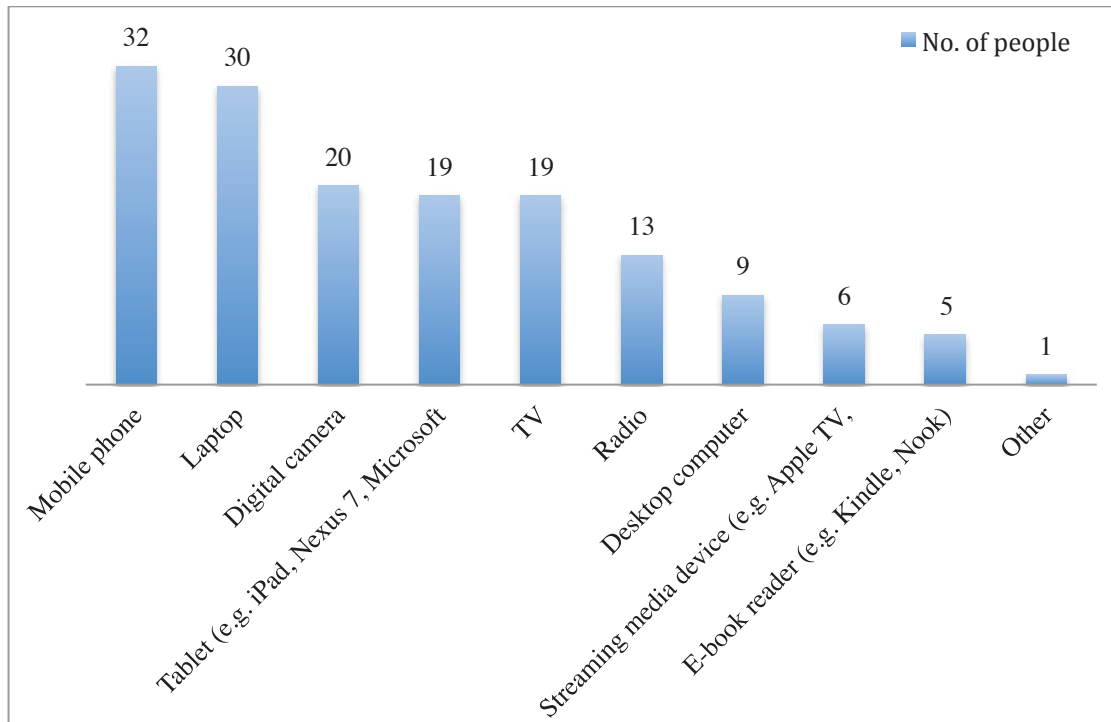
Figure 6.6 Which of the following devices do you own?[13]

All participants had a larger, potentially portable, secondary device

Following the mobile phone, the laptop computer (n=30) was the second most prevalent device. Within the data, 73% (n=22) of people who owned a laptop did *not* own a desktop computer. Out of those individuals who owned a desktop computer (n=9), 7 *also* owned a laptop computer. The two individuals who owned a desktop computer and not a laptop computer both had a tablet computer. What we can summarize from this is that, in addition to a mobile phone, *all* individuals had a larger potentially portable device in either the form of a laptop or tablet computer.

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[13] The 'other' device that was owned was an iPod – which is a digital music player created by Apple.

Mobile phone device usage

To gauge mobile device usage, participants were asked to select what they used their mobile phone for. In addition to phone calls 100% of participants used their mobile phone to take photos. All participants whose phones *could* access the Internet used their phone for email. The majority of participants used their phone to text (97%), engage in social networking (91%) and surfing the Internet (91%). What is readily observable in the data is the range of activities that individuals perform on their mobile device. From consuming (n=29) and disseminating (n=24) multimedia content, to creating their own content in the form of photos (n=32), video (n=18), sound (n=9) and writing blogs (n=3) and fanfiction (n=1). For participants who owned tablet computers, 100% used their device to surf the Internet, with email (n=18), social networking (n=15) and watching online video (n=14) being the most popular usage for the device.

Tablet device usage

Out of the total number of participants, nineteen owned a tablet computer. In a comparison of mobile and tablet usage for participants who owned both devices (Total =19) it is possible to see that the tablet, in contrast to the mobile phone, is used marginally more for content consumption than creation (Figure 6.7). For example more people used their tablet to surf the Internet (n=19) and watch videos (n=14), than take photos (n=11) or video (n=7).
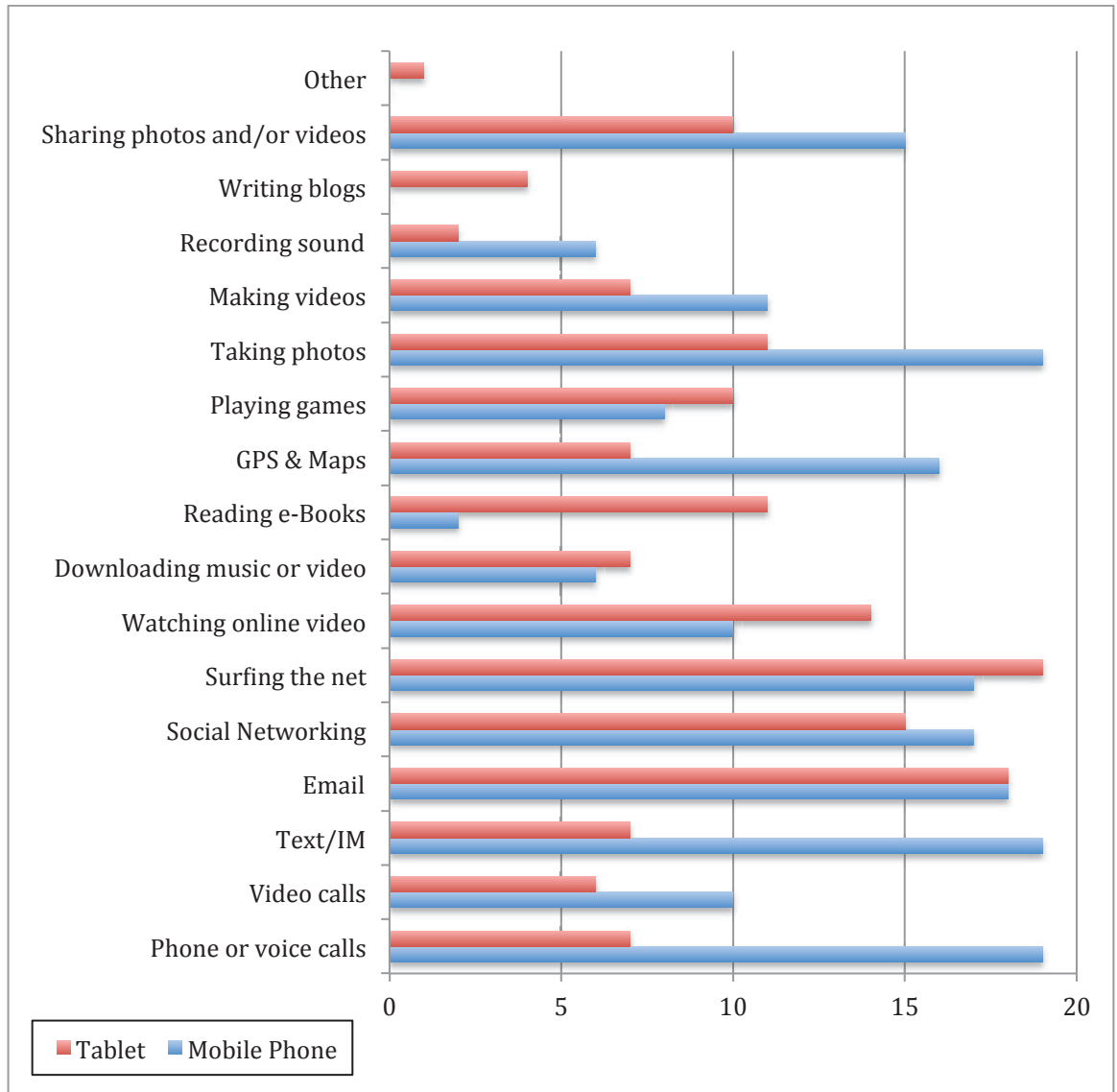
Figure 6.7 Comparison in mobile device usage between tablet and mobile phone for participants who owned *both* devices (n =19)

Navigating between multiple devices

Another key finding from Survey I is how individuals use different devices. This was explored in different ways within the analysis, but is highlighted using three examples of participant practices:

1) Taking photos (Table 6.6)

2) Making videos (Table 6.7)

3) Reading e-Books (Table 6.8)

Table 6.6 Taking photos across single and multiple devices

Photos		No. of people (n=32)	
Single device	Mobile phone	8	**8**
Two devices	Mobile phone and iPad	4	**17**
	Mobile phone and digital camera	13	
Three devices	Mobile phone, iPad and digital camera	7	**7**

Table 6.7 Taking video across single and multiple devices

Video		No. of people (n=21)	
Single device	Mobile phone[14]	14	**17**
	iPad	3	
Two devices	Mobile phone & iPad	4	**4**

Table 6.8 Reading e-Books across single and multiple devices

Reading of e-Books		No. of people (n=15)	
Single device	e-Reader	2	**9**
	Mobile phone	2	
	iPad	5	
Two devices	Mobile Phone & iPad	3	**6**
	iPad and e-Reader	3	

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[14] Out of these fourteen 6 persons did not own an iPad. This means that 8 individuals had a secondary device but choose to use their mobile phone solely for the purposes of taking photos.

What is possible to see is that there is a combination of ways in which participants navigate between multiple devices – especially if these devices can perform different functions. Firstly, individuals may use one device to consistently perform one function, for example only taking photos with their mobile phone. For individuals that only have one device that can perform this particular function, using a single device may, according to interviewees, turn out to a chosen or enforced restriction to that device (e.g. Table 6.6). We cannot say from this data. However, for some people using one device for one function is a deliberate choice of one device over a potentially capable alternative within their own personal ICT ecology. Conversely, there are other individuals who use more than one device to perform what is the same technical function, such as reading an e-Book, taking photos or making videos. In addition to framing device usage in terms of notions of personal ICT ecologies, this data has further analytic utility when used in conjunction with other methods. Following the emergent research design, findings from this survey were used to design more extensive questions on device usage around food and multimedia content within the context of interviews, and additional surveys that aimed to understand which devices individuals used to create their Red Hen Recipe and why. These findings are presented later in the chapter alongside their respective method.

6.2.2 Stage 2: Multimodal analysis of participant content

This section details findings from an analysis of the participant generated recipes – that is, what people created. This section begins with a descriptive overview of the site that includes the number and types of recipes generated by participants during the course of the research project. Close readings and content analysis are undertaken in two ways: firstly through thematic analysis of *all* recipes using NVivo and secondly through visual analysis of images. For this analysis Kress and van Leeuwen's (2006) *Visual Grammar* is used to make sense of visual data.

6.2.2.1 Overview

Of the 32 participants who enrolled in the Red Hen Recipes project, 25 participants created online profiles on the RHR website. In addition to this number was also the

researcher's own community profile (n=1) an exemplar profile (n=1) and other website users who were not research participants and not known to the research project (n=3). It is important to bear in mind users who did not participate in research, since these people *also* contribute something to the online community. Of the 25 research participants who created an online profile, 15 of this group (47% of the total participant cohort) went on to create one or more Red Hen Recipes (RHR). At the time of writing, the RHR website had a total of 24 user-generated recipes. These 24 recipes account for 14,207 words, 113 images, 23 interactive maps and 7 videos that make up the site's core content. These figures are inclusive of the four example recipes that were generated by the researcher to guide participants.[15] In addition to those participants who completed and published a RHR, 4 participants started to create their Red Hen Recipe, but for different reasons did not finish or publish their work. These incomplete recipes are briefly mentioned but are not admitted into the core analysis. Reasons for participant attrition are dealt with later in this chapter, principally via data from Survey II and Researcher Reflections.

6.2.2.2 Recipe Categories and Types: Shopping, Growing and Foraging
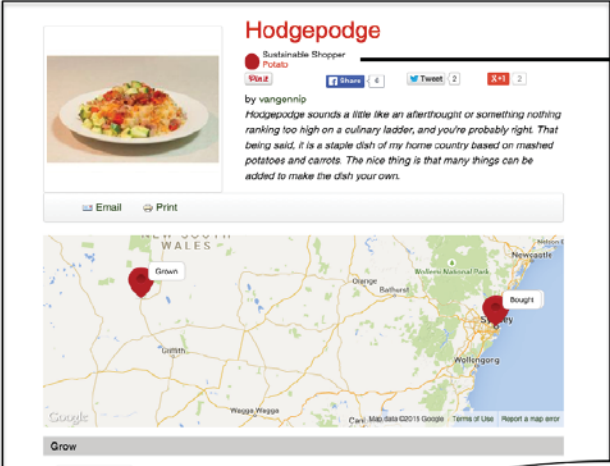
Each recipe allows the individual to trace *one* ingredient – referred to within the system as the Red Hen Ingredient. Participants also use the website system to categorize their recipes by *how* they sourced and found out about that particular ingredient. For example one participant sourced potatoes as a Red Hen Ingredient, which he found out about through *buying* this ingredient from a local shop or supermarket (Figure 6.8). He categorized his recipe under the 'Sustainable Shopper' recipe category. There are six recipe categories within the Red Hen Recipes system that allow users to represent the different ways that they have sourced their primary ingredient. Full descriptions of these recipe categories are supplied in Table 6.9. Categories were arrived at through the preliminary study (Chapter 5), with the decision to limit the recipes to be focused on

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[15] It is necessary to acknowledge the role of researcher-generated recipes both as an accurate summation of the total content on the site and the role that such content plays as a learning resource, both for people learning about the food system and for people considering how best to create a recipe of their own. Such content also demonstrates the researcher's position within the Red Hen Recipes community as a dialogic facilitator, as opposed to an 'objective' outsider or observer.

tracing a single ingredient based on the need to limit participant load. Further information on the design choices in the Red Hen Recipes system is available in Frawley and Underwood (2014), Frawley and Dyson (2014b), and Frawley, Dyson and Underwood (2014).

Recipe categories are visualized in both the main recipe (e.g. Figure 6.8) and within the website's search and browsing functions through map searches, drop down menus and colour coded icons (Figure 6.9). People can create more than one type of recipe *within* the permissions granted to their specific user account. For example, commercial users (e.g. farms, retailers, secondary producers) can *only* create commercial recipe types and non-commercial users (e.g. home cooks, individuals with vegetable gardens) can only create non-commercial recipe types (see Table 6.9).

Figure 6.8 Excerpt and exemplar of Red Hen Recipe types

Figure 6.9 Recipe types represented on recipes, maps, and browsing features

Table 6.9 Categories of Recipes Generated on the RHR website

User account	Category or Type of Recipe	Icon	Description of Recipe Category	TOTAL No. of Recipes[16]	Participant Recipes	Excerpt from Participant Example
Non-Commercial	*Sustainable Shopper*		Created with knowledge acquired through shopping.	11	8	*I found trays of Tomatoes at Harris Farm for $6.99 each on the weekend. There must have been about 4kg there. Harris is a great …*
	Greenthumbed Grower		Created with knowledge acquired through a person growing or producing a raw product – non-commercially.	8	5	*'The lettuces and herbs in this salad were grown at Ultimo Community Garden. Garden members meet each Sunday morning to bask in Sydney's glorious weather, catch up and garden. There's always something worth picking and always someone who knows a few interesting new ways to enjoy the produce.'*
	Forager		Created with knowledge from the person foraging for produce. This can include picking berries, dumpster diving, produce from the next door neighbor etc.	3	3	*'Picked from a Jasmine bush on Plaza Santa Cruz.'*
Commercial	*Productive Producer*		Created with knowledge acquired through either primary production (farming or a related industry) or secondary production (e.g. jam making, manufacture)	1	1	*'I focus mainly on Saddleback pigs, a breed native to the south of England. They are very good at getting fat so they need to lead an active outdoor life with a carefully managed diet. They generally live up to 7 or 8 months and reach weights of 70 - 90 kgs.'*
	Savvy Seller		Created with knowledge acquired through the commercial buying of products and the retailing of these.	0	0	
	Other	?	User defined via text box	0	0	
	TOTAL			23	17	

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[16] This figure includes researcher-generated recipes to reflect the sum content on the site.

This restriction fulfills two important functions. Foremost, knowing whether a commercial or personal user created a recipe provides the reader with additional qualifying information about *where* the recipe comes from and what purpose it might fulfill. Secondly, by limiting users to categorizing recipe types that are relevant to them the system's design minimizes user risk of a backyard grower categorizing their recipe as the product of commercial farming or vice versa.

Red Hen Recipe Types: How did people source their produce?

As Table 6.9 demonstrates the majority of participants were non-commercial users (n=16) – though two farmers were recruited to the participant cohort, only one farmer (n=1) completed a recipe. Furthermore, at the time of writing, there were no retailers represented. Thus, the majority of participants who wrote recipes sourced their Red Hen ingredient and their understanding of this produce from shopping (n=8), growing that ingredient themselves (n=5) or foraging (n=3). Out of these non-commercial users only one person had a job within the food industry. Whilst *all* individuals selected a primary ingredient to trace, not all recipe writers were successful in tracing this ingredient back to its source or finding out grower information. Of the 23 recipes 2 supplied *no* information about the source of their ingredient.

Out of all the different recipe types, those where the Red Hen ingredient was grown or sourced from scratch by the individual (e.g. 'I grew it myself') are more easily explained than those from the Sustainable Shopper category. With the plurality of farmers' markets, supermarkets and online shopping, there is a greater range of ways through which individuals can find out food information. To manage this the Red Hen Recipes system supplements allows Sustainable Shoppers to supplement and qualify their written text by choosing *how* they found out about their particular ingredient through a drop-down list of pre-existing categories: farm visit, personal communication with the grower, website, packaging, and other. Of the total number of Sustainable Shopper recipes (n=11), most people (n=7) found out where their ingredient came from by talking to the grower face-to-face. This came in the form of personal communication with the grower (n=4), with some people mentioning the personal names of farmers (e.g. 'It is a tuber grown organically by Hapi on his Field to Feast farm at Catherine Field on the outskirts of Sydney'). Other people visited the farm (n=3) where their

produce was grown. It was less common for people to find out information about an ingredient solely through online information. To find out where and how their produce was grown one person emailed the primary producer and another person visited the farm's website. One person gave no response, however this individual was not successful in tracing information on the origins of their ingredient.

Red Hen Ingredients: What foods did people source and trace?

The ingredients that individuals chose to trace were largely unprocessed foods. People traced plant-based foods (n=15), such as fruit, vegetables, herbs and blossoms. People explored the origin of animal products such as eggs (n=3), meat (n=3) and milk (n=1). One person traced pre-made tahini (n=1), which is a paste, made of ground, and sometimes roasted, sesame seeds. The recipes include food that can be described as minimally processed and thus having a shorter journey between that produce's origin within the ground than products that had gone through more intermediary processes (e.g. chocolate, cereals, or ready-made, canned or tinned goods). In addition to being largely unprocessed, participants tended towards tracing foods that were plant based (n=16). The majority of these recipes were entirely vegetarian (n=12). Individuals who traced plant-based foods traced herbs, fruits, vegetables, seeds and even flowers such as jasmine. Though animal products such as meat and dairy are less feasible for non-commercial producers to rear and thus accounted for *none* of the backyard growers' recipes, only 2 Sustainable Shoppers traced meat products. The one commercial producer was a meat farmer so his recipe focused on pork that he reared.

Categories and SEO Tags: How do people describe their final dish?

Participants could categorize their recipe in a number of ways that would assist readers in finding and using that recipe. Firstly, users could categorize their recipe under the types of meal that their particular dish could be served as (e.g. Breakfast, Lunch, Dinner, Snacks etc.) (Figure 6.10).
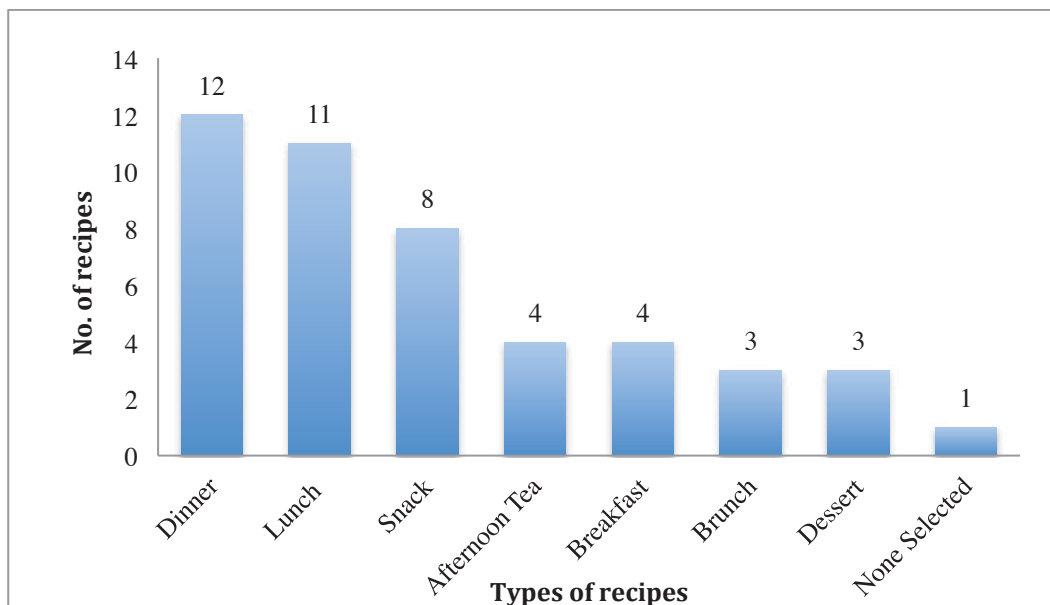
Figure 6.10 Types of recipes that participants created

People could associate their dish with more than one category of meal. Secondly, users could 'tag' their recipe with keywords or phrases that would feed into both the RHR website's internal site search function, as well as wider search engines such as Google. Analysis of this data revealed that most participants suggested to readers that their dish could be served for more than one type of meal (e.g. Dinner *and* Lunch). Most people prepared dishes that would serve for major meals like Dinner and Lunch – with savoury dishes outweighing sweet dishes (Figure 6.10).

Out of the 22 recipes created, 18 participants assigned keywords or tags to their recipes. There were exactly 100 tags generated. Though one person assigned a single descriptor to their recipe, all other participants assigned multiple different tags as a means of describing and categorizing their recipe. All participants included their primary ingredient as a descriptive keyword or tag. For the most part this was the first word assigned to the recipe and was a simple repetition of the ingredient name. However, there was a wide range of alternate ways in which people described and identified their recipes. Coded in NVivo the specific tags associated with each recipe and its title could be seen to relate in one of several linguistic relational forms in which the tag served to either reinforce or extend the title of the recipe in several ways. Firstly, repetition of words or phrases in the recipe title (36 instances) was the most common relationship found between tags and the recipes they represented. Secondly, tags may

represent ingredients or components of that dish *not* visible or represented within the recipe title (27 instances). In this case the tag has a meronymous relationship in the way that it represents a part of a whole (e.g. fingers have a meronymous relationship to hands); this is most readily seen within one recipe writer who used the catch-all term 'salad' within the recipe title and a list of different leafy ingredients within the tag field. Tags were often used to bolster meaning through colocational terms (25 instances) such as 'free-range', 'ayuervedic', and 'dairy free' which typically extended the meaning of the recipe titles with qualities that were associated with the main ingredient, the type of recipe, or how something was produced. These and other relational terms used by participants to define their recipe are included in *Appendix 7*.

6.2.2.3 Multimodal analysis

This section explores RHR trends and patterns observed in the way RHRs convey meaning through visual, as well as written, information. This analysis is informed by Kress and van Leeuwen's visual analysis framework that assumes that 'as a resource for representation, images, like language will display regularities which can be made the subject of relatively formal description (Kress & van Leeuwen 2006, p. 20). Use of this framework is modified using understandings of how aspects of these kinds of systemic functional linguistic (SFL) frameworks are best understood in relation to user-generated content (Frawley 2011; Frawley & Dyson 2014c). Findings from the visual analysis are presented as trends observed within the *total* number of recipes, with each trend being illustrated with images from participant-generated recipes. The analysis begins by identifying *where* within the recipe participants used image or video footage. Then, in line with standard SFL analytic frameworks, trends are explored in reference to three primary questions[17]:

- What is it about?
- How does the text enact a social relationship with the viewer?
- How is this meaning sequenced or positioned within the wider context?

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[17] Terms stemming from SFL are defined and illustrated throughout this section, however, additional reader support is provided in the form of an illustrated glossary in *Appendix 8.*

Where were images and video employed within the recipe?

All participants added at least one image to their RHR. The main image, which is used to summarize the entire recipe and attract readers to view more, was standard. This image is displayed on the RHR website's interactive map and summary page (Figures 6.9 & 6.11) and automatically featured in social media posts (Figure 6.25). It is the most visually prominent and prevalent image for all recipes and is one that *all* participants created. Furthermore, 26% (n=6) of all recipes on the site *only* used a single main image and thus did not further supplement their recipe with additional image or video content.
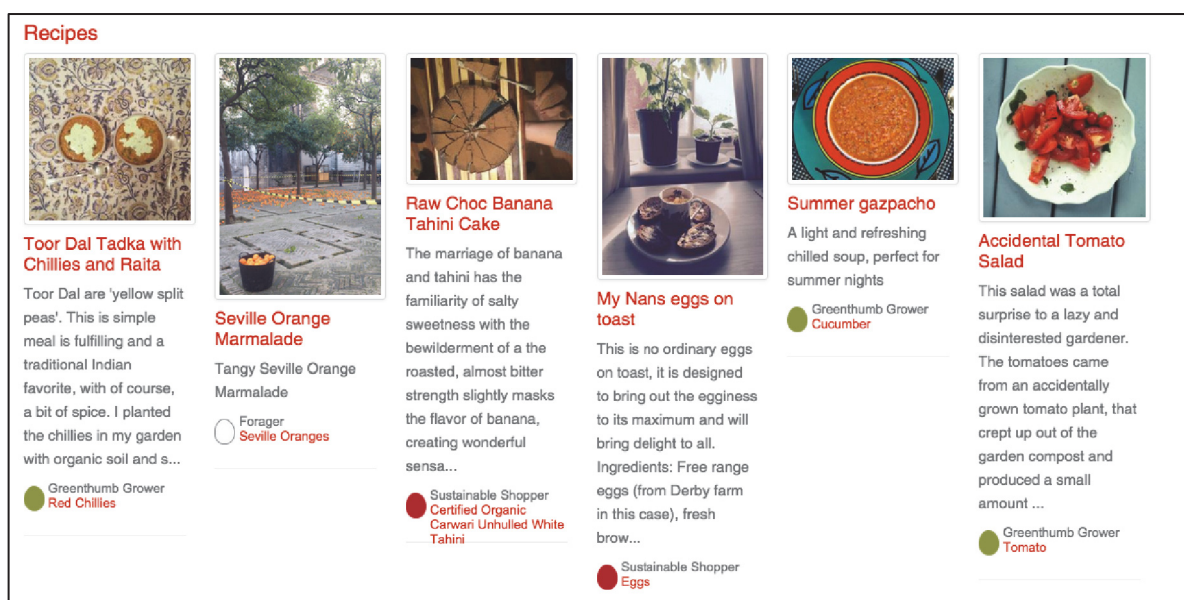
Figure 6.11 Main Images - summarizing and leading the recipe

In addition to the summarizing information, such as the main image and recipe description, each recipe can be thought to have three main components, which refer to the various stages of the RHR: *grow*, *cook*, and *eat*. Participants were able to add images and video to support each component of their recipe. Table 6.10 demonstrates how images and video were distributed across different parts of individual RHRs. Seventeen recipes used images to support other aspects of their recipe. In contrast to recipes' main images, that typically demonstrated the finished product, supplementary images were more likely to represent stages of growing or production around a key ingredient (14 recipes), the cooking process (15 recipes) or how the food is eaten (9 recipes), for example depicting serving suggestions or aspects relating to the wider context of

consumption. Of the seven videos added to the site, *five* of these depicted the farming or primary production of a food – with only two showcasing cooking methods.

Table 6.10 Use of images and video *across* different components of RHRs

Recipe Section		Images (n=113)		Video (n=7)	
		No. of Images	*No of recipes*	*No. of Videos*	*No. of Recipes*
Summary and Introduction	Main Image	23	23		
Recipe Body	Growing	37	14	5	5
	Cooking	44	15	2	2
	Eating	15	9	0	0

What is represented?

This section explores the types of visual images that are included within recipes and what they represent to the viewer.

Types of images: subjective or objective viewpoints

Kress and van Leeuwen (2006) distinguish between images that are *subjective* and *objective.* Within this schema subjective images typically have perspective, are non-diagrammatic and thus position the viewer of the image in a particular perspectival relationship to what is being represented through the selection of the viewer's 'angle' or 'point of view'. In contrast, the objective image is typically without perspective and largely diagrammatic in style. It is important to note that Kress and van Leeuwen use these terms in a specific way that does not negate the socio-political bias that objective images, such as maps and diagrams, often have. Within each recipe we can see 'subjective' images in the form of photographs and 'objective' images in the form of interactive Google maps that are created by both participant data entry and the combined functions of Google maps and the RHR website. With the exception of these maps, which were required by the RHR system, 111 of the 113 images created by participants are subjective and position the viewer in a specific relationship to what is being viewed (e.g. Figure 6.12: *Image B).* Exceptions to this trend were *two* recipes, one that included a diagrammatic image of a map of Australia (e.g. Figure 6.12: *Image A)*

and the other a copy of the front cover of a book on cows that was referenced within the recipe.

Image Type	Objective Image (2 pictures)	Subjective Image (111 pictures)
Example image		
	Image A	*Image B*

Figure 6.12 Objective and subjective images

Represented participants

Subjective images use meaning-making components such as angles and framing to design or indicate the position of the reader. However, in order to understand *how* social relationships are semantically constructed we first have to know *what* is represented. Analysis of the represented participants, Kress and van Leeuwen's (2006) term for those people, animals, objects that are depicted, reveal *what* is featured as the central character or object within participant photographs. Findings from this analysis demonstrate that *what* is depicted differs depending on *where* within the recipe the image is placed or positioned. Beginning with the main image, of the total number of recipes (n=23), 17 recipes featured the dish in its final stage – i.e. the point at which someone would eat the prepared food. In contrast, 6 recipes used the main image to showcase an alternate stage of the recipe process: this included pictures of the produce being grown or produced (n=2) or pictures of the raw ingredient or ingredients (n=2). By contrast, images contained within the body of the recipe were more likely to depict other aspects of the food system – for example stages of growing (28 images), scenes

from a shop or market (3 images), aspects of the cooking process (44 images). By looking at what people chose to represent we can see the focus of images within the recipe as the ingredient or food – albeit within different contexts and circumstances.

| Image A | Image B |
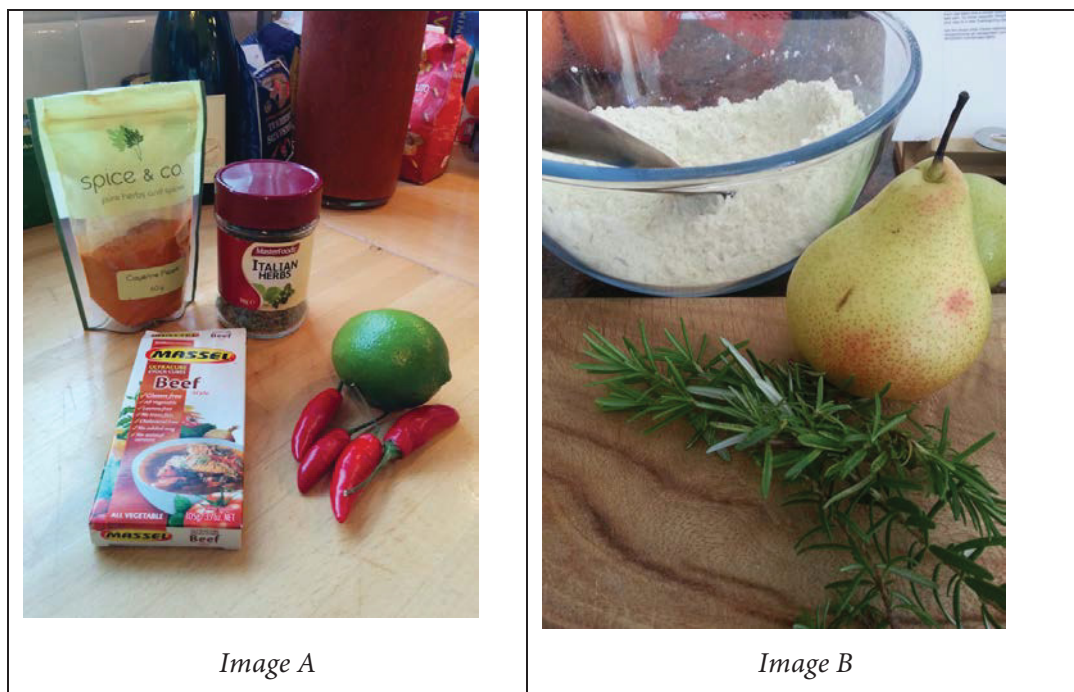
Figure 6.13 Still life and symbolism in participant photography

Still life and symbolism

Kress and van Leeuwen also identify symbolic processes (2006, p.105) in which what is featured 'cannot be interpreted as an action' but are nevertheless made salient within visual representation through being placed conspicuously in the foreground, look 'out of place in the whole' of the image, or 'conventionally associated with symbolic values'. Images that utilize symbolic representation can be observed within 14 of the 23 RHRs. This form of representation is most frequently seen within images representing cooking, with images presenting a cooking process symbolically in the form of a single 'still life' image of ingredients that appears highly designed and artificially arranged (Figure 6.13). In line with Kress and van Leeuwen's analytic visual grammar we do not see any human actor engaged in the act of mixing or preparing ingredients (e.g. Figure 6.13, *Image A*). Rather these symbolic 'still life' images cohere with other media, such as the written text or subsequent photos to emphasize ingredient or method within the wider RHR narrative.

Narratives and processes OR offers of information

In contrast to these still lifes, are images conveying actions, narratives and processes. Within Kress and van Leeuwen's (2006) schema, representations of narratives are often conveyed through vectors within any given image. For example the direction in which represented participants (those depicted) are pointing, travelling, walking or looking. If images do not depict a narrative or process, then they typically depict an *offer* of information. For example in Figure 6.14 *Image A* depicts the action or process of *picking* basil; this is conveyed by the vector between the background of the image (the basil plant) with the foreground of the image (leaves within a person's hand). Conversely, in Figure 6.14 *Image B* though viewers are invited to imagine sitting at this table, no action or process *within* the image is represented; it can thus be considered an offer of information as opposed to a narrative-based action or story.

Image Type	Image depicting action or story	Image as offers of information
Example image		
	Image A	*Image B*

Figure 6.14 Images depicting either processes and actions or offers for the reader

There were trends in the types of images that people used within different parts of their recipes. Within the *main* images of all recipes, only *two* represented a narrative or process (2 recipes), with the majority of remaining recipes (n=21) featuring an image that *offered* what was represented without any represented narrative or action. Participants' primary recipe image was typically less narrative and instead *offered* the dish as an image to the viewer for consumption.

Where participants did choose to represent processes or actions, these images were largely contained within the body of the recipe (8 recipes), especially in instances

where there was either a human or animal represented in the image. Images depicted a range of narratives and processes such as: people shopping at the markets, pigs eating on the farm, bees pollinating flowers, people picking herbs. Thus, where action was represented *within* the image it spanned both several different kinds of activities relevant to the food system. For example in Figure 6.15 the process of *seasoning* in cooking is demonstrated by the vector created by the pepper mill, that goes from left to right, on the *x* axis within the frame of the image.

Figure 6.15 An image depicting a process through left to right vectors on the image's *x* axis

Similarly, Figure 6.16 demonstrates the process of people *shopping* at a market stall. The represented participants (the people) are conveyed as shopping by the natural vectors created by the image with the people going towards the market stall. In this image the direction of the movement is primarily upwards on the *y* axis within the frame of the image.

Figure 6.16 An image depicting a process of shopping through vectors on the image's *y* axis

Just as direction can be carried on the *x* and *y* axis, Figure 6.14: *Image A* depicts the process of picking Basil by conveying direction of movement on the third dimensions: the *z* axis. In *Image A* (Figure 6.14) picking is conveyed by the relationship between the Basil in the human hand held *in focus* and those in the background just *out of focus*. Whilst the majority of images did not, in themselves depict actions or reactions, participants often formed a wider narrative through the sequencing of several non-narrative images within the wider space of the recipe. However, this is a feature created by how the multimodal artefact is assembled holistically within features of the RHR system interface, thus its meaning-making function is part of the compositional metafuntion and, as such, is discussed later in the chapter.

How does the text enact a social relationship with the viewer?

Analysis of the visual images reveal there to be several trends in *how* images involve the reader through the use of gaze, horizontal and vertical angles, and framing. These aspects of a *subjective* image enact the degree of intimacy, level of involvement and power relationships between the viewer and what is represented within the image. Trends from this analysis are summarized below.

Social distance

Within visual grammar the framing of an image suggests how close the interactive participant is to what is represented within the image (Kress & van Leeuwen 2006). Thus, in Western cultures a close-up shot enacts a close social proximity between the viewer and what is represented whilst a long-shot places the viewer at a greater social distance from what is being represented. Use of framing within RHRs constituted one of the most interesting aspects of participants' visual image construction. Out of the 17 recipes that feature the final dish as their *main* image, 14 recipes use a close-up frame and 3 use a super close-up frame. This framing positions the viewer in a personal or intimate relationship with the depicted meal or food. When looking at the following image (Figure 6.14: *Image B*) the viewer is positioned as sitting down to eat this dish. In this case the social relationship between viewer and what is represented is one of a diner and dish as the creator of this image shares their recipe by inviting the viewer to sit at the table.

Though eating typically enacts a personal or intimate relationship between depicted food and the viewer, images depicting shopping differ in this respect. Pictures taken at markets or shops instead utilize a medium shot that enacts a less personal relationship between viewer and store. For example, in Figure 6.17 we are no longer the diner but are now the shopper and our point of view occupies a greater social distance that reflects the nature of this kind of public space. The enactment of public and impersonal space relations can be seen in participant images of markets (Figure 6.16) shops, (Figure 6.17) and village squares (Figure 6.19).

In addition to these central trends are a few playful outliers that demonstrate the ways in which alternative perspectives are shared with the reader. For example, in the RHR 'Grilled Basil and Garlic Salmon' (Figure 6.14: *Image A*) the close-up framing creates an intimate space in which the viewer *becomes* the gardener picking the basil. Likewise Figure 6.18 positions the viewer in a personal relationship to the pigs in the farmyard – the viewer becomes either a farmer crouched down in the pigsty or, perhaps, a member of the herd. These examples demonstrate a sharing of the RHR creator's perspective within their activities and an invitation to participate within activities around food that span typically close social proximity that is contextualized appropriately to the personal and public context depicted in the image.

Figure 6.17 Image from RHR: 'Tomato Passat – Nonna's Famous Recipe'

Gaze

The use of gaze between represented participant and the reader is only visible within images featuring animals that are part of the food system. Since participants' main recipe images rarely featured either animals or people, gaze between viewer and animal largely occurred within recipe supporting images – specifically of recipes relating to animal's involvement in food production (10 photos): bees, pigs, chickens and cows. The direct gaze, or lack thereof, is the difference between an enacted relationship of the viewer that demands a response or one that offers information. The majority of depicted animals were not looking at the viewer (8 photos). However, in two images for a recipe for Pork Rillete, the pigs look directly at the reader. Combined with the angles and framing of the shot, the person was positioned as an equal to the pig – either as the farmer crouched down or as a member of the pig herd (Figure 6.18).

Figure 6.18 Image from RHR: 'Pork Rillette'

Level of involvement

The viewer's level of involvement in an image is carried by the angle between what is represented (e.g. a dish, a pig) and the viewer on the horizontal plane. Oblique angles that position the viewer looking on from the sidelines typically position the reader to be outside of any direct involvement in the scene. Conversely, angles that position the viewer directly in front of what is represented enact a more involved social relationship. Within the main images of the RHRs 21 out of 23 recipes represent a dish or ingredient that is placed directly in front of the viewer, with a full frontal angle being most commonly found in photographs of final dishes where the viewer becomes the intended consumer.

Where main images used an oblique angle (n=2) these were typically *slight* (as opposed to extreme) and position the viewer as an onlooker rather than an active participant. This can be most noticeably seen within images that are *not* depicting eating or cooking. For example, within images within the body of the recipes oblique angles can be found in images of markets, shops, town squares (e.g. Figures 6.17 & 6.19) and a robotic dairy farm. Data from the *types* of recipes created (e.g. Sustainable Shopper) indicate that all images that position the viewer as an observer rather than a participant occur in recipes where the RHR writer is *not* a commercial grower or retailer but is observing or engaging with such produce in a public or semi-public space. Though

oblique angles are used these are slight and not extreme thus not presenting a barrier to the curious onlooker or viewer.

Figure 6.19 Image from RHR: 'Seville Orange Marmalade'

Power relations

Power relations between viewer and *what* is represented within the image are carried on the vertical plane (Kress and van Leeuwen 2010). Typically steep vertical angles that position the viewer looking down on the represented participant position the viewer in a position of greater power than those with steep angles that position the viewer looking up.

Figure 6.20 Image from RHR: 'Toor Dal Tadka with Chillies and Raita'

Firstly, for images where a dish, ingredient or cooking process is depicted, the viewer is *always* positioned looking down. The use of a sharp incline for images of food is the most common way of presenting dishes (e.g. Figure 6.20). This angle serves a practical function in that it allows the reader to *view* what a particular dish looks like – what is in it for example. However, in Kress and van Leeuwen's (2006) schema these angles also depict a power relationship between what is represented and the viewer. Such angles that look *down* on food can be interpreted as making this food accessible to others. By looking *down* on an ingredient or food item the viewer is in a position whereby they can attain and potentially eat what is represented food. Contrast this to depictions of food and wine where the viewer is positioned looking *up* at an item. This convention is most notably seen in adverts for luxury consumer goods such as champagne where the enacted power relationship positions the viewer in an aspirational relationship to that of the depicted food, drink or brand. Furthermore, such angles when used within cooking, also serve to mimic and share the perspective of the cook – providing viewers with an insight into how each stage of the recipe process looks from that vantage point.

Secondly, the use of vertical vectors between interactive participant and represented animal participants (e.g. bees, pigs, cows and chickens) may highlight both power differentials and interest between the human viewer and animal. Out of the 10 photos that represent animals throughout the RHR website the majority (n=8) position the viewer looking down, but only at a *slight* angle. One image alone positions the viewer looking down onto cattle from a platform at a steeper angle. What we can learn

from this is that the power dynamic between humans and farm animals is reinforced through these images but merely to a limited extent. For many of the images the photographer's curtailing of the vertical angle of the image by crouching down to get closer to the animal mitigates the power differential enacted between the human viewer and animal. This allows viewer some connection with that represented species and demonstrates that the recipe makers may have had a greater interest in the ethical use of animals and felt less superior to these other species. Moreover, one image which positions the viewer looking at the animal on a *neutral* level – neither looking down or up. This image has been selected from the front cover a book about the history of the cow and included in a recipe for milk.

Modality

Images, like written language, have a modality that relates to the truth, credibility and probability of what they present to the viewer. With the exception of *two* objective images that are hand drawn, all images created by participants are created using photography. The modality of photography may be described as more authentic than that of alternative images such as cartoon, sketch or caricature.

How is this meaning sequenced or positioned within the wider context?

The sequencing, positioning and layout of images determine how individual meanings from images, videos and text cohere to create a single cohesive semantic unit. The potential reading path, that is whether we view an image or text from left to right, top to bottom, typically directs the reader in *how* to read a given text through vectors. These vectors can be part of the image itself or the wider context in which image and text are situated. Compositional meaning-making components are derived from a combination of computational and human actions. Trends that emerge from the outcome of these actions are explored below and illustrated with reference to one example recipe.

Internal structure of an individual Red Hen Recipe – reading paths

Components of the RHR are largely controlled by the computer system with the sequencing of sections such as: grow, cook, eat having been established within the design and development of the RHR website. Authorial choice extends to whether or

not to supplement the recipe content with images or video, *and* control what images or video are associated with each part of the recipe. Each recipe can be read in a variety of ways with different reading paths enacted by different website functions employed by the reader (Figure 6.21).

The reading path of the recipe works from the top of the web page to the bottom in a way that is congruent with reading practices on the web and practices such as 'scrolling down'. The hierarchy of information within the RHR situates summative information such as the main image, recipe description and interactive map at the beginning (or top) of the recipe. Succeeding this are the sections *grow, cook* and *eat.* This order, read from top to bottom, presents a narrative of 'beginning to end' of an individual food item. This sequence and its emphasis on the story of a particular ingredient is created by the information system and populated with photos, video and words by participants.
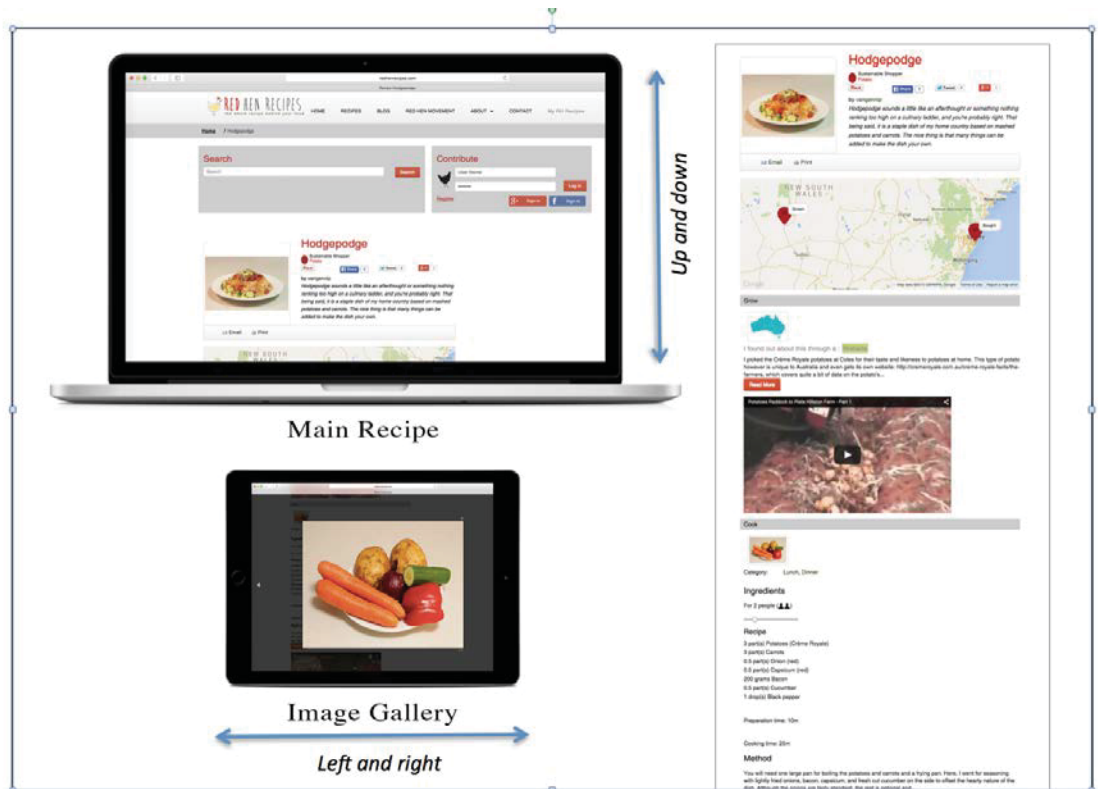
Figure 6.21 Reading Paths *within* the Red Hen Recipe

However, *technical functions* of the website create alternative reading paths. As thumbnails, images can be as an image gallery, where the reader can click from right to left to see all images contained within the recipe (Figure 6.21). Alternatively, readers can view these images as thumbnails that may be read from *left to right* with their

surrounding text (Figure 6.22) to create a narrative sequence. For example,in Figure 6.22 the participant's thumbnails connect the process of cooking to the symbolic still life image of the main ingredient. Images contained in the body of the recipe were typically used to convey processes such as the growth of pigs in the RHR 'Pork Rillet' or stages of cooking a recipe.
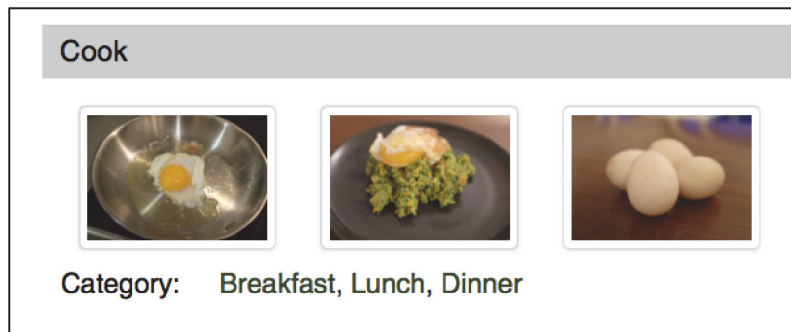
Figure 6.22 Narrative sequence of images within one part of a recipe

Figure 6.23 Interactive maps and multivectoral reading paths

In addition to the vertical and horizontal reading paths that operate on the *x* and *y* axis of the image, is the third reading plane (*z*) which is supported by the interactive map that are featured in each recipe (Figure 6.23). Zooming *in* and *out of* the map creates a visual narrative of proximity – what is near and what is far. Thus interactive maps allow for exploratory and multivectoral reading paths.

Changing digital spaces and context

Unlike the pages of printed books and magazines, web content and the compositional meaning is inherently unstable. The ways in which images from the RHR and the recipe itself is structured can vary according to *where* and *how* the recipe is viewed. Factors affecting the composition of recipes and their images are discussed below.

- *Devices, screen sizes and a responsive system:*

The RHRs website is responsive and displays content differently according to the device that views it. This rarely affects reading paths and compositional meaning. However, the amount of whitespace and the way the recipe appears to be composed will adjust to different screen sizes.

- *Migratory main images:*

Whilst the body of the recipe is only available to view on a single webpage of the RHR website, the main image of each recipe can be seen as a migratory image that can appear in multiple places on both the RHR website and other platforms such as Facebook, Twitter and Pinterest. Each change of context can bring a different visual narrative and meaning to that image.
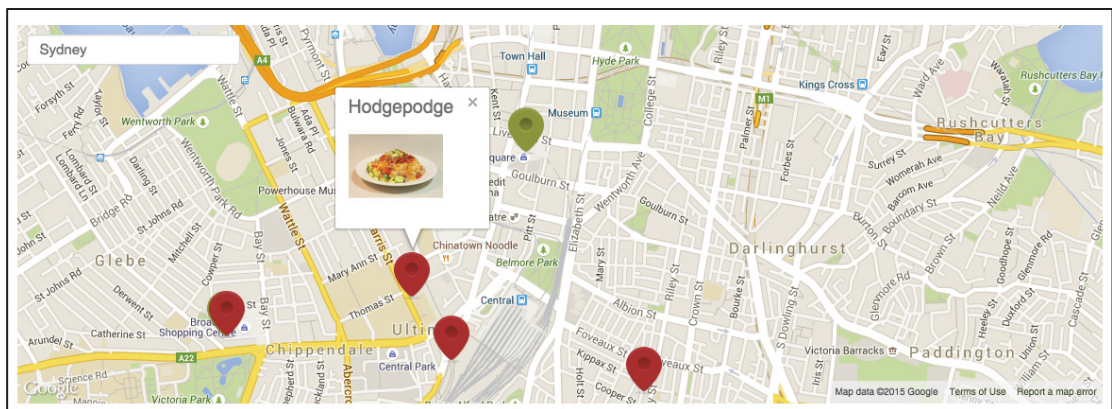
Figure 6.24 Main image displayed on the RHR website map

For example in Figure 6.24, the main image of the RHR 'Hodgepodge' is contextualized and given compositional meaning by both the map and the pin, whose colour denotes a 'Sustainable Shopper' recipe. The meaning of this visual image is one of place and origin. Comparatively, the compositional meaning of the Facebook post (Figure 6.25) is one where the image becomes *part of* a conversation within the genre and compositional

meaning-making components of that particular social network. Similar variations can be found across social networks where RHRs were shared. This includes Facebook, Pinterest, Twitter and G+, with images and words from the recipes appropriated and given new meanings through other technologies, communities and people.
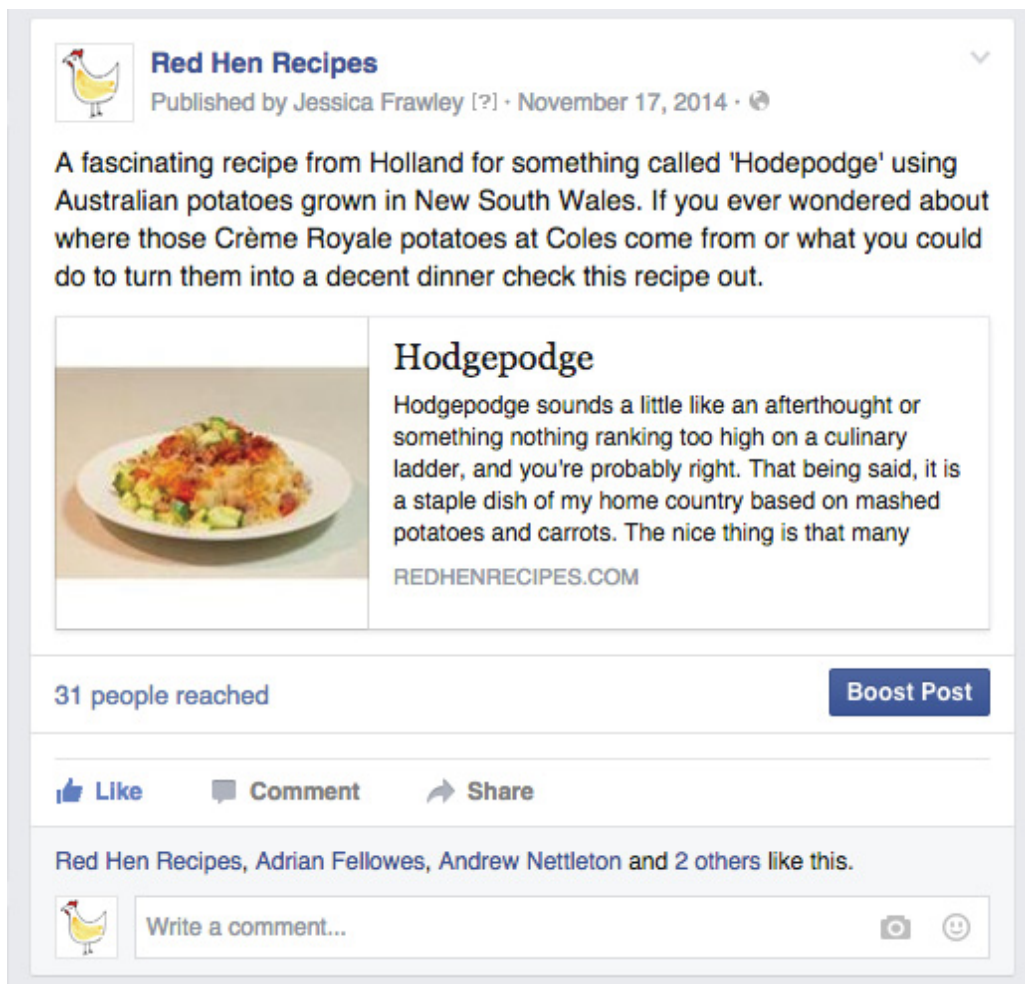
Figure 6.25 Main image displayed in a Facebook post

6.2.2.4   Summary

What is possible to see is that the main focus of participants' RHRs is the story of a particular food item that is represented through multimodal methods. The majority of participants were successful in finding out *some* additional information about the provenance and origins of their ingredients. Two people did not supply any provenance information. Multimodal analysis demonstrates that several consumers who *did* use video were able to use video from the grower that they had found online. Still life images allowed people to represent ingredients or processes, whilst images of the final dish

typically structured the image so as to invite the viewer to the dinner table using close-up framing that positions the interactive participant in a personal or intimate relationship with what is being represented. This differs slightly in cases where the image represents a shop or public space. In this instance the viewer is held at a greater distance from what is represented and inhabits the same public space as that of the shopper. Visual analysis of the recipes demonstrated that in creating their recipes individuals negotiated with different aspects of the food system, for example through images of animals that embodied different power relations to those ordinarily seen in the mainstream food system. Thus, these recipes demonstrate alternative ways through which participants' negotiate, construct and share food knowledge and the ways that digital technologies afford migratory and multivectoral readings of this content across different spaces and platforms. These findings are important for understanding how information is constructed and shared as a semiotic, and the significance of this within participants' informal m-learning within the bounds of the RHR project.

6.2.3   Stage 3: Interviews

This section details the findings from nine semi-structured interviews. In contrast to survey data, interview data explores themes with greater depth and aims to capture the voice and stories of the individual learner as distinct from the wider aggregate group. This section begins by presenting findings from participant vignettes and narrative analysis, thereby introducing the reader to each interviewee's voice, story and characteristics. After grounding this work to individual participants, the chapter then presents findings generated through thematic analysis of all interview transcripts. Presented in this way, the researcher aims to not only convey in-depth findings from across *all* interviews but to demonstrate how individual participants' lives are situated within the wider Red Hen Recipes project.

For reasons of participant confidentiality, participants are afforded pseudonyms and a randomly selected age from within the age bracket they chose in Survey I. In instances where information referenced could be used to link an individual's website profile to their research pseudonym the researcher uses a generic non-identifying term such as 'One person' or 'one interviewee'. De-identified information about interview participants is presented in a summarized form in Table 6.11.

Table 6.11 Interviewees

Participant Pseudonym	Age	M/F	Characteristics
Louise	28	F	Full time student, lives with her family. Inspired by celebrity chefs such as Jamie Oliver and engages heavily with social media. Likes farmers markets but shy about talking to the farmer.
David	29	M	Research student who lives alone in an apartment in central Sydney. Skeptical about labels. Rarely uses recipes, prefers to make it up as he goes along, by cooking things he likes. Interested in the cultural elements of food.
Zoya	40	F	Writer and mother of two young children. Not a 'foodie' but likes the chance to use technologies for self-expression and creativity. Used the RHR experience to re-explore her relationship with food.
Annie	27	F	Works in marketing, lives with her partner in an apartment in central Sydney. Self-described 'foodie'. Member of Youth Food Movement and grows produce at her local community garden.
Peter	60	M	Works as a consultant, lives with three others in a shared house in central Sydney. His whole life has been about food. He has written about food for magazines and newspapers, hosts and attends dinner parties as part of a special food interest group, has connections with his farmer at the farmers' market, and engages with academic resources like journals and public lectures.
Sarah	43	F	Works as an artist, lives with her partner in an apartment in a Sydney suburb. Discovered food through a cooking course. Enjoys food as something that she can do for her family and can bring people together.
Hendricks	35	M	Farmer of rare breeds based in Northern Ireland. Uses social media and events to promote his farm and encourage people to try eating different produce.
Katherine	40	F	Research student, lives with partner in an apartment in a Sydney suburb. Used to have a food blog but didn't like photography. After seeing her mother's life change through diet she has adopted a paleo diet.
Eloise	41	F	Solicitor and part time food blogger. Involved with food groups like Youth Food Movement & Oz Harvest.

6.2.3.1   Participant vignettes and narrative structures

The writing of individual participant vignettes allowed the researcher to explore the ways in which participants co-constructed their food literacy narratives within the space of the interview. Each participant vignette is designed and written for brevity and readability. Thus, the vignettes are not comprehensive ways of presenting data but rather a way of conveying the core theme and structures that shaped each *individual*'s narrative, and some of the wider demographic data that further contextualizes this. From these vignettes, key narrative structures can be derived and discussed. This section presents an exemplar vignette and findings from narrative analysis of all nine transcripts. This analysis focuses on food literacy acquisition. For reference purposes the remaining eight vignettes can be found in Appendix 13.

Example vignette - Louise (IV1)[18]

Louise is 28-year-old full-time university student who lives in Sydney's suburbs with her parents and younger sister. Though she lives in her family home, she stills shops for groceries and cooks. She enjoys cooking, baking, writing and making videos which she publishes online. She studies creative writing at University and writes books, blogs and articles in her spare time. Louise largely learnt to cook from following a combination of trial and error, her mother's cookery books and following television series such as those by celebrity chefs like Jamie Oliver and Donna Hay. She watched these shows with her family. She follows her favourite celebrity chefs online through Twitter, Facebook and YouTube. In terms of becoming aware of the food system, Louise credits Jamie Oliver with making her more concerned about where her food comes from, particularly buying free-range and organic produce. In practice she embodies these values through shopping for free-range chicken at the supermarket and going to her local farmers' markets occasionally. However, describing herself as shy, she rarely talks to the farmers about their produce. However, in doing her Red Hen Recipe she describes what she did as being very different to what she usually does. This difference happened in both

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[18]   Details about the specific ingredient and recipe type can be used to identify participants through the RHR website. These specific details have been removed from this vignette to protect participant confidentiality.

shopping and cooking. When she shopped Louise went to a farmers' market, played detective, asked questions. When she cooked, Louise chose a recipe that was unusual or different to what she normally did. Louise sees this as being an opportunity to 'try something new' and do something different. She was inspired by the Red Hen Recipe 'Lavender and Chocolate Chip Cookies' and wanted to try something that used an unusual ingredient. For Louise's Red Hen Recipe she researched several types of recipes online and spoke to members of her family about ideas for what she could make. She then went to the organic markets to source her main ingredient and went to a health food store to look for other ingredients that she had not used before. Describing the challenges of this experience Louise often says that she feels like the process asked her to 'be a detective' or 'an investigative journalist' and how researching her ingredient by talking to the farmer felt different and at odds with the more private way she normally creates written and video content, describing herself as more of 'reclusive novelist'. Louise often describes herself as shy. However, Louise does say that doing the Red Hen Recipe gave her an excuse to approach the farmer and start up a conversation about where and how that produce was grown. Louise even used her phone to show the Red Hen website to the farmer to explain what she was doing. Once she had got the farmer talking she found her to be really friendly and 'full of information'. Indeed, the idea of playing with identity crops up again in the creating of the Red Hen Recipe where Louise takes stylized shots with her mobile phone and experiments with her 'inner professional chef'. Each image of the cooking process reflects this, for example, images that depict ingredients and cooking implements in a stylized and symbolic manner. Louise concludes by saying how much she had learnt, not just about the produce, but in finding the courage to talk to producers and do some of the things that her self-proclaimed hero, Jamie Oliver, promotes. The Red Hen Recipe process was one of learning through identity play.

Narrative structures and food literacy development and comparisons

The majority of participants' narratives around food refer to their childhood. Learning about food starts in the home. How this home is set up dictates what this learning looks like. For Hendricks, whose home was a rural working farm, experiences included the picking of various crops and exposure to livestock. For David, who grew up in a rural

part of Europe, formative experiences included buying food directly from the farmer and foraging for foods with his family. People often narrated their experience of learning to cook through a combination of observing and assisting older members of the family household. The motivation to cook or take an interest in learning about food typically occurs at pivotal transformative points within that individual's life story. Though interest in cooking is sometimes mentioned, even these are associated with life stages characterized by increasing independence for that individual. For Peter this occurred when his mother started working. For Katherine it was cooking for her father when her parents divorced. For Zoya learning to cook took occurred when she went to University, for David this occurred when he moves out of home. Such learning is largely self-taught, with the exception of Sarah whose interest in cooking was sparked by a cookery class.

Where people were interested in the wider food system, understandings about this typically came at a *later* point in life and were shaped by the unique and specific experiences or issues that they had encountered. For example, Peter became interested in food provenance at University when living with 'hippy' flat mates who were interested in the environment. These kind of transformative learning experiences are common throughout *all* interviewee narratives and vignettes (see Appendix 13) and are inextricably embedded into each individual's beliefs, health, financial circumstances and family setup. Learning is incremental and a lifelong process that occurs through accrued experiences and face-to-face interactions, as well as a range of technologically mediated forms. Within the narratives, Red Hen Recipes is typically framed an extension of pre-existing interests and understandings. It is largely described positively but as an evolutionary component in that individual's learning as opposed to a revolutionary change in perspective. Such learning is, like most things, situated within the specifics of that participant's age, socio-economic status and lifestyle that markedly shaped that individual's food literacy and habits.

Phases of food literacy learning

When explored for chronological patterns participants' food literacy narratives demonstrate that food literacy acquisition falls into three phases.

- *1st Phase – Childhood, family, home*

Learning about food takes place within or around the family home and is facilitated by family members. Family members and the home environment shape early understandings and practices around food. For Hendricks this meant activities such as 'picking potatoes and barley'. For the daughter of a Chinese migrant (Annie) this meant seeing her father grow Chinese vegetables in the back garden. The majority of food learning takes place with family members in the kitchen through the act of cooking. This is informal learning and is typically not technologically medicated but involves activities like:

  - Watching parents cook

  - Helping parents in the home

  - Experimenting and seeing what happens.

- *2nd Phase – Shifting to independence, necessity and interest*

The second phase of learning about food happens in the shift towards independence and may arise out of necessity, interest, or combinations of these. Though moving out of home and having to cook for oneself was a strong part of the interview narratives (David, Zoya, Annie) growing independence can also happen out of necessity when the structure of the family changes, such as the mother going to work (Peter) or the divorce of parents (Katherine). Though this learning may be triggered by transformative events, growing independence and food learning can equally occur within the childhood home. For example, though Louise still lived with her parents she engaged in independent acts such as shopping and cooking for herself and her family, with much of this being driven by her own interest in food. During this phase information resources are more likely to be books, magazines and television shows. However, the types of resources that people refer to are, to some extent, determined by the technologies that were prevalent during that period of time. Had this study been conducted with a younger cohort, digital resources may have been more prevalent within the individual narratives.

- *3rd Phase – Adulthood, self-teaching, exploration, digital resources and the Internet*

Information comes from a variety of sources, many of which are technically mediated. Information is found in different contexts both on and offline. People continue to use

recipe books heavily, but often supplemented with information found via Internet search engines such as Google. Celebrity chefs were a dominant resource for information: these chefs and celebrities were often accessed through different platforms. For example Lousie started watching Jamie Oliver on television with her family, and now follows him on social media. Social media was a dominant place for getting information. Excluding celebrity chefs and official groups such as the Youth Food Movement, much of information used by people came from non-expert sources through blogs and social networks.

6.2.3.2   Thematic coding analysis of interview transcripts

This section details themes and patterns that emerged across the nine interview transcripts. It is important to note that the themes that are presented here are not identified as comprehensive or conclusive, but rather a curated selection of evidence. This selection presents themes that emerged as the most dominant or prevalent within the interview narratives, as well as those which best address the concerns of this particular study. What is presented can be viewed as a cross-section of the interview data and its analysis in a way that sheds the most light on the phenomenon of interest. Commentary on coding and the researcher's decisions as to what was included or excluded is discussed in the next chapter (*Chapter 7:* Researcher Reflections). Themes are presented in order of their prevalence and illustrated with interview excerpts. The number of references to a particular theme is recorded in the text in brackets. For example, three references to a particular theme would be recorded as (3 refs). Where the analysis directly refers to specific interviewees, they are referenced to by a pseudonym (e.g. Louise).

Overview

There are seven major themes, each of which has subsidiary codes and descriptors (Table 6.12). With the exception of the last category (7) that draws together specific learning and feedback that occurred within the RHR project, each theme is explored with reference to both the participants' existing or prior food literacy experiences and their RHR experience. This makes best sense of the data, since typically interviewees' existing practices and prior learning would overlap with their RHR practices. As with

any schema of categorization, there is some overlap between categories. For example, social networks such as Facebook could be interpreted as a reference to an online space (2. Contexts and spaces), a technology (4. Technology and information resources), or a social network of people and social actors (3. People). However, for readability and concision a particular theme is discussed under a single heading with due recognition given to the alternative ways in which this code can manifest.

Concerns, interests and motivations

Different concerns and interests structure how people navigate their own personal relationship with food across different spaces. Reflective of *Survey I*, was a balance between concerns that largely emanated from that individual's *de facto* state – that is where they live, how close the shops are, issues of convenience and their budget, and concerns that were more about how things *ought* to be – thus their own personal *de jure* ethics and the ethical, social and environmental concerns that they expressed. Whilst interest in taste, health and culture surrounding foods emerged, these were not mentioned by *all* interviewees and can be seen as lesser themes that permeate the interview narratives. The themes that relate to the concerns and interests that shape participants' food practices are detailed below.

Table 6.12 Overview of Thematic Analysis of Interview Transcripts

No.	Major Theme and Analytic Focus	Subsidiary Themes	Description
1	Concerns, interests and motivations	• Pragmatic and practical motivators • Ethical, social environmental • Economic, commercial or financial costs • Looks and Taste • Culture and history • Health	Topics, beliefs and motivations that structure individuals' food decisions. These span both prior practice and RHR practice.
2	Contexts and spaces for learning	• Purchasing places (e.g. shops, markets) • Geographic places (e.g. country, rural, climactic) • Domestic spaces (e.g. home, garden, farm)	Places where people find out or engage with food and how they describe these spaces.
3	People	• Personal and familial contacts (e.g. family, friends) • Commercial networks (e.g. retailers, farmers)	The people and social interactions through which individuals learn about food.
4	Technologies and information resources	• Information resources (e.g. TV shows, books, recipes, news) • Technologies used (e.g. Social media, software, participant owned devices)	Technologies and resources that participants use to seek information about food.
5	Emotions and self-identity	• Identity creation • Identity roles and self efficacy • Emotions (e.g. enjoyment, awareness, curious, difficult) • Likes and dislikes	How people emotionally responded within the context of prior practice and RHR practice.
6	Learning processes and praxis	• Activity (e.g. cooking, growing, eating, sharing) • Approach (e.g. repetition, planning, ad libbing) • Meaning-making (e.g. taking photos)	The activities and approaches people used to describe what they did within both prior practice and RHR practice.
7	Learner Outcomes of RHR[19]	• Exploratory learning • Participants as experts • RHR website usage (e.g. creating a Red Hen Recipe, reading other recipes, usability problems) • Similarities and differences between existing practice and RHR practice • Learner challenges • Learner engagement	Specific responses to questions about learning and self-development that are *unique* or *specific* to the RHR project.

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[19]   Themes 1-6 *all* manifest in interviewees' reference to their everyday food learning practices *and* specifically in relation to the RHR experience. However, Theme 7 details interviewees' comments that relate specifically to learning and interactions that were unique or solely related to the RHR experience (e.g. RHR website usage).

Pragmatic motivations: Ease, Simplicity, Availability and Convenience (80 References; 9 interviewees)

Supporting findings from *Survey I,* all interviewees' decisions around the sourcing and preparation of food were, to some degree, motivated by factors relating to ease, convenience and availability. Convenience (8 refs), availability (13 refs), proximity (6 refs) and choice and variety (9 refs) determined where people shopped or sourced their food.

The interviews highlight the degree to which such motivations bridge participants' daily practices and what they did within the RHR project. For example, terms such as easy (17 refs), simple (10 refs) and quick (1 ref) are used by participants as reasons for choosing a particular recipe to cook or put on the website. In describing her own RHR Zoya states 'it is quick and easy too (.) […] It's a meal we make weekly'. David's RHR was also *based* on a recipe that he had made before. He described this as 'really simple to make'. Ease and simplicity were not the only motivating factors. Availability and access also played a part. In saying how she came up with her RHR idea, Katherine states: 'I would have a look at what is in the fridge'. Similarly, another participant's decision to integrate rosemary into the dish is expressed in the following way: 'I *had* rosemary (.) I grow that (.)'.

Economic and Commercial Factors (48 references; 8 interviewees)

The ways in which people learn about food does not happen in isolation from the commercial and financial aspects of the food economy. Extending *Survey I* data, interviewees frequently discuss or make reference to the financial costs (27 refs) associated with the different ways and means of sourcing food. These can be expressed generally in terms such as 'it's fairly reasonable' (Katherine) or linked to buying decisions (6 refs) – that is what to buy. However, how individuals narrated these concerns differed. For some individuals cost presented a barrier to going to certain places: 'we'd LOVE to go to (.) what is it? (.) Harris Farm? (.) [yeah[I'd love to shop there (.) but it's a bit pricey (.)' (Zoya). For others the constraint of cost led to new experiences such as exploring markets or doing something with produce that that person wouldn't normally buy:

> **Peter:** we as students tended to go and find cheap food (.)
> so we'd often go there (.) and buy bulk
>
> **Eloise:** I had to buy because I thought it's [*Harris Farm
> Imperfect Eggplant?* [so huge (.) and cheap so I'm going to
> buy it and I'll (.) I'll figure out what I'll do with it later

The commercial and economic interests of the consumer find their counterpoint within the narrative of the producer and how the business of the farm shapes both the types of crops that are farmed and how producer-consumer interactions are framed. Speaking historically, the farmer Hendricks notes that rare and native breeds of cattle became less popular as the trend for leaner, larger and more efficiently farmed continental breeds meant that farmers 'didn't get as much money for them [the native breeds]' (Hendricks). In this way Hendricks' RHR focuses on renewing consumer interest in fat as a way of supporting farmers, like himself, in the farming of native and rare breeds. However, whilst the various 'farm-to-fork' approaches that Hendricks uses stimulate this kind of dialogue and consumer interest, he acknowledges that 'what you share on social media is marketing (.) and it should be treated as that (.)'. Thus, the commercial needs of the farm mean that the dialogue that people engage with has a commercially invested interest, with the language of commercial enterprise permeating the interview narrative in terms such as marketing (6 refs), income (1 ref), market segment (1 ref) and supply chain (1 ref).

The degree to which commerce shapes food information and learning is something that other interviewees were conscious of. Annie, states that she goes to one market stall that 'says they source all of their green vegetables locally? (.hh) like ((laughter))'; the intonation and laughter all suggested that though she went to this particular market stall for its use of the term 'locally grown', that this was something she entertained a degree of scepticism towards. In this case the interviewee demonstrated an awareness of the dual function of a term like 'locally grown' as both a label that demarcates food origin and a marketing tool used to fulfil commercial functions. Problems associated with food costs were also found to shape the way cottage industries such as food blogs conveyed information: Eloise states:

> 'I don't generally say where I buy things on the blog cause
> (.) um:: (.) I don't commercialize the blog at all and I just
> feel that people might feel (.) that it's getting pushed down
> their throat a little bit (.)'.

This is both a stylistic choice and a business decision not to engage in paid product promotion. Similarly, there is awareness in food blogging that the kind of prescriptive writing that advocates 'twelve raw sustainably produced organic almonds' (Eloise) as a recipe ingredient may potentially turn off readers who 'don't have the disposable income' (Eloise). Thus these economic concerns are not solely experienced within the domain of purchasing but extend into how people write and discuss food within Red Hen Recipes and other participatory user-generated spaces.

Ethical, social and environmental concerns (47 references; 9 interviewees)

Concerns about the wider food system permeate individual interview narratives. This supports and extends the findings from *Survey I*. This theme manifests in concerns around organics (11 refs), locally grown food (8 refs), limiting wastage (8 refs), sustainability (6 refs), seasonal produce (5 refs), animal welfare (4 refs) and concern about the environment (4 refs). One person also emphasized their avoidance of foods that had too much packaging (1 ref). Often, where participants were unconflicted about a specific term (e.g. locally grown) this would often be entangled with other beliefs. This may simply be the belief that we ought to buy certain types of food because they are good or better (Louise) or rather a more encompassing mental model about the food system, how it works and how individual choices are part of that:

> **Eloise:** I have been making more conscious decisions to (.)
> actually pay attention (.) not specifically to what farm things
> have come from but (.) pay attention to (.) things that (.)
> ah::m (.) being sourced more locally? (.) cause like that's
> another way we can reduce wastage and er:: and help the
> environment is to eat things which are actually in front of us
> rather than get them from like Chile or what have you

Though all participants are aware of the wider food system, their experiences often reveal uncertainty, scepticism or confusion about these terms.

> **David:** I usually just pick a normal thing? Instead of say
> the bio.. the organic (.) cause I'm not completely convinced

> that (.2) I mean there are things wrong with lets say (.) injecting um::: animals (.) with (.) what's the word? [*growth hormone? Or…* [anitbiotics [*yep* [on the other hand (.) I tend to think (.) if an animal gets sick then the animal stays sick (.) [*um* [that's not completely fair (.) so I'll just stick with the regular thing (.) [*yeah?* [I think (.1) and (.) you know?? The cost thing helps as well (.) to go with the regular stuff

What is evident from these contrasting interview narratives (e.g. Eloise and David) is that both individuals, though attitudinally different, have formed a set of beliefs around what occurs within the wider food system, whether they have direct experience of this system (e.g. Hendricks) or not. These beliefs can be seen to carry into the each Red Hen Recipe, where interest in organics or locally grown food leads to sourcing of the Red Hen Ingredient in this particular way.

Culture and History (18 references; 5 interviewees)

Culture and history were of most interest to individuals whose Red Hen Recipe engaged in a cultural or historical dialogue. Though one person made reference to the general politics of food (Katherine), the majority of peoples' interest in the culture and history of food were played out in relation to their own personal identity. People talked about growing up as the child of migrant parents (Annie, Peter) and the particular seeds and crops that their parents would grow in the garden because they were not able to get these crops in their new country of residence. For some, this interest in personal heritage extended into *how* they used the Red Hen Recipe to explore a dish that 'might have featured in the lives of my mum and my father (.hh) my grandparents (.)' (David). Similarly Peter's RHR explored both the history of that particular ingredient (e.g. the country it came from, its historical uses) but then appropriated this ingredient into a dish from his native country's cuisine. For interviewees who expressed interest in the culture and history of food, such interest was not limited to their *own* history or culture, with interviewees talking about the food culture of other places they had visited, such as Hong Kong and Bankok (David) and Italy and India (Peter). Within the farmer interview, Hendrick's reasons for farming native breeds was rooted in the agricultural history of that area:

to go (.) to go way back (.) before World War Two there would have been (.) so obviously I'm talking in UK terms here (.) so (.hh) so um:: (.) the ah::mm (.) there would be no continental animals on (.) found in anywhere in the British Isles (.) ah::m (.) but whenever the er:: (.) it would have been all (.) you know? (.) your short horns, your long horns. Your belted Galloways (.) Herefords (.) Aberdeen Angus (.) whenever the war finished (.) there was a shortage of food (.hh) and the continental animals from France or Belgium (.hh) they were (.) traditionally kept for (.) for pulling plows or whatever (.) so they were big bulky animals (.) that produced big lean meat (.) so they grew big and muscly (.) ah::m so we (.) they were much more efficient convertors of food (.) and produced a whole lot more lean meat (.) so we (.) the UK (.) ah::m started introducing them to the farms (.) and really encouraging farmers to concentrate on those particular breeds (.h) ah:mm and they were really successful (.) so the (.) the Limousins (.) the Charolais (.) Simentalles (.) they would have been er::m (.) you know they they (.) they would have basically took over the whole landscape of (.) of British Agriculture (.)

This history of farming is countered both by Hendrick's farming of native breeds and his work trying to get people interested in this, and his Red Hen Recipe specifically focuses on native and rare breeds that were diminished from the landscape of the British Isles as a result of post-war food shortages.

Taste (45 references; 9 interviewees)

All participants mentioned the taste of food (28 refs). Taste and appearance can be seen as important feedback for individuals in learning about food, especially in food preparation and cooking. Taste was not only expressed positively such as 'delicious' (Louise), 'fantastic' (Peter) and 'yum' (Zoya) but also in more neutral terms such as 'okay' (David) and negative terms such as 'awful' (Eloise). Within the interviews taste often emerged at a key moment of learning within a wider sequence of events, processes and activities. For example, where taste was a positive experience, people, if able, may repeat or pursue that experience in the future. For example Hendricks notes that the breeds he works with were bred to 'taste good (.) for their meat', whilst Katherine goes to a regular butcher whose meat is not only good quality but also tastes good. Though liking or disliking something may not always lead to learning, the role of taste in food learning is highlighted within one particular example. In this example learning about

food can be seen to occur through a recursive process between different senses and different places. In this example Eloise starts with shopping and trying to buy 'good eggs' – using her existing knowledge and understanding about egg farming to distinguish between free-range, organics and other labels. She gets back and cooks a cake with these eggs and, upon eating, finds that the cake tastes of fish. Before going online she thinks about potential causes within the home that could lead to this outcome (e.g. the oven). She dismisses each of these and searches online and finds that some egg farmers feed fishmeal to the hens and that this can result in a fishy taste and smell when the eggs are baked, but not fried, scrambled or cooked in other ways. Through cooking, tasting and searching for information online, the participant has learnt a about processes involved in contemporary egg farming. Though this particular anecdote did not occur as part of that participant's RHR experience, it nevertheless highlights the way in which taste factors into how people learn and form understandings about food in online and offline contexts.

Looks and appearance (17 refs; 6 interviewees)

Six participants mentioned the visual appearance of food (17 refs). The theme of appearance (i.e. how something looks) emerged as a strong theme in the interview data. How something looked affected what produce people bought and how they presented their own food – especially within the context of the RHR. These two themes are highlighted in the researcher's interview with David, in which he explains how he choose the potato (his Red Hen Ingredient) for his recipe:

> **David:** […] this kind of potato it's, it's still at Coles, and it still has the sand on it and all that (.) and it looks more raw than the other ones (.) they're probably just cleaned in hot water before they're put on sale (.) but this looks more raw and natural (.) […] I actually picked them beforehand (.) sort of oblivious to all the details (.) just because of the appearance (.) uh::mm and I figured when I was in the supermarket (.) that those would be the easiest to find the information about (.) because the other ones looked (.) lets say more 'produced' (.) in the sense that they were all cleaned (.)

> **Researcher:** So (.) In a way the ones that were covered in the dirt? (.) if you like? (.) because visually it is sort of (.) it's going to be more traceable (.) than the ones that are …

> **David:** I figured that there had to be a story behind it (.)
> [yeah [an:::d (.3) and perhaps that's (.1) ah:mm as the
> urban dweller that I am (.) the closest that I will get to:: (.h)
> sort of getting the potato from the ground? and all that

The look or appearance is important to participants and shapes how they themselves interact online, both in selecting recipes that look nice (Louise) to making photos of food look appetizing to others (Peter). Appearance also influenced what content relating Hendricks the farmer chose to post online. Though this theme is briefly mentioned here, moments where interviewees explicitly discuss how they created their recipe, as a unit of online content, this is presented separately and more fully later in the chapter under the theme of semiotics and meaning making.

Health (20 references; 5 interviewees)

Concerns surrounding health and healthy food presented across five of the nine interviews. This theme was expressed in general terms (16 refs) such as people talking about 'being healthy' (David), a 'health food thing' (Eloise), food being a 'healthier choice' (Sarah), food being 'good for you' or free-range farming being 'much healthier […] and nicer to be involved in' (Hendricks). Whilst this was the dominant way of this theme being discussed, other people brought specific health issues into the dialogue. These included: heart disease (1 ref), weight loss (1 ref), Hepatitis A (1 ref), as well as consideration of dietary or nutritional recommendations (1 ref). The context in which health concerns were voiced varied. For some people it was about 'feeling healthier' (Louise) or 'being healthy' in a general sense. For other people there were specific instances that structured how they talked about health. One of these included a 2014 food scare, in which frozen berries were found to be contaminated with Hepatitis A (Eloise); information in the news around this health concern led the participant to reflect on buying more local or Australian grown foods since the contamination occurred overseas in China. Another example was Katherine who watched her mother experience ill health for a number of years only to address this ill-health through dietary change: 'in terms of health it was very hard not to sort of look at that and not be influenced by it (.) [*yeah* [and so that's sort of pushed (.) pushed me a little bit further into (.) the type of food and the (.) quality of food (.)'.

Contexts and spaces for learning

Learning interactions occur in a range of places (155 refs). These real-world and online spaces are reflective of the participant cohort and support findings from *Survey I.* Thus out of the places referenced by participants, most were purchasing places (105 refs); These included the big supermarkets (30 refs), farmers markets (27 refs) and gourmet supermarkets like Harris Farm (10 refs) and a range of other specific local stores. The descriptors assigned to these places also largely mirrored those in *Survey I.* For example farmers' markets have fresher produce (9 refs) whilst big supermarkets are perceived to be 'convenient'. Interviewees attached a range of attitudes and beliefs to these places. Within the interviews places were often described comparatively, for example food is perceived to be *more* traceable at the farmers' markets than the supermarket (Eloise). In addition to purchasing spaces were references to the domestic space (12 refs) of the home and garden: the kitchen, the veggie garden, the parents' house, the grandparents' house. Places formed important focal points for interviewees' depictions and discussions on food. In Hendricks' interview, the single entity of the farm acted as an epicenter for the entire interview. In this case the farm is both reference for a specific site that had 'chicken houses' and 'paddocks', a business entity, and a domestic space in which he, his father and family have lived. References to geographic places, like specific countries or travel (10 refs) and how interviewees explore the cuisine, recipes and produce within those areas were also made. Though references to the geographic factors like the weather and climate (1 ref) and rural and urban places (1 ref) were mentioned, these were less prevalent. This may reflect the dominant ways of contemporary food provision in urban settings and how food interactions are structured around commerce over factors affecting arable provision.

What is interesting to note is the ways in which individuals' pre-existing practices connect to their RHR practice. Of the interview data we can ask the following questions: 'Where did people *create* their Red Hen Recipe'? and 'Is this an extension of how they would normally source their food or something entirely different?'. In creating the RHR interviewees typically returned to places that they had been before. For example, people sourced the Red Hen ingredient from the farm they owned (Hendricks), the supermarket they usually shopped at (David), the farmers' market that they had been to previously (Louise, Katherine) and a range of domestic settings that

included a community garden (Annie), the individual's back garden (Zoya) and the garden of relatives (Sarah) and family friends (Eloise). However, in returning to these spaces there were often different intentions. Where people had planned their RHR in advance, the interviewees describe making repeat visits to the shopping place to find out more information about what they were buying (Louise, David). Where people had integrated the sourcing of their RH ingredient with their typical shopping (Peter, Katherine) the experience was more *ad hoc* with those people seeing produce and talking to the producers about it. For participants who had sourced their ingredient from a garden (Louise, Zoya, Katherine) or a farm (Hendricks) these were places, whether domestic or work related, were transformed for the purpose of learning and captured through video, words, and photographs.

People and social interactions

The interviews highlight the importance of human conversations and the social element in which learning about food takes place (129 references; 9 people). Though community groups such as OzHarvest (Eloise), Youth Food Movement (Annie, Eloise) and other community groups (Annie, Peter) featured thematically within the interviews (19 refs), most face-to-face learning around food occurred informally through conversations with individuals via either *personal* contacts (40 refs) or commercial networks (12 refs). All interviewees' RHR experiences were influenced by people within either their personal or commercial social networks.

Personal and familial interactions

Family (90 refs), friends (13 refs) and non-familial household members (5 refs) were the dominant figures through which people talked about learning about food. This thematic analysis supports findings from the earlier narrative analysis that saw individual's food learning typically begin within the home. Though participants would talk about their family generally (24 refs), they were more likely to specifically reference their mother (21 refs) or father (16 refs). People's partners (11 refs) were also important. Siblings, children and grandparents were discussed less – though still mentioned. More peripheral personal influences were through a colleague: one person learnt about a food event through a person at work (1 ref). This same person also sourced food from their

parents' neighbour (1 ref). Whilst much of the familial learning for individuals can be considered non-commercial cooking and growing, for Hendricks the family farm is where agricultural learning and understanding take place:

> **Hendricks:** I don't even know how many generations (.) farmin' has been in our (.) family (.) or family has been farmers (.) but that (.) I mean it was always going to be (.) that (.) my career (.) path (.) because I was the only son (.) so um:: I mean (.) not um::: (.) might sound quite sexist but it was going to pass on to me (.) so it was always going to be the direction that I'd be going in

In undertaking the RHR project people often turned back to members of their personal network for ideas, produce, information or inspiration. For Louise the farmers' markets where she sourced her produce was a place she already visited with her family. She discussed her recipe idea with her sister and her mother, the latter telling her where to source one of her ingredients: 'I only know that because [my mother] said "oh you won't find that here (.) 'you'll need to go to the health food shop to get that" (.)'. David imagined how the recipe he created fitted in to his familial and cultural history, whilst for Zoya the process of creating a RHR made her reflect on her own family and the domestic life she has created. For Sarah her main focus in writing the RHR was described as the joy of cooking and giving to others:

> **Sarah:** I just focused on it because I like that thing (.) of erm:: (.) giving (.) sort of (.) to people (.) giving to the family (.) that's how I think of the cooking (.) so (.) think yeah (.) that's sort of really nice thing to do (.) [yeah [to actually (.) for your family (.) to cook for them (.) so yeah (.) it brings people together

People sourced their produce from community garden initiatives (Annie), their parents' next-door neighbors (Eloise), and sought advice or recipes from their mothers (Louise, Eloise). Some people also then shared their final recipe on their own Facebook page with friends within their wider social group (Louise, Eloise).

Commercial interactions

Commercial contacts were also important (12 refs). People would get information about particular produce by talking to the retailer (11 refs), butcher (1 ref) or farmer (1 ref).

However, discussion with people in a commercial capacity was less prevalent. Furthermore, there was a greater degree of variation between individuals' attitudes and comfort in striking up conversations with growers, farmers and retailers. For example, whilst some individuals had good relationships with their butcher or grower (e.g. Peter, Katherine) other individuals felt uncomfortable or hesitant about striking up a conversation within a specific purchasing place (e.g. Louise, David). For Louise, asking the farmer about where food came from was incredibly challenging. Similarly, both Louise and David felt uncomfortable about taking photos for their RHR within the context of a market or supermarket. However, for individuals like Peter, who had a good relationship with his local grower, he was able to not only discover a new ingredient and but find out about its origins for the RHR. Several people's primary inspiration for their recipe came, *not* from friends and family, but from seeing and learning about a particular ingredient in the market (Peter, Katherine). In the case of Peter this interviewee's relationship with the grower also extended to asking that individual grower whether it was possible to grow a particular food he had discovered when he was on his travels in Italy. This is a rare but strong example of how an individual producer-consumer relationship can be educational not only for the consumer but the farmer as well. Peter's discovery of a crop variety common to Italy may lead to a discussion about whether it is possible to grow this on a small scale on a local Australian farm. Likewise, for Hendricks, his connection with butchers (1 ref) other farmers (1 ref) and customers (1 ref) are persons with which food learning occurs at a commercial level.

Interactions with educational networks (9 refs; 4 interviewees)

> **Annie:** ((talking about the Youth Food Movement)) I guess it's like a (.) like it's a (.1) really nice social network? (.) [uh huh[that's kind of (.1) yeah (.) that's socially really rewarding (.1) (.1) [hm::: [um:: (.1) it also makes me feel like I'm not alone (.) which is actually pretty important part of it (.) [hm:: [because otherwise you feel like (.h) what you do is kind of a drop in the ocean and doesn't really matter (.) [yeah [if no-one else is doing it? (.) you know what I mean?

In addition to personal and commercial interactions, are formal educational events such as public lectures designed to engage people in learning more about where their food comes from. These educational networks are not explicitly personal or commercial, but

may engage or bridge both interests. Though one person attended a formal public lecture (1 ref) at the University of Sydney, the majority of these events and their networks are outside of formal education. For example Hendricks' 'nose-to-tail' evening allows people in the local area eat different parts of an animal and listen to talks from the people who reared, butchered and cooked the animal. Annie and Eloise engage with groups such as the Youth Food Movement and OzHarvest through events typically run by enthusiasts and volunteers. Similarly, Peter is a member to a food writers' group, which meets to discuss and share food writing. Through engagement with these social communities these individuals are able to explore specific interests and meet with like-minded people. This can be very important, especially when people are trying to learn and engage in civic change relating to large and complex phenomena presented by something such as the agro-food system. Individuals' personal actions, in isolation, may feel like a 'drop in the ocean' and leave individuals feel overwhelmed and ineffectual. However, in contrast to social and commercial interactions, educational groups constituted a much smaller component of interviewees' discussions about social learning, with the majority of discussion focusing on familial, filial or commercial interactions.

Though this section focuses on the social actors that are mentioned by individuals during their interviews this does not account for people who, within the interviews, are never mentioned by name but comprise the social networks of online forums such as blogs, Facebook, Twitter, Instagram and other forums. These are discussed specifically under the next sub-heading 'Technologies and information resources'.

Technologies and Information Resources (216 references; 9 people)

Face-to-face conversations are supported with a wide range of information resources and digital and traditional technologies, outside of the RHR recipe. Of the interview data we can ask two questions: 1) what resources do people use to find out about food? and 2) what technologies or platforms support this behaviour? These two questions are addressed sequentially using interview data.

Information Resources

Information resources describe the books, recipes and authorities that comprise individuals' informal food learning. Information resources, such as recipes, may be platform or technology ambivalent whilst others *may* lend themselves to specific technologies. For example, a television series may be watched on a television, however with the rise of on-demand television for both mobile and desktop devices, TV series were treated as a resource and a format rather than a specific technology such as YouTube, Facebook or a mobile phone.

- *Recipes (33 refs; 9 interviewees)*

Although people used a wide variety of information resources to find out about food, *all* nine interviewees used recipes (33 refs) to learn how to cook. Recipes were a way for people to do new things, with interviewees using words like 'try' and 'explore' to describe how they used them.

> **Peter:** I:: like (.1) working things out for myself I guess (.) I like getting a recipe book (.) grabbing it (.) and trying it (.) I don't feel like I need to be taught (.)

Though all people used recipes as a resource for both learning how to cook *and* learning about new ingredients, David and Zoya used recipes in a more peripheral way to their main cooking practice. For example, Zoya said 'I've never done recipes (.) ah::mm (.) even when I was starting to teach myself how to cook at Uni (.)'. What Zoya means by this is that she rarely follows a recipe explicitly but instead uses it to understand the rough composition of a dish in order to recreate this. Zoya learnt how to cook by starting with ready-made foods like pre-made pasta sauce and then looking at the label and seeing what the ingredients were. However, for both Zoya and David, who both claim to 'just cook from the top of their head', recipes become a resource when they want to try something new. This may be when catering for a large number of people (David) or trying a new dish (David, Zoya).

> **Zoya:** when we go to restaurants (.) we might order something that I don't cook at home (.) and then say to ourselves 'Okay so we really like creamy pasta' (.) we don't

> do creamy pasta (.) so then I might google it (.) and read the
> recipe

These findings support those from the preliminary study (*Chapter 4*) in which people were found to learn and engage with food through recipes and cookbooks. In addition to online spaces, people sourced recipes from recipe books (18 refs) and magazines (7 refs). For some people (Louise, Peter, Eloise) these resources often belonged to family members and provided inspiration for cooking. For example, in creating her RHR Eloise found inspiration for her RHR from her mother's homemade cookbook. This resource was a collection of recipes from magazines, newspapers and other sources that were collated into a single ring binder folder. Though there are a wider number of recipe apps and online resources, many people still maintained a preference for the traditional hardcover recipe book (18 refs; 7 people).

> **Researcher:** And do you like having the physical book? (.)
> you wouldn't want it all on like an iPad or something?
>
> **Eloise:**   No (.) definitely not (.) Cookbooks are one of the
> few books I still buy (.) I actually read all my books
> otherwise on my iPad (.) but I love having cookbooks (.) I
> love looking at pictures of (.h) something about a cookbook

These books were not just tools for imparting information, but were also counted as aesthetic objects that people would collect or 'leave open on the table' for inspiration. In summary, recipes can be seen to function as sources of information, guidance, inspiration and aesthetic object.

- *Celebrity chefs and food philosophies (28 refs; 4 interviewees)*

For four people (Louise, Sarah, Katherine, Eloise) the source of recipes and wider stances to food were often linked to celebrity chefs or bloggers. For these individuals the influence of a particular celebrity chef may inform not only what people buy and cook, but also their wider attitudes towards the food system. Though participants occasionally refer to a particular chef in a personal and informal manner, for example 'Jamie' instead of 'Jamie Oliver', their position as a source of information is more similar to a public figure or commercial brand than a personal contact. Thus the name Jamie Oliver may come to signify not only the person but their recipes, their YouTube channel, their wider corpus of work. Furthermore, the figure of a celebrity chef is difficult to delimit

to a single source since participants may access these people through multiple online and offline channels including social media. For example, Louise's interest in the British chef Jamie Oliver began by watching his first TV cooking series *The Naked Chef.* She went on to collect his recipe books, subscribe to his YouTube channel and follow him on Facebook and Twitter.

However, what discussions around celebrity chefs reveal is the degree to which resources, such as recipes, are not neutral but rooted within the recipe writer's ideological beliefs and attitudes to aspects of the wider food system that may include diet or concerns around food provenance. To highlight this, we can continue to look at how Louise's interest in Jamie Oliver shapes her understanding of the food system, both pre- and post- the RHR project. Firstly, Louise's pre-existing attitude towards organic produce was prompted by 'reading Jamie Oliver books (.) he's like really wanting us to get organic food' (Louise). This leads her to look for organic chicken at the supermarket and visit farmers' markets with similar intentions. Within the context of the RHR project Louise discussed the process of tracing and documenting food from scratch: 'I was like "this is awesome", because Jamie does that [trace food provenance]'. Similarly, other participants also rejected particular recipes and sources of information because of how they aligned, or failed to align, with their own beliefs and attitudes to food. For example, Eloise gets annoyed with writers who are 'obsessed by their particular diet of the minute'. This awareness shaped both her blog and RHR writing into something that was more open and less didactic. For example:

> **Eloise:**   I never say that on the blog (.) because you know
> it's a bit Pete Evans (.) 'I've got ten activated almonds or
> something' (.) and you think for f***s sake! (.)

Eloise exhibited a lot of frustration with recipes and writers whose stance towards what we *ought* to eat was so prescriptive so as to exclude people who may have both different attitudes towards food and lower financial resources. What this demonstrates is the degree to which recipes are embedded in wider beliefs around food such as diet and provenance. In summary, though individuals may learn from such authorities (Louise) people also bring their own beliefs and attitudes to that source (Louise, Katherine, Eloise). People may either seek out recipe writers with accordant beliefs (e.g. Katherine, Eloise) or turn away from those writers where there is discord (Eloise, Peter). In

summary, recipes and the personas of celebrity chefs are always embedded within a wider belief system around the food industry.

- *Documentaries, television series and radio (10 refs; 5 interviewees)*

Though participants drew upon cookbooks and celebrity chefs *within* their RHR learning, learning from documentaries (6 refs), TV series (3 refs), and radio (1 ref) occurred outside of the RHR project; thus no one used these particular channels to support their learning during the RHR project. Whilst Louise mentioned watching a TV cooking show, the remainder of references to broadcast media were typically concerned about food's wider aspects. David learnt about how organic foods were defined by watching an ABC TV program, whilst Annie learnt about environmental reasons for vegetarianism through a radio interview. Two interviewees referred to specific documentary style films such as *Food Inc.* (Katherine) and *Forks Over Knives* (Eloise) that had made a significant impact on their understanding about food and their own personal daily habits. For Eloise, watching a documentary was a pivotal moment that shaped her understanding around food and her eating habits.

> **Eloise:** we were (.hh) on a plane to Perth? (.) ah::m after Christmas? (.) and we were watching um *Forks over Knives* (.) I don't know whether you've heard of that? (.) [no no [it's […] a couple of cardiologists and a medical researcher (.) and they (.) they did (.) they've done various studies over the years and particularly a big one in China (.) which they (.) called the China study where they um:: (.) they concluded (.) well their conclusion was that you can reverse heart disease damage and (.) cardiovascular damage by um:: (.1) um::: by eating the way that they suggest eating? (.) which is basically fruit and vegetables (.h) loads of you know? (.) more whole grain things (.) [yeah [cutting out as much fat from your diet as you can (.) it's quite extreme actually but um:: (.) they have (.) they had a couple of people who followed their diet who actually reversed their heart disease (.) and became healthy and blah blah blah

The significance of this film lead Eloise and her partner to adopt a radically different diet to the one they were already on for a period of two months. During that time Eloise and her partner had to learn how to shop and cook to maintain a vegan diet. To assist

her in collecting recipes, Eloise started writing a food blog that became a way for her to document and share recipes for her new diet. The role of the documentary was catalytic to her own personal food education and her engagement with other food bloggers and the wider food blogging community. Eloise and her partner have since continued to eat a largely vegetarian diet, but have modified the diet to allow for a wider range of foods. This was driven by both social factors (e.g. being able to eat what a friend or family member cooks) and availability of foods that fall into a vegan and low-sugar diet.

- *Blogs (26 refs; 5 interviewees)*

Blogs formed a significant online resource through which people engaged as both readers and creators. Though only five interviewees discussed blogging in their interview, supplementary data from *Survey I* indicates that eight out the nine interviewees had experience in writing blogs. However, for three participants this blogging practice was not food-related (Louise, Zoya, Sarah). For interviewees who had specific experience in writing a *food* blog (Annie, Peter, Katherine, Eloise), either previously or currently, *all* started blogging whilst learning or experimenting with food and wanting to document this process. Annie started writing her food blog when she was 'just finding out how to cook' and both Katherine and Eloise set up food blogs when they were *learning* how to cook to support specific dietary changes. All participants started out on this learning process by initially reading and learning from other food bloggers and food websites. For many, the shift from content consumer to content creator was triggered by personal or familial reasons. For example, Annie's main impetus for creating her own blog is described in the interview excerpt below:

> **Researcher:** And (.) and what (.) what drew you to creating your own blog (.) instead of just accessing that information [from other blogs] an::d you know (.1) just using it (.)
>
> **Annie:** I guess cause (.1) it was (.) at first and foremost (.) more for::: me as like a (.) [hm:: [like a good online (.1) catalogue? (.) like I still use my own blog (.h) as like a recipe.. (.) cause it's so easily searchable (.) whereas if you record everything on paper (.hh) [yep [it's not actually very easy to:: find the right page:: (.)like (.) I discovered that as I started collecting recipes (.hh) and I was like (.) oh:: I may as well make it public (.) cause you know (.) if other people are interested (.) then why not.

Here the blog becomes an online and personally created recipe book, which primarily serves the individual writer as a way of cataloguing experiences of learning how to cook and being able to share this with other people who are interested. Like Annie, Eloise initially started creating recipes for her vegan and low-sugar diet. Her partner suggested that she write her recipes down so that they could share these with her family and friends. Initially she did this by using a Google Docs file but then, further encouraged by her partner, set up a blog.

> **Eloise:** originally just to kind of share with friends and family (.) but then I actually quite enjoying the whole photography side of things and got (.) into it a lot more than I was expecting

What is interesting to note is the way in which individuals who blogged about food transferred these skills over into their RHR practice. The following excerpt highlights how pre-existing recipe writing practices on blogging websites went on to inform and shape how individuals created their recipe:

> **Researcher:** And did (.) you (.) you chose to use a mixture of text and photo (.) [hmm [um:: (.) you could have done (.) video or (.) [hmm. [or other things (.) why did you lean towards just photos and (.) text?
>
> **Eloise:**   Well I think cause that's the way I usually do my (.) food blog um:: (.)

Within the interviews references to blogs were predominantly tied to cooking (Annie, Katherine, Eloise). However, alternative uses for blogs involved the communicating about the farm (Hendricks) and discussing issues relevant to the wider food system (Peter) such as culture, the environment and food wastage.

• *Traditional written resources: books, journals, printed news (11 refs; 3 interviewees)*

Traditional written resources such as books (2 refs), journals (2 refs) and printed news (7 refs) remain sources of information. However, these dominate interview narratives significantly less than other resources and technologies. Katherine describes how books on the industrialization of food system, such as those by popular journalist and writer Michael Pollan 'were big influences' on her. Peter, who identifies himself as a 'foodie', subscribed to several academic food journals and other specialist publications.

- *Labels (8 refs; 4 interviewees)*

In *Survey I* all people used food labels to find out about the food they are buying. However, though all interviewees used food labels, interview data suggests that, in contrast with other sources of information, these are not highly influential. Whilst interviewees had clear attitudes towards label terminology, such as free-range and organic (discussed earlier in this chapter), explicit reference to the use of labels as a source of information was less prevalent as a theme within the transcripts. For several individuals labels could be a source of confusion (David, Eloise). Eloise discusses shopping for free-range eggs: 'that's one thing that's very difficult to um:: (.) judge when you're in the supermarket buying or whatever shop […] a lot of them say 'free-range' now but (.1) [hmmm[it doesn't specific how much space the chicken (.) I feel quite strongly about it'. Others are cynical about the claims made on labels (Peter): "real fruit and berries' (.) like three per cent is real fruit and berries (.) the rest is CRAP (.) And the rest can be sugar.'

Despite individuals feeling a degree of confusion or distrust around labels, people still nevertheless read and use them to inform both their existing and RHR practice. Eloise said that she 'spend[s] loads of time reading the labels of (.) of anything that's (.) processed that I buy'. Zoya taught herself how to cook by reading the ingredients on ready-made meal packaging and recreating these later with fresh ingredients. For Zoya reducing costs was the motivation for this practice. For David, the label was his first way of finding out where the main ingredient for his RHR had come from: 'I went back to the supermarket and I looked at the label (.) and it doesn't really say (.) it says it's grown in Australia (.) and I'm like oh Australia (.) that's pretty big.' What is interesting about this is that David does not normally look at food labels, choosing to look at the produce's appearance instead. The RHR process engaged him in using the label to find out more information about where the produce came from. However, in this case because the label had limited information, David researched the produce online to find out the missing information.

Technologies

This section details the technologies by which individuals accessed various information resources. Themes around technology are detailed in order of prevalence and illustrated with excerpts from the interview transcripts.

- *Social Media (42 refs; 6 interviewees)*

> **Louise:** I follow Donna Hay and Jamie Oliver (.) so if I see recipes (.) I'll like (.) retweet them (.) and go back and print them out (.) but there's Jamie's Food Tube? (.) which I'm like *addicted* to (.) and there's this guy like Donald (.) who's Irish and he like is awesome (.) he made this banana cake or something (.) and it had caramel icing (.) and I *had* to do it (.) because I was like 'oh my god' (.) it looked so great (.) it was really sweet (.) ((*this is emphasized not in a good way*)) but when it comes to social media (.) I probably somehow (.) flick between all of it (.) from Twitter to YouTube um::: sometimes Facebook when people say (.) put up photos (.) or someone puts up photos (.) ((in this example the participant refers to taking photos of her own cooking)) or sharing the recipes (.) ((*e.g. others' recipes*)) or like Word of Mouth (.) like someone will put something up (.) and I will say 'can I have the recipe for that' (.) and so::: yeah (.1) it really bounces between all of the social media [yeah [(.1) which these days is so great (.) because I think (.) back before we had any of that (.) it might have been like tearing a recipe out of some book and giving it to someone (.1) would've been the only way (.) for like 'posting it' or something.

Social media plays a significant role in the way people engage and learn about different aspects of food. The way in which people refer to various social media tell us a lot about how social networks and user-generated content support informal food learning and manifests within the interviewees' RHR practices. In addition to participants' use of blogs, which is discussed earlier in the chapter, interviewees made reference to a wide range of specific social media platforms such as Facebook (13 refs), Instagram (9 refs), Twitter (7 refs), Pinterest (2 refs), YouTube (2 refs), Tublr (1 ref) and Wordpress (1 ref). There were three main uses of social media: accessing food related content from other people (Louise, Peter, Eloise), creating or sharing food related content (Louise, Peter, Eloise), and being part of an online community (Peter, Hendricks, Eloise). As illustrated

in the excerpt above, people often 'flick between' different platforms. There were minor differences in the way each platform was used. For example, Louise considered using Instagram as an editing tool for pictures to 'make it look pretty'. Whilst Eloise used Instagram to browse food pictures whilst 'waiting for my bus'. She tended to do this largely on her iPhone. With Facebook, participant references towards the platform were often more concerned with online community aspects. For example, Peter had recently joined a group started by a woman in Canada for people interested in sharing South Asian cuisine. For Hendricks, Facebook managed to attract 'a good bit of interest' in his nose-to-tail events by using Facebook to document the lifespan and rearing of a particular animal (e.g. a cow) over the months leading up to the 'nose-to-tail' dining event where people would eat different dishes from different parts of the animal. The dining event was accompanied by talks from the meat farmer (Hendricks), the local butcher and the chef. While almost all social-media usage was described positively, Hendricks did experience conflict between his farm's Facebook page and a vegan activist group for a picture posted of his pigs going off to the abattoir. Hendricks' attitude to this was fairly philosophical:

> **Hendricks:** I think it was just petty people (.) as supposed to a group of erm:: (.) sort a (.) ah::mm (.) vegans who were being rational (.) I mean I don't think it was ever about rational argument (.) it was just about (.) you know (.) veganism (.hh) ah:mm because (.) lets face it (.) if people are going to eat meat (.) and you know (.) people are going to eat meat then it's best to know where it's coming from (.hh) and that should be supported by vegetarians and vegans I should have thought

As to the function of social media within people's RHRs, Louise, Zoya stated that they had shared their recipe on both Twitter and Facebook. *All* interviewees followed the RHR's page on Facebook.

- *Google and the wider web (20 refs; 6 interviewees)*

Interviewees used Google to search for information (13 refs) and connect to specific webpages (4 refs) and sites like Wikipedia (3 refs). In creating their RHR, interviewees used Google to search for ingredient combinations (Louise), recipes to inspire or guide how they cooked their dish (Louise, Annie, Eloise), information about the farm where it

came from (David), and cultural and historical information about the ingredient (David, Peter). Individuals also referred to specific websites (4 refs) such as Wikipedia (3 refs) that they arrived at through using Google search. Whilst not all participants mentioned using a search engine as part of their recipe process, searching for information online about a particular food's provenance (Eloise) or cooking method (Zoya) was still part of their RHR food learning practice. For some people the RHR got people to search for information that they would not ordinarily look for.

- *Other online platforms (7 refs; 3 interviewees):*

In addition to blogging platforms (26 refs) and social media (42 refs) several other platforms were briefly mentioned. Hendricks the farmer has a background in mobile and blended learning, and once tried to introduce a Moodle site. Moodle is an online learning platform and virtual learning environment:

> **Hendricks:**   the aim was to maybe introduce (.) ah::m () the (.) course content that would have been (.) ah::m (.) teaching about dif (.) the benefits of different breeds (.) ah::m (.) different butcher techniques (.) ageing techniques (.) husbandry (.) feeding (.) but I just haven't had time to make the most of that

In addition to not having sufficient time to create the content, Hendricks also struggled in identifying who the target learner would be:

> **Hendricks:**   I wasn't entirely sure who I was going to be aiming it at (.) [hm:: [whether it would be farmers who would want to do something similar and try and sell their produce to (.hh) ah::mm (.) to er:: (.) attract a market (.) or whether it would be foodies who would want to find out a bit more about (.h) where their food was coming from (.) so that side of things (.h) that's really what put a stop the whole online learning environment (.)

Other people also used Google docs (Eloise) and personal websites (Peter) to share food related information with either members of the public (Peter) or friends and family (Eloise).

- *Participant Devices (56 refs; 9 interviewees)*

Interview discussion relating to participants' device usage largely focused on what they did *within* the RHR process, but occasionally referenced other non-RHR food interactions. In non-RHR practice individuals would often do the same task on different devices. For example, Eloise would read food blogs on her phone, iPad *and* laptop, whilst Hendricks would take photos of the farm using both his DSLR camera and his mobile phone. Similarly several interviewees had previously used their phone to take photos of what they ate. Whilst this is interesting, since the main focus of participants' discussion fell onto their RHR practice, this section focuses on what devices people used in creating their RHR. All interviewees used *several* devices to complete their RHR. Table 6.13 summarizes this information by demonstrating what devices people used for different activities.

Specific devices for specific purposes

In talking about the devices they used, participants would sometimes opt to use a specific device for a specific purpose. For example, though *all* participants used their phone to take photos (Survey I), six interviewees (David, Annie, Sarah, Hendricks, Katherine, Eloise) specifically chose to use a digital SLR camera to take high quality photos for their RHR. Whilst one person used his digital camera on a tripod to record footage for the specific creation of a time lapse video, most people said that they just wanted higher quality photos: 'to occasionally take something that's a bit nicer' (Hendricks). Similarly, though the RHR site was responsive, *all* interviewees used desktop or laptop computers to assemble and upload different media to create their final recipe. The laptop or desktop computer became a hub for: writing written content, collating different media created on different devices, editing image and video footage and uploading the finished product to the website (Table 6.13). Mobile phone devices were used for taking photo and video content and, for one person, showing the farmer what they were working on.

'On hand' devices

However, sometimes individuals' focus on the task that they were doing meant that they were not aware of what device they used and why. For example, both Louise

and Annie describe using Google to search for recipes to guide and inspire their own RHR. However, though both could recall the task, neither could recall which device they had done this on. This suggests that in some cases people may focus on the task they are doing over the device that they are using, and use whatever is most convenient at the time. This 'on hand' availability was an especially strong motivation for individuals using mobile devices.

> **Peter:** Recently when I went to Italy (.) same thing (.) it's just convenient to have it in my pocket all the time (.) rather than pick up a camera

> **Eloise:** I did it on my iPad (.) yep because I had my iPad with me (.)

Mobile phones were used for a wide variety of purposes. One individual used her mobile device to show the farmer at the farmer's market what she was working on (Louise). Four people used their mobile to take photos for their recipe (Louise, Zoya, Peter, Sarah). Hendricks filmed his video using his mobile phone but later edited it using his desktop and editing software.

Table 6.13 Specific references to technologies and activities used in the RHR process

Device	Activities or Uses	
	Description	*No. of people*
Desktop and laptop computers *19 refs*	Creating *written* content for RHR	9
	Editing photos or videos using software	6
	Uploading the recipe to the RHR website	9
	Google searching	2
	Downloading recipes to print out	1
Mobile phones *16 refs*	Taking photos for the RHR	4
	Taking video for the RHR	1
	Showing the RHR website to a producer	1
	Google searching	1
Digital cameras *10 refs*	Taking photos for the RHR	6
Tablet computer *8 refs*	Google searching	1
Large monitor screen *1 ref*	Displaying recipe on a large screen facing the kitchen	1

- *Software (10 refs; 6 interviewees)*

Where people mentioned specific software, this was largely used for editing existing content in their RHRs. Image editing was the most commonly referenced process. People used Adobe Photoshop (4 refs), Adobe Lightroom (4 refs) and Aperture (1 ref) to edit high quality photos taken using their digital camera. Hendricks, who took video content on his phone, edited this using Final Cut Pro (1 ref). One person made a stop-motion video using images taken from a digital SLR camera; he used both image editing software Adobe Photoshop and Stop-motion software to create the video component of his recipe.

Emotions, self-identity and self-efficacy

Human emotion and concepts around self-identity structured all participant food narratives. Statements around self-identity couched both *what* people would and would not do and some of the emotional responses they had to different tasks.

Self identity as a relational concept

Self-identity is central to how people *relate* to existing and future food practice. At a simple level this may play out in statements that can be interpreted as demonstrating identity or values through how individuals position themselves to a particular thing or entity. Though *all* interviewees *use* big supermarkets to fulfill some of their regular shopping needs, how they talk about, or position themselves, in *relation* to these supermarkets varies. For example, the comments 'I try not to go to the supermarket' or 'I *only* go for dry goods' are statements by which the individual distinguishes *their* values from those that they associate with the larger supermarket chains.

Identity roles, self-efficacy and play (27 refs; 7 interviewees)

Participants often structured their interviews with references to identity roles, for example in statements such as: 'I sometimes like going to food places (.1) because I'm a 'foodie' ((laughter))' (Annie). Such roles were typically phrased as nouns and spanned a wide variety, with people referring to their identity under their career role (4 ref), their ethnicity or cultural background (1 ref) or the role that their gender (1 ref) occupied in the construction of self. However, with food people 'wore' other identities such as

'foodie (5 refs), food blogger (3 refs), collector (2 ref), a good cook (1 ref), a professional cook (1 ref), urban dweller (1 ref) and 'baker' (1 ref) – always using such terms to identify, describe or relate to themselves. What is interesting is the degree to which these assumed identity roles occupy in interviewees' self-efficacy since statements around identity typically followed a claim about what they could or could not do. This extended into the RHR project, with interviewees sometimes *playing* with identity roles as part of the RHR process. Examples of this are detailed below with the identity role *italicised* within the text.

> **Annie:** I sometimes like going to food places (.1) because I'm *a 'foodie'* ((laughter))
>
> **Eloise:** I'm not such *a baker*
>
> **Katherine:** I'm never going to be *a big gardener* but I would like to explore it a bit more.

In the above examples individuals describe themselves and activities they believe they can and cannot do. This not only includes prior attitudes to food learning, but attitudes to technology and technology use. This sometimes informed what modes or media interviewees used in their RHR. In describing why she preferred to write recipes instead of using lots of photographs, Katherine said she just didn't think she was 'that good a photographer'.

Though these identity roles are most clearly observed when people talk about what they can and cannot do, they are not fixed in stone. Interviewees often used the space of the RHR to play with both ideas and identity concepts. This is most clearly highlighted within Louise's interview narrative, in which she felt for the RHR she had to assume the role of 'reporter', 'detective' and 'journalist'. She contrasts this with her usual assumed identity:

> **Louise:** But as a writer I'm like more of the (h) like (h) secluded novelist ((laughter)) than like a reporter that is supposed to go and *find out* information.
>
> **Louise:** ((in describing doing the RHR)) it was finding the courage to talk to people (.) being the journalist type.

This playful characteristic lends itself to people imagining writing their recipe from the perspective of a particular plant and crop: 'I was going to pretend to be a Basil plant (.)

((laughter))'. In addition to playing with identity experientially (e.g. 'being the journalist type') writing the RHR allowed people to construct and represent this identity (13 refs; 7 interviewees) in a semiotic form. Interviewees felt that they had to consider not only the audience for their RHR but how they represented themselves on the RHR website.

> **Hendricks:**   it gives you er:: (.) time to sit down and think about (.) what (.) how I wanted to represent myself on your website (.hh) ah::m (.) in in (.) in one single recipe (.)

> **David:** your project is about where food comes from (.) [h [maybe in terms of ingredients (.) but I thought maybe it's nice to take something from where *I* come from (.)

Though self-efficacy was most typically expressed in relation to the individual, there are examples where an individual's self-efficacy is supported by the RHR group or online community. For example, in the case of Annie, on joining the RHR project she said that she initially felt anxious because she thought she would have to trace all ingredients that went into a recipe. However, after looking at the site she says:

> **Annie:** once I saw (.) because I did have a look at the recipes that were already on the site (.) I was like 'oh Okay I can do this'

In this example, seeing what other people had created gave Annie the confidence to complete her own recipe. In summary, the way identity statements occur within the interviews can be literal, metaphoric or imagined. Identity construction and play occurs both within the learner's practice in creating a RHR and how this identity is represented as a semiotic artefact on the website. Identity statements are typically linked to beliefs about what a person can or cannot do – their self-efficacy. What can be drawn from this is the way that the RHR project provides a space for people to explore and play with identity constructs both through experience (e.g. being a chef) and representation (e.g. my recipe), thus manifesting in both semiotics and praxis.

Emotions – likes, dislikes, feelings

In talking about the RHR project, participants described a wide range of feelings. The most referenced emotion in relation to the RHR process is how people describe feeling more 'conscious' or 'aware' (16 refs; 7 people). People said that they paid 'more

attention to 'what's in it' (Louise, David) and more attention to what they did than when they normally cooked or prepared food.

Processes and Praxis

So far, the interview analysis has demonstrated the various concerns, places, people, resources and tools through which individuals have learnt about food and which are embedded into their daily and RHR food interactions. While participants' practices have been described in relation to other themes – for example, their use of recipes and technologies, this section specifically focuses on the processes and praxis that enable individuals to connect these facets together to form coherent and holistic understandings. That is, instead of looking at the specific activities that people undertake (e.g. cooking, growing, using social media) this section focuses on the language that interviewees use to describe *how* such activities are practiced and relate to one another.

Approaches to learning about food

- *Flicking between resources*

> **Louise:** I probably somehow (.) flick between all of it (.) from Twitter to Youtube um::: sometimes Facebook when people say (.) put up photos (.) or someone puts up photos (.) ((*in this example the participant refers to taking photos of her own cooking*)) or sharing the recipes (.) ((e.g. others' recipes)) or like word of mouth (.) like someone will put something up (.) and I will say 'can I have the recipe for that' (.)

The number of technologies, resources, labels, people and social context in which individuals' food narratives are formed means that the quality of 'flicking between' (4 refs) is incredibly important practice for people to negotiate the world around them. The way narratives are structured demonstrates that people may, like Eloise, start a process of change by seeing a film, then change their diet, then look for recipes, talk to family members, cook a new dish and document this through a blog. Similar sequences of processes can be seen in the interview transcripts of Louise, Katherine and Eloise. For some people these different processes are experienced as deeply embedded within the

way they already live their lives: 'It's integrated very much (.) [in the way you live? [yeah it's integrated into what I do' (Peter).

• *Balancing and blending habit and novelty:*

The concept of food being and embedded, situated aspect of daily life means that interview narratives typically describe a habitual behvaiours (14 refs; 5 people). However, in order to learn people new behaviours are also necessary. Thus interviewees typically reflect a balance and blend of habitual and novel behaviours.

People are not *always* learning new things but are sometimes engaged in habitual tried and tested behaviours. This is expressed in how people both shop and cook. For example, Zoya says 'we have our staples (.) 21 litres of milk, is one of our staples'. Similarly though David describes his cooking practices as not really having 'a set process', he admits that he has 'a few things that [he likes] to make (.) a few ingredients (.) and I usually just combine that (.) and think (.) in a way that (.1) fits? (.) so it is probably based on what I was *used* to eating.' However, habits (14 refs) and planning (15 refs) are often blended with more experimental and *ad hoc* behaviours (37 refs; 7 interviewees). These include learning how to cook through 'trial and error' (11 refs), '*trying* something different' (11 refs), 'trial run throughs' (3 refs) and so-called culinary 'experiments' (2refs). In this type of process people talk about 'playing around' (Peter, Eloise) and the uncertainty that comes with this: 'I had no idea what to do' (Louise).

These processes manifest in the RHR context. People brought some aspect of their habitual practice into what they did in the RHR practice. For example, this might include visiting a market they normally went to (Louise, Katherine), making dishes they regularly cooked (Zoya, Sarah) or had made before in a modified version (David, Peter). Interviewees also used their usual or standard multimedia practices (Louise, Zoya, Annie, Peter, Hendricks) to create something new within the RHR context. This is highlighted in the case of Louise who, though a regular shopper at her local Farmers' markets was shy about striking up a conversation with the grower. As part of her RHR she asked the grower for more information, researched the produce and made and modified a recipe that she found to be 'unusual' and 'different' online. Thus her RHR process was not an entirely new process, but a blend of new and habitual activities.

- *Repetition and adaption*

In their RHR practices some people *repeated* actions (12 refs; 7 people) such as doing a test RHR (Louise), revisiting the place they bought the food (David), making the recipe twice (Eloise) or even rehearsing the recipe mentally in their mind: 'it's the sort of thing that because I knew I was creating the recipe (.hhh) I rehearsed the recipe (.) [yeah (.) in your mind? [in my head' (Peter). Interviewees not only repeated various cooking practices, but also adapted what they were doing in the moment (4 refs; 4 people). This included minimizing the recipe to simplify it or adapting it based on the ingredients and tools people had (Zoya, Annie, Louise), changing things in the recipe to reflect personal taste preferences (David). Repetition and adaption are often, though not always, connected. Sometimes people would create a recipe that they had done before but modify it to include their new ingredient (e.g. David, Peter). At other times individuals would repeat a recipe (Louise) only to discover that the final product had changed as a result of some unintended alteration within the recipe process. Repetition and adaption can occur separately (i.e. someone can repeat something without adapting it and someone can adapt something without repeating it). However, they very often co-occur as a type of iterative process and for this reason are grouped and discussed together.

- *Consciousness and awareness*

The result of the RHR was a blend of novelty and habitual actions that heightened people's consciousness or awareness (16 refs; 7 int) of the things that they were doing. Examples of this are illustrated in participant quotes below:

> **David:** I think I was a bit more conscious about what I was buying and why? […]if I hadn't have done this I would have gone out (.) ate them (.) and been oblivious to any of that (.)

> **Sarah:** I was more conscious of what I was doing (.) yeah (.) I was much more conscious of what I was doing (.) I don't really think that deeply about when I'm cooking I suppose (.)

Though interviewees highlighted how the RHR process made individuals more conscious or aware of daily practices and decision-making that they may have previously taken for granted, some people did wonder about the extent to which it would impact on their future behavior. David, though acknowledging he learnt

something new about food did state 'but I was thinking (.) will this really influence my buying decisions'.

Semiotic choices and approaches to meaning making within the RHR

> **David:** think it was also nice to sort of do this writing up (.) and being sort of forced (.) with the different categories within the process of the website (.1) Because it was so explicit (.) you have to think about it and write about (.) um:: (.3)

Multimodal analysis of participant RHRs found that all people used written text and at least one image to create their recipe. However, though semiotic analysis can describe *what* individuals created, it cannot explain '*why*' it was created in this way. Only through interviews can the researcher gauge the motivations and authorial decisions behind participants' RHR content. Interviewees were asked how they created their RHR and why they created it in that particular way. The focus of these discussions was to understand the decisions and actions that created the recipe content analyzed in Stage 2 of the qualitative component of this study.

- *Awareness of readers and audience (20refs; 8 interviewees)*

> **Louise:** I had to rewrite it 'cause it was in American (.1) sort of (.) Fahrenheit and it had like um? 'use eight tablespoons of butter' which I thought was really (.) kind of confusing

> **David:** Yeah I mean (.) I figured If I'm doing it I might as well do it for someone else (.) I think it's also more motivating too::: (.) sort of making it (.) in mind of that someone else might be doing this (.) [yeah [or someone else might be looking at it (.) [hm::: [um:: (.) and make a sort of tutorial about how they might do it (.) but first of all they need to be attracted to do it (.) [yeah [so all that stuff did take a bit of time (.)

That RHRs were published online to the public was a highly motivating factor in how people created their RHR. Concern for the intended or imagined reader informed participants' choices of: media (David), type of recipe (Louise, Katherine, Eloise), what people photographed or recorded (David, Annie, Katherine), the written language that people used (Louise, Peter, Eloise), and the number of images people uploaded (Louise).

For example, in stating why he used a time-lapse video one participant said: 'I figured that if I had a short time lapse thingy, um:::, I guess people could view what the steps are and how long it will take'. Similarly, two people (Annie, Katherine) thought that it was important to take a photo of the final recipe since, 'from the user's perspective' (Katherine) people would 'obviously want to have a look at what the finished product sort of looks like'. One participant's decision to limit the number of pictures of the cooking process was motivated by a desire to make the recipe appear simple: 'I think if you added too many photos it might be too complicated' (Louise). One person also altered the language used – for example converting imperial measures to metric measures, and using an American term 'cornmeal' for a more Australian term 'maize'. There were also wider concerns about 'getting it right' (Louise) for the website – since this is a public forum. This demonstrates that interviewees have an awareness of a specific imagined reader *and* that this is a motivating factor for participants in creating their RHR.

- *Representation and aesthetics in visual images*

> **Hendricks:** and you know (.) and people don't want to see muck (.) and they don't want to see a cow (.) well some people might like to see a cow doing a poop but um:: (.) you know? (.) it depends on how it's done ((laughter)) [Black and white (.) artsy! ((laughter))[Yeah ((laughter)) Yeah (.) exactly! (.) yeah! ((laughter)) it's definitely worth the effort (.) a blur (.) you know? (.) it's it's (.) it's worth putting a bit of an effort into your photograph (.)

> **Louise:** I'm pretty sure I took the photos before I had (.) sort of started doing it, I had wiped the thing ((*work surface*)) so that there wasn't flour everywhere (.) I did think that maybe I should leave the flour there (.) But um:::er::: [hm::: [I think I wiped it clean (.) And made it look like the whisk was pointing out in a certain direction (.)

In designing or writing their recipe for a potential reader, interviewees were selective in what they chose to represent and how they chose to represent it. Choices about what to include or exclude within still or moving images was discussed in reference to both agricultural (Hendricks) and cooking or kitchen work (8 people). Choosing what to include was done both during the moment the photograph was taken and also

afterwards by interviewees who took more photos than they needed and then selected the 'most important' (Louise, Zoya) ones. For Hendricks, his experience with social media in promoting his farm taught him that images were the most successful way to engage people on social media but that people responded more positively to images where animals looked 'cute'. This part of the interview raised questions about the limits of social media for engaging people in discussions around food and the nature of social media as a marketing tool for farms.

> **Hendricks:** it's marketing (.) you know? (.) and (.) for me I (.) I remember (.) […] I remember seeing a post once (.hh) ah::m where they (.) someone actually went around photographing chickens that had attacked each other (.) or:: (.) or something else (.) like all natural things that went on (.) but it was like (.) you know? (.) sort of the unsavory side of farming (.) ahm:: (.) for me personally (.) there's no benefit to that (.) because (.hh) if (.) if you know? (.) it's like (.) it's like (.) it's like (.) Burberry (.) you know? (.) they put out a certain image (.) ah:mm and it's not gonna benefit them to take photographs of (.) you know? (.) the the unsavory side of Burberry (.) whatever that might be (.) and it's the same with farming (.) I think? (.) ah::m (.) you know? (.) you are still marketing your product (.) and I personally don't think that people want to see every single (.hh) ah::mm (.) I don't think they need to see (.) the whole (.) the whole dirty side to it (.) because you know? (.) like on a day to day basis (.) like (.) you know? (.) we have our (.) our free-range chickens (.hhh) ah::mm (.) and they (.) they go outside and it's all lovely (.) but they went out to the er:: (.) the factory you know? (.) the other day (.) and that's that's (.) that's an obvious part of the whole process (.) and (.) you know? (.) the catchers come in (.) in the night time (.) and that's not really pleasant (.) like you've got your (.) you've got these guys (.) who spent their evenings going round houses (.) it's such a horrible job (.) ah::mm (.) but a necessary part of the whole process (.) […] That side of things is essential (.) it needs to be done (.) but it's not something (.hh) that's going to help sell the whole experience […] I don't think it's important to show every single side of it (.hh) as long as you're practicing high welfare (.) and you're putting (.) you know? (.) the the (.) what you share on social media is marketing (.) and it should be treated as that (.)

Whilst Hendricks sees the role of social media and consumer targeted content to be part of marketing and selling a product, he admits that if a course was 'for education purposes', for example an online course on chicken rearing, then there would need to be a completely different approach which is more inclusive of the 'whole dirty side to it'.

To some extent commercial factors drive Hendricks' decision in visual representation towards that which is more visually appealing to online communities and, thus, more likely to be clicked, liked, or shared with others. However, these types of decisions are also part of non-commercial RHR users' practices. Though interviewees stated that images assisted in communicating recipe instructions to other people (Louise, David, Zoya, Katherine) these visual images are often stylized (6 people; 9 refs). People wanted to make their recipe look 'attractive' or 'appealing' (Zoya) and would do this in a variety of ways. For kitchen work this might involve stylizing photos by using different lighting (Annie, Eloise), cleaning the plate or work surface (Louise, David, Peter), using props (Eloise) like chopping boards, or editing images (Louise, David, Katherine, Eloise). Even individuals who did not edit their images for their RHR had previously edited images for other purposes such as blogs or posting pictures of their food on Facebook (Peter). What this illustrates is the degree to which user-generated content around food is designed to be appealing and attractive as well as instructional, and the potential conflict between representing a practice (e.g. chicken farming) and selling this practice as an experience or product within a food system that is commercial and trade based.

- *Choice of media: text, image, video*

> **Annie:** I guess (.) So::: (.1) I'm not very confident with video creations (.) so that would be the number one reason (.) ((laughter))
>
> **Zoya:** when people are on (.) their devices (.) whatever device they are (.) the video can take a while to download (.) and they've got to watch all of it (.) they actually have to dedicate a lot of time to just staring at the screen (.) whereas with the written form (.) they can actually scan through to the sections (.) and skip over sections (.) and it's more convenient for them (.)

Participants' choice of media can, to some extent, be attributed to the affordances of the RHRs technologies, for example, the field 'ingredients' demands alphabetic and numeric content. However, individuals are not determined by the technology they use, with interviewees expressing a range of reasons for adopting different modes and media. People's choices were motivated by their own interests and perceived abilities, and what they thought would convey the message best. For example, Louise loved photography, whilst two participants chose a mixture of text and photos because that was the way they usually created their food blogs (Annie, Eloise). For others, creating video was an activity in which they lacked experience and ability (11 refs; 6 int). However, those who did use video found that it was a way that could help people see 'what they might do' whilst they were cooking.

- *Content curation and bricolage*

> **David:** I figured out which farm it might have come from (.)
> and I looked at the website of that farming company (.)
> which looked like a pretty big thing (.)

> **Sarah:**   I used something ((a photo)) I already had

Though a minor theme, not all recipe content was generated by the participant or specifically generated for the RHR. Three interviewees created their RHR with digital content they had either sourced from elsewhere (David) or created prior to the project (Sarah, Hendricks). One interviewee augmented their own work with a video and image from the farm that grew the potatoes used in making his RHR. In two other cases people used an image (Sarah) and text and images (Hendricks) that they had previously created. Participants then connected this ancillary content to their own text, image and video footage to create their final RHR.

Learner outcomes from the Red Hen Recipes project

Aspects relevant to interviewees' informal learning have been identified *throughout* the thematic analysis under broader themes, for example technologies or participant processes. This recognizes the many facets integral to informal learning. However, this section is devoted solely to the specific learning outcomes related to the RHR project. Of the data we can ask the following questions: 'what were the learning outcomes for RHR

participants?' and 'was the approach taken by the RHR project a worthwhile way through which to foster food literacy?'. Learner outcomes are addressed under subheadings of 'learner opportunities' and 'learner challenges'. Within interview analysis, learner opportunities (171 refs; 9 int) emerged as a stronger and more diverse theme than learner challenges (49 refs; 9 int) with the majority of individuals responding positively to their experience on the project. However, in understanding this data it is worth bearing in mind that the interviewee group had all successfully *completed* the RHR task. Thus, this data cannot help us understand the full suite of challenges and issues that may have lead some individuals to not complete the RHR activity, drop out of the project or disengage from the community. An overview of all learner outcomes, both positive and negative, is supplied in Table 6.14.

Table 6.14 Summary of learner opportunities and challenges

		Question asked of the data	Theme	No. of refs	No. of interviewees
Opportunities	1)	**What did participants learn?**	Knowledge – learning about food	30	8
			Reflection – learning about myself	12	6
			Skills – learning to do something	2	2
	2)	**How did participants learn?**	Conversation and participatory elements	47	9
			Exploration, investigation, inquiry and discovery	31	4
			Awareness	21	8
			Reflection	9	6
			Creating something	10	5
	3)	**What did participants like?**	General likes – (e.g. interesting, exciting)	40	9
Challenges	4)	**What were the main learner challenges?**	Time – how long the task took	31	7
			Difficulties in sourcing information for the RHR activity	27	5
	5)	**What did participants dislike?**	General dislikes – (e.g. talking to the producer, website usability)	13	6

This section of the chapter elaborates on each point featured within this table using quotes from interview transcripts.

1) What did participants learn?

All participants learnt something from their experience with the RHR project (42 refs; 9 people). Learning occurred as a result of actions which people took to create their RHR and reading other RHRs on the RHR website. All people learnt something about an aspect of food (i.e. knowledge). However, learning experiences also included learning about oneself (6 int) and developing specific skills (2 int). These themes are expanded upon below.

- *Knowledge – learning about food (30 refs; 8 int)*

> **David:** Apparently it comes from (.) it comes from some kind of development strain (.) in the Netherlands (.) which was then brought to Kangaroo Island (.) and it worked there (.) and so they are growing it here (.) I'm not even sure what makes this potato different from others (.) apart from apparently it needs less water (.) [o::kay [and less resources (.)

> **Louise:** I think that the whole idea from farm to fork (.1) was a really great idea to make people think about where their food is coming from (.)

People learnt about different aspects of food. Six interviewees learnt or explored an aspect of the specific ingredient that they traced for their recipe. People learnt about how a specific crop was grown (Louise, David), discovered a new ingredient (Peter), or re-explored an existing ingredient that they had hitherto taken for granted (Zoya, Sarah, Katherine). One person was surprised at the extent to which they learnt about pears: 'And that surprised me? That I've learnt so much about pears?'. People also learnt about different ingredient combinations for cooking and the origins of the food they buy (10 refs; 5 int).

- *Reflection – learning about myself (12 refs; 6 int)*

> **Louise:** I think I learnt more about myself in the process
>
> **Sarah:** I did learn quite a bit about (.) why I really like cooking (.) yeah So it was more a sort of (.) personal learning
>
> **Zoya:** I was thinking about the herbs in the garden (.) and how much fun it is growing my own herbs (.) and how much better everything tastes and smells (.) an:::d then I thought why is that important to me? (.) well I thought (.hh) well I didn't have a garden growing up! (.)

Six interviewees expressed the theme of learning about themselves through reflection, in particular around their relationship to food. The RHR experience was an opportunity for people to 'have the opportunity to reflect on that [charting a recipe back to the farm] (.) rather than just taking if for granted and doing it on a day-to-day basis' (Hendricks).

- *Skills – learning a skill (2 refs; 2 int)*

> **David:** that is something I can repeat [yeah [(.) whenever someone asks me to cook something (.) ((laughter)) I can do this (.)

Though a lesser theme, David and Peter expressed how they learnt or worked on the specific skill of recipe writing through creating a RHR. Peter described this as a process that is improved through repetition, whilst David learnt how to translate cooking from something that is done from 'the top of your head' to something that he could share with others in a recipe format.

2) How did participants learn?

Having detailed the main learner outcomes of participants' engagement with the RHR project, this section details *how* people went about that learning – as evidenced by the thematic elements that emerged from interview narratives. Learning practices occurred in relation to the interviewee's narration of *creating* their RHR and viewing content on the RHR website. The following themes are expanded upon below:

- Conversation and participatory elements
- Exploration, investigation, inquiry and discovery

- ▪ Awareness and reflection
- ▪ Creating something

- *Conversation and participatory elements (47 refs; 9 int)*

> **Peter:** I think we undersell how people continue to learn by actually talking to each other you know? (.) [yeah [(.) we pretend that doesn't happen but it does? (.) you know (.) and we should (.) in a sense (.) and that's what Red Hen's about (.) it's about people having conversations (.) I mean it's a different style of conversation but it's still a conversation

The role of community aspects of the RHR project was profoundly significant in shaping participant learning. This extends from the way in which audience awareness shaped how people created their RHR (20 refs; 8 int) – something that was discussed earlier in the chapter – to participants' reading of other community members' recipes. People read other people's recipes (16 refs) out of: curiosity and interest (6 refs), ideas and inspiration for their own recipe (5 refs), to cook another person's recipe (3 refs) and find out about food provenance (1 ref). Occasionally participants identified themselves as the 'experts' on their own produce (1 ref) but acknowledged that for them learning through the project came, not as a the result of creating a recipe about something they were already an expert in, but through reading other RHRs. This process was likened by Peter to a conversation, with the RHR website being the means through which this conversation was structured. Some interviewees were motivated by the sense of 'community' (Louise, Peter, Hendricks) as a means for collaboration and sharing information. Hendricks felt that the RHR website needed the additional feature of a forum since the project, for him was 'not just about connecting (.h) your people with where their food has come from (.) its about connecting people of common interest all over the world'. Though this section specifically explores learning that occurred between RHR participants, these practices cannot be detached from wider conversations and social structures that were discussed earlier in this chapter. Thus, family members, friends, producers, growers and other people external to the RHR project have been part of shaping both the learning experience and learning content that comprise the RHR project.

- *Exploration, investigation, inquiry and discovery (31 refs; 4 int)*

> **Louise:** you've really gotta go out there and hunt for stuff
> that you want (.)

The primary way that people described their learning was in terms of inquiry, exploration and discovery. This theme was manifest in terms such as 'exploring' (10 refs), 'finding' (4 refs), 'discovery' (2 refs), 'surprise' (4 refs), 'hunting' for information (1 ref). Participants sometimes expressed this concept of inquiry metaphorically. For example, Louise described finding information about her RH ingredient as requiring her to be a 'journalist' (3 refs) and a detective (2 refs). The majority of these references referred to individuals' learning about food provenance (Louise, David, Peter, Eloise), for example through searching a farmers' market or the Internet. However, this inquiry-based learning was also referenced in relation to cooking practices. For example, David discovers a particular technique for cooking a specific kind of produce. Similarly Peter, in cooking with a new ingredient for the first time, discovers how a particular ingredient behaves when cooked. He described being 'fascinated' by the way his final recipe worked out.

- *Awareness (21 refs; 8 int) and reflection (9 refs; 6 int*

> **Sarah:** I was more conscious of what I was doing (.)

Awareness and reflective practices are discussed in tandem since both would often co-occur within the interview narratives. In preparing or creating content for their RHRs people would be more attentive or experience heightened consciousness (21 refs) around an activity that they would do frequently – such as shopping, cooking or farming. Where people reflected on these experiences was primarily through the act of writing. Through writing the recipe David had the opportunity to think and reflect on what were typically commonplace daily activities. Reflection, as discussed earlier, was largely related to people learning more about themselves and their own relationship to food (12 refs; 6 int).

- *Creating something (10 refs; 5 int)*

> **Sarah:**   I think it's creative as well (.) cooking (.) and I'm sort of (.) I enjoy doing creative activities (.)
>
> **Eloise:**   I like the creative side of like putting together flavor combinations and making them taste good?

The act of creating and doing something as part of the RHR project was instrumental in individuals' learning and motivation for engaging with the project. Five participants specifically used the project as an opportunity to 'do something creative' (David). Whilst the creation of a semiotic artefact, the RHR, has been previously detailed in this chapter (Processes and Praxis), participants also exhibited creative practice in the work that they did in the kitchen. Annie describes coming up with the idea of her recipe by thinking about what was available in her community garden and her fridge. She joined these existing ingredients together to make something new in an act of *bricolage,* that is creating something new from a diverse range of things. Other people (David, Annie, Peter, Sarah, Eloise) also emphasized the creative potential of cooking and creating something as part of the RHR process.

3) What did participants like?

Response to the project was largely positive with all individuals saying they liked having participated in the RHR project (40 refs; 9 int). In addition to generic likes of the project (14 refs), people described the project as 'interesting' (12 refs), 'enjoyable' (8 refs), 'cool' (2 refs) and 'definitely worth it' (1 ref). People said they 'loved' the project (2 refs) and enjoyed the 'agency' and freedom (1 ref) that it gave the individual recipe writer.

4) What were the main learner challenges?

Since overall the response to the RHR project was positive, learner challenges comprised less of the interviewee narratives (85 refs; 9 int). However, learner challenges and dislikes of the project can be seen to stem from three sources: 1) finding the time to undertake the RHR activity; 2) difficulties in sourcing information for the RHR activity & 3) usability or technical challenges in using the RHR website. The nature of these challenges are described below.

- *Time (31 refs; 7 int)*

The theme of time required to complete the RHR emerged as a prominent theme within the interviews and was further supported by the researcher's experiences of participants needing a longer period of time to finish their recipe than previously imagined. Though categorized largely as a challenge, as Hendrick's reflections on the RHR activity suggest, individuals may have a complex relationship with time in online contexts and with informal learning.

> I think (.) with (.) you get used to online being instant (.) um:: and (.) I:: (.) I suppose everything (.) if everything's not quick and straightforward (.) and um:: (.) and (.1) I think charting a an ingredient to the very start is more involved than what (.hh) a lot of people might be used to given that everything is so so erm:: (.) you know (.) if you (.) if you have to spend more than five seconds on something you lose interest so (.) so you needed a different frame of mind I think (.) whenever you're going into it (.) it is an educational process (.hh) ah::mm (.) so I I think that maybe (.) took a while to get my head around (.) [hmm [but when I did (.) then that's what I liked about it (.) so I think it probably is a (.) is a sort of double-edged sword (.) in that on the one hand (.) you know (.) you you need to be prepared to spend a bit of time on this site (.) [hmm [to get the most out of it (.) [yeah [and maybe (.1) maybe that that (.) there's a bit of a mind shift required to (.) use your website compared to what you would if you used (.) other recipe websites where it's just recipe that's there straight away (.) so maybe that needs to be (.) people need to be aware of the fact (.) that this is slightly (.) this is a different approach to doing things (.) and you will need a bit of time to explore (.) to think about it (.) or ah::mm you know? (.) other than just you know? (.) a huge list of ingredients and go away and make your recipe

Five interviewees emphasized the effort that they put into the recipe. Though participants were not set a delivery date for their RHR, interviewees' references to the effort required to complete the RHR were often coupled with references to being 'held up' or needing 'more time'.

- *Difficulties in sourcing information for the RHR activity (27 refs; 5 int)*

> **Eloise:** I actually it was harder than I expected (.) I said earlier it was harder than I expected it to (.) and I thought cause I actually pay quite a lot of attention to everything I buy so (.) originally I thought 'oh it'll be quite easy for me to do' and then I realized (.) that I actually don't (.) know the source of my like (.) I know generally but I don't know the specific story of that particular thing that I buy (.) and I would (.) consider myself a pretty conscious shopper

The greatest extent of learner difficulties occurred around the sourcing of information about the main ingredient. Interviewees described this as challenging (4 refs), complicated (4 refs) and confusing (1 ref). Finding information on where food came from was described as 'hard' (3 refs) and two people noticed that there was a lack of available information (2 refs) on food provenance. In addition to difficulties in finding information on food provenance, one participant (Eloise) experienced the problem of information overload – this was largely in reference to what is 'right' to eat from a nutritional or dietetic perspective. In addition to interviewees sometimes struggling to find information, two participants also struggled to capture this information using their mobile devices since they felt self-conscious (2 refs) about taking photos (Louise, David), and initiating conversations with producers (Louise) in their respective purchasing places. Participants navigated around these social issues in different ways. Louise went to the market twice to gain the courage to talk to the farmer whilst David relied on using his memory to remember the names and labels on the produce.

5) What did participants dislike? (13 refs; 6 int)

Dislikes in the project were limited. People expressed feeling social anxiety around taking pictures or talking to producers (2 refs; 2 int) and dislikes relating to some of the technical constraints of the RHR website (11 refs; 5 int). Since the technical constraints and usability issues were usually discussed alongside interviewees' likes of the website, these are discussed in tandem below, under the next heading.

Affordances and constraints of the RHR project (20 refs; 8 int)

> **Zoya:** I was just quite impressed with the interface? (.) um:: (.) as an internet user (.) on a daily basis (.) I have a low patience (.) tolerance level (.) for::: ah::um::: (.) bad interfaces (.) an::d (.hh) if something is too hard (.) it can make the experience (.1) um:: unpleasant? (.) and er::mm:: (.) the (.) this interface was not unpleasant (.) so:: it was pleasant (.) ((laughter)) and that made it (.1) the whole experience worthwhile (.) and er:: (.) I could benefit from (.) from it in the ways I was supposed to (.) rather than be frustrated with the technology (.) [yeah [um:: so that was good (.) um::: (.3)

> **Katherine:** I found um:: (.) I had a bit of trouble with the interface (.) um:: (.) it it (.) it took a long time (.) it took like quite a long time for me to actually get all the information in there (.) and I had trouble with the photos (.) [oh yeah [it was a little buggy

Since the focus of this thesis is not design, usability testing of the website was not undertaken with *this* participant cohort. Instead usability tests were conducted *prior* to the launch of the website. Though users were not explicitly asked about RHR website usability, the technical affordances and constraints of the RHR website emerged as a theme across eight out of the nine interviews. Feedback on the RHR website was both positive (9 refs; 7 int) and negative (11 refs; 5 int). The majority of positive responses found the site easy to use and navigate, whilst negative responses typically had problems in uploading their recipe to the site 'in one go'.

6.2.3.3   Interviews analysis – summary

Data derived from nine semi-structured interviews depicts food learning as a lifelong and embedded process shaped by key transitional moments within each individual's life, whether this involves increasing independence, concerns about individual health, or serendipitous moments that trigger a particular interest in certain foods or food related activities. The interview data supports findings from *Survey I*, in demonstrating that much of this learning is informal, with cooking classes or formal school education making scant appearances throughout the interview narratives. Learning takes place within a variety of domestic and commercial contexts and through conversations and interactions with family, friends, retailers, farmers and other people comprising an

individual's social network. A range of digital and traditional technologies support this learning; user-generated content and non-expert sources such as blogs and social networks constitute significant tools and spaces for adult food learning. This learning was often self-directed and involved interviewees searching and inquiring for information.

Involvement in the RHR project had a largely evolutionary, as opposed to revolutionary, relationship with participants' prior food learning. Creating a RHR was typically identified as both similar and different to interviewees' existing practices. Response to the RHR project was largely positive, with the experience promoting learning about food and oneself. Learning occurred through inquiry and reflection and was supported by the participatory nature of the project. Perceived challenges largely related to the difficulty of tracing an ingredient and the time required to complete the task. Though some people experienced problems with the RHR technologies, usability issues were not a major theme.

6.2.4   Stage 4: Survey II

Survey II was designed based on the early analysis of interviews. The survey explored dominant themes expressed by interview participants and extended these questions to the wider participant community. Survey findings are presented below. Where findings support or contradict findings from other data collected in the study (e.g. Interviews) reference to this is made.

6.2.4.1   Overview

Out of the 32 participants who completed *Survey I*, 59% (n=19) completed *Survey II*. This number was comprised of 15 people who created a recipe and 4 people who did not (Table 6.15). The survey was designed in four sections that explored how people engaged and learnt through the RHR project. Participants who *did not* create a RHR were not required to answer questions relating to this section.

Table 6.15 Survey design and responses

	Section	Responses
1	You and the RHR Project	19
2	Creating a RHR	15
3	Using the RHR website	19
4	Likes, Dislikes and other comments	19

Whilst all participants completed all sections of the survey that were relevant to them, some participants did not answer *all* questions. For questions where there was no 100% response rate, the researcher states what the total response for the question is (e.g. 13 people answered Question 5). The researcher does not attempt to extrapolate on *why* some participants did not answer all the questions since this is something that we cannot know from this data alone.

6.2.4.2   Not creating a Red Hen Recipe

The four individuals who had not managed to create a RHR but completed *Survey II* were asked the following question '*If you did NOT create a Red Hen Recipe briefly explain why*'. Since there were only four responses (S1, S2, S3, S4), these are not thematically coded but presented in their entirety and analysed using understandings taken from interview data.

- **S1** I intended to and would have loved to contribute to this great project but personal issues intervened to occupy all my time.

- **S2** My life circumstances changed significantly as I got a full-time job, got married and had an extended family holiday, and I did not have the time. I have a tendency to over-commit, especially when I love a project or idea, and this was the case on this occasion.

- **S3** I have absolutely zero talent as a cook and wouldn't want to poison anyone with any ill-conceived recipe idea

- **S4** I don't have any recipes to write down.

We can contextualize this data with themes within the interviews. Time and availability was a strong theme in the interviews and can be identified here in S1 and S2, whilst concepts of personal identity and self-efficacy are evident in S3 and S4.

6.2.4.3   Creating a Red Hen Recipe

Individuals who *had* created a RHR were *also* surveyed on: 1) Similarities and differences between the RHR experience and their existing food literacy practice; 2) Technology use in creating the RHR & 3) Learning and experiences related to creating the RHR. Findings are discussed sequentially.

Similarities and Differences between RHR and existing praxis

Participants were asked: 'How does reading/viewing a Red Hen Recipe compare to how you normally learn or find out about food?' Though the question invites people to identify similarities and differences, the majority of responses emphasized differences (19 refs) in the RHR tool over its similarities (4 refs) to their existing practices.

Differences (19 refs)

> Usually, I would look for what I'd like to eat and how easy it'd be to make a particular dish. This time, my motivation was to look into the origins of (some of) the ingredients, something I admittedly do very little for other dishes/ingredients. So normally my searching would be very goal-directed, whereas for the Red Hen website it was a more explorative approach.

The main difference was the emphasis on food origins (11 refs) with participants typically saying that this was not the usual way that they thought about food. Also mentioned were the way in which RHRs allows connections between people to be made through an online community (2 refs). Some respondents felt that the RHR process was 'more complex' (2 refs), made them think (2 refs) and asked them to 'be accountable' (1 ref) for information relating to food. Furthermore, one person felt that engaging with a single website was different to the standard way she would use Google to perform a search for something she wanted to cook or eat.

Similarities (4 refs)

The main similarities related to *how* information was shared. Two people found the community aspects of the site similar to finding out about food through word of mouth (2 refs) and conversations. The website was seen as having some similarities to other recipe repositories (1 ref) and being comparable to food postings on the social

networking site Pinterest (1 ref), which often posts 'photos of the process and the recipe'.

Technology use in creating the Red Hen Recipe

Technology use was explored through questions around the tasks that people did. For example, the closed question 'If your recipe included photos, which device/s did you use to take these?' and the open question 'Why this device/s?'. Similar pairs of closed and open questions were used to explore: taking photos, taking videos, writing text and uploading content to the recipe platform. Frequencies for technology use per task were tallied and reasons were coded thematically in NVivo. An excerpt of this data is presented in Table 6.16. Please see *Appendix 16* for the complete summation of this data. The researcher explored the data from several different perspectives and looked for similarities, differences and patterns between and across: devices (e.g. mobile phone), tasks (e.g. taking photos), individual respondents, and themes occurring across the entirety of this data set. Core findings from this process are presented under appropriate sub-headings below.

Multiple devices used sequentially and in tandem

Supporting interview findings, *all* respondents used more than one device to create their RHR. Findings from Survey II identify the number of devices used by participants ranging between two and three. Though not explicitly asked, it is possible to see within some surveys that participants used devices both sequentially *and* in tandem. For some respondents devices were used sequentially, for example taking photos with a mobile and writing recipe content using an iPad. For others, devices were also used in tandem – for example, reading a recipe on a text message on their mobile phone and typing up the recipe on their laptop/desktop computer.

Different devices for different tasks

Respondents used different devices or approaches to perform different tasks. The data demonstrated a clear, though not absolute, difference between the typically mobile devices people used for photo and video footage and the preference for less-mobile devices such as laptops and desktops for tasks involving written content, compiling and

editing different media and uploading the final recipe to the website. Participants' reasons for using a particular device were often linked to a feature (e.g. keyboard, larger screen) or characteristic of that device (e.g. convenient). This was described either on its own terms (25 refs), for example 'easy', or in comparison to an alternative device (21 refs), for example using comparative and superlative adjectives such as 'easier' or 'easiest'. Differences between mobile and non-mobile device use, and the reasons for people selecting such technologies are illustrated below.

- *Photo and Video Footage - typically mobile*

As findings from the multimodal analysis showed, all individuals included images in their recipe, with three participants also using video. Whilst larger devices such as tablet computers are capable of taking photos, still or moving images were largely created on either a mobile phone (n=10) or digital camera (n=9). One person used *both* a digital camera and mobile phone to create images for her recipe (n=1), whilst two people supplemented their own photos with a photo that they already had (n=1) or had sourced from the Internet (n=1). Where the participant created video footage (n=2), the individuals used a mobile phone (n=1) or digital camera (n=1) to do so.

People's reasons in choosing to use a mobile phone or digital camera to create this content varied. For respondents who created photo or video footage using their mobile phone, the key reasons related to the 'ease and convenience' (7 refs) of this device. Mobile phones were described as 'handy' or 'accessible' (3 refs) 'quick' to use and having a 'good camera' (2 refs). Comparatively, digital camera use was largely driven by the need for 'good quality photos' (3 refs) or being part of someone's existing practice (1 ref), for example blogging.

Table 6.16 Excerpt of findings and thematic analysis around mobile device use and task performance in creating the RHR

Task (no. of people)	Reasons		
	Themes	*Refs*	*Excerpt*
Taking photos (9)	• Ease and convenience	6	This device does the job easiest and quickest
	• Context – good for the time and place	2	Because it was easy to take it into the kitchen and, as I was cooking, leave it on the bench nearby or in my pocket.
	• Good camera	2	Because my phone is always handy and has a good camera.
	• Handy or accessible	2	It's my phone, it doesn't leave my side, it takes photos, so it is accessible.
	• Quick	2	Using the mobile phone was a quick way to take a picture without interrupting too much the flow of the recipe
	• Uploading from phone	1	Easy to take photos while I was preparing and then just upload them from my phone.
Taking video (1)	• Ease and convenience	1	Convenience. Easy to carry, capture and upload to dropbox.
Writing text (1)	• Handy or accessible	1	My sister txt me through the recipe quite some time ago, I had txt it to myself so I could access it whenever I wanted (I don't usually get a lot of txts from myself so when I look through its usually right there).
Uploading recipe (1)	• Used in tandem with other devices	1	My laptop is set up as a desktop, connected to 2 screens. This is the device I was on at the time (afternoon break at work). So technically I was looking at my iPhone while typing the recipe into the website on my laptop/desktop computer.

- *Written content and recipe upload – typically less-mobile devices*

Creating written content and uploading the recipe were typically done on either a largely static laptop or desktop device. There were two exceptions to this rule. Firstly, one person who used their iPad to write and upload their recipe to the website. Secondly, another person stored their written recipe as a text message so that they could easily access this, but used the device as a reference tool when writing up their recipe on the website using a laptop and desktop computer.

Reasons for laptop and desktop usage differ to those relating to mobile devices. Unlike mobile device usage, that was primarily justified by reference to characteristics or features inherent in that device (e.g. easy to use, convenient), the reason for people to use laptop and desktop devices was often justified by reference to specific and multifarious tasks. For example, people used their laptop or desktop to compile media (3 refs), edit photo (2 ref) or video (1 ref) content, save their work in a word document (1 ref) or search the web (2 refs). The laptop or desktop computer is thus used as a hub for content that is generated by both mobile and non-mobile devices. Both laptops and the iPad were considered to be easy and convenient to use (14 refs). For laptops, key features that supported this were the device's keyboard (2 refs) and large screen size (1 ref) that made tasks like writing (9 refs) and viewing content online (5 refs) easier. The iPad user also cited the device's 'bigger' screen size as being 'more convenient' than doing the exercise on their phone. Desktop users typically did not cite characteristics or features of the device, but referenced other things like doing other tasks (3 refs), the context they worked in (2 refs) and not having access to an alternative device such as a modern laptop or smartphone (1 ref).

Common themes

Whilst the data demonstrates clear differences between the types of tasks people conduct on different devices, there are also common themes that permeate the wider data set. These are discussed in order of prevalence below.

- *Ease and convenience (21 refs)*

One of the most dominant characteristics cited for using a technology was 'ease or convenience' (21 refs). This term was applied to the use of laptops (21 refs), mobile

phones (7 refs) and tablets (2 refs), but not applied to digital cameras or desktop computers.

- *Access and ownership (6 refs)*

> I don't have a tablet. My mobile phone doesn't support
> Word documents. My laptop is so old it doesn't have Intel
> and therefore cannot display many websites properly.

For some individuals the device used was the device that was available. Several participants used the technologies they had access to. The above excerpt is from a participant who used their desktop computer to write and upload their RHR to the RHR website.

- *The role of context and environment (5 refs)*

One shared theme between both mobile phone and digital camera was the importance of contextual factors (3 refs). One person said she used her mobile phone 'because it was easy to take into the kitchen and, as I was cooking, leave it on the bench nearby or in my pocket'. Another individual who used a digital camera used this device because of the low level lighting and confined space in his apartment (1 ref). Both participants were taking photos, however the specific context shaped their decision over which device to use. Context was also a factor in the choice of non-mobile devices such as desktops:

> I find it easier to give my full concentration to a project in
> front of my desktop computer which is situated in an office.
> When I am in the office I do not have as many distractions
> and can give my full attention to any project at hand.

Creating, designing and writing the recipe

Respondents were asked about their design intentions through three questions, the responses to which were thematically coded and are presented below.

What did you want the reader to learn or take away from reading/viewing your recipe/s?

In addition to information on sourcing (13 refs) and cooking (15 refs) food, people wanted to share a diverse range of concerns, interests and personal values (23 refs) through their recipe. These included themes such as family tradition (3 refs), culture (1 ref), giving to others (1 ref) and thoughts around social progress (1ref). Three people explicitly wanted the reader to engage in learning around how to 'make a difference', for example through ethical practices (1 ref) or demonstrating how to overcome the challenges of sourcing local produce. The idea of encouraging people to *do* something is most widely seen in people's aim to create something that is simple or easy (3 refs) for the reader to follow. Concerns around taste (5 ref), health (2 refs) provenance (2 refs) and cost effective shopping (1 ref) were also represented. Moreover, two people also explicitly emphasized that they wanted to share something about themselves, either through what they had learnt or why their recipe was important to them. Many of the concerns and interests that emerged from both *Survey I* and the interview data emerged thematically in response to this question.

Did you edit your photos and/or video? If you did edit your photos and/or video, briefly say what you did and why.

One person did not respond to this question, bringing the response rate down to 14. However, out of this number 85% (n=11) edited their visual images or resources. The most common reason for doing this was to make the photos visually or aesthetically pleasing (6 refs), however other people also did it to 'play at being a food photographer' (1 ref), encourage others to read their recipe (1 ref) and format pictures to publish them (1 ref). Whilst one person claimed to 'edit' their photo by designing the shot *in situ,* all other people edited their photo after taking it and using technologies to adjust colour (1 ref), brightness (3 refs), contrast (1 ref), adjust exposure (1 ref) and white balance (1 ref), and to crop (4 refs) and straighten (1 ref) images. Individuals used tools such as Google photo editor (1 ref) and Instagram (1 ref) to edit photos on their phone. Photoshop (1 ref) and a stop-motion software (1) were used on laptop or desktop computers. This supports findings from Interview data.

Describe the ways you tried to engage the reader/viewer in your recipe

The focus of this question was less on the content of the recipe, but the stylistic devices through which people sought to *engage* and attract the reader. This question and its placement within the survey worked effectively. Whilst respondents continued to reference content (11 refs), for example the particular qualities of their recipe (7 refs) or the recipe's story or history (2 refs), this focus was balanced with references to visual and written style. Out of the 14 people who responded to this question, 8 people emphasized the role of photos to engage the viewer through photography or videography. Nine people also referenced how their written style aimed to engage the reader, with people using words like: casual, clear, easy, engaging, evocative, interesting, poetic, succinct and thorough. The word simple (6 refs) was also used more generally to describe the recipe's in-kitchen function.

Learning outcomes

Did you find researching and creating a Red Hen Recipe easy or difficult? Why?

> It took me a while to decide on the one I though would best represent what I was about so in that respect I found it difficult enough.

Responses to this question were mixed with respondents finding different aspects of the recipe to be easy (10 refs) or difficult (6 refs). One person described creating a RHR as 'moderate' (1 ref). Where participants found the exercise easy they typically cited a pre-existing practice or skill that made it so (4 refs). For example, three people found it easy because they had previously written recipes for either blogs or websites whilst one other person created a dish she made regularly (1 ref). Other people found the experience easy because they made the task easy (1 ref) or found their local market to have helped them (1 ref). Aspects of the exercise that participants found difficult were 'deciding what to do' (3 refs) and finding information on food origins (3 ref). One person found using the website difficult (1 ref) whilst another found talking to their grower provoked social anxiety (1 ref). One other participant felt that the task was difficult due to an overall pessimism about life and the ability for such an 'optimistic' project to make a difference.

In creating a RHR what did you learn about where your food came from?

> I was reminded how important food origin is to me! I have a busy life so its easy just to pick some veggies up from Cole's and make something. It brings so much richness to my life to have fresh caught fish or chestnuts from the Farmer's Markets for my meals. It takes a little homework to find out where your ingredients come from, because companies and stores often do not list it.

What people learnt varied on what they did and how this interacted with their existing practice. For example, Hendricks the producer, in being 'fairly well engaged with where food comes from', found it was more interesting 'to reflect on where it [food] was going'. Thus learning for the farmer was not learning about where his food comes from, but the ways in which people might use it. Similarly, two people said that they learnt nothing from *creating* the RHR because they already knew about that particular ingredient: 'I didn't learn anything because I used produce whose source and history I knew about already'. For people who had undertaken a RHR that explored something different to their usual practice, there were a range of learning outcomes. Whilst two people learnt about aspects relevant to cooking or eating, the majority of learning from *creating* a RHR was focused on aspects of the wider food system. People found out about particular food items, such as crop varieties (2 ref) and cultivated crop origins (1 ref). Four people were interested in geographic provenance and food miles. More generally people were aware of wider systemic issues to the food system such as farmer-retailer connections, cold storage and sustainable farming. For one person the act of 'consciously setting out to find a product that would work for the site' taught her about how hard food traceability was. Two people learnt about the ability to grow produce in urban or backyard environments.

What else did you learn or experience?

> I think there has been a flow on to my other recipe writing
> i.e. wanting to say more than just the how to.

In addition to learning about aspects of the food system (3 refs) the most common learning experiences related to human relationships (7 refs) that expressed themselves in reference to the individual's learning about themselves (3 refs) and experience derived from learning from others, both in the RHR online community (3 refs) and

through making connections with a primary producer (1 ref). For other people the RHR was a chance to develop skills and strategies (4 refs) such as using local food, improving their recipe writing or finding out about new food combinations.

Affordances of creating a Red Hen Recipe

To gauge the affordances of the RHR activity, respondents were given a multiple answer question in which they could select one or more of nine descriptors relating to the question 'Creating a Red Hen Recipe Let Me...'. These descriptors were formed using findings from Survey I and early interview analysis. Only thirteen of the fifteen respondents completed this question. Results from this are displayed in Table 6.17.

Table 6.17 Affordance of creating a Red Hen Recipe

Creating a Red Hen Recipe let me…	No. Responses	Respondents – Non Responses % (*n= 13*)
Contribute to a research project	13	100%
Do something creative	12	92%
Share my knowledge with others	12	92%
Think about my own relationship with food	11	85%
Reflect on the things I do everyday but take for granted	10	77%
Learn about where my food came from	9	69%
Do something different	9	69%
Be part of an online community	8	62%
Other	0	0%

6.2.4.4 Learning in the Red Hen Recipes project

All respondents were surveyed on their wider engagement and participation in the Red Hen Recipes project. Respondents were surveyed on: 1) what they found out through reading or viewing other people's recipes; 2) recipes they remembered and what they learnt from reading these and 3) how RHR compared to the way they normally sought

out information on food. Findings are discussed sequentially. As per usual, themes are presented in order of prevalence.

Similarities and differences between RHRs and existing praxis

Respondents were invited to compare their RHR experience with their existing way of finding out about food. The question 'How does reading/viewing a Red Hen Recipe compare to how you normally learn or find out about food?' invites people to identify *both* similarities and differences, however the majority of responses emphasized differences in the RHRs over its similarities with existing approaches. For example only two people mentioned the similarities between the RHR website and food blogs and the existing plethora of ways to find out about food. Contrast this with responses that emphasized differences (30 refs). Differences emphasized were the project's approach (13 refs), the type of information provided (10 refs) and the community aspects of a participatory environment (7 refs). These themes are elaborated on below.

Different approach or structure (13 refs)

> Through reading/viewing a Red Hen Recipe I learnt something about where produce comes from and the story behind a recipe.

> The back-story plays an important role. You don't just jump to the list of ingredients, it is more of an overall experience. This requires more time which in turn requires the reader to be in the right frame of mind when embarking on the recipe (i.e. not in a hurry!)

Respondents found that the RHR project was different in its approach to food. Differences were often linked to learning with people describing the approach as inspiring or thought provoking (4 refs) or educational (2 refs). People also drew on the alternative structure of the RHR, describing the 'overall experience' (1 ref), 'social network' (1 ref) and 'additional dimensions' of the recipe (1 ref) as distinguishing factors. Where respondents made direct comparisons between their pre-existing and RHR practice (3 refs) such comments were typically focused on *how* participants used the website. Differences included: using RHRs as a single resource in comparison to using a generic Google search for recipes (1 ref), different ways of searching and

browsing for information (1 ref) and needing more time to engage with this type of website.

Information type (10 refs)

> It is much more focused on the ingredients and their origins.

> The Red Hen recipes are interesting to browse through because each recipe is a little vignette of the maker's story, perhaps in how the dish is significant to them and/or how they procured the ingredients.

Seven respondents felt that RHR was different in the kind of information that was presented. Distinguishing features were provenance information (6 refs), the 'story' behind the recipe (4 refs). Contrasting with traditional recipes, one person said that 'there is not often information regarding the source of food or how local it is to the end-eater'.

Community and participatory aspects (7 refs)

> I very rarely cook myself but when I do I either improvise something without a recipe or I try to follow a written recipe to the letter. The red hen recipes were nice because they were written by real people and not by cookery experts so I didn't feel like I was being talked down to.

The RHR project is a participatory project and five respondents referred to the ways in which 'real people' create a more 'personal' and 'individual' experience. For one person this sense of community made her 'feel good' since she was 'able to see that others care about food the way I do'.

Learner outcomes

Respondents were asked two questions: 1) What recipes can you remember and what did you learn from reading them? 2) What did you find out through reading or viewing recipes on the Red Hen Recipes website?. Common themes resulting from both questions are presented below.

What recipes were memorable and what did people learn from them?

'What recipes can you remember and what did you learn from reading them?' Seventeen out of nineteen respondents remembered a particular recipe from the site. Respondents mentioned between 1-3 recipes that they found memorable. Two respondents, both of whom created a recipe, had no recollection of a specific recipe. With the exception of recipes that were added later to the site, respondents made reference to 15 of the 23 recipes on website. One interesting finding is that the recipes with the highest number of mentions were created by the researcher (e.g. The Accidental Tomato Salad). However, it is not possible, from this data, to make the jump from the number of people who remembered a recipe and its power as a learning resource since the RHR repository grew during the project, with people accessing and viewing different recipes at different times. Instead, what we can learn from this data is the relationship between the content they remembered reading and what they learnt from this. Overlooking what people learnt, which is dealt with under the next heading, reasons for a recipe being memorable were often tied to its visual (11 refs) or written (3 refs) appeal. People often said the recipe looked simple (3 refs) or good (5 refs) or had a particularly memorable image (3 refs). Recipes' written appeal was expressed in terms of the recipes' 'backstory' (1 ref), being 'beautiful; or 'enjoyable to read' (1 ref).

What did people learn or experience?

In analysis, respondents' self-identified learning and experiences fell into three dominant categories: learning that referenced issues around food provenance (21 refs) and learning that related to cooking (16 refs) and learning that related to other people and the RHR community (13 refs). Out of the nineteen individuals who completed these questions 84% (n=16) learnt about food – either in the form of cooking (n=5), provenance (n=4) or a combination of cooking and provenance (n=7). Of the total response rate 42% (n=8) learnt about other people within the community. This community learning was typically linked with learning about food (n=5), however a small number of respondents (n=3) demonstrated that learning through the project was *solely* about understanding others and not related to skill or knowledge development around either cooking or provenance. These categories are expanded upon below, drawing on subsidiary themes and excerpts from participant responses.

- *Food origins and the food system (19 references; 15 people)*

> I enjoyed reading the article on milk but was surprised to read the animals where kept indoors.
>
> I also remember reading in that recipe about how over-farming has resulted in fewer nutrients making it from the soil into the vegetables we eat.

Responses that cited learning about food origins and the food system manifest in a diverse expression of learning outcomes. In learning about food origins people's responses demonstrate learning about *specific* examples of food sourcing and provenance (18 refs) and more general learning about the food system (4 refs) and valuing this system (3 refs). Responses around learning mentioned both commercial (9 refs) and backyard (5 refs) production. Where people learnt about commercial food production, the focus was on specific agricultural examples such as how cows behave at a dairy farm (3 refs) and the farming of eggs (1 ref), pigs (1 ref) and crops (1 ref). In contrast to learning about the commercial food system, where people learnt specifically about *how* particular foods were grown, learning about backyard growing was more general with people reflecting on the possibilities of growing something themselves (2 refs) and memories of recipes that stood out because the food was home grown (1 ref) or from a specific community garden that the reader had not previously known about (2 refs). Responses that mentioned food origins were sometimes reflective of the nature of the food system as a whole (7 refs) with people thinking about it as 'a complex process' or reflecting on how and why RHR writers sourced produce in the way that they did (2 refs).

- *Cooking (15 references; 13 people)*

> didn't know it was so easy to use lavender in food!
>
> I actually liked the variety of the recipes I've seen when I checked recently.

In contrast to responses around learning about provenance, learning that related to cooking manifest in a lesser number of subsidiary themes. The majority of feedback related to people's learning or engagement with the recipes as standard tools for cooking

(9 refs), these were often linked to people stating that they would like to try the recipe in the kitchen.

- *Community and participatory aspects (13 references; 8 people)*

> It is also really heartening to learn that people (including myself) are becoming more aware and respectful of how food is sourced, from the most simple to complex ingredients.

> It's always interesting to read how others source product and why. I am pretty well embedded in the 'foodie' world so probably not a lot is new, but it all adds to the store of knowledge and perspective.

Though the majority of people learnt something about an aspect relating to food literacy, learning also included understandings from other perspectives and approaches relating to individual members of the RHR community. People often compared themselves to others (4 refs), for example by realizing that there were other people that shared similar interests or alternatively recognizing differences between food systems. Indeed the theme of difference was important (3 refs) with participants using words like different, diverse, and alternative to describe learning about other people on the project. For example the farmer learnt that:

> […] trends that are common in British agriculture are not in Australian agriculture'. For example we have a real dislike of fat (although that is changing) whereas it seems to be something Australians seek out. Breeds on the other hand are quite similar.

People emphasized admiration for other recipe writers (1 ref), and enjoyed the ability to 'share recipes with people around the world in this way' (1 ref).

How did people describe this learning?

In addition to *what* people learnt about, the data was encoded for the ways in which people articulated this learning as a process (17 refs; 8 people).

> the pasta recipe showed me that some things are not as difficult or time-consuming to produce as I had actually thought.

> The map function really helped visualise where produce comes from and how far it travels.

The most prominent theme relating to what people gained from reading other people's Red Hen Recipes was that of 'self-efficacy and future possibilities' (8 refs). This finding supports those from the interview analysis. In survey responses this theme presented itself frequently in reference to cooking, growing or sourcing things in a different way. People spoke about trying new things (8 refs) and learning whether something they had never previously done was deemed to be within their capabilities (2 refs), for example whether growing or cooking a particular food was perceived to be easy or difficult. Six people (6 refs) also found that reading recipes had helped them to think about food. This was expressed using terms that cited the recipes as encouraging people to be more 'aware' or 'mindful' of where their food had come from. For example, one participant who already identified as knowing a lot about the food system, felt the RHR experience helped contribute to her 'incremental' food literacy development by allowing her to explore different perspectives. One person also noted that the map function helped 'visualise where the produce comes from'. Thus what we can see is that the processes associated with reading a RHR can be linked to *doing* or *trying* new things and *reflecting* and *thinking* about the world.

6.2.4.5 Likes, dislikes and other comments

In response to the open question 'What did you like or dislike about the Red Hen Recipes project?', participant answers were largely positive and mirrored similar findings from the interview analysis. Out of the 19 respondents, 18 completed this question. All individuals (n=18) said that they liked participating in the RHR project, with 39% (n=7) of respondents also registering aspects of the project that they disliked. Likes, dislikes and additional participant feedback are summarized below in Table 6.18.

Likes

What people liked on the project was encoded into four main categories that are displayed in Table 6.18. The vast majority of people really liked the idea and the design of the project (17 refs), with people largely focusing their attention on the project's design and affordances. The theme of awareness of food origins, expressed both within

the interview and earlier survey findings, recurred (Table 6.18). Within these responses, participants used terms like 'encouraged' a lot, which the researcher chose to use when naming particular subsidiary themes (e.g. 'encourages sustainability'). As with earlier interview data, human and participatory aspects of the project were also important, with people referring to their own self-efficacy and agency (6 refs) within the project as well as the nature of the wider community (2 refs). The website's design and technology (3 refs) were also referenced, in addition to general expressions of like (2 refs).

Table 6.18 What people liked about the RHR project

Main theme	Refs	Subsidiary Themes/ Descriptors		Excerpt
Project's design and affordances	17	The idea	4	I really like the idea of a recipe collection based on local produce because it encourages healthy eating and sustainability at the same time
		Awareness of where our food comes from	3	
		Encourages sustainability	3	
		Encourages healthy eating	2	
		Could be good for children in schools	1	
		Bring about change	1	
		Encourages ethical processes	1	
		Worthwhile	1	
		Encourages respect for food	1	
Human and participatory aspects	10	My role within the project	6	I liked that *I could be a bit creative* in portraying the making of the dish.
		Community	4	I love the idea, I think there is the opportunity to build a real community. Like all things, more people being involved would make it better - but then I am guilty of this as I only looked but didn't contribute within the time frame.
Technology	3	Features of the website	2	I liked that I could upload photos and videos to the site, and tag on a map where produce comes from
		Easy to use	1	
General likes	2			I liked everything about it

Dislikes

Dislikes around the project stemmed primarily from individuals who had created a RHR and found the website 'clunky' or difficult to use during the recipe upload (5 refs). Navigating around the website was not mentioned. In addition many people felt that the site and project would be improved with a greater number of people (4 refs). As a nascent project people felt that when they used it there 'wasn't too much inspiration to take from others' and that the project ought to 'reach a wider audience'.

Other comments

> Thank you for the opportunity and assisting me to raise my awareness around the food I consume.

The final survey question 'If you have any additional comments, suggestions, or concerns' gave participants an opportunity to provide feedback and any other thoughts that they had not been able to express elsewhere in the survey. This question was entirely optional and eleven people chose to answer it. The majority of responses (n=6) were messages of thanks and support from participants to the researcher. In addition, six people also expressed interest in the future of the RHR project, either through expressing interest that the project should continue post PhD (3 refs) or suggestions for how the existing website or project could be expanded upon (3 refs). One person suggested that the site could have a world map of ingredients, another suggested that the project's focus could be expanded from food to include wider lifestyles, whilst another asked that the researcher 'fix that map?!'; this last comment relates to way Google maps function when embedded within other websites. More general comments (2 refs) pointed out that the project had assisted in raising their awareness of the food system whilst another person commented positively on the website's usability and 'uplifting' design and graphics.

6.3   Impact assessment

Due to the research focus and aims of the study, the findings have, to a large extent, focused their attention *inwards* on the RHR project, exploring how people learn by creating a RHR or viewing the RHR website. This section aims to contextualize these

findings by looking *outwards* to identify any wider engagement with the RHR website and project that is external to the RHR participant cohort. This perspective is explored through web and social media analytics data, and through the short story of one research participant who, after completing two recipes, assisted in helping grow the project. This data is treated descriptively and as a snapshot of the data that was available upon cessation of data collection in August 2015.

6.3.1   Website usage

Since the website was launched there have been 829 unique visitors and 1,510 sessions. Website usage can tell us the degree to which there is some wider audience for the RHR project and an overview of how they engage with this kind of website.

6.3.1.1   Audience and reach

Website *users* who had *meaningful* interaction with the RHR website came from Australia (1,037) the United States of America (213), the United Kingdom (118), Turkey (43), Spain (24), Italy (17), New Zealand (16), the Netherlands (12), Canada (10), Germany (7), Ireland (4), Papua New Guinea (2), Sweden (2), Indonesia (2), the United Arab Emirates (2) and Greece (1). In most cases the number of sessions per country tends to correlate with other potential indicators of engagement, such as the average number of pages viewed, the bounce rate and the time spent on the site[20]. However, exceptions to this rule were two visitors from Greece and Canada both of whom spent between 3-5mins on the site and viewed several pages. Examples like this from the data are important to showcase since the participant cohort had no representatives from either country. What this data demonstrates is that the RHR project has spread *beyond* the immediate participant cohort. However, over the course of a year these numbers reveal that the website is a low-traffic site, with a small number of views from around the world.

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[20] Bounce rate is the percentage of single page visits to a site.

6.3.1.2   Acquisition

The majority of users accessed the site through a direct link (935) or through search engines such as Google (235). However, other people accessed the site through blogs (81) and websites (6) belonging to other people. A page on the crowd funding website Pozible, with whom the researcher ran a successful crowd funding campaign for future research, also generated website traffic (10). Social media platforms such as Facebook (205), Twitter (22), Disqus (12), Pinterest (9) and Google + (3) were also used.

6.3.1.3   Technology use

Of the 829 site visitors 73% (n=602) accessed the site on a desktop computer, 20% (n=166) used their mobile phone and 7% (n=61) used a tablet computer. Of mobile devices, that is mobile *and* tablets, Apple devices dominated. 104 users had iPhones and 56 users had iPads. Other devices included the LG Nexus 5 (8,) the Google Nexus 6 (4), the Sony Ericsson MT11i Xperia Neo (4) and the Samsung Galaxy Note (1). Other Windows and Android devices were also used (13). Exacerbating the variation and heterogeneity of different hardware, were a variety of operating systems and Internet browsers. Though it is important to acknowledge these as yet another way users' experience is customized, the specifics of such data do not assist in addressing the core research questions. As such, this data is not included here and is, instead made available in Appendix 17.

6.3.1.4   Behavior and popular content

Across users and sessions were 13,637 page views of content on the RHR website. 26% of total site use was on the page 'My RH Recipes' (3,555) which allows individuals to create their own RHR. Home Page (2,335), Recipes (1,842) and Red Hen Movement (1,134) were also prominent *main* pages of the site. *All* user-generated recipes on the site were viewed. The number of views per recipe range from 15 – 137. The most popular recipes on the website included: Springtime Lavender and Dark Chocolate Chip Cookies (137), Plastic Bottle Grown Salad (134), Tomato Passata (114) Pear Maize Flour Cake (72), Milk from a Robotic Dairy (64) and Pork Rillette (62). In addition to reading recipes users also looked at support materials that are under the 'About' tab (118) of the website. There were 216 views of pages like FAQs and Tips that were designed to

support users in creating their RHR. Blog posts were also popular (215). The site's terms and conditions were rarely read (8). What this data demonstrates is that whilst the largest *single* percentage of page visits is from people *creating* RHRs on the 'My RH Recipes' tab, 74% of the site's usage is people viewing other content.

6.3.2 Facebook

Red Hen Recipes is further supported by a Facebook page (Figure 6.26). This section explores how this Facebook page widened participation within the RHR project.
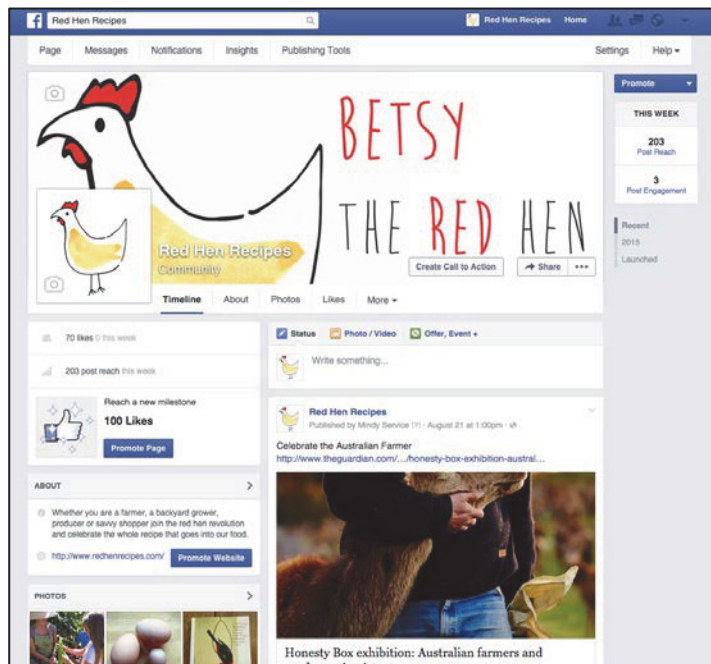
Figure 6.26 Red Hen Recipes Facebook Page

6.3.2.1 Audience and reach

At the time of writing RHRs has 70 followers: 71% are female, 27% are male. Followers were recruited through participants and their social networks and not through paid options available via Facebook. In addition to the number of RHR page followers is the *reach* of the posts. Reach is defined as the 'the number of people your post' was served to. An example of post reach is if a follower likes, comments or shares a post, this post will appear in the news feed of some of their friends. Post reach is influenced by when the post was released, the number of people who engaged with the post, the use of hashtags for wider sharing and Facebook's own algorithms. The country source of traffic to the Red Hen Recipes only to some extent reflects that taken from Google Analytics data. People from 24 different countries saw RHR Facebook posts. Figure 6.27

highlights the main countries of activity, with the USA (306), Australia (203), and the United Kingdom (247) accounting for the majority of the visits. Traffic from Australia came largely from Sydney (150), traffic from the UK derived mainly from London (104). The majority of US traffic came from across California, where one participant now resides whilst contributing voluntarily to the RHR project. This participant's work, could explain why the USA Facebook views have surged.

6.3.2.2   Posts and engagement

Since launching, the RHR Facebook page has posted 111 posts which included links to: participant generated RHR, news articles, YouTube documentaries, TED talks, aspects of the RHRs Research Project including a crowd funding campaign, and articles relating to cooking and farming. Posts had a reach of between 1-525 people. The rate of engagement is calculated as the number of people who either 'liked', 'commented', 'shared' or 'clicked' as a percentage of the total number of people who had seen that post. The rate of engagement spanned between 0 – 31%. People read a total of 399 food related-posts and articles over the course of the year. Posts with hyperlinks to other content (e.g. RHRs, articles, etc.) performed more successfully than posts involving images or video (Figure 6.28)

Country	People Reached	City	People Reached	Language	People Reached
United States of America	306	Sydney, NSW, Australia	150	English (US)	533
Australia	203	London, England, United …	104	English (UK)	168
United Kingdom	147	San Francisco, CA	44	German	7
India	9	Benicia, CA	26	French (France)	7
New Zealand	8	San Luis Obispo, CA	20	Spanish	6
Germany	7	Melbourne, VIC, Australia	14	Danish	3
France	6	Oakland, CA	12	Japanese	2
Canada	6	Los Angeles, CA	10	Portuguese (Brazil)	1
Thailand	5	Walnut Creek, CA	9	Dutch	1
Mexico	5	Manly, NSW, Australia	9		
Spain	4	San Diego, CA	9		
Netherlands	3	Brisbane, QLD, Australia	7		
Hong Kong	3	Berkeley, CA	7		
South Africa	2	Austin, TX	6		
Switzerland	2	Sacramento, CA	5		
Ireland	2	Napa, CA	5		
Denmark	2	New York, NY	5		
Japan	2	Santa Barbara, CA	5		

Figure 6.27 Global reach via Facebook
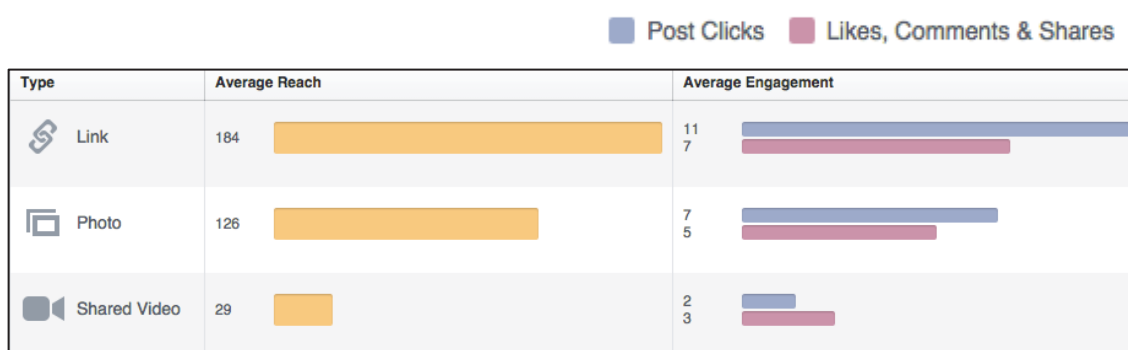
Figure 6.28 Types of content and types of engagement

Additional sharing was supported through Twitter. This, like the website, demonstrates that RHRs has had an impact outside of the original online community and participant cohort. Though extending out from the original project, data from the Facebook page, like that of the Google Analytics, demonstrates that the impact of this is relatively low for a page that has been running for over a year.

6.3.3   Extended participant engagement

One participant in Survey II expressed an interest in helping to grow the project. This participant was called Mindy Service. The researcher first met Mindy serendipitously whilst shopping for clothes and, after hearing the researcher talk about her work, expressed enthusiasm to join the project. Originally from California, but living in Sydney, Australia, Mindy wanted to be create a more sustainable food system and be part of a community that worked to this cause. After data collection relating to the RHR project concluded, Mindy contacted the researcher. Through informal meetings and discussions about technologies and the food system a mentor-mentee relationship emerged organically between the researcher and participant. Mindy wanted to help expand and promote the project. Through several meetings the researcher worked with Mindy to come up with a role on the project that would help her learn about the food system and grow the community. On returning to the USA, Mindy was given the title of 'US Red Hen Ambassador', a profile on the RHR website and responsibilities for writing the website blog and managing social media. At the time of writing, Mindy has set up the RHR Twitter Account, manages the RHR Facebook page and writes a blog on food issues (Figure 6.29). Mindy's first blog researched the use of School Gardens for promoting healthy eating. As part of this Mindy researched school gardens, visited and interviewed a local garden, and got the school garden she visited to supply images to accompany her blog. The researcher edited blogs and provided ongoing mentorship through Skype video conferences and the use of Google Docs. Since Mindy began working on the project there has been an increase in visitors numbers to the RHR website and Facebook page. Many of these visitors come from the California and the wider USA.

What this narrative demonstrates is the possibility of a community like RHR being sustainably run by members of that very community. Whilst the researcher has acted as a mentor and guide, the emphasis for Mindy's engagement in the project has been for her to 'make Red Hen Recipes her own' and bring her own interests and skills to the project. This is important for a project like RHR where participation is voluntary.

Figure 6.29 Blog post: School Gardens Harvesting Health

6.4　　Chapter Summary

This chapter presents findings that explore the central case study: Red Hen Recipes. Five stages of data collection and analysis were used, when combined together these present a complex picture of *who* participated and the existing skills, attitudes and motivations they brought into the project (Survey I, Interview I). This chapter explored participants' food learning experiences from two perspectives: 1) what people made (Multimodal analysis of RHRs) and what people did (Interviews, Survey II). Views of the project from a wider context (Impact Analysis) demonstrate that the RHR project had a modest reach to other people outside of the participant cohort. Throughout each stage of analysis, qualitative data confirmed and extended understandings found in previous stages. There were no contradictions between what was identified within one method and what was identified within another. The researcher argues that saturation has been achieved in that the same themes are routinely represented and extended through different perspectives. Though data here is presented sequentially, so as to clarify each analytic step independently, the summation of these findings are considered together in *Chapter*

8: Conclusions (p. 288 – 290) in conjunction with the literature and in response to the study's research questions.

Chapter 7: Reflections on the Red Hen Recipes Project and the role of the researcher

We form theories as we reflect on practices that are based upon the knowledge we bring form earlier actions or experience. But first we have to understand the internal and external forces that propel us towards the actions we take, and how we make sense of our experiences (Etherington 2004, p. 28).

In the varied topography of professional practice, there is a high, hard ground overlooking a swamp. On the high ground, manageable problems lend themselves to solution through the use of research-based theory and technique. In the swampy lowlands, problems are messy and confusing and incapable of technical solution. The irony of this situation is that the problems of the high ground tend to be relatively unimportant to individuals or society at large, however great their technical interest may be, while in the swamp lie the problems of greatest human concern. The practitioner is confronted with a choice. Shall he remain on the high ground where he can solve relatively unimportant problems according to his standards of rigor, or shall he descend to the swamp of important problems where he cannot be rigorous in any way he knows how to describe (Schön 1995, p. 27)

7.1 Chapter introduction

This chapter presents the core findings derived from ongoing researcher reflection through memo and diary writing throughout the project. In understanding the role and experiences of the researcher, this section acknowledges understandings derived from the researcher's perspective and how these shape both research and practice.

7.2 Community creation and researcher-participant interactions

During the Red Hen Recipes project there were numerous points where the researcher interacted with participants, potential participants and persons interested around the project. These interactions highlighted aspects of the project that were not accessible through survey or interview. Since the researcher interacted with people who were not part of the research, such conversations were often critical to understanding the reasons people had for not participating or for dropping out. The researcher documents these reflections below.

7.2.1 Changes in participation over project duration

How people interacted with the project and the website changed during the project's duration. Though a lot of people registered interest in the concept, as evidenced by the high number of sign-ups and expressions of interest, the formation of an initial participant group was incredibly difficult. Though the researcher had created several exemplar recipes, the site was empty of user profiles and user recipes. During this period of time the researcher fielded several emails from participants about 'what they had to do'. Though participants often had lots of ideas for the concept, many people were shy, hesitant or anxious about translating that into something that would be published online. However, as the community grew and the site populated with recipes less people contacted the researcher to ask for help.

7.2.2 Individuals who did not complete the project

Individuals who did not complete the project also failed to complete a survey. As a result it is not possible to know all the reasons for participant attrition. However, some of the interactions highlight reasons for this. Some participants wrote and expressed highly specific ideas for the ingredient they were going to trace and the story they were going to tell only to fail to submit a complete recipe. Additional support was offered to these individuals (n=3) but they did not take the researcher up on the offer. It would be easy to assume that all people who dropped out were disengaged. However, one example demonstrates that this is not always the case. In supporting participants, the researcher saw that one person who was lactose intolerant had researched different dairy alternatives and their origins. However, the participant struggled to convert the research she had done into a published recipe. She was affected by flooding that cut off her home electricity during Sydney's storms and anxiety about 'getting it right' – which she described as a kind of writer's block. What this demonstrates is that there are a variety of factors outside of the project's control that may lead individuals to drop out.

7.2.3 Interest versus participation

Since first discussing this project on National Radio there has been a steady pattern in which observer interest in the project outnumbers active content creation and participation. The struggle in this project was not getting people interested in the topic of discussion or the way in which the project approached this but in getting people to generate the content. This pattern can be observed across the participant attrition rate, as well as the web and Facebook analytics. What has emerged repeatedly is that there is a high degree of interest in food provenance discussions with people wanting to observe or find out more. However, there appears to be a barrier between wanting to know, or engage in this conversation as a listener or an observer, and people speaking, writing or creating online content about the issue.

7.2.4   Characteristics   of   informal   learning communities

One of the primary reflections on this project was the difficulty in managing mobile learning with an *informal* learning community. Whilst learning could be 'anytime and anyplace', without the routine structures of readings, classes and assessment deadlines participants' engagement with the project would be structured around other aspects of their life such as work and family. There are several challenges to managing this type of learner group. In the case of a nascent community, in which both concept and technology are new, the 'anytime, anywhere' potential of the project makes providing learner support difficult. Individuals are never within the same place and learner-support not limited to a discreet period of time such as class, consultation hours, or semesters. It is difficult to know when people will need guidance or help. Initially the researcher was on standby to field questions and provide support at different times.

7.3   Technical and resource limitations

The Red Hen Recipe website supports users in viewing and creating content from a range of devices. However, as with any technical development there are limits on the cost, technical ability, and time available for development. The researcher is able to reflect on the aspects of the technology's development that may make sense of both participants' site usage and participants' attitudes to the technology in Interviews and Survey II.

7.3.1   Handling images and multimedia content

There were several motivations in developing a responsive website, instead of a mobile app (or several apps). Firstly, in wanting to better understand food literacy and mobile learning, the researcher wanted to have as few barriers to participation as possible. A responsive website was able to accommodate the majority of web browsers and platforms, and was less time consuming than building multiple apps for multiple platforms and devices. However, this system presents other technical challenges for the developer and the user. One of the challenges of user-generated content is uploading images. Users may upload images of different formats and file sizes. For usability, these

have to be processed so as not to slow down the functioning of the webpage. Though system handling of images is feasible when done locally, in an app for example, this process is much more complicated when done in a web browser. Fast and reliable Ajax image up-loaders are technically difficult to create. The researcher was not surprised when several participants mentioned the slow upload time for images. However, without more resources this is something that is not easily addressed.

7.3.2 Social media integration: Facebook, Twitter, Pinterest & Disqus

Comments and social media were managed through integration of existing tools. Common buttons for Facebook, Pinterest and Twitter allowed people to share, pin and tweet a recipe. For managing and moderating comments the site used the comment hosting service Disqus, which was integrated at the bottom of each recipe. The benefits of Disqus are that it is widely used and supports comment moderation.

Social media sharing was largely successful with people using Facebook and Twitter to share content. However, the Disqus comment feature was unused. Understanding why people did not engage in discussion *within* the Red Hen Recipes website, but rather on other social networks is impossible to address solely through researcher reflection. However, the technology and researcher's experiences highlight some of the issues with commenting on the Red Hen site. Though the researcher tried to initiate conversation around the recipes there was no notification feature to alert recipe owners to comments. This meant that the only way for participants to know that a person had commented on their recipe would be by checking their recipe intermittently. Participants who are registered to use Disqus can receive notifications to content they have commented on. However, registering to another service in order to comment on a recipe may also be a barrier to people engaging in the first place. These issues could be explored in future research and changes made to future versions of the site.

7.3.3 Balancing custom development and pre-existing code use in early development

The Red Hen Recipes website is best viewed not as a complete piece of technology, but as an early version and proof of concept through which the designer and researcher can

learn about what works and what does not. The first version is not ideal or perfect and allows the designer to explore the concept quickly and without a large expenditure of time and financial resources. To do this the site used existing tools such as Disqus and a Joomla extension called YooRecipe, which was an open-source recipe software. Existing code is then customized to meet the design needs. Some of the limitations in the development of the website have derived from the use of pre-existing code. However, the enormity of cyber and human risks associated with user-generated content and the moderation this requires means that it was not economical to develop a custom moderation tool for a small site such as this. Thus though there were usability issues and flaws within the site, as technology it must be seen for what it is, an early and functioning version that provides a way of testing and exploring a concept within time and resource limitations.

7.4 Managing versus researching – looking outwards and inwards

In addition to researching the Red Hen Recipes project, the researcher also occupied the *in* project roles of project manager, system administrator and user support person. In generating content, recruiting participants and supporting the initiative using social media the researcher was an 'insider' to the project. In analyzing and researching the project the researcher was an 'outsider', not in the sense of objective post-positivist disinterest, but in the attempt to look back at the phenomenon of interest from a specific research perspective. Over the course of the Red Hen case study there were tensions between these roles and perspectives.

Most noticeably is the conflict in time and duties that each role occupies. It was challenging for the researcher to create content, manage and recruit participants and simultaneously engage in research. Features such as the blog, the site Facebook page and Twitter account are all meaningful ways of continuing the project's scope, however this work is difficult to maintain whilst collecting and analyzing data, or writing research papers and the doctoral dissertation. With competing duties, priorities between research and project management shifted throughout the project. Initially project management duties were prioritized over research since it was necessary to establish project

momentum and assist in fixing any early teething problems with the project's initial user group. Furthermore, without research participants there was nothing to research. However, once this was established project work in the form of participant recruitment, social media and blogging became secondary to critical moments in the PhD – such as the final year's 'write up' period. This balancing act is important to note for several reasons. Firstly, these tensions highlight the extent to which mobile and e-learning require the support of human co-ordinators and leaders. Technology has to be maintained, users need support and user-generated content, especially, needs moderation. Where learning technologies do involve user-generated content in public spaces there have to be mechanisms for moderating and controlling this content and resources to support this, whether this is locally within the project or through the use of secondary tools or platforms that do this for you. Secondly, this reflection helps make sense of website and social media metrics. Social media engagement declines when there is no one to post content or manage the account. Fortunately the issue of human resources may be potentially addressed through extending project management duties to highly engaged participants and members of the community. This notably illustrated with the example of Mindy Service, who volunteered to undertake additional roles in the project (see *Chapter 6)*. However, even participant leadership requires a degree of support and input. In the case of Mindy Service, the researcher became a mentor to this participant, with meetings conducted using video conferencing software. Though giving community members additional power and input into project management may be one way that the project can be managed sustainably, this too requires time and input from the project leader.

Less easily addressed through outside help is the tension in the perspectives necessary to manage a project and also research it. For the project manager the aims are to increase the website's use and manage participant engagement. Strategies to do this might ordinarily involve project promotion and marketing. Conversely, for the researcher the aim is to honestly document and understand the phenomenon from a particular research perspective. These two perspectives can be at odds. This was practically managed through the use of journal writing that sought to support both project management and research work. By identifying this tension the researcher was able to revisit the data to see how the ways she had established and managed the project

might have affected the themes that the researcher identified. Likewise, the research can also feed back into understanding how the project was established and any issues that emerged because of this. Balancing practice and research is difficult and shifting between roles calls for reflective practice so that we can become aware of how competing roles and responsibilities may affect both what is researched and how it is researched. For the researcher the concept of being both an insider and outsider that sat on the threshold of the project, assisted in conceptualizing and thinking about this problem and using both perspectives to meaningfully understand and make sense of the project and its research findings.

7.5 Thematic coding and data analysis

Thematic coding was used to analyse qualitative data across all stages of the data analysis. Strategies such as notebooks, Post-it® notes and drawing were used to open up the analytic process to alternative approaches that were less linear than those that occurred within the structures of NVivo's software. Though practical approaches can provide some assurance of rigor, tools and practical methods do not eradicate issues integral to human interpretation and thus fundamental to the interpretative process. This section details researcher reflections relating to *how* codes or themes were decided upon by the researcher and some of the questions and issues that arose through this practice.

7.5.1 Code utility and data representation

The benefits of microcoding allow the researcher to remain close to the data – that is, not to jump to a wider theme prematurely. However, the experience of microcoding raises interpretative tensions. Though proceeding in this way allows the researcher to remain close to the data, the codes generated are, initially, of limited analytic utility. The process raises the issue of code utility – that is how useful a code is for research purposes. Though strong themes that can be coded *in vivo* are unproblematic, the majority of qualitative data does not emerge in this form. The nature of human language and communication means that people will express a theme in a range of synonyms, antonyms, phrases and linguistic expressions. Thus, when coding qualitative data there

are moments of inherent tension between the code's closeness to the data and a code's analytic utility. Experienced, this interpretative quandary takes place on a sliding scale. On one extreme we can imagine codes that are so close to the data as to nearly mirror it. The strength of these codes is their faithfulness to the data and the individual's expression. However, these codes, due to their collective profligacy are limited in their analytic utility. Theoretically we can imagine a worst-case scenario where a code is not an interpretation but just a mirror of what a person has said. On the other extreme of this sliding scale are codes that are so large and all encompassing in their categorization so as to swallow all types of human expression in a kind of descriptive 'catch-all'. These large codes, without any further sub-codes or understanding, fail in their analytic utility by virtue of their distance from the nuances of the data. The researcher's role within the coding process is, to use a less than technical term, 'feel' their way around this space to find a code that is analytically useful whilst also being representative of the data. This tension between representation and code utility was experienced throughout the coding process.

7.5.2   Pre-existing codes and future interpretations

Another difficulty experienced during the coding of qualitative data is the effect of pre-existing codes on future interpretation and analysis. This problem occurs when the researcher identifies a theme in one piece of data, for example 'Identity' and the existence of this code then influences how the researcher approaches or interprets other data. For example, the researcher having already identified the theme of 'Identity' and 'Identity formation' may see a reference to someone's family or childhood and code such data as extensions of this particular theme. This is not to say that this interpretation may not be correct or relevant but rather that it is problematic if this interpretation excludes alternatives such as treating references to 'family' under the code of social actors, or references to childhood as under the code of 'memory' or 'development'. As researchers it is important to be honest about the effect of pre-existing codes. The researcher experienced this throughout the coding process and identified these issues via researcher reflections. From this understanding the researcher was able to think of strategies to enliven the interpretive process and counterweigh, but not eradicate, the problem faced by pre-assigned codes. Strategies employed included

iterative analysis, where the researcher codes the data multiple times from different perspectives (e.g. actions, social actors, feelings and emotions, technologies etc.), and starting any coding of a new data source with microcoding and no pre-existing codes (Bazeley 2013). At a practical level, this meant separating the codes generated for the survey, interviews and recipe analysis and, only at the end, identifying where codes or themes duplicated themselves within those categories. This process was more labor intensive but ultimately afforded a greater degree of exploration and rigor in the analysis of the data.

7.6   Researcher's daily practice

In researching the field of food literacy and mobile learning the researcher became more acutely aware of her own habits, practices and ways of learning. During the period of the study the researcher experienced key moments in which she observed her own behaviours through the perspective of this particular study and diarized these reflections. Some of the key moments are summarized below:

Creating Red Hen Recipes

As the site owner and administrator the researcher was responsible for, not only testing the site on numerous platforms and devices, but also creating the first recipes and supporting documentation as learning content. In engaging in the project as a participant the researcher was able to have first-hand experience of the RHR process:

> Firstly, the process changed *what* I cooked with. In searching for an appropriate ingredient to trace I used a flower in the garden that I had never cooked with or used before. Photographing this and capturing a bee engaged in pollination made me reflect on the role of that plant within a wider ecosystem. Searching online for ways of cooking with this flower felt like a type of practical research and charting the cooking process a sort of experiment. I was aware that everything had to look appetizing and the degree to which I was stylizing shots so that they looked attractive or enticing to the potential viewer. In this experience I felt aware of the many ways in which I was using the mobile device to not only share information but craft a particular aesthetic and narrative (Researcher Diary).

Mobile Device Use

Most noticeable was how the mobile devices – a smartphone and an iPad – have supported the researcher learning a specific skill. This occurred in a variety of ways that were not always related to the RHR project. The following examples are highlighted:

- Seeing a cheap tray of fruit and vegetables at the store and using my phone to search Google for a recipe that would help me use this particular produce.

- Using my phone or iPad in the kitchen to look up recipes, convert quantities from imperial to metric, and use other features like the timer to time baking.

- Watching tutorials on YouTube in order to try to address a specific skill – for example how to make bread.

In all the examples, whether in the shop or the kitchen, the mobility of the device was important to allow the researcher to access information in a space that would not have access to a laptop or desktop computer.

7.7 Chapter summary

In attempting to understand the role and position of the researcher, this chapter engages in what Donald Schön (1995) describes as the 'swampy lowlands' of practice. This is the daily work of inquiry that constitutes research. Through reflective practice this can be explored. What actions did the researcher take? What understandings were gained from this? How did these actions shape the work undertaken? These are questions that the researcher asks of the self. In response to these questions the chapter identifies the researcher's position as occupying the liminal point between participant and observer, insider and outsider. This contextualizes the findings presented in *Chapter 5* and *Chapter 6* and re-emphasizes the role of the researcher's own viewpoint on the project and its outcomes. Informal elements of practice, such as discussions with participants and privileged understandings of the project's technology are part of the researcher's viewpoint. In presenting key reflections from the researcher's ongoing diary entries this

chapter reminds the reader of the human, subjective and messy process of interpretative work.

Chapter 8: Conclusions and future work

> […] static concepts of education which relegate the learning process to the period of youth are abandoned. The whole life is learning (Lindeman 1989, p. 4).

8.1   Chapter introduction

In this final chapter, findings from the empirical study (Chapters 4, 5, 6) are interpreted in light of the research questions and wider academic literature. In synthesizing data, analysis, arguments and evidence this chapter both consolidates findings from *across* the research whilst generating 'new, composite, integrated understandings through considering all things together' (Stake 2010, p. 184). This chapter demonstrates the scope of this research by highlighting its contributions to the body of knowledge as well as its limitations. The chapter draws this dissertation to a close and concludes by highlighting opportunities for further work and suggesting ways that this work could be extended.

8.2   Findings – overview and validity

This chapter begins by presenting a 'high level' overview of the findings (Table 8.1) with a brief discussion as to their validity. In addition to affording the reader a 'birds-eye-view' of the key findings, this table demonstrates characteristics of the research necessary to assess its rigor and value: validation, data saturation and case study completeness. These three points are discussed in relation to the findings in Table 8.1 below.

Validation through multiple methods

Findings from different methods supported, confirmed and extended, but never contradicted, each other. This ensures a degree of validity to the methods used. The value of multiple methods is discussed further in *Chapter 4* (p.80).

Data saturation of key themes

Throughout the research process key themes repeated themselves to the point of saturation amongst the dominant themes. For a qualitative study whose value cannot be attributed to sample size, information redundancy is one way of ensuring rigor (Sandelowski 1995). This saturation only occurs within the context of those analytic approaches employed. Alternate interpretative approaches may lead to other outcomes.

Case study completeness

'Completeness' is identified as an important characteristic of good case study work (Yin 2009). The summary of findings demonstrates an exhaustive collection of evidence within the bounds of the case study. This characteristic can define the case as complete within the boundaries of the study (Yin 2009).

Table 8.1 Summary of findings

Preliminary Study *1 farm field study/interview & 5 interviews*	• Knowledge of the food system is highly specific and variable to the specifics of context. Variability affects both producer and consumer within the agro-food system. For example, farmers face the variability of soil and seasons whereas consumers have varying tastes, occasions, diets and cuisines.
	• Storytelling through egg-cartons has been successful in engaging local consumers at the farm visited. These egg-carton stories were successful in the way they were able to communicate the changing and variable nature of the farm.
	• Recipes are a ubiquitous and powerful structure through which people engage and learn about food. Recipes are commonly used to answer the question 'what should we eat?' A recipe supports exploratory interactions through which people imagine future acts of cooking and eating, and experimented with cooking new foods. This contrasted with supermarket interactions, which are typically more routinized and habitual.
	• Interview research with five persons living in urban and suburban Sydney, and *not* employed in agriculture, found people interacted with food in a range of digital and non-digital contexts and environments.
	• Knowing *where* and *how* food is produced is important for individuals not involved in agriculture. However, uncertainty about what particular labels mean and the role that marketing plays undermines how people receive this information.
	• Practical factors such as cost, convenience and time shape how people source food.
Survey I *32 surveys*	• People came to the project from a variety of demographic and occupational backgrounds and had a range of pre-existing hobbies and interests that aligned with aspects of the project. Motivations for participating included: interest in the concept or idea of the project, in being part of a community and contributing to research.
	• People learn about food primarily though informal channels and through commercial and non-commerical contexts. People's interactions with food are motivated by pragmatic concerns (e.g. convenience, cost) and values and belief systems (e.g. animal welfare, consumerism).
	• People use a range of digital and non-digital information resources and technologies for learning about food. Participants all owned multiple devices, including a mobile phone and larger device such as a laptop. Users navigate between multiple devices to perform different tasks.
Multimodal Analysis *23 recipes*	• Participants created a range of multimodal augmented recipes. Recipes include text, visual image, video and map data. Each recipe demonstrated that meaning was designed by the creator of that recipe.
	• All participants used visual images. Images typically focus on the food item but position the reader in a personal relationship with what is depicted. Images depict narratives and enact social distance, involvement and power relations between what is represented and the viewer.
	• Though the user largely controls ideational and interpersonal meaning-making components, the computer or system determines the majority of all compositional meaning. Compositional meaning of an image may alter as images migrate through different contexts on both the RHR website and the wider World Wide Web.

Interviews *9 interviews*	• Findings confirm and support those of Survey I
	• Food literacy typically starts in the home with the domestic context defining what aspects of food the individual learns about. Independence through adulthood leads individuals to use a variety of resources to learn and self-teach.
	• Learning is supported by a range of activities that take place using digital and non-digital resources that are accessed through different devices.
	• Learner outcomes from the RHR project included: learning about food, learning about self, and learning a skill. Learning was facilitated through participatory and conversational elements and largely described as a process involving exploration, heightened awareness, reflection and 'creating something'. Self-identity and self-efficacy were important themes.
	• Learner challenges were focused on the time needed to create the recipe, difficulties finding information and problems using the RHR website.
Survey II *19 surveys*	• Findings confirm, support and extend those of the Interviews.
	• Participants who *did not complete a recipe* cited a lack of time or a lack of talent for completing the task. This ties in with themes from the interviews, for example time presenting the primary learner challenge and the role of self-efficacy and self-identity in supporting food literacy.
	• RHRs was largely characterized as *different* to other ways of learning about food. Where identified as similar, participants drew parallels between RHRs and other social networking or user-generated contexts such as blogs, Pinterest and Facebook.
	• Participants used different technologies to perform different tasks; all participants used more than one device. Mobile devices were primarily used for taking photo or video footage. Whilst laptop and desktop devices were used to consolidate, edit and reflect on different media to create a whole recipe.
	• Community and participatory aspects of the project were highly important to people's engagement.
	• Response to the project was largely positive

Impact Assessment *Web Analytics* *Facebook Analytics* *Participant involvement*	• Findings from web analytics supports data from Interviews and Survey II that show the majority of people uploaded their information on a Laptop or Desktop computer. However, site viewing was done on mobile, tablet and desktop devices.
	• Individuals who visited the site used a wide range of browsers, platforms and devices.
	• Web and social media analytics demonstrate the site to have an impact that extends beyond its initial participant cohort. However this impact, based purely on the number of site visits over the period of a year, can be considered low and reflective of a small web community.
	• Extended involvement of one participant demonstrates the ability for participatory projects to be part-run by members of that community
Researcher Reflections *12 NVivo memos* *47 diary entries* *1 hand written diary*	• Reflections confirm and support findings from Interviews and Survey II and extend understandings to participants who had not completed the project.
	• More people are interested in viewing and accessing the resource than creating content.
	• Technical and human resources limited how the project was run and need to be accounted for when evaluating the project.
	• There are several tensions experienced throughout the thematic coding analysis. Acknowledging these through reflective practice mitigates the negative impact they can have on the project.

8.3   Revisiting the research questions

> The qualitative research question, as you work with it, becomes more complex, not less, more situated and seemingly dependent on its context (Stake 2010, p. 185).

Within emergent and interpretivist research design, research questions are not static but evolve with the study through progressive focusing of the research through the researcher's accumulated knowledge. Progressive focusing is described as a form of 'informal triangulation' and 'an effort to control presumption and invalidity' (Stake 2010, p. 132). Thus the tentative research questions that were generated out of the literature review and preliminary study (*Chapter 4*, p.77) were refined and revised (Figure 8.1). One of the most significant changes was the removal of the research question 'How can mobile learning be applied to improve food literacy with adults in informal learning contexts?'. It was only through the research process that the scope of this research question became apparent. The four final research questions explored in this study are addressed in turn in the following sections
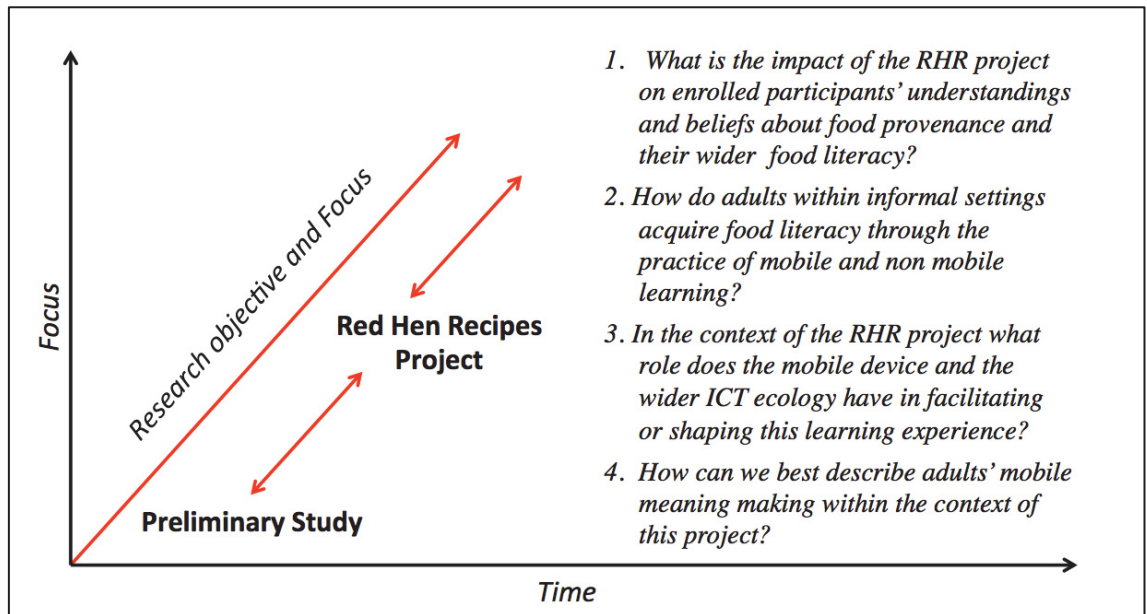
Figure 8.1 Progressive Focusing – the research questions deepen and change over time

8.3.1   Research Question 1: The Impact of the RHR project on participants' food literacy

RQ1: What is the impact of the RHR project on enrolled participants' understandings and beliefs about food provenance and their wider food literacy?

This research question explores the efficacy of the RHR project and the extent to which this type of approach can foster or facilitate food literacy with adults. Though findings from both Survey I and the interviews demonstrated that learning was not a primary motivation for participant enrollment in the project, this might be expected in a project where learning is informal, tacit, situated, practical, implicit, incidental and embedded with other activities. As such this incidental or informal learning remains often unacknowledged, even by the learner (Foley 2001; Hrimech 2005). Though not the primary reason for participants engaging with the project, findings demonstrate that people learnt through creating and viewing content. This research was able to gauge *what* people learnt within the RHRs project but not the *extent* of this learning; this limitation is discussed later in the chapter. What interview and survey findings demonstrated is that, though the RHR system and project *design* placed emphasis on food provenance, learning outcomes were not solely confined to this. For Hendricks, the farmer, who already knew a lot about the origins of his food, the RHR was a chance to think about where his produce was *going*, who would use it, who would cook with it. For other people what they learnt or remembered included ways of cooking, skills such as recipe writing, or moments of self-insight gained by reflection. This diversity of learning outcomes can be best understood through understandings derived from education and human computer interaction (HCI) that highlight the limitations of design and the role of individualized learner outcomes.

8.3.1.1   Designed learning

The design of the Red Hen Recipe website and its attendant software placed emphasis on provenance and food origins. The system allowed users to create their own type of recipe narrative within the bounds of a template that focused on traceability and

provenance over nutrition, wastage, taste, or many alternative approaches that could have been used. The majority of individuals learnt *something* about *where* food came from and how it was produced. However, this was not the only learning outcome, with people learning skills, identifying dishes they would like to try, or finding moments of self-reflection. Though designing educational environments and technologies may require educators to *imagine* future learning scenarios or technologies, such technologies cannot be understood as artefacts isolated from their use (Bannon & Bødker 1990). The specifics of use cannot be predicted or prescribed in advance since they are highly dependent on contextual and human factors *outside* of the control of the machine (Suchman 1987). Not only are technologists *unable* to design or control all human action, but attempts to do so through standardized or conventional systems are highly questionable: thus, there will always be a misalignment between the '*standardized* or *conventional* system and the *needs* of individuals' (Star 1990, p. 36). This study sees the diversity of learner outcomes from the RHR project in light of the perspectives from HCI that emphasize the agency and individual freedoms of human users within specific contexts.

8.3.1.2   Individualized learner outcomes

> Self-directed informal learning *per se* is most simply understood as learning that is undertaken on the learner or learner's own terms without either prescribed curricular requirements or designated instructor (Livingstone 2001, p. 3)

Development in the field of HCI supports the idea that it is neither possible nor desirable to use technologies to design all aspects of human interaction (Star 1990; Suchman 1987, 2007). These ideas find their parallel within the mobile learning research literature that emphasizes constructivist open settings, learner-generated contexts, and individualized learning spaces (Pachler et al. 2010a). Though Pachler et al. (2010a) often discusses these concepts in reference to young people or school environments, this study demonstrates that such concepts are relevant to adult learners in informal settings. The RHR project can be explored in terms relating to conversational learning (e.g. Laurillard 2002; Pask 1975; Sharples 2002) with the project design *inviting* individuals to engage in a conversation about food by providing tools through which

individuals could create and share *external* representations of knowledge (see Sharples 2002) within the public space of the RHR website. Though the design of the site invited individuals into this conversation, there were no 'prescribed requirements' or 'designated instructor' (Livingstone 2001). Though, for safety, the 'conversation' was moderated it was not scripted. Individuals were thus free to drop out. Similarly, multimodal analysis of the RHRs demonstrated that not all people who created RHRs found out information about the main ingredient's provenance. The *type* of narrative that was constructed based on a single ingredient was structured around what people were interested in. Recipes explored culture, history, family, farming, community and taste. Similarly in reading the RHRs, people looked at recipes that they were 'drawn' to, further individualizing the learner outcomes. There was no homogenous measurable learner outcome or standard metric through which participant learning on this project might be evaluated. Rather, learning was a dynamic interaction between individuals' pre-existing interests and community-generated content that, with the exception of moderation, is outside the control of the researcher or website administrator. A constructivist and open setting such as the RHR project recognizes adults' prior experiences (Knowles 1980) and is more inclusive of individual agency, structures, and cultural practices (Pachler, Bachmair & Cook 2013; Pachler et al. 2010a). Learning was highly experiential (e.g. Dewey 1966) and self-directed, and shaped by that individual's interaction within situated and learner-generated contexts such as markets, supermarkets, gardens and kitchens that were *outside* of the jurisdiction of the project.

8.3.1.2.1   Participation inequality in online communities

Though the impact of the RHRs project for those who *created* and *viewed* content is demonstrable from the data, participant attrition in the RHRs project combined with data analytics demonstrated that more people *viewed* content than actively created it. This supports understandings of online communities. In the words of media and cultural theorist van Dijck (2009, p. 44) 'it is a great leap to presume that the availability of digital networked technologies turns everyone into active participants'. In a voluntary and informal learning initiative such as the RHR project, the online community is vulnerable to participation inequality. This is a general rule of thumb, described by Nielsen (2006) whereby in a group of 100 people online, 1 will create content, 9 will

contribute intermittently and 90 will read and observe but not contribute. The researcher argues that, in initiatives that aim to encourage learning through participatory online communities, such communities are vulnerable to the same participation inequality as other forums on the World Wide Web. The researcher speculates that participation in informal initiatives would differ significantly to those in formal educational programs where digital media comprises part of the summative assessment for students enrolled.

8.3.2 Research Question 2: Food literacy acquisition and mobile learning

RQ2: How do adults within informal settings acquire food literacy through the practice of mobile and non-mobile learning?

Throughout this study individuals' food learning has been predominantly acquired through informal channels. Though formal education may be presumed to be a *part* of this learning, school education is seldom mentioned within participants' food literacy narratives. Food learning can be characterized as a lifelong process that is largely self-directed. In order to navigate the near ubiquity of food interactions and learning needs, adults' learning may occur through the synergy between habitual and novel practices that occur throughout a lifetime in response to changing contexts and particular life changes. Technologies, people and learner-generated contexts support learning that is often 'on hand', self-taught and self-directed. The Red Hen Recipes project was found to *extend* existing forms of adult learning through an experience that supported experiential, reflective and self-directed learning experiences that played in the space between 'habit' and 'novelty' within learner-generated contexts. Thus, someone might go to the *same* market as they usually do to buy food for their RHR but, by engaging in this activity in a different way, were afforded new opportunities for meaning-making, reflection and learning. The main aspects of this learning process and the role of mobility are discussed sequentially, in relation to existing literature and theory.

8.3.2.1 Lifelong learning

Findings from both the preliminary research and major case study characterize knowledge and skills relating to food being *largely* informally acquired over the lifetime

of that individual. 'In a world of accelerating change learning must be a lifelong process […]' (Knowles 1980, p. 19). Narrative analysis from the interviews (*Chapter 6* pp. 193 – 197) identified three life phases in which learning around food occurred and the attendant methods and resources for learning that accompanied these. What is observable is the shift from learning in childhood that is guided by older members of the family to the *self-directed* practices described in adulthood. As individuals shift towards independence, learning becomes more self-directed, more responsive to the individual's needs, and more self-taught. Consequently, adults are more likely to draw on people such as friends and information resources – technologically mediated and otherwise – in order to gain information or a new skill. Though individuals move towards digital technologies is in part due to the age group of the study's population and the epoch in which the study is based, the same trend can also be seen occurring in the uptake of non-digital information resources such as labels and recipe books within adulthood. The use of digital and non-digital resources occurs at a stage where individuals are typically *not* living with their parents and are more self-reliant. Figure 8.2 illustrates how the ratio of family instruction and use of information resources align with self-directed learning with adulthood. Though this relationship is representative of the patterns exhibited within *this* study, we should be cautious of its idealistic progressivism. It is not difficult to imagine how different family structures or a lack of access to resources or technologies might alter individuals' abilities to engage in self-directed learning. Thus, any conception of self-directed or life-long learning must not put *all* its emphasis on learner agency but recognize the wider structures that affect this learning (Pachler et al. 2010a). Ultimately though this study supports the views that 'the abilities, approaches and tools for learning that a person gains from childhood onwards provide a context and resource for learning and performing in later life' (Sharples 2000, p. 178) and that adult learners have a need for increasing self-direction in their learning pursuits (Knowles 1980, p. 43).
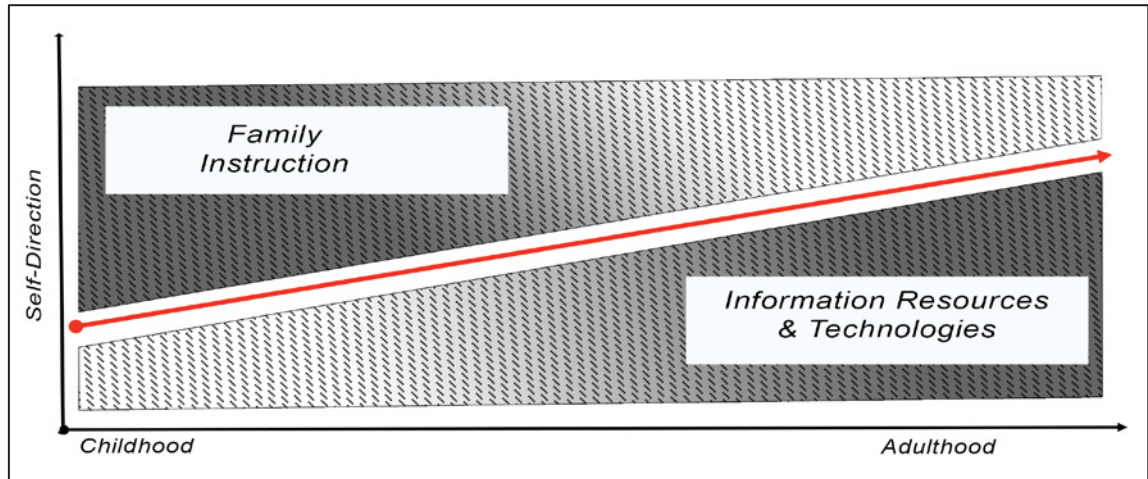
Figure 8.2 Self-direction and the shift towards information resources and technologies

From a food learning perspective, this study accords with research that demonstrates that food literacy starts in the home through cooking with an elder, often female, family member (see Vidgen & Gallegos 2012). However, in contrast to Vidgen and Gallegos' study (2012), that adopts a narrower 'dietary intake' definition of food literacy, findings from both the preliminary and major case study demonstrate that, in addition to cooking, people also learnt about other stages of food production, for example through gardening, foraging and farming. Thus, though home may be the starting place for fostering food literacy, for many adults this learning is not confined to the kitchen. Cultural, historical, familial, economic and value-driven themes that permeate both the preliminary and main case study accord with broader definitions of food literacy (Harvard Food Literacy Project 2013) and understandings from the agro-food systems literature (e.g. Ferguson 1998; Guthman 2003).

8.3.2.2   Constructed, situated, and variable

In addition to the variability of food understandings (*Chapter 5*) the lifelong and informal acquisition of food learning means that there is a high degree of variability in skill and knowledge of learners. Within the RHR project participants represented a range of gender, age and occupational backgrounds and had various pre-existing hobbies, interests or motivations for engaging with the project (Survey I). The diversity of learners makes fostering food literacy difficult in educational programs. Traditional content-transmission models of learning are problematic in a context where there can be little in the way of a fixed starting point from which learning can begin. The RHR project overcame the challenge of learner variability through the use of preliminary and

design research (*Chapter 5*), which identified *how* to support learning within this variable context. The results from this research were less focused on *content* and more on *structure.* Recipes were found to be a commonly understood cultural resource that lent themselves well to imaginative interactions and re-appropriation by individuals (Frawley, Dyson & Underwood 2014). Findings from the preliminary study supported the use of user-generated approaches as these best supported learner and content variability whilst allowing individuals to be *active* contributors who learnt by doing and creating (Frawley & Underwood 2014). The role of user-generated content in supporting variability in learners' knowledge and skills was further supported by findings in the main case study (*Chapter 6*) that found that individuals already used social media and Web 2.0 tools to structure their own learning around their particular interests in food and the wider food system – often, though not always, mediated by a mobile device. This demonstrates what mobile learning researchers have known for a while, that 'learners are already taking matters into their own hands, and are creating mobile learning experiences for themselves' (Kukulska-Hulme, Traxler & Pettit 2007, p. 53). This is demonstrably the case with the ways in which individuals, both prior to and during the RHR project, engaged in learning whilst on the go and in a range of different food related contexts, where they were both content consumer and producer. Since food learning is largely situated and inherently subjective, mobile technologies support individuals in relating the near-unlimited information available online to situated problems (Sharples 2000).

8.3.2.3   Habit and transformation

For those fortunate enough to live in food secure environments, food interactions will likely occur more than once a day – whether this is through growing, cooking, shopping or eating. This quotidian necessity multiplied across an individual's lifespan means that individuals adopt practices through which to minimize the extent to which food learning occupies their cognitive load. Not *all* food interactions are learning interactions. Rather, interview research from this study found people to oscillate between habitual and transformative practices. Habitual routines, such as shopping at the same time or place, having set meals or regularly buying the same produce (e.g. eggs that are deemed 'ethical', or food that is cheap) limit individuals' cognitive load and

manage long term learning. Transformative practices, such as trying something new, watching a documentary, writing a RHR recipe, or creating a food blog are opportunities for personal transformation and alteration of existing perception and practice. Though transformative practices *may* be entirely novel, they may also involve engaging with existing habitual practices with new insight, focus or reflection. This study argues that learning results from the co-dependent and co-referential relationship between habit and transformation (Figure 8.3).
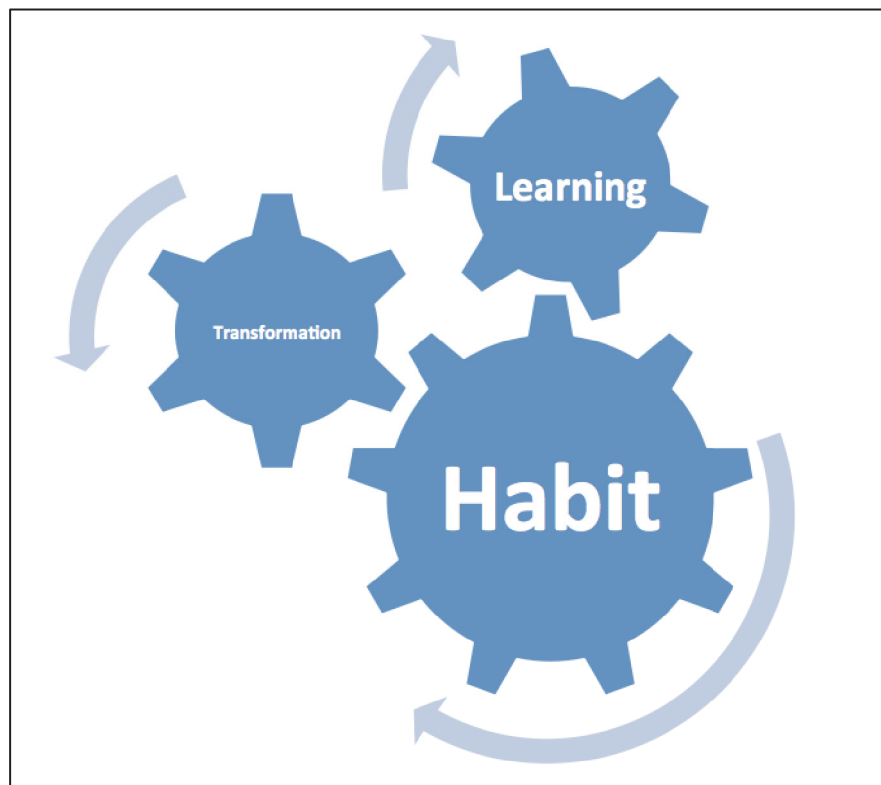
Figure 8.3 Habitual and transformative practices for managing lifelong learning

This dynamic can be seen across findings from both the preliminary study (*Chapter 5*) and the major case study (*Chapter 6*). In daily life people balance pragmatic needs with value-driven motivations. Interview narratives also demonstrate moments of identity formation and personal transformation in people's attitudes, beliefs and practices around food, for example, reading a book, watching a documentary, or seeing a family member's health improve on a certain diet. Though not all moments are triggered through technologies, technologies come to support such transitions. For example, one participant's dietary change was triggered by watching a particular documentary. This change was sustained and supported by the use, and subsequent creation of, food blogs. Though not always motivated by dietary concerns, this pattern recurred through the

participant data. Such moments can be viewed in light of transformative learning theory which 'involves reflectively transforming the beliefs, attitudes, opinions, and emotional reactions that constitute our meaning schemes or transforming our meaning perspectives (sets of related meaning schemes)' (Mezirow 1991, p. 223).

Not all learning is necessarily transformative. Within Mezirow's (1991) theory of transformative learning, perspective transformation is rare. However, findings suggest that the RHR project provides the conditions through which transformative learning *may* be possible. From the perspective of lifelong mobile learning, the RHR project can be conceptualized as a disruptive force that breaks 'the flow of routine daily performance' (Sharples 2000, p. 178) or 'changes the pattern of learning/work'(Winters 2006, p. 8). In creating the RHR individuals either did *new* tasks or brought new attention to habitual action. Findings demonstrated that the RHR project supported reflection. Reflection is not only important for lifelong learning (Sharples 2000) but is also a key part of transformative learning theory (Mezirow 1991). In disrupting the flow of individual's familiar practices and presenting an alternative recipe structure, the RHR task alienates the commonplace 'recipe' and asks individuals to re-imagine an alternative. Participants routinely described feeling more conscious or aware of tasks that they did routinely did but often 'took for granted'. In doing so the project afforded space for reflection, both through the acts required to *create* the recipe (e.g. source produce, find information) and the reflective and meaning-making act of representing this through multimodal content creation. From the existing findings it is impossible to know whether transformative learning experiences occurred. However the researcher argues that the disruption of the RHR project into the everyday context provides an opportunity and conditions for transformation to occur, either through small incidental changes or greater shifts in perspective. In summary, moments of food literacy learning can be thought to derive from the interplay between habitual and transformative acts.

8.3.2.4   Situations and Contexts

> A central concern must be to understand how people artfully engage with their surroundings to create impromptu sites of learning (Sharples, Taylor & Vavoula 2005, p. 3).

In Lindeman's classic *The Meaning of Adult Education,* situations take precedence over subjects: 'subject matter is brought into the situation, is put to work when needed' (Lindeman 1989, p. 6). The importance of situations over subjects is especially relevant to mobile learning where the learner's mobility means that learning occurs 'between and across contexts' (Pachler et al. 2010a, p. 24). Findings from this study routinely emphasize the contextual and situated nature of food literacy learning, with place, social actors, time, purpose, motivations and technologies comprising learning interactions in learner-generated contexts (Figure 8.4). In line with an interactional view of context (see Dourish 2004) the context for learning in this study was *created* by the learner with mobile devices enabling 'users to create synergies across knowledge distributed across people communities, location, time, social contexts, sites of practice, networks, systems, etc.' (Ranieri & Pachler 2014, p. 65). This included looking up recipe information in the supermarket, taking photos or video of produce or actions, and sharing this content within a network of informal inquiry. Findings, especially from the preliminary study, demonstrate the ability for mobile, and non-mobile, technologies to support people in relating 'near-unlimited information to situated problems' (Sharples 2000). For example, when people used their device to search for recipes in the supermarket to find out how to cook specific produce. As such, this study depicts food literacy learning as something that is embedded within everyday activities that occur within diverse (often mobile) settings such as farms, gardens, supermarkets, markets, kitchens, and dining rooms. The researcher argues that there is a fluid relationship between *learning interactions* and the daily-lived experiences. In this way the commonplace (daily individual lived experiences) and the learner-generated instances *inform* one another (Figure 8.4) in the same way that habit and transformation similarly inform one another (Figure 8.3).

Thus, the daily lived experience of shopping for food can be transformed into a learning interaction and supported by the contingencies of technologies, people, and the spatio-temporal aspects of the context as well as the individual's purpose or motivation. Through action and reflection the daily-lived experience can *become* learning. The *learning experience* can similarly feed back into the daily-lived experience. Rather than placing all the emphasis on learner agency, this study situates these learner generated contexts within the wider socio-cultural ecological frame of mobile learning (see

Pachler, Bachmair & Cook 2013). In this way this study balances the freedom of learner-generated contexts with the due recognition of the wider structures and cultural practices that may either support or hinder individual learners. Contrary to earlier conceptions of mobile learning as 'anytime and anyplace' (Quinn 2000) learning that occurs in learner-generated contexts occurs at *specific* times in *specific* places that are contingent on the time, place, learner, technologies and people.
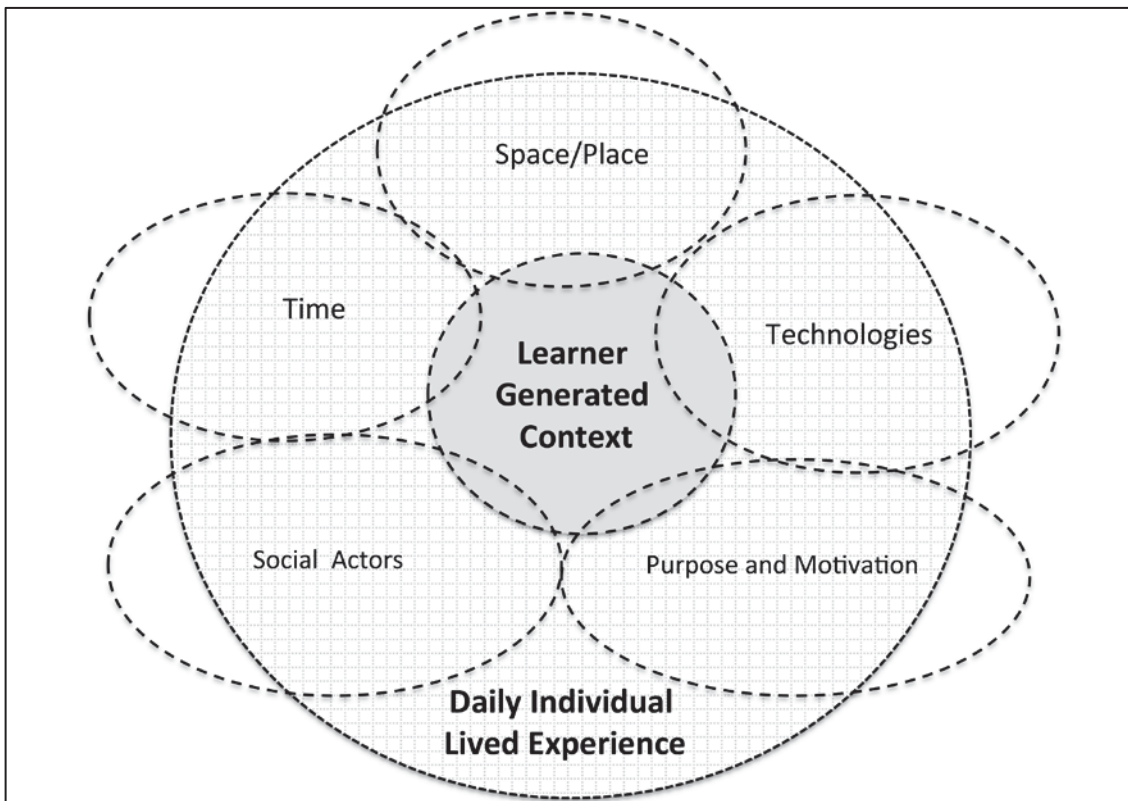
Figure 8.4 Learner generated contexts within daily lived-experiences

Recurring throughout the data is the commercial and consumer elements of trade that comprise much of the food system. This research supports studies of incidental and informal learning in shoppers (Jubas 2011) by demonstrating that learning can and does occur within commercial consumer contexts. However, unlike Jubas's (2011) study which remains optimistic about 'critical shopping' as 'a process of informal and incidental adult learning about the intersecting politics of globalization and consumption' (Jubas 2011, p. 225) this study sees commerciality as problematic. Though learning does occur within commercial contexts, this study identifies numerous challenges to the act of 'critical shopping' and the identity of the 'critical shopper'. Throughout the study individuals were often skeptical or confused about information within commercial contexts. Similarly producer perspectives highlight the tension

between representing farming practices and the marketing and commercial goals of the farm as a business, for example the difficulty in portraying abattoir practices (p. 233). This raises the issue of provenance learning being borne by individuals whose livelihoods depend on marketable portrayals of their daily work. Thus, this study concurs with views from others (Appleby et al. 2002) that highlight the problems with 'ethical consumer' models that place total responsibility for a complex system onto the individual at the point of purchase. Situating food learning solely with either consumer or producer is problematic. Research from this study highlights the degree to which cost can curtail *where* people shop and the kind of information they can access. Alternative food networks such as farmers markets (see Goodman, DuPuis & Goodman 2012; Goodman & Goodman 2008) may offer more transparency for shoppers and growers but costs act as a barrier to all people attending such places. Similarly, produce that is linguistically marked by its origin (e.g. free-range, organics) though often associated as being 'better' or more 'environmentally friendly' has a higher cost that, for some, will be exclusionary. Throughout interviews and surveys people expressed the desire to engage with these types of produce or alternative food networks but were unable due to financial restrictions. The commerciality of the system raises ethical issues and highlights points made my Pearlman (2013) around the ability to *purchase* or *buy* moral goodness. Followed to its logical conclusion, the ethical consumer model is contentious in the way it allows for the rich to be 'good' and the poor to be 'bad'. From a learning perspective moral purchasing is, to some extent, problematic given its dependence on a haphazard and incidental learning process that is subject to chance as well as socio-economic affordance.

8.3.2.5   Time – Learner challenges, slow learning and Internet culture

Though time is a contingent aspect of context, its recurrence within the data requires that it be mentioned separately. Findings from the study demonstrate that *making* time to engage in learning about the food system, either through the RHR project or other means (e.g. farmers markets, food blogs, etc.), was especially difficult. The Internet culture of social media was identified as a place for speed in which images were consumed rapidly in conjunction with other content. The RHR process contrasted to this, requiring slower more deliberate interactions and knowledge acquisition. This

contrast can be understood using Orr's concepts of 'fast' and 'slow' knowledge (Orr 2002, p. 40): 'Fast knowledge deals with discrete problems, whereas slow knowledge deals with context, patterns, and connections. Fast knowledge arises from hierarchy and competition; slow knowledge is freely shared within a community […] Fast knowledge is mostly linear; slow knowledge is complex and ecological.' Though somewhat binary in its characterisation of 'fast' and 'slow', the concept of slow learning and slow knowledge is important in understanding the ways in which people engaged with the RHR project and the barriers to engagement.

Though the concept of slow learning and slow philosophy has been discussed in reference to ICT-rich education (Tanti 2010; Tanti & Kennedy-Clark 2010) it has not been applied to the field of mobile learning. Slow learning is especially relevant to food literacy in that it shares parallels with alternative food movements such as the *Slow Food Movement* (see Petrini 2001; Petrini 2006) that provides a food philosophy that counters fast-food culture with alternative, slow, approaches for living and engaging with food. What the RHR case study shows is that a slow educational approaches support learner reflection and complex learning that takes place across a variety of contexts. This study demonstrates that whilst mobile learning and mobile technologies comprise part of the 'on the go' rapid learning, they can also be part of a slow lived and educative experience that supports the individual in learning through community, culture and complex ecological structures (see Tanti 2010). Though positive, slow learning is difficult to foster in a culture that favours speed and immediacy. As such, slow aspects of the RHR project, though supportive of learning, remain challenged by the dominant culture. Such challenges may assist in making sense of the high rate of participant attrition that the project experienced.

8.3.2.6   People, community and participation

From early socialization to participation in online and offline communities, people learn about food through engaging in familial, filial and commercial interactions. Food is inherently social (Fischler 1988). The importance of this social aspect cannot be over-emphasized, especially within a participatory project such as RHRs. Interview and survey findings demonstrated that community aspects of the project were a strong motivator for people to initially participate in the RHR project. Likewise recipe analysis

and understandings of what motivated individuals' recipe designs revealed the many ways in which participants' created their recipe for other readers and viewers online. Literature on peer-learning and student-generated content identifies the value of creating content *for others* as both highly authentic (Herrington & Herrington 2007) and motivational (Wikan et al. 2010) to individual learners. The researcher argues that this motivation and authenticity can be observed in informal learning communities like RHRs where people are motivated to *create* content *for* a real community of people who will access and use the resources that each individual has worked to create.

Conversational learning

In terms of learning, this process can be interpreted in terms of conversational learning theory (Laurillard 2002; Pask 1975) whereby communicative aspects of mobile learning support individuals in *externalizing* representations of knowledge (Sharples 2002). Though other mobile learning theorists (Crompton 2013; Pachler et al. 2010a) reject the term 'conversation' in favour of broader definitional alternatives such as 'communication' (Pachler et al. 2010a) or interaction (Crompton 2013), the term conversation was used by one participant:

> **Peter:**   that's what Red Hen's about (.) it's about people having conversations (.) I mean it's a different style of conversation but it's still a conversation

Within both prior learning and RHR learning, the online and offline, the human and the technological co-exist. Meaning-making is a participative, entangled process in which technologies seamlessly integrate 'into the fabric of everyday life and into users' life-worlds' (Pachler et al. 2010a, p. 7). Within this study such conversational or communicative interactions occur across learner-generated contexts and daily life-worlds.

Civic participation

These learning conversations have a role in civic participation. In the words of Dewey (1927) to communicate is to participate within a community. Learning and socialization have a democratic and political role. Dewey's (1927) pragmatist philosophy has been used in several ways to make sense of participatory spaces as places for experiential

learning and democratic participation (Ehn 2008; Ehn, Nilsson & Topgaard 2014; Lindström & Ståhl 2014). Especially relevant to this study and the informal and incidental learning around food systems is Dewey's concept of *publics,* a plural term relating to members of the public who gather around a common interest or matter for concern. Using this concept it is possible to see the contemporary food system as presenting 'complex issues that cannot easily be resolved by experts or institutions, but are left to the public to deal with' (Lindström & Ståhl 2014, p. 307). Thus, faced with a distanced, complex and industrialized food system people coalesce around social networks, blogs, and other forms of user-generated content through which they make sense of this phenomenon. RHRs can be conceptualized as a similar kind of participatory space in which learning is achieved through the meeting of *different* voices: conversational learning may be not only dialogic but polyphonous in nature. Though expert and professional voices exist in the form of journalists, celebrity chefs or farmers, with such voices the power dynamic between expert and learner differs from those teacher-learner dynamics found in formal educational environments. Using Deweyan terminology the RHR project can be seen as an emerging public through which individuals navigate the complex, embodied and entangled issues of the contemporary food system through learning from peers. The mobile device supports communication and vocalization of these voices and allows people to take part in community through the language of image, video and written text.

8.3.3   Research Question 3: Mobile devices and the wider ICT Ecology

> **RQ3:** In the context of the RHR project what role does the mobile device and the wider ICT ecology have in facilitating or shaping this learning experience?

Though this study contributes to the field of mobile learning, it does not define mobile learning solely in relation to the mobile device. Rather, by casting mobility as the object of analysis, this study explores how learning occurs across contexts and the ways in which different technologies support existing and novel practices. Findings from the RHRs project demonstrate the blurred divisions between mobile and non-mobile devices. This can be seen in the ways people use different devices sequentially and in tandem. Conceptualizing the mobility of devices in terms of a continuum also better

makes sense of the existence of hybrid devices such 'phablets' (phone-tablets) and tablet-laptop devices (e.g. Microsoft Surface). In this study, people typically used one portable smaller device and a larger secondary device. Though the affordances of the device are important (see Norman 1988) these perceived affordances are often defined comparatively in relation to alternative devices that are either included or absent from the individual's personal ICT ecology. Individuals used different devices in tandem and also performed the same task on several devices. Boundaries between devices are not clearly delineated. These findings further support approaches to mobile learning that explore ICT ecologies of use (Brady & Dyson 2010; Frawley & Dyson 2014a) and the wider mobile complex (Pachler et al. 2010a) over isolated mobile device usage.

8.3.3.1 'Probes', 'Satellites', and 'Mission Control'

> Mobile learning, as it is currently understood, is an emerging repertoire of teaching, learning and communication practices, where communication forms the backbone, *no matter what specific technology is used.* (Kukulska-Hulme 2010b, p. 185)

Within the RHRs project individuals used a range of devices to support their mobile learning. Participants used smaller mobile devices to collect visual images and video footage and draw on the near unlimited information available on the World Wide Web from different contexts. However, the complexity involved in compiling those photos, videos, and stories from *across* contexts coupled with learners' desire to edit their footage meant that people often returned to a larger device or used several devices in tandem. What constituted this 'larger' device differed from individual to individual. For some participants an iPad constituted the secondary larger device for performing complex tasks, whereas for others a laptop or desktop assumed this role and function. This was not solely motivated by the larger device's functionality, but also the affordances of the context of use, in which people could sit down, compile different resources together and reflect and focus on translating these experiences into a unified and coherent story. In conceptualizing the role of technology in the RHR project the researcher proposes the use of a metaphor that adopts language from aerospace to describe *relational* functions of devices within an individual's personal ICT ecology.

This metaphor is illustrated in Table 8.2 and further discussed, drawing on findings from the RHR case study.

In addition to conveying characteristics of the mobile complex (see Pachler et al. 2010a) as a dynamic and continually moving system of interrelated devices within space, a metaphor that draws on the language of aerospace allows the researcher to convey the relational, as opposed to absolute, properties of devices within a wider system or network. Terms like 'probe' and 'satellite' can help convey differences in scale and purpose of devices that have shifting identities within a wider system. For example, the International Space Station (ISS) is a satellite *in relation* to the planet Earth, but the Earth is also a satellite *in relation* to the Sun. Personal devices can be described in similarly relational terms. Smaller devices such as mobile phones and tablet computers may be used to explore mobile spaces and draw on wider, larger, networked resources. Rather than seeing these devices existing in isolation, we can view them as part of a continuum of devices that support different and similar purposes. On one end of the mobile continuum are devices that are like probes – collecting data without being necessarily 'manned' or instructed by user input: for example tracking on mobile phones, or automatic machine inputs. On the other end of this spectrum are larger more static devices like desktop computers that, though physically static, connect to data that is itself mobile, shuttling between servers and networks across the world. Within the RHR project what constituted the *satellite* or *probe* device and what constituted a *mission control* or '*hub*' was contingent on the individual participant's unique configuration of their personal ICT ecology and the specific ways in which they used these devices. For one person the mobile phone was a satellite device to an iPad: the mobile device was used to collect images in the field whilst the iPad was used to edit and compile this footage at home. For another person the mobile phone functioned as a satellite to a laptop *and* desktop computer. Similarly, for one person, a large screen in the kitchen was used in tandem to project a recipe that was on a smaller phone or iPad device. What the language of this metaphor enables m-Learning researchers to do is to discuss the relational and dynamic properties of individual technologies and the way that mobility of device is part of a continuum that is *appropriated* by individuals based on the technologies they own, as well as their individual interests and needs. Thus, this

Figure 8.5 An aerospace metaphors for describing mobile technologies and their relational properties
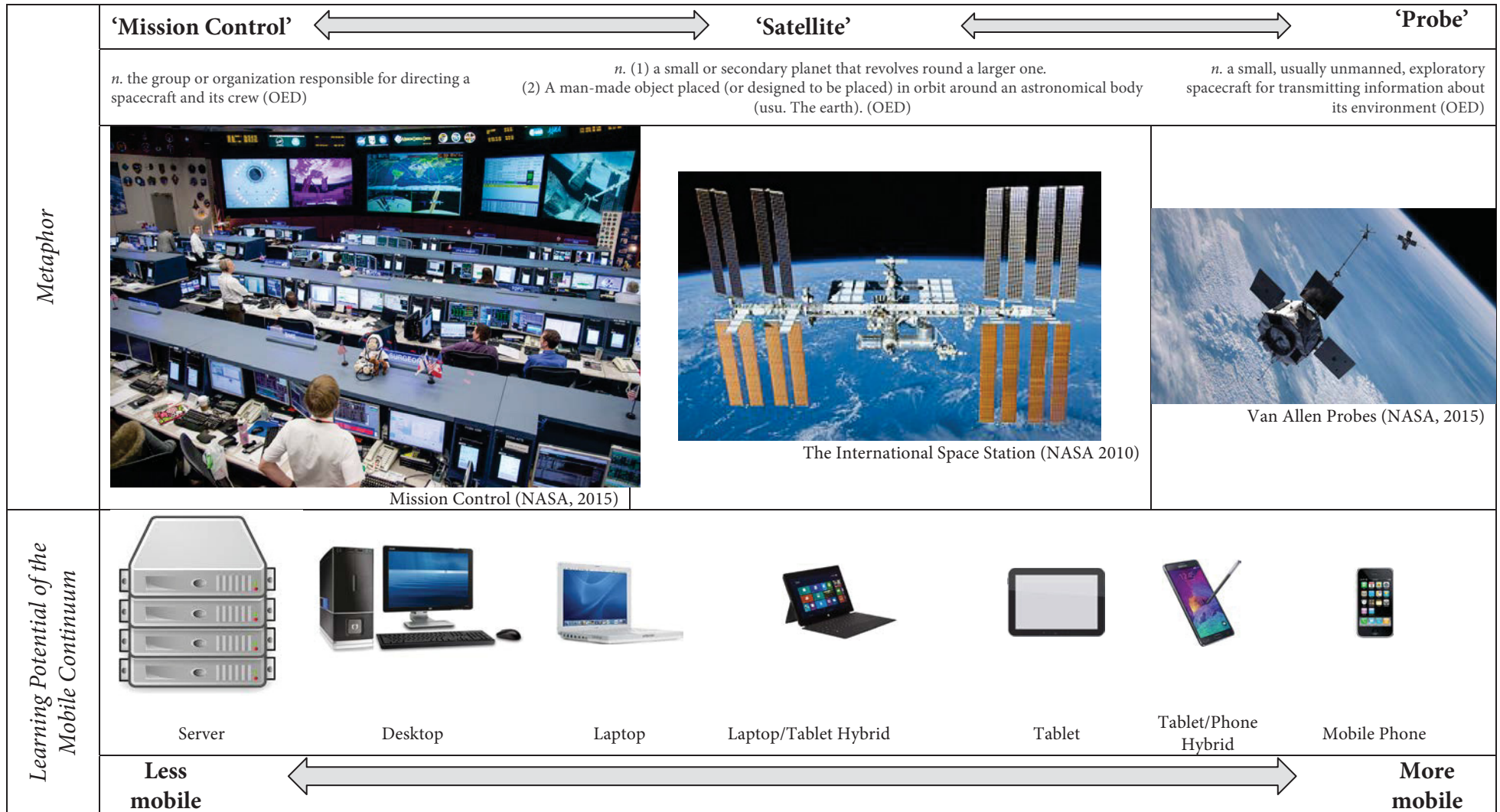
research emphasizes the relational, as opposed to absolute, properties of mobility and digital technologies. This approach follows early concepts of mobility as a continuum (see Traxler 2005); however, contrary to Traxler's (2005) approach, this metaphor of 'probes', 'satellites' and 'mission control' is less technocentric and does not say which device is or is not included in mobile learning. Rather, this approach recognizes the way appropriation and individual ICT ecologies determine the different and relational roles that technologies assume in supporting mobile learning. This understanding of technologies better aligns with socio-ecological theories of mobile learning that emphasize flux, contingency, provisionality and agency (Pachler et al. 2010a).

8.3.3.2 Disruptive

The notion of mobiles as 'disruptive devices' (e.g. Sharples 2002) has largely been interpreted as something that is disruptive to institutional learning (see Kukulska-Hulme, Traxler & Pettit 2007, p. 57). However this research demonstrates that in addition to disrupting the carefully managed space of the classroom, mobile devices and mobile learning initiatives can disrupt the everyday lived experiences associated with food provision. In this research mobile learning is not always 'seamless and integral' to learners' lives (Kukulska-Hulme, Traxler & Pettit 2007, p. 57). Rather, the learning can be thought to come about through the disruption and the effort of engaging in an alternative practice or way of thinking. For example, in photographing or videoing parts of their shopping, the mobile device has the power to disrupt habitual practices that take place within the constructed space of consumer culture. However, engaging in these practices against the grain of the dominant social and cultural practices is difficult. Multimodal analysis of the RHRs demonstrated that the majority of people photographed or videoed private spaces such as kitchens or gardens, over public spaces such as markets or shops. Interview findings demonstrated that this was often due to feeling socially uncomfortable about deviating from the standard and accepted social behaviours that occur in those public spaces. This was not only limited to device usage but included other behaviours that the RHR project encouraged, such as talking to growers and documenting experiences in order to *create* the RHR. Though some participants found this difficult, the disruption to the everyday afforded an opportunity for reflection and heightened consciousness of practices typically taken for granted.

However, in breaking the habitual flow of food provision and consumption mobile learning faces the challenge of 'all the other events, pressures, stimuli and challenges of learners' lives' (Kukulska-Hulme, Traxler & Pettit 2007, p. 57). Learning can be understood to occur from the disruption, but this disruption is not always easy to achieve.

8.3.3.3   Learner agency

> **Zoya:** Enabling different forms of self expression (.) that's what new technologies are all about (.1) giving people options (.) do you want to do a video (.) or an image (.) and not just words (.) because some people are not good with words (.) and enabling those different (.hh) mediums (.) is what technology gives us (.) it gives us freedom.

Though the RHRs project had a small number of participants, findings from *across* the entirety of the study show diverse and heterogeneous device ownership and usage, both in the ways that participants *create* and *consume* RHR content. People used different devices, operating systems, Internet browsers and a range of different software. Different devices afforded and constrained certain types of behavior (Norman 1988), for example, mobile devices were often 'handy' or 'convenient' due to their portability. However, what this study re-emphasizes is that people are not dictated by the technologies they own, but exercise choice and agency, especially when engaging in meaning-making practices that are 'designed', 'intentional' and 'representational of the individual self or selves'. The focus on the *human* learner over the machine aligns with later conceptions of mobile learning that focus on socio-cultural conditions (Pachler, Bachmair & Cook 2013; Pachler et al. 2010a). Thus, this study continues to rejects earlier technocentric definitions (see Winters 2006) of mobile learning that privilege the device over the human and instead re-emphasises the need to acknowledge learners' agency, identity and interests. In addition to aligning with recent mobile learning foci, such an approach best supports constructivist pedagogies, open settings, and the needs of largely self-directed adult learners.

8.3.4 Research Question 4: Mobile meaning making

> **RQ4:** How can we best describe adults' mobile meaning making within the context of this project?

This research question seeks to understand how people make meaning through the reciprocal process of *creating* (e.g. writing, designing) and *consuming* (e.g. reading, interpreting) digital content. This research question is especially important for a research project that takes place in a participatory environment in which learning is assumed to occur through the creation and consumption of user-generated content. Within this project findings showed that meaning-making practices of participants were not bound to a single technology, practice, semiotic or place. Rather meaning making was facilitated by the affordances of the open participatory setting and supported by technologies that were used *across* different contexts. Key themes within the data that characterized this complex process are discussed in reference to existing understandings of participatory settings, conversational learning, identity creation, experience and reflection, and multimodal design practices.

8.3.4.1 Constructivist pedagogies and open settings

In understanding data derived from the RHRs project it is necessary to acknowledge the role of the RHRs website and project structure. Developing a 'culture of openness' and inquiry (*Chapter 5:* Preliminary Study) can be seen as one of the goals in the RHR project design which was actualized through user-generated content approach. In *creating* content for a public community the RHR's project required individuals to inquire into the world around them in order to create their augmented recipe. Meaning making that occurs within the project can be understood through contemporary constructivist pedagogy, in which meaning making occurs through interpretive and individualistic interactions between the learner and the world around them (Dewey 1966), instead of didactic content-transmission approaches. This constructivist understanding aligns with approaches such as inquiry-based learning, where individuals come to 'understand the natural and social world through a process of guided investigation' (Sharples et al. 2013, p. 36). In this instance inquiry can be interpreted as being facilitated by the RHR project and the RHR web interface that prompts individuals to *seek* out information on specific aspects relating to food. This approach

that places the locus of control in learners' hands, makes sense of the self-directed and individualised learner outcomes and the wider project structure through which these behaviours occur. The open and learner-centred structure of the RHR project can also be interpreted through understandings of cultures of participation (Fischer 2011; Jenkins et al. 2009) and the ways in which new technologies and tools support this. Findings throughout the study demonstrate that the space and structures that the RHR project provided an opportunity for dialogue to emerge around food issues.

However, though these findings emphasize the power of open participatory spaces for facilitating learning (*Chapter 6*) these same findings also demonstrate the challenges that these approaches present for both the individual and the project facilitator. For the project leader gauging the degree of learner freedoms is difficult. Participant feedback (*Chapter 6:* Interviews and Survey II) indicated that for some individuals having no formal deadline, and being able to 'create anything' proved difficult, with some participants asking for more structure. By contrast, other more experienced food bloggers wanted more freedom in *how* they formatted and structured their recipe. Thus, for informal learning initiatives the challenge in balancing learner freedom and learner support is a difficult one. Furthermore, in the context of learning about the food system this open and loosely structured environment was, for some individuals, potentially overwhelming. The complexity of charting food provenance is already well recognized (e.g. Singer & Mason 2006), and whilst this project did not expect individuals to solve the issue of food-system transparency through some form of crowd-sourced knowledge, even as a learning activity the difficulties in finding out about food origins were significant. The challenge involved in finding out about food was exacerbated by the lack of formal educational structures (e.g. online lectures, guidance, deadlines, assignments) that might otherwise assist in structuring the learning activity. This research demonstrates some of the hurdles to informal mobile learning initiatives in this space. Such outcomes also raise the limitations of informal learning and voluntary initiatives for addressing complex public learning needs in the absence of a formal curriculum.

8.3.4.2   Performance, conversation and polyphony

This section discusses how the project's open structure supported dialogic meaning making through performance, conversation and polyphonous interactions. Findings from the study demonstrate the role that the community had in shaping participants' food literacy learning. Community aspects of the project design were a motivation for people to participate in the RHR project (*Chapter 6:* Survey I) shaped participant learning (*Chapter 6:* Interviews & Survey II), and for some were a source of anxiety over writing and contributing to the site (*Chapter 7:* Researcher Reflections). Just as the affordances of this community came to support learning, limitations the community, were also negatively perceived. The project's small size and formative nature, were aspects of the project that some individuals disliked (*Chapter 6:* Survey 2) and, for some, presented barriers to the first individuals participating (*Chapter 7:* Researcher Reflections). What can be garnered from this is the profound impact that the project's participatory and community dimensions had in shaping the way learning conversations occurred. Though web-analytics (*Chapter 6:* Impact Assessment) demonstrates that many of these learning conversations did not exhibit themselves in overt, or readily identifiable, forms (e.g. a discussion on a comment board) people described how they created their recipe frequently from the perspective of intended or imagined readers. For example, wanting to create a recipe *for others,* share an aspect of their life *with others,* or make it easy for *others* to follow (*Chapter 6:* Interviews & Survey II). Visual analysis of recipe images (*Chapter 6:* Multimodal Analysis) further demonstrated the ways in which recipes invited viewers to engage with each recipe in a personal or intimate way.

In understanding mobile learning, meaning making has to be conceptualized as a social phenomenon. This aligns with concepts of mobile learning that explore conversational (Sharples 2002) or communicative (Pachler et al. 2010a) elements. However, if mobile learning can be conversational or communicative it can also be performative and polyphonous, especially within social networks. Research from participatory design has demonstrated the ways in which participatory spaces can support learning through the meeting of different and diverse voices (Lindström & Ståhl 2014). A small social network such as the RHR website can thus be seen as a digital stage on which multiple voices may perform. Findings from the study demonstrated the way

that the different perspectives and voices from various recipe writers supported food learning. It is important to think of these voices in terms of plurality and performance, since the recipes were not raw footage of someone's food choices but were designed semiotic artefacts through which people created their online identity. Since identity emerged as a significant theme from this research, the role of this is discussed further under the next heading.

8.3.4.3 (Re)inventing identity and the concept of multiple selves

Findings from this research have demonstrated the ways in which participants represent or re-invent identity within a participatory context. This is important for learning since concepts of self-identity were frequently tied to concepts of self-efficacy within the findings. Thus, peoples' concept of self and beliefs as to what they could or could not do were heavily intertwined. Findings from the project (*Chapter 6:* Interviews, Multimodal Analysis, Survey II) demonstrate that the participatory RHRs space afforded a space in which people could represent, create and play with concepts of self, both experientially (e.g. 'I got to be a detective') and representationally through multimodal content (e.g. creating a Red Hen Recipe). In exploring alternative identities through play participants explored the self-efficacies of an alternative self. For example, one person played with her 'inner professional chef' and, in creating her RHR, engaged in new practices and the learning that followed-on from this. The participatory context also provided the audience and social context into which this self could perform. The mobile device and wider suite of technologies were instrumental tools for the construction of multimedia content that were part of this performance.

It is important to recognise the role of identity in learning in a way that conceptualizes identity as a fluid and dynamic construct instead of a fixed and stable entity. In this study identity is characterized as a reflexive, constructed and continuous process (see Giddens 1991) that is linked to concepts of lifelong learning as a process of 'learning to be' instead of 'learning to know'(see Su 2011). These findings cohere with existing studies that view mobile devices as strategic tools through which individuals (re)form their identity (Bachmair & Pachler 2013), especially through m-learning approaches that adopt user-generated or learner-generated content (see Ranieri & Pachler 2014). Findings from the RHR study parallel with earlier research (e.g.

Bachmair & Pachler 2013; Ranieri & Pachler 2014) in several ways. Firstly, in the RHR project individuals formed and re-formed identity *both* through creating meaning through the purposeful design of images, video, and text *and* through the re-appropriation of existing content – content that belonged to them and others. In this way RHR participants can be seen as giving old images 'new significance in new media contexts' and 'thus generating new meaning and learnings' (Ranieri & Pachler 2014, p. 73). Therefore, when individuals in the RHR project use a farmers' YouTube videos to narrate part of the story of their ingredient they can be seen to engage in appropriation. Within mobile learning research appropriation is described as 'a process of internalization of, and externalization into, the pre-given world of cultural resources and these cultural resources are *inter alia* used as semiotic resources for representation and meaning making in and of the world' (Ranieri & Pachler 2014, p. 65). In providing a creative, open and performative digital stage, the RHRs project supports individuals in exploring not a single identity but multiple identities (see Star 1990) and the reflective learning that results from this. Thus, people can be the 'journalist', the 'baker', a 'foodie', a 'food blogger', a 'mother', a 'writer' and draw on different aspects of existing and potential identities by crafting a narrative using modes and media that best reflect this. In summary, just as conceptions of writing development move away from 'the notion of a single personal 'voice' to a multiplicity of voices' (Andrews & Smith 2011, p. 4), so too can our concepts of written and authorial practices associated with multimedia content.

8.3.4.4   Experience, 'writing' and reflection

> So here is the paradox: the lived always seeks to be represented in some way and thus sacrifices the sense of life for the sense of words and meanings in order to relive. The journey is thus a double structure: one is the life of bodily engagement with the world; the other track is the life of reflection in order to represent textually, through images, through signs of all kinds the experience of the journey. The double-tracked journey demands commitment, is often uncomfortable, takes too long and yet opens up new vistas, gives glimpses into different lives and can offer new possibilities for change in direction, self-growth (Schostak 2002, p. 2).

This study explores participants' meaning making through the creation and interpretation of digital multimedia content. For individuals who *created* a recipe

meaning making occurred as a result of experience and reflection, through which 'writing' the augmented recipe allowed people to reflect on their daily practices and experiences. Learning can be seen to occur from the meeting of experience (e.g. shopping for food), 'writing' (e.g. taking a photo, writing a list of ingredients) and reflection (e.g. 'I didn't realize I did that', 'it made me think'). These do not always occur in the same order, but occur throughout participant narratives. The importance of reflection is widely recognized within educational theories of learning (Dewey 1966; Kolb 1984) and in daily working practice (Schön 1983). Donald Schön (1983) introduced the concepts of 'reflection-on-action' and 'reflection-in-action' as part of the learning and daily activities of individual working practitioners. Though such approaches focus on the individual meaning-making they are not mutually exclusive from participatory and socio-cultural perspectives of learning that emphasize the role of the community of practice (Lave & Wenger 1991). Learning within the RHR project can be conceptualized as a process that involves both participatory elements within social situations and the reflection on individual practice and action. This reflection is initiated and supported by the act of creating a digital artefact. This aligns with research from digital and mobile storytelling, whereby the act of *creating* a digital artefact enables reflection and development (Bonsingnore et al. 2013). Though instead of creating a story, in the traditional narrative sense, individuals within the project achieved a similarly reflective outcome through the process of documenting information in the world around them and creating a unified 'story' through the structure of the RHR. Indeed, several people referred to their RHR as a type of story.

8.3.4.5   Multimodality – the learner as designer

> Of real significance here for us are the multimodal affordances and characteristics of mobile devices, in particular how images and sound-related functionality impact on the input and output dimensions of interactions as well as the representation of information and knowledge
> (Pachler et al. 2010a, p. 70)

Findings from the multimodal analysis of participant-generated RHRs demonstrate the role of the visual within this particular participatory environment. *All* RHRs on the site used visual images or video to support written content. Accepting that the range of human communication and interaction should involve multiple modes is

uncontroversial (Stivers & Sidnell 2005), however these choices support the concept of society shifting from a 'logocentric' to an 'ocularcentric' culture (Spencer 2011) and that the semiotic landscape is increasingly visual (Kress 2003). Findings from both Survey I and Survey II (*Chapter 6*) demonstrate the role that mobile devices have as tools for creating and consuming visual content. The vast majority of individuals used their mobile phones to take photo or video content for their recipe. Written content, by contrast, was typically generated using a larger device with a keyboard, such as a laptop or desktop computer. Thus mobile devices play a particular role in supporting public participation in visual culture. This supports findings from previous studies of the semiotics and praxis of user-generated mobile content (Frawley & Dyson 2014a; Frawley & Dyson 2014c). Within the RHR case study, each image was found to design a personal social interaction between what was represented in the image and its intended reader. Though interview and survey research found that some people were able to describe why they had created particular images or videos in the way they had, not all participants were able to articulate their intentions. This can be explained with research from design literacies that demonstrates that individuals often learn visual design skills informally without always being able to say what they have done or why (Sheridan & Roswell 2010). In characterizing the way individuals make meaning through user-generated content as something that is designed and constructed by the participant, this research positions individuals as *designers* as well as *writers*. User-generated content thus bears some alignment with research from participatory design that identifies design as a fundamental form of enquiry where people design-by-doing and learn-by-doing (e.g. Ehn 2008).

8.4   The significance of this study

> As our circle of knowledge expands, so does the circumference of darkness surrounding it (Albert Einstein)[1].

In assessing the significance of this work the researcher illustrates the scope of the study, as judged by both its contributions *and* its limitations. This section highlights how answers to the four research questions constitute a novel and significant contribution to the wider body of knowledge. In looking outwards, this section of the dissertation *positions* the research in reference to the scholarly and societal issues it originally sought to address. In doing so the researcher recognizes the limitations of this work, or to use Einstein's metaphor the 'dark circumference' around what is illuminated.

8.4.1   Contributions

As a study that engages in both 'basic' and 'applied' research, the research contributions are twofold [2]. Firstly, in presenting a rich and varied depiction of mobile learning for food literacy in informal contexts this study contributes to two specific research communities: mobile learning and food literacy. Addressing a gap in the literature, responses to the four emergent research questions extend and supplement existing scholarly knowledge. Secondly, as applied research, this study contributes practical understandings of how to address issues relating to the food system through educational public food literacy development. In summary, these findings not only contribute to how we currently conceptualize or understand the phenomenon of interest at a *fundamental* level, but may also be of benefit to practitioners' future work and practice. This work may be relevant to persons working in fields relating to informal adult learning, food literacy and environmental education, or mobile learning. Though the outcomes of this study are specific, they form an important and significant extension to

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[1]   This quotation is frequently attributed to Albert Einstein. Though this is available across the World Wide Web, its original citation or use could not be found.

[2]   *Basic Research:* Producing knowledge for understanding, advancing fundamental knowledge about the social world and the development and testing of theories. *Applied Research:* Producing knowledge for action, producing knowledge for practitioners, helping practitioners and changing policy, change orientated, usually more immediate (Blaikie 2010).

existing understandings of mobile learning and food literacy development. Key contributions that stem from the study are discussed below.

Conversational and ecological concepts of mobile learning

This study supports and reinforces existing concepts of mobile learning, albeit within the unique conditions and context of this study. Concepts such as conversational learning (Crompton 2013; Sharples 2002) and socio-ecological mobile learning (Pachler, Bachmair & Cook 2013; Pachler et al. 2010a) provide the best theory for making sense of the data that emerged from this study. As such, findings support existing research from mobile learning theorists and demonstrate their applicability to new learning contexts and problems.

Informal learner cohorts

Mobile learning has often been linked to informal learning. However, it is only recently that studies with *informal* learner cohorts, that is persons who are not affiliated with a formal educational program, have been conducted. This study contributes to the growing body of knowledge that seeks to understand mobile learning with informal learner groups.

Food literacy acquisition

There has been very little in the way of research into the acquisition of food literacy, through either mobile or informal learning approaches. This study explores the social phenomenon of incidental learning in this place and the role that technologies have in supporting this. Since, no study into mobile learning and food literacy has been undertaken this can be considered a novel contribution.

Mobile technologies and the continuum of devices

In adopting an ecological concept of personal devices (Brady & Dyson 2010) and its application to mobile learning and new literacies (Frawley & Dyson 2014a) this study was able to focus on the relational properties of different technologies. Findings from the empirical study formed the basis for the development of the aerospace metaphor of the mobile continuum described in detail within this chapter. This contribution provides the language for describing the different functions and appropriations of

different learner-owned devices and navigates the problematic territory that mobile learning routinely faces when attempting to discuss the mobility of devices without resorting to earlier technocentric mobile learning definitions. The necessity of delimiting and talking about the field, routinely leads researchers back to sentences with technologically defined terms. For example, […] we consider laptops to lie outside the range of devices we focus on (Pachler et al. 2010a, p. 7). This does not mean that a particular study cannot focus on behaviors associated with one particular device. After all, all research has its limitations. Rather, in presenting the concept and metaphoric language for talking about devices' relational properties, this study offers an approach that acknowledges both the device's affordances and how it is appropriated within the life world of the user. This is especially helpful in the current climate where what counts as a 'mobile device' is constantly changing (Kukulska-Hulme et al. 2011) with research suggesting that 'handheld devices may not always suffice' (Kukulska-Hulme et al. 2011, p. 27). This metaphor provides the language for future studies to overcome the categorical problems posed by hybrid and modular devices (see *Chapter 3*). Furthermore, this metaphor makes sense of learners who appropriate technologies differently within their own ICT ecology. This approach reaffirms pre-existing definitions of mobile learning that emphasize the mobility of the learner (e.g. Laurillard 2010), communication (e.g. Kukulska-Hulme 2010b) or the mobile complex (e.g. Pachler et al. 2010a) and may be valuable for researchers who wish to structure a study without limiting which technologies are included or excluded. Though outside the scope of this research, future work may wish to extend the concept of a mobile continuum to other devices such as wearable technologies. A future study may wish to explore how students' learn about fitness activities through data collected through mobile probes. What constitutes a mobile problem could include data from mobile phones, but also extend to wearable devices such as fitness bands and smartwatches.

Slow learning philosophy

This study explores the value and challenges of the philosophy of slow within mobile learning. Though this concept has been previously explored in other disciplines, as far as the researcher is aware, it has not been discussed in relation to mobile learning. Since time is a fundamental component of existing definitions of mobile learning, concepts

around fast and slow learning are valuable points of discussion. Though this study is cautious of using terms like 'fast' and 'slow' as polar concepts, this is an area that constituted a significant outcome of this particular study and is an area for potential future research.

Applications of a multimodal analytic approach

With notable exceptions (Frawley & Dyson 2014c; Pachler et al. 2010b) the majority of visual and multimodal analysis has been conducted on expert-generated content. In doing this, existing research continues to privilege expert generated content in a user-generated world and to surreptitiously reinforce research into learning that emphasizes the *educator's* role in didactic transmission models. In applying multimodal methods to user-generated content within an educational setting this research demonstrates how such methods can be used to make sense of contemporary participatory phenomena.

Educational food project: infrastructure and technologies

This study has contributed the technologies and initial resources for an ongoing food literacy project, in both the website, Facebook page and initial momentum. The redesign of the structure of the recipe is also a novel design contribution (Frawley, Dyson & Underwood 2014). Though not a research outcome, this can be seen as a practical contribution to addressing food literacy within communities.

Since the study began in 2012, this research has been disseminated in six peer-reviewed publications, four media broadcasts and a public lecture. The researcher has also received nine awards and commendations. This dissemination and recognition is included in full in *Appendix 1*.

8.4.2 Limitations

All research is limited. Though qualities such as completeness, qualitative saturation, internal consistency and multidimensional perspectives may demonstrate the rigor and value of this research, even these concepts are defined by the parameters of the study. Findings from this study are not only limited to the bounds of the specific case but to the methodological, theoretical and practical constraints that affect all research. In

identifying the boundaries to this research, this study is able to further define its core contributions by identifying the constraints, ensuring claims are not overstated, and highlighting areas for future work. These limitations are itemized and discussed below.

A 'snapshot' of a nascent food literacy project and technology

This study presents a descriptive, but rich, snapshot of a *nascent* food literacy project at a set point in time. What is presented in this dissertation is a study of an early version of the Red Hen Recipes project, both in terms of the technologies used (e.g. the website software) and the participant cohort. Knowing whether the project will continue, how the project will evolve over time, and whether this approach is scalable are outside the scope of this doctoral work.

Food literacy acquisition and the limits of narrative analysis

In assuming constructivist pedagogy this research recognized adults' prior learning experiences. Though learning and food literacy acquisition were explored within preliminary study interviews (*Chapter 5*) and survey and interview research (*Chapter 6*), these methods explore acquisition solely through individuals' self-reported narratives. Narrative analysis is an acceptable methodological approach and acknowledges participants' prior learning in a study that focuses on adult learning. However, this approach is context dependent. Narrative analysis of adult interviews is insufficient and inappropriate for garnering insight into food literacy acquisition in childhood and adolescence. Studies with different age groups undertaken by experts in the appropriate fields would be necessary for understanding actual, instead of reported, acquisition in earlier developmental stages such as childhood and adolescence.

Who does and who does not speak in participatory communities?

Though this study demonstrated that learning occurred through the meeting of different and diverse voices within a participatory setting, it is important to recognize the voices that remain absent from that space. The RHRs project typically attracted individuals whose interests aligned with an aspect of the project – be it through food or through participating in a creative online initiative (*Chapter 6:* Survey I). Though the participant cohort was, in its own way, diverse, the participants all had some shared

interest in the project goals. What is missing from this research is an understanding of how education can empower disenfranchised learners. This is especially the case since food literate understandings often constitutes part of affluent middle-class culture and identity within post-industrial countries (Guthman 2003; Pearlman 2013). However, since diet-related health issues are more prevalent in populations with a lower socio-economic status (e.g. Turrell & Kavanagh 2005), it can be argued that food literacy initiatives are most needed by those who may have less time, less financial resources and less interest in the topic.

Though efforts were undertaken throughout the project to ensure that there were as few limitations to participation as possible, the RHR project did not engage the masses. As a result the data and subsequent findings are reflective of individuals from largely English speaking countries in which individuals had access to food, more than one device, and time to take part in such a project. There was also a noticeable lack of primary producers who reached project completion. This is important to remember since many of the points of discussion are dependent on the individuals with whom this study was conducted. For example the concept of a personal ICT ecology is socio-economically dependent on people being *able* to afford more than one device. Secondly, though participatory culture is often attributed with democratizing power, technologies are not culturally neutral or value free (e.g. Bannon & Ehn 2013). The RHR project and its design will not appeal to *all* individuals. This means that it may be necessary to take several different approaches in order to explore how different groups or individuals learn about food in ICT rich environments. In summary, there is no single unified approach through which to understand or address adult food literacy acquisition. This study explores one approach within the specifics of that community. Though this approach demonstrably worked, this study does not claim that this is universally generalizable.

A single researcher study

Though there is no way of knowing what an alternative research approach would have generated, it is necessary to recognize how the wider administrative running and funding of a research project may affect its outcomes. PhDs can be conducted independently or under the auspices of a large multiple-researcher funded study. This

research was funded under the Chancellors' Research Scholarship (CRS), was conducted by a single doctoral candidate and was not attached to any wider research grant or project. The result of this is that outcomes from the study are derived from the work of a single cross-disciplinary researcher instead of several subject specialists working in a cross-disciplinary team. This is worth highlighting since the perspective and capabilities of a single researcher differs to that of a research team with many different experts working on different facets of a single problem. The researcher has already acknowledged the challenges of working as a single researcher and project manager on this initiative (*Chapter 7*) and recognizes that within an interpretivist study such as this that the structure of the project will come to bear on its outcomes.

Limitations of informal and incidental learning

The skills and knowledge associated with food literacy are increasingly coming to be recognized as an important in addressing social, environmental, health and economic issues. Though this study focused on informal and incidental learning, it also highlights the limitations of approaches that occur in informal, voluntary and incidental ways. In addition to the difficulty of engaging disenfranchised learners is the question as to whether the burden for this education ought to fall solely on informal initiatives, voluntary charity programs and learning that is unintended and subject to chance. Though learning that takes place within the community is legitimate, it is also potentially serendipitous and available to those who have the time, economic resources and access to learn through interactions at farmers' markets and community gardens. Several researchers and participants have suggested that the RHRs project could be beneficial to school education. Future research may work to integrate RHRs, or a similar approach, into formal educational settings in order to explore how the project might change when further supported by formal learning structures.

Data – suggestions and limitations

As a case study analysis, this research has aimed to include as many perspectives on a single project as possible. Though different methods provided different perspectives, they also demonstrated the limitations of certain types of data – especially if used in isolation. Data from web and social media analytics showed that people *outside* the

project have interacted with the website in some way. However, findings from the interview and surveys (*Chapter 6*) demonstrated how much of the subsequent interactions (e.g. shopping, cooking) took place offline. For individuals outside of the participant cohort, it is not possible to know (solely from web and social media analytics) what, if anything, results from these interactions. The same can be said for private social networks. Though social media data indicates that individuals have used Twitter, Facebook and Pinterest to share some of the RHRs within other forums, it is not possible to know what conversations or discussions take place in these, and other, non-public spaces. While analytics data from web and social media hints at the social and public characteristics of this project, it is not possible to know what is outside the view or jurisdiction of the project [3].

Multimodal Analysis

Visual and multimodal analyses are a labour intensive research method. As a result of this the researcher had to discriminate over what content would be analysed and what analytic methods would be applied. The study analysed the types of recipes produced and the visual images that accompanied these recipes. The results from this were extensive and fruitful. It is worth noting that this was only one of many multimodal approaches that could have been adopted. Video analysis is noticeably absent from this study, as is inter-semiotic analysis that explores the relationships between visual and lexicogrammatic content. This is due to the time and analytic detail that such approaches take. Had the researcher undertaken additional semiotic work it is entirely likely that this entire dissertation would be devoted solely to multimodal analysis. This would be a different study than the one that is presented. This is a legitimate limitation and would constitute an interesting area for additional research.

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[3]   Ethics clearance for the use of web analytics was granted, however collecting data on gender, age, interests are separate functions that were not used as part of this project as they were deemed invasive and would have required a change of policy on the website terms and conditions.

8.5   Future work

In reaching the conclusion of this dissertation the researcher suggests areas for future work. In addition to disseminating findings from this thesis within different academic and public forums, future work may expand on early research contributions and address some of the limitations of the study. Suggestions for future work are listed below.

Disseminating findings: journals and blog

This research was conducted in a participatory spirit. As such it is important that findings are not only disseminated through academic and peer-reviewed channels, but are made accessible to the project's participants in language readily understood by a lay audience. Future work may involve translating findings from this thesis into accessible blog posts.

Extension of the project to other voices

As highlighted in the limitations section of this chapter, not all voices were equally represented within the project. The researcher had difficulty in retaining primary producers within the project. Funding of 1,300 AUD was raised through the crowd-funding platform Pozible. This money will be used to visit rural communities and engage those users in participating with the RHR project and conducting interviews around methods of better communicating food production to urban and peri-urban audiences.

Follow-up studies of the existing project

Pending the development and continuation of the project, a follow-up study with the project's participants would address some of the limitations of the project data by understanding the ways in which the project evolves over time and gauging the long-term effects of participating in this type of project for different participants. Though findings from the study demonstrated that individuals learnt by participating in the RHR project by engaging in this process, follow-up work with these participants would be necessary to see the long-term effects of the project on participants' beliefs and practices.

Re-purposing or redesign of the RHR project for other learners

The focus of this dissertation has been on informal learning with adult participants. It would be interesting to see how this project and its attendant technologies could be integrated into pre-existing formal educational initiatives such as The Stephanie Alexander School Kitchen Garden Program (n.d.) in which children grow and cook their own food (see *Chapter 2*). This approach to further research would also explore the possibilities of bridging the divide between formal and informal learning (see Pettit & Kukulska-Hulme 2007). The re-purposing of the RHR project design or technology may be undertaken in several different ways. Different users could use the RHR website as it currently is, with modifications in order to protect student privacy. Computer code from the RHR website could be repurposed and modified for different educational groups in order to contextualize and re-brand its use. Alternatively the concept of an augmented recipe could be manifest using other technologies with learners creating student-generated screencasts, stopmotion, slow-motion, or videos to present similar kinds of content.

Further multimodal analysis

One of the limitations of this study is its use of a single visual image analysis. Further analytic work with video and other analytic schemas would make a significant contribution to understandings of multimodal meaning making. This may include intersemiotic analysis for relations between visual and lexicogrammatic semantic components (see Bowcher 2007; Royce 1998; Royce 2007) or video analysis (Iedema 2001). Further visual analysis could also be used to make sense of the ways in which the RHRs social media components function as semantic units.

8.6   Last words and final thoughts

> […] human knowledge is personal and responsible, an unending adventure at the edge of uncertainty (Chapter 11: Knowledge or certainty, Bronowski 2011)[4]

This section brings this study and its written dissertation to a close. Though this thesis has a finite ending, its findings constitute one small part of the 'unending adventure' of human knowledge garnered piecemeal by the work of individuals over the course of history (Bronowski 2011). The convention of concluding a dissertation with sections devoted to the study's limitations and need for future work, is one way that the researcher attempts to relay this work to other studies and other researchers. As food learning becomes an increasingly important societal issue, this research constitutes one voice in a varied, but *ongoing*, discussion. In exploring concepts such as mobility and adult learning, this work has embraced Lindeman's (1989) tenet: 'The whole life is learning'. In the same spirit, this study does not claim to revolutionize existing m-Learning or food literacy research, but rather stand as one small part in a longer, more evolutionary, process that encounters both knowledge and unknowns that lie at the heart of all research.

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[4]   This quote was taken from the 2011 e-Book edition of the original 1976 edition of Bronowski's *The Ascent of Man*. This edition is not paginated. Since e-Book location numbers are difficult to trace, the chapter title (Chapter 11: Knowledge or certainty) is provided, in lieu of a page number.

Addendum

The Red Hen Recipes project, which is the principal case study on which this doctoral dissertation is based, spanned 2012 – 2015. The design, build and maintenance of both the technical and social aspects of the project were supported by the UTS Chancellor's Scholarship. This scholarship provided the funds, time and living wage necessary for the researcher to run the project. Throughout this dissertation, I have taken pains to present the research project honestly, with reference to the various practical constraints that shape the work. This has included reflections (Chapter 7) on the impact of conducting a project as a single inter-disciplinary researcher, in contrast to that of a wider multi-researcher project. As part of this commitment to honesty, I have always emphasized the role that practical constraints have on both research practice and research outcomes, and that these practical matters ought not to be brushed aside in favour of a neater or tidier story. When this dissertation was written it was not known how the project would evolve – whether the voluntary engagement in running the Red Hen Recipes content (such as that demonstrated by Mindy Service) would be ongoing, or whether the work could be funded or sustained post its initial PhD scholarship. In 2016 the researcher retired the Red Hen Recipes website and replaced this with a research blog. Individuals' recipes and content were migrated to the blog format. The technologies that were initially built for the project were stored on a secure server, allowing potential collaborators to get involved in the future. The decision to move to a blog format was motivated by the need to reduce the time and cost required to maintain the site. User-generated content platforms for *public* use, as opposed to internal organizational use, present several challenges that have been discussed throughout this dissertation. User login systems and content generation tools require moderation and continual maintenance to avoid security breaches and misuse. In the precarity of the post-PhD employment market, having the time, money, and energy to do this as an individual was near impossible. Rather than disturbing the bounded case and the narrative of the Red Hen Recipes project with jarring use of the past tense or frequent reference to future research blogs an addendum was opted for. Sitting at the end of the dissertation I felt that this structure provided the additional information important to understanding the

Red Hen Recipes' project outcomes without disrupting the research story and the participant voices that rightfully remain at the center of the work.

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Appendix 1: Dissemination and wider research engagement throughout the candidature (2012 – 2015)

Listed below are the peer-reviewed publications, presentations, awards and commendations and media coverage generated by this research to date.

1.1   Academic peer reviewed publications

Since the study began in 2012, this research has resulted in six peer-reviewed publications relating to the fields of HCI, mobile learning and social semiotics. Given the extensive task of writing this thesis, not all work contained within has been published within its appropriate academic forum. Listed below are peer-reviewed academic publications to date:

1.   Frawley, J. & Dyson, L.E. 2014, 'Mobile Literacies: Navigating Multimodality, Informal Learning Contexts and Personal ICT Ecologies', in M. Kalz, Y. Bayyurt & M. Specht (eds), *Mobile as a Mainstream- Towards Future Challenges in Mobile Learning: 13th World Conference on Mobile and Contextual Learning, mLearn 2014, Istanbul, Turkey, November 3-5, 2014, Proceedings*, Springer International Publishing Switzerland, pp. 377-90.

2.   Frawley, J. & Dyson, L. E. 2012, mStories: exploring modes of participation in a creative storytelling project, in *Transactions on Mobile Learning,* vol. 1, pp. 10 – 14.

3.   Frawley, J. & Underwood, J. 2014, 'Designing mobile learning to support public food literacy: constructivist pedagogies and ICT ecologies', *Transactions on Mobile Learning*, vol. 3, pp. 10-5.

4.   Frawley, J. K. & Dyson, L.E. 2014, 'Animal personas: acknowledging non-human stakeholders in designing for sustainable food systems', paper presented to the *Proceedings of the 26th Australian Computer-Human Interaction Conference on Designing Futures: the Future of Design*, Sydney, New South Wales, Australia.

5.   Frawley, J. K. & Dyson, L.E. 2014, 'mStories: exploring semiotics and praxis of user-generated mobile stories', *Social Semiotics*, vol. 24, no. 5, pp. 561-81.

6.   Frawley, J. K., Dyson, L.E. & Underwood, J. 2014, 'Rewriting, redesigning and reimagining the recipe for more sustainable food systems', paper presented to the *Proceedings of the 26th Australian Computer-Human Interaction Conference on Designing Futures: the Future of Design*, Sydney, New South Wales, Australia.

1.2 Media coverage and wider research engagement

As is the nature of research that works with the public, the role of disseminating these findings within the wider media can be seen as an important means of communicating research to a wider audience and demonstrating impact.

1. UTSpeaks Public Lecture – Kobayashi, H. Colley, L., **Frawley, J.,** & Le Hunte, B. 2014 *Tipping the Point – Must our professions and industries embrace the new ways: the new learning, the new thinking, the new doing?*, 9 April, University of Technology Sydney, Australia.

2. Frew, W. 2013, 'Food's roots a recipe for success', *Sydney Morning Herald (Brink Magazine) (Brink)*, 19 September, p. 2.

3. Berriman, A. 2012, 'The Chicken Project: understanding where our food comes from', *U: Mag*, 5 August.

4. Jacobs, G. 2012, *A Cracking Good Yarn* Radio Broadcast, Afternoons, 666 ABC Radio Canberra, 5 November.

5. Wilson, C. 2012, *Interview*, Radio Broadcast, Food on Friday, ABC Radio National, 5 October.

1.3 Awards and commendations

1. Fellowship of the Higher Education Academy (FHEA) 2015 through the ANU Educational Fellowship Scheme

2. AMP Amplify Bright Sparks 2015: Bringing Together Business and Research (Finalist) https://amplifybusiness.com/bright-sparks-2015-bringing-together-business-and-research

3. UTS Faculty of Engineering & IT Higher Degree by Research Publication Award 2014

4. Australian and New Zealand Mobile Learning (anzMlearn) Research Group Best Project Award 2014

5. Sciences of Technologies and Learning Research Fest, University of Sydney, 2013, Best Poster Award (Judges' Choice, Runner-Up)

6. Australian and New Zealand Mobile Learning (anzMlearn) Research Group Best Project Award 2013

7.   Google Anita Borg Memorial Scholarship Award 2012

8.   Dean's Merit Award 2012, Faculty of Engineering & IT (UTS)

9.   NASSCOM 2012 Student Innovation in Technology Awards – Highly Commended

1.4   Funding and grants

1.   Pozible Crowdfunding Campaign: Unpacking the Food System **($1,300)** Crowdfunding money for future field work with primary producers as part of the Red Hen Recipes project, http://www.pozible.com/project/196031

2.   UTS Chancellor's Research Scholarship (CRS) 2012 – 2015 **($35,000 pa**)

3.   Google Anita Borg Memorial Scholarship **($1,000**)

1.5   Memberships, affiliations and community roles

In addition to contributing to disseminating research findings, the researcher has also been an active member of the academic community in her role as a reviewer and a member of several different academic and professional bodies.

- International Journal of Mobile and Blended Learning (IJMBL) – *Reviewer*
- Transactions on Mobile Learning – *Reviewer*
- Interactive Design and Human Practice Lab Reading Group – *Member 2012*
- Australian and New Zealand Mobile Learning Group (anzMlearn) – *Executive Committee Member and Multimedia Consultant 2010 – present*
- Technology Education Design and Development (TEDD) Lab – *Member*Appendix B: Field Notes and Preliminary StudyAppendix C: Technical Specifications for the RHR Website

Appendix 2: Preliminary study (I) – Rural fieldwork

2.1 Interview Questions

The interview was an exploratory unstructured interview that used themes and suggested questions to help guide the interviewee. As this interview was used to both define the problem *and* understand the user questions about the farming industry, and *what* was important to communicate to the public were used.

Farm

- How long have you owned your farm for?
- What did you do prior to egg farming?

Chickens

- How many chickens do you have? What breeds are they
- How many eggs do you produce a day?
- What is the behaviour of the chickens like?
- Where do they lay their eggs?

Connecting with the consumer

- You have a website and a book- what was the motivation behind creating these?
- When did you set-up the website- why?
- What other ways do you have of engaging people in your farm or product?
- Do you know any other farms that have adopted similar approaches?

Workday

- What are the roles and responsibilities you have to undertake on an egg farm?
- Why have you adopted the free-range organic approach to farming?

2.2 Interview excerpt

Interview: FARMER (INTERVIEW EXCERPT)	
Interviewer: Jessica Frawley (**J**) *Female, 27, research student*	**Date:** 25th Sep
Interviewee: Bea (B) *Female, 55-65, Farmer, previously worked as a nurse and secretary*	**Time:** 11am
Location: Farm House (interviewee's home)	**Duration:** 1hr 28mins
Type: Unstructured exploratory interview	
Comments: This interview was audio recorded and *semi-transcribed*. This transcription uses the following format: ▪ **Important themes**: highlighted and transcribe *in vivo* ▪ **Additional themes:** summarized or described ▪ **Repeated or conversational fillers:** […]	

JF: *INTRODUCTION* What I'm working on is an information system that helps people living in urban environments connect with where their food is from, and the people who produce it. So at the moment I don't know what I'm creating but I'm doing my research with people first- so I'm talking to you, I spoke to someone yesterday from the wool industry and later I'll speak to people in the city about their attitude to food. The idea is that I design a system for that would help real people do that- so it's not about complicated technology it's about finding out what we really need and how can we use technology to help people along. So what I really wanted to find out was, what goes on on a free-range egg farm and just a little bit about how you…why you've already set up a website and written a book. I've got a few questions but feel free to just explore that and feel free to deviate off the topic if you find yourself talking about something interesting

A: No, no I'll let you lead the way… **it's interesting what you're doing…last year I hadn't had a day off for months and then my mum died and so I got a chance to go on a slow food tour in Italy in Turin- so I was away about 10 days or something like that. But I met a woman there, which I suppose ties in with what you're doing, and she was a school teacher and her husband was a farmer and they also saw the huge**

disconnect between the farm…cause one of the things that really shocked me in Italy was all the desolate farm houses. It was awful, it's not your nice picturesque…rooves off, houses falling down. No-one working the land, everything's inside now…they've done the …

JF: Hydroponic?

A: I suppose- I saw a lot of …yeah but this lady that I met…they started a restaurant, sort of semi-rural but close enough to some big centers to have the population…but what their idea was, like so many, was to have a menu that reflected the seasons. When we came there in October they were going to shut in December because it just wasn't working. People wanted what they wanted, when they wanted…and hang the seasons. It's very hard to take away from the people what you've given them, but then what they started…her and her husband…was like a type of co-op except I could only gather it was only her and her husband that started. But what they then did was then source all sorts of local things and their idea was this connect, so what (I haven't actually seen their website) but I have got their address and all that sort of thing, but she set it up so people could order their food directly from the website, but every item that they ordered people could somehow login behind…not login…cause you don't leave her website…but she had then posted who the farmers were, where their properties were, and the farmers posted (every week) an upate…we've had a lot of rain etc…and it ended up a huge barn and they ended up doing wine…wine and eggs…and it was through that when I saw with the eggs…cause our tour was mainly a wine tour…with a wine grower…and no-one was interested in the soil, I asked all the questions about the soil…and how come one wine gets paid 2.50 per kilo and another gets paid 6.50 per kilo…and of course it's all about the soil but no-one does any soil testing.

J: So it's all about the wine and the tasting not the production?

A: Exactly. So it's all about that connection…and I suppose with the stories that I put in the egg cartons, unbeknownst to me…I knew when we started this part of business says that we have to do a news letter but most of the news letters I've ever come

across from anywhere are too long, they're too boring, I haven't got time and I can't stand anything (even on the internet…with links…don't expect me to go tramping off to other websites…especially when you're on a slow connection). I thought, for my purpose it was just a quick thing that a mum has to be able to open the egg carton, see it there, have enough time to see it there, read it, read it in a minute and not burn the dinner. So that's how that part of it started, and it was an intentional way of trying to connect…because we don't do any wholesaling at the moment: it's with the chefs or with the retailers that sell to the customer…

J: So who do you sell to?

A: **Aw…um…quite a number of IGA stores, we don't touch the big boys…um and then in Berrima the restaurant there now wants our for cooking and retail and they're doing quite well with the retail…and because it's so diverse in town they get different cliental**…general store is more for our locals, that type of thing, and then in Bowral Wildfood which is an organic store. Our farm was certified organic for 6-8 years and then the chickens I think 3 years, 4 years…and that was an absolute bloody nightmare…

J: Why was it?

A: I mean I'm all for it…just with the food and the rules and I don't have any problem with Organics at all…I think the whole world has to go back to it before we completely destroy ourselves, but twice our food was lost um…once it went down…way down the south coast and like you've got no food and you give this ample time and you're like trying to chase this up…so then ended up having to run to Nowra to try and find organic feed. There's no point saying cross out your labels, how can you sell them? Because you're not allowed to sell two lots of egg anyway: organic and non-organic…so basically you have to slaughter your chooks if that happens. So anyway we had to get through that one, and the second one prior to Christmas so we booked in very early with the mill so everything was fine there, the feed is going to leave on that day which it did, and while the trucking companies got that feed the trucking companies went on

holiday…and that was a nightmare… I must have rang every possible person in Sydney. In the end we got out of that, but it was at the point where I was about to ring

2.3 Field notes and photos

The connection between farmer and consumer was found to be more visible within the rural community visited. The context for the connection between producer and consumer often took place in the venues of small retailers such as local IGA supermarkets, markets and cafes. Connections were established through posters and face-to-face communication during sales. One particular cafe advertised that their eggs were free-range; when asked about where these came from the cafe owner was able to provide the farmer's name and telephone number. These interactions demonstrate existing ways that consumers can engage with where their food comes from. Whilst these face-to-face practices are difficult to extend to consumers in large urban communities, information system design may be able to draw on real-world practice to provide similar digital interactions.

In addition to engaging consumers with produce through third-party retailers, such as shops, supermarkets and cafes, local producers are also engaging directly with the consumer through farm-visits such as those organised by Food Path, a tour company specialising in providing visits to local producers (Figure 3.). Food Path connects users to producers through the experiential process of visiting local producers and eating local produce. These tours cater to visitors to the area, and may tap into 'food as experience'; something that innovation strategist Grant Young (2011) identifies as a trend emerging around popular TV shows such as MasterChef ™.

Come with us on a FoodPath tour in the beautiful Southern Highlands of NSW. Visit local producers who proudly offer artisan cheeses, luscious berries, exotic mushrooms, real free range eggs and more. Enjoy a long table lunch at one of our best restaurants. Let us be your hosts for the day and learn and enjoy along the way. Regular tours with interesting and varied itineraries.

Customized workshops and activities available for groups.

e: jill@foodpath.com.au

m: 0419 617 021

www.foodpath.com.au

Mini interviews

John	25-35	Waiter	Son of a farmer in the Western Wheat Belt area. Grew up with a connection to the land and food. Is connected to food by his senses: the taste, hearing food sizzle, the smells and the sights. That is why he now works with food, because of the connection to the senses.
Warrick	55-65	Wool Buyer	Father made him got to law school to get a "proper" profession. However he hated it and after he graduated he went to work as an apprentice in a wool factory. Worked in the wool industry for thirty-eight years doing everything from buying, selling to merchandising. At the moment he is a seller of merino wool garments but also has contact with the farmer. His feeling is that there really needs to be a reconnect with where the product comes from- the farmer. He connects with consumers through stalls at markets. He feels it is especially important to connect with younger generations who have been brought up with synthetics.

Appendix 3: Preliminary study (II) – Interviews with urban dwelling consumers

3.1   Interview Questions

The interview was an exploratory unstructured interview that used themes and suggested questions to help guide the interviewee. Bullet points and subsidiary questions were used to prompt and guide participants but were not rigidly adhered to.

1)   How often do you shop for food each week?

2)   Where do you shop for food each week?
   - Supermarkets (which ones)
   - Grocers
   - Butchers
   - Farmers markets
   - Direct from farmer
   - Do you buy food over the Internet?
   -

3)   Why do you uses these particular people?
   - Convenience
   - Cost
   - Quality- how do you define quality
   - Freshness
   - Organic
   - Free-range

4)   How often do you eat out? What factors shape where you decide to eat out?

5)   How do you plan your meals- recipe book, recipe app, etc.?

6)

7)   Have you ever bought your food from a farmers market?
   - If so why?
   - Why do you not do this all the time?

8)   What gets you interested in food?

9)   Do you find that you're provided with enough information about where your food is from and how it is produced?

10)   When do you plan your meals or lunches- how do you decide what you're going to eat?

11)   How do you engage your children in this?

12) Out of the following- which things connect you to the food your eating:
   - Where it is from
   - Who has farmed it- the farmer
   - Which animal it has come from
   - How long it took to produce

Appendix 4: Technical specifications for the Red Hen Recipes project technologies

Server Environment

The RHR site was run on a shared server environment provided by Pair Networks (Pair). For development two identical accounts were set up with Pair: one to host the production (public) version of the site and another to serve as a test environment for release candidates (RC) of the site. This allowed for a production environment that was isolated from the test environment yet technically identical. This reduced the complexity and risk of deployments. GitHub was used and featured the following branches: 1) Branch Master - which holds the latest production ready version of the software and 2) Branch RC- which holds the latest release candidate of the software.

Targeted Browsers

The website is responsive and thus works across platforms and devices. To limit the amount of time and resources spent on development a list of target web browsers was developed for, this includes the following:

- iOS 7 (Safari)
- Android 4 and later (native android browser)
- Chrome 32 and later/current version (Windows / OSX/ Android)
- Internet Explorer 9 and later
- Firefox 26 and later/current version (Windows / OSX / Android)
- Safari 7 (OSX)

Markup and CSS: Standards compliant and following best practice

Site visitors using older browsers receive a notification telling them that they should either update their current Internet browser or use one of the suggested alternatives. The markup produced by the software, both static and dynamic, validates as HTML 5 and is validated through W3C. The accepted tool for the validation of the markup is the W3C markup validation service, available at http://validator.w3.org. All style sheets produced by the software, both static and dynamic, must validate using the W3C CSS validator, available at http://jigsaw.w3.org/css-validator/ If for some reason valid CSS can not be produced (i.e. to target Internet Explorer browser bugs or using browser specific styles) exceptions were made. Where possible, conditional comments in markup were used to target specific versions of Internet Explorer.

Pre-existing technology use

To create a minimum viable product (MVP) some pre-existing tools were used, and then customized, to best-fit with the design. A lot of small 'plugins' were used to support minor features such as a content management system (CMS), dynamic FAQs, a blog page and social media integration. For all of these examples, a standard 'out of the box' solution was all that was needed. Other parts of the custom development were managed by significant customization of open-source tools. YooRecipe, an opensource recipe publishing tool, was used and extended to create the RHR publication tool. Additional browser-based image upload features and Google maps integration was used to 'augment' the recipe and provide additional functions. As mentioned earlier, Disqus comment tool, was used to manage comments and moderation.

Appendix 5: Case study, Survey I (Instrument)

Red Hen Recipes REGISTRATION SURVEY

Welcome to Red Hen Recipes

Information about this research

My name is Jessica Katherine Frawley and I am a research student at the University of Technology Sydney
(UTS). I am based in the Faculty of Engineering and IT and my research focuses on how we can use technology to learn about the agro-food system. My supervisor is Dr. Laurel Evelyn Dyson and my co-supervisor Dr. Jim Underwood. The title of this PhD is "The Chicken Project: mobile learning as a pathway to public food literacy" and the research has been approved by the UTS Human Research Ethics Committee (Reference No. 201300070). This is the first of two surveys. This survey is to be answered BEFORE you create your Red Hen Recipe. The second survey is to be answered AFTER you create your Red Hen Recipe. Each survey will take no more than 15 minutes.

The purpose of this research /online survey is to find out about what you know about the food you buy and eat. The survey will begin by asking you to give personal details, such as your name, date of birth, and address. The survey will then ask you several questions about how you make decisions about what to eat or avoid eating. These are general questions with no right or wrong answer. You can change your mind at any time and stop completing the survey without consequences.

If you agree to be part of the research and to research data gathered from this survey to be published in a form that does not identify you, please continue with answering the survey questions. If you wish to receive a Red Hen Recipe bag please indicate this here and we will send one to you on completion of both surveys.

If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact either me or my principle supervisor Dr. Laurel E. Dyson via email:

- Jessica Frawley: Jessica.Frawley@uts.edu.au
- Dr. Laurel E. Dyson: Laurel.E.Dyson@uts.edu.au

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on 02 9514 9772 or Research.ethics@uts.edu.au and quote this number 2013000702.

Thank you for agreeing to participate in this survey and research project.

Part 1: About Me

First Name

Family Name

Sex
- ◯ Male
- ◯ Female
- ◯ Would rather not say

Age

Country

Email address

Number of children or dependents at home

What are your hobbies and interests?

Occupation

Part 2: Food and me

Where do you get your food for home consumption? (e.g. in a regular month)

Select all that apply

☐ The Big Supermarkets (e.g. Coles, Woolworths)
☐ IGA
☐ Aldi
☐ Farmers markets
☐ Specialist online ordering services (e.g. Farmers' Direct)
☐ Health food shops
☐ Specialist shops (e.g. butcher, baker, fish shop, greengrocer, deli)
☐ Speciality supermarket (e.g. Harris Farm, Thomas Dux)
☐ Grow my own
☐ Food co-op
☐ Picking wild foods (e.g. wild fruits or vegetables)
☐ Fishing or hunting
☐ Dumpster diving

Other:

For each place that you source your food from, briefly explain why you choose to source your food from these places (e.g. supermarkets for convenience and tinned goods, farmers markets for speciality goods etc.)

In an average week, how often do you cook food from scratch?

(e.g. not ready-meals, pre-made sauces, cake mixes)

- ◯ Never
- ◯ 1-2 times a week
- ◯ 3-4 times a week
- ◯ 5-6 times a week
- ◯ Everyday

If yes, why do you cook?

Select all that apply.

- ☐ Enjoyment/Fun
- ☐ To know what is "in" my food
- ☐ Health or diet
- ☐ Because I have to
- ☐ To get nicer food
- ☐ To save money

Other: [_____]

How did you learn to cook?

Select all that apply.

- ☐ Cooking classes
- ☐ School
- ☐ TV cooking shows
- ☐ Learnt from family
- ☐ Learnt from friends
- ☐ Self-taught (e.g. recipe books, magazines, information on the internet, food blogs, experimenting, etc.)
- ☐ Online tutorials (e.g. YouTube)

Other: [_____]

Do you, or have you ever sourced your own food from scratch?

E.g. growing herbs or vegetables, foraging, bee keeping, fishing etc.

- ◯ No
- ◯ Yes

If yes, briefly describe what food you sourced and your reasons for doing so.

[text box]

What do you use to find out about the food you are eating or buying?

Select all that apply.

- ☐ Recipe books
- ☐ TV Cooking show
- ☐ Recipe websites
- ☐ Food blogs

☐ Mobile apps.
☐ Food Labels
☐ Books or magazines
☐ Social Media (e.g. Twitter and Facebook)
☐ Agricultural publications or websites
☐ Specific social food groups (e.g. clubs, organisations)
Other: [   ]

I DO NOT eat the following food types...

Please select the foods you DO NOT eat.
☐ Meat
☐ Fish and seafood
☐ Eggs
☐ Dairy (e.g. milk, cheese)
☐ Vegetables
☐ Beans and pulses (e.g. lentils, beans)
☐ Fruit
Other: [   ]

Why do you NOT eat these foods or food types?

(e.g. dietary, religious, ethical, taste or health reasons)

[   ]
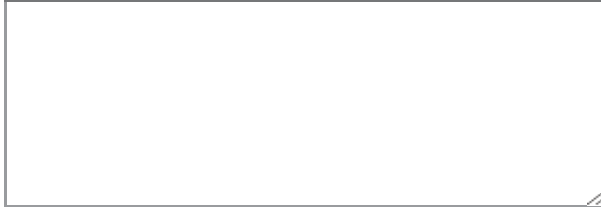
When shopping for food I am interested in food that is...

Tick all that apply.
☐ Free-range
☐ GM Free
☐ Organic
☐ Grass-fed
☐ Locally grown
☐ In season
☐ Hormone free
☐ Low-fat
☐ Low sugar
☐ Low salt
☐ Fairtrade
☐ Biodynamic
☐ Vegetarian
☐ Vegan
Other: [   ]

Why are you interested in shopping for these food types?

[text box]

Are you a commercial food producer, supplier or retailer?

(e.g. a farmer, artisanal producer, shop owner etc.)

- ◯ Yes
- ◯ No

If you are a commercial food producer briefly explain how you currently promote your produce with members of the public?

E.g. do you talk to people in store or at farmer's markets, do you organise farm tours, share photos, have a website or a Facebook page etc.

[text box]

Part 3: Red Hen Recipes

What interested you in the Red Hen Recipes project?

[text box]

Part 4: My technologies

Which of the following devices do you own?

Tick all that apply.

- ☐ Mobile phone
- ☐ Desktop computer
- ☐ Laptop
- ☐ Tablet (e.g. iPad, Nexus 7, Microsoft Surface)
- ☐ Digital camera
- ☐ E-book reader (e.g. Kindle, Nook)

- ☐ Streaming Media Device (e.g. Apple TV, Roku)
- ☐ Radio
- ☐ TV

Other: [   ]

Can you access the internet from your mobile device (e.g. mobile phone or tablet)?

- ◯ Yes
- ◯ No
- ◯ Don't know

What do you use your mobile phone for?

Select all that apply.

- ☐ Phone calls
- ☐ Video calls
- ☐ Text (SMS)
- ☐ Email
- ☐ Social networking (e.g. Facebook, Twitter)
- ☐ Surfing the internet (e.g. Google, Wikipedia etc.)
- ☐ Watching online video (e.g. YouTube)
- ☐ Downloading music or video (e.g. iTunes)
- ☐ Reading eBooks
- ☐ GPS and maps
- ☐ Playing games
- ☐ Taking photos
- ☐ Making videos
- ☐ Recording sound
- ☐ Writing blogs
- ☐ Sharing photos and/or videos (e.g. by uploading to Facebook, Youtube, or a Blog)

Other: [   ]

If you have a tablet (e.g. iPad) what do you use this for?

Select all that apply.

- ☐ Voice calls (e.g.Skype)
- ☐ Video calls
- ☐ Instant messaging
- ☐ Email
- ☐ Social networking (e.g. Facebook, Twitter)
- ☐ Surfing the internet (e.g. Google, Wikipedia etc.)
- ☐ Watching online video (e.g. YouTube)
- ☐ Downloading music or video (e.g. iTunes)
- ☐ Reading eBooks
- ☐ GPS and maps
- ☐ Playing games
- ☐ Taking photos
- ☐ Making videos
- ☐ Recording sound
- ☐ Writing blogs
- ☐ Sharing photos and/or videos (e.g. by uploading to Facebook, Youtube, or a Blog)

Other: [   ]

Part 5: Availability

Please indicate whether you would be interested in participating in interviews at a future stage of this research project.

○ Yes, I do not mind being contacted for interview
○ No thank-you, I would prefer to only do surveys

Part 6: Additional comments

If you have any additional comments, suggestions, or concerns, please write them here.

Part 7: Postal Address

Thank-you for your time in completing this survey. By creating a Red Hen Recipe and participating in this research we are giving participants a free Red Hen hessian shopping bag. If you would like to receive this, please complete your shipping address and we will send one as soon as the last survey or interview is complete.

Address 1:

Address 2:

City/Town:

State/Territory:

Post code:

Thank you

Thank-you for taking the time to complete this survey and for being a part of the Red Hen Recipe research project. If you have any further questions about this research please contact the researcher either on email Jessica.Frawley@uts.edu.au or by phone (+61) �. You are free to pull out of this research at any point without consequence.

Appendix 6: Case study, Survey I (Supplementary data)

6.1 Participant occupations

Participant Occupations

Field	Job Role	No. of People	Total per Field
Professions	Teacher	4	6
	Lawyer	1	
	Accountant	1	
Food Industry	Chef	1	4
	Food Trainer	1	
	Farmer	2	
Commercial Industry	Marketing	1	5
	Research Strategy Analyst	1	
	Finance and Tax Advisor	1	
	Human Services Consultant	1	
	Human Resources Manager	**1**	
Student	PhD Student	2	7
	Full Time Student	5	
Creative Industry	Artist	2	6
	Writer	2	
	Designer	2	
Other	Nurse	1	3
	Researcher	1	
	Retired	1	
No Response		1	1
	TOTAL		32

6.2 Food habits

When shopping for food I am interested in food that is...

Label	No. of people	% of Individuals* (Total = 32)
Free-range	29	91
GM Free	19	59
Organic	24	75
Grass-Fed	18	56
Locally Grown	25	78
In Season	28	88
Hormone Free	18	56
Low-Fat	8	25
Low-Sugar	18	56
Low-Salt	9	28
Fairtrade	22	69
Biodynamic	14	44
Vegetarian	11	34
Vegan	7	22
Other	2	6
* percentages rounded to the nearest whole number		

Where do people source their food and why do they source their food from there?

	Q. Where do you get your food for home consumption (e.g. in a regular month)?				Q. For each place that you source your food from, briefly explain why you choose to source your food from these places.'		
	Source of Food	**No. of people**	**% of Individuals* (Total = 32)**	**% of Responses (Total = 135)**	**Main Themes**	**No. of refs**	**Example of participant response**
BUYING CONTEXTS	**The Big Supermarkets**	**26**	81	19	Convenience	18	*"Supermarkets for convenience and price"*
					Cost, price and value	8	*"I am a student so I do at times buy from potentially less-than-ideal supermarkets because I, frankly, can't afford better"*
					Particular Products	3	*"tinned food, cheap staples, junk food"* *"basics such as recycled paper goods… and a few speciality items such as Dick Smith, Maggie Beer"*
					Good quality	1	*"it's good quality and cheap"*
					Try not to use them	1	*"I try to use the supermarket as minimal as possible for bread ett, as I dont think the quality is as good and I do feel they have a monoploly and want to support the smaller guys."*
	IGA	**10**	31	7	Convenience	4	*"IGA for convenience"*
					Supermarket doesn't have it	1	*"IGA – Woolies doesn't have it"*
	Aldi	**6**	19	4	Convenience	4	*"aldi - convenience & price"*
					Cost, price	2	*"I choose to go to aldi because it is also inexpensive compared with the big supermarkets,"*
					Interesting and unusual	1	*"Aldi- interesting and unusual one-off items"*
					Quality	1	*"Convenience and quality"*
					Values and ethos	1	*I heard an interesting radio program about the brothers who created the store. I am not sure how correct it was, but it seemed to suggest that they owners, if they do still own it, lived very simple lives which stands in contrast to the money that seems to be acquired by other leading chain CEOs and their managerial boards. I find it quite an interesting place because the progression/pressure of capitalist competition in this industry has lead to a chain becoming popular that actually provides less goods, less choice, so it seems as if both extreme capitalism and communism might lead to a reduction of social diversity. It is quite a soulless place and going to it helps me think*

							that capitalism is on its way out.
Farmers Markets	18	56	13	Fresh	7		*"Farmers markets, as I try to purchase organic and hope the produce is fresher."* *"Farmers markets - fresh fruit/vegies"*
				Method of Farming around product (e.g. organic, free-range, etc.)	7		*"organic"* *"I try to purchase organic and hope the produce is fresher"* *"good quality ethical food (eggs) and fresh gluten free bread"*
				Supporting the Local Economy	3		*"Farmer's Markets: I believe in supporting a local economy and its better for the environment."*
				Particular Products	2		*"Farmers markets when I'm doing a big shop for fruits and veg"*
				Experience	1		*"... I like to go for the morning out"*
				Quality	1		*Farmers markets/greengrocers – good quality produce*
				Sustainability	1		*"flavour and sustainability"*
				Taste	1		*"the food is grown carefully and tastes better"*
Specialist Online Ordering Services	4	13	2	Boutique produce	2		*"Specialist online ordering – for boutique ingredients…"* *"Occasionally I will see something that I want online that I can't get locally (like super expensive Fortnum and Mason beans).*
				Know how its grown	1		*Online ordering (Bellofoodbox) - local and/or organic food directly, or almost directly from the grower; I get a better idea of how it's grown, a chance to support locals; seasonal eating*
				Local	1		
				Organic	1		
				Seasonal	1		
Health Food Shops	12	38	8	Speciality products	6		*"health food shops - for specialty items that aren't as easy to find at supermarket eg. specialty flours"*
				Convenience	1		*Convenience and quality*
				Quality	1		*Convenience and quality*
Specialist Shops (e.g. Butcher, Baker, Fish Shop, Greengrocer etc.)	25	78	18	Quality	7		*"Butcher & Seafood – better quality"* *"Speciality stores because I like gourmet items and I find the groceries there of a better quality"*
				Particular food or product	6		*Local butcher for fresh meat*
				Where it comes from and how it was made	4		*"I also visit the local butcher as we can talk to him and he is in to sustainable and cruelty free sourcing. Gives us confidence in where we are buying our foods."* *"more chance to find out where it's from"*
				Cost, price	3		*It is also much cheaper and is not stored in plastic bags*

					Supporting the Local Economy	3	*"Specialist shops (Greengrocer, baker, fish shop) - select own range of food; support a local business; more likely to be fresh; more chance to find out where it's from"* *"Again it supports the local economy."*
					Convenience	2	*Back home in the Netherlands I would go a bakery for bread, as the selection in supermarkets is less diverse than it is here (also, it's closer)* *Specialist shops - I am lucky to live in walking distance to great bakeries, fruit shops, deli.*
	Speciality Supermarket (e.g. Harris Farm, Thomas Dux)	**16**	**50**	**11**	Speciality produce	4	*"fresh, high quality treats", "they have unique brands that I like to try"*
					Cost, price	3	*"...quite good value also"* *"fresh vegetables and fruits with good price"* *"It may be slightly more expensive than Coles/Woollies but not by any significance"*
					Fresh	2	*I mainly go to Harris Farm as the produce is extremely fresh and seasonal.*
					Convenience	2	*pecialty supermarket - harris farm for convenient fresh veg* *Harris farm: close to my place,*
					Quality	2	*HFarm - speciality, organic, quality*
					Company Values	2	*I like to believe they have a commitment to community, and they are not owned by the larger supermarkets therefore the farmers get a better price for their product.*
					Variety	2	*"These shops might provide more variety of produce".* *"Harris Farms, for example, has a better selection of organic fruits and vegetables and they have a great fresh fish market to choose from"*
	Food Co-Op	**1**	**3**	**0.5**	-	-	*co-op - I volunteer there! Social/organic/good value*
GROWING OR FORAGING	**Grow My Own (CURRENTLY)**	**12**	**38**	**8**	Herbs and Veggies	9	*Grow my own mostly herbs and leafy greens for convenience and to feel good.*
					Commercial farmer	1	*I rear my own meat so I generally a good supply of that in the freezer.*
					No response	2	-
	Picking Wild Foods (e.g. Wild Fruits or Vegetables)	**2**	**6**	**1**	Close to nature	1	*Wild food foraging - closer to nature*
					-	1	*Wild food - finding roadside or abandoned fruit trees; harvesting some wild herbs (like stinging nettle for iron) from which to make tea.*
	Fishing or Hunting	**2**	**6**	**1**	Fresh	1	*"My roommates boyfriend goes fishing every other week and always brings us fresh catch, which is the type of fish I prefer to eat most of the time"*
					Delicious Enjoyment	1 1	*"Coastal hunting - delicious enjoyment"*

				Organic Healthy	1 1	*Dumpster Diving: I am always bringing home leftover food that cannot be sold at the organic shop where I work. It's organic and healthy.*
Dumpster Diving	**1**	3	0.5			
Other	**4**	13	3	Food from Others (family or community)	2	*"Community garden"* *"My mum has an allotment and I receive some food from this."*
				Online box	1	*ooooby box*
				Alternative supermarket	1	*Big supermarkets in Thailand are Tops, Fuji, Villa market (the Coles and Woolworths equivalent)*

6.3 Technology usage

Which of the following devices do you own?

Device	No. of people	% of total (n=32)
Mobile phone	32	100
Laptop	30	94
Digital camera	20	63
Tablet (e.g. iPad, Nexus 7, Microsoft Surface)	19	59
TV	19	59
Radio	13	41
Desktop computer	9	28
Streaming media device (e.g. Apple TV, Roku)	6	19
E-book reader (e.g. Kindle, Nook)	5	16
Other	iPod	iPod

What do you use your mobile phone for? (Non-Internet Functions)

What do you use your mobile phone for?	No.	% of total (n=32)	% of responses (n=320)
Phone calls	32	100	10
Taking photos	32	100	10
Text (SMS)	31	97	10

What do you use your mobile phone for? (Internet Functions)

What do you use your mobile phone for?	No.	% of total (n=31)
Email	31	100
Social networking	29	91
Surfing the Internet	29	91
GPS and maps	26	84
Sharing photos and/or videos	24	75
Watching online video	18	58
Making videos	18	58
Video calls	12	39
Playing games	12	39
Downloading music or video	9	29
Recording sound	9	29
Reading eBooks	5	16
Writing blogs	3	10
Other	1	Fanfiction[1]

---

[1] Participant's hobbies include writing fanfiction, which is defined as: fiction written by a fan of, and featuring characters from, a particular TV series, film, etc.

If you have a tablet (e.g. iPad) what do you use this for?

Activity	No. of people	% of total (n=19)
Surfing the Internet	19	100
Email	18	95
Social networking	15	79
Watching online video	14	74
Reading eBooks	11	58
Taking photos	11	58
Playing games	10	53
Sharing photos and/or videos	10	53
Voice calls	7	37
Instant messaging	7	37
Downloading music or video	7	37
GPS and maps	7	37
Making videos	7	37
Video calls	6	32
Writing blogs	4	21
Recording sound	2	11
Other	1	Work[2]

GPS and Map			
Usage for persons who had more than one device			
Single device	Mobile phone[3]	13	**13**
	iPad	0	
Two devices	Mobile phone & iPad	3	**3**

---

[2] Participant is a food trainer and uses the iPad to assist in training people how to cook.
[3] Out of these fourteen 6 persons did not own an iPad. This means that 8 individuals had a secondary device but choose to use their mobile phone solely for the purposes of taking photos.

Appendix 7: Case study, exemplar Red Hen Recipe and supplementary artefact analysis
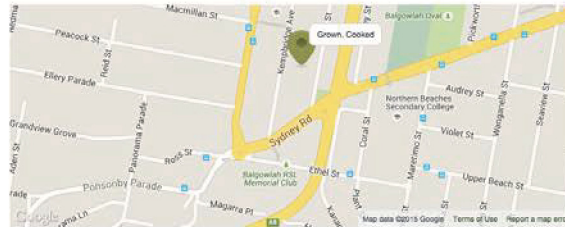
Springtime Lavender and Dark Chocolate Chip Cookies

Greenthumb Grower
Lavender

Pin it   f Share 4   Tweet 1   g+1 0

by jfrawley

As Spring arrives the lavender in the garden comes into bloom. This recipe uses the lavender buds to make a floral chocolate chip cookie that is delicious with a cup of earl grey tea.

Email   Print

Grow

I planted the lavender last year in 2013- in a spot in the back garden that gets both sunlight and shade. During winter there were no flowers, but as the sun has started to come out purple flours have bloomed. These are not only pretty but have attracted bees to the garden.

Cook

Category: Afternoon Tea, Snack, Dessert

Ingredients

For 1 Batch(es) (⬤)

—○——————————————

Recipe

3 Lavender blossoms
100 grams Wholemeal Spelt Flour
100 grams Plain White Flour
1 teaspoon(s) Baking Powder
0.25 teaspoon(s) Bicarbonate of Soda
0.5 teaspoon(s) Salt
200 grams Unsalted Butter
140 grams Light Brown Sugar
1 Free-range egg
1 teaspoon(s) Vanilla extract
150 grams Dark Chocolate (chips or chunks- depending on what you prefer)
2 pinch(es) Sea Salt

Preparation time: 1h

Cooking time: 12m

Method

1. In a mixing bowl, combine the flour, baking powder and bicarbonate of soda with half a teaspoon of salt and the lavender. Pull the lavender buds off the main flower and discard the stalk.

2. Beat the butter and sugar together till light and creamy. Slowly whisk in the egg and vanilla extract till combined.

3. Next start adding the dry flour and lavender mixture to the wet egg and butter mixture.

4. Once combined add the chocolate chips. I only had a block of dark chocolate so I just chopped this up into chunks- but you can use chocolate chips if you have them.

5. Cover the dough with cling wrap and refrigerate for 24hours.

6. Once ready pre-heat the oven to 350 degrees Fahrenheit.

7. Take your dough out of the fridge and scoop mounds of dough.

Eat

Though cookies are good to share- there is something incredibly pleasing about sitting down on a weekend afternoon with a cup of tea, a biscuit and a good book (in this case my kindle, on which is currently Game of Thrones). Though the health benefits of the lavender are probably out weighed by the butter and sugar that make up this recipe the soothing properties of the plant still make for a lovely afternoon reading companion- the herbal taste of the flower balancing the sweetness of the rest of the the dough.

Tags: Chocolate chip, Biscuit, Cookie, Spring, Chocolate , Lavender
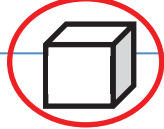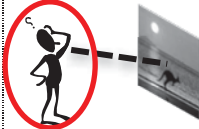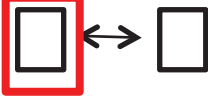
Pin it   f Share 4   Tweet 1   g+1 0

Relation between recipe tags and recipe titles
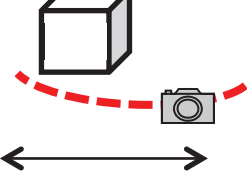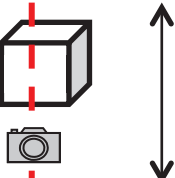
Relation between tag and recipe title	Definition	Red Hen Example		No. of Instances	No. of Recipes
		Title	*Related Tags*		
Repetition	Identical experiential meaning (e.g. Flour and flour)	Thai Inspired Beef Salad	Thai, Beef, Salad,	36	15
Synonymy	The same or similar experiential meaning (e.g. cake and gateaux)	Tomato Passata – Nonna's Favourite Recipe	Sauce	9	8
Antonymy	The opposite experiential meaning (e.g. free-range and caged)	Raw Choc Banana Tahini Cake	Vegan	2	2
Meronymy	The Relation between the part and the whole of something (e.g. a finger is part of a hand; tomatoes are a part of tomato sauce)	Dum Ka Murgh	Lemon, Chicken	27	11
Hyponymy	The relation between a general class of something and its subclasses (e.g. spoon is a hyponym of cutlery)	Minced Beef Turnover	Minced meat,	4	4
Collocation	An expectancy or high probability to co-occur in a field or subject area (e.g. 'eggs' and 'free-range')	Toor Dal Tadka with Chilies and Raita	Ayurvedic, Indian, homegrown	25	12

Appendix 8: Visual glossary

Visual Meaning Making Components for the Ideational Metafunction

Term	Description	Visual Example
Subjective	An image with perspective.	
Objective	An image or diagram that does not have perspective.	
Represented participants	Those people, animals, objects that are depicted.	
Interactive participants	Those people who interact with the visual: the producers and the consumers.	
Vectors	Direction of action	
Shapes	Shapes used in graphs, diagrams, e.g. Circles, squares, triangles etc.	

Visual Meaning Making Components for the Interpersonal Metafunction

Term	Description	Visual Example
Gaze	The gaze of the represented participant can be a 'Demand' (a direct gaze) or an 'Offer' (no direct gaze).	
Framing	Close, Medium, Long Shot etc. indicate the level of intimacy enacted between image and interactive participants.	
Horizontal angle (Level of involvement)	The horizontal angle indicates the level of detachment or involvement enacted between what is represented and the interactive participant.	
Vertical angle (Level of power)	The angle indicates the level of power enacted between what is represented and the interactive participant.	

(Adapted from Kress and van Leeuwen 2006)

Appendix 9: Case study, interview metadata

Overview of Interview Participants

	Participant Name[1]	Age	Sex	Occupation	Duration of interview hh:min:sec	Time of Interview 24:00	Context of Interview[2]
1	Louise	26 – 30	F	Undergraduate student	00:46:53	15:30	Participant's Garden
2	David	26 – 30	M	Postgraduate (PhD Student)	00:59:07	14:00	University Lab
3	Zoya	36 – 45	F	Writer	00:36:59	11:00	Café
4	Zara	26 – 30	F	Marketing	00:52:45	18:30	University Lab
5	Peter	56 – 65	M	Human Services Consultant	01:09:38	11:00	Café
6	Sarah	36 – 45	F	Artist	00:30:43	10:00	Café
7	Hendricks	31 – 35	M	Farmer	01:07:14	21:00	Skype
8	Katherine	36 – 45	F	Postgraduate (PhD Student)	00:29:42	10:30	Café
9	Eloise	36 – 45	F	Lawyer	01:09:45	10:30	Café

Average Interview Times for Semi-Structured Interviews

Interview Time	*hh:mm:ss*
Total Combined	07:42:46
Average Interview Time (Mean)	00:49:07

[1] Names have been changed to protect participant identities
[2] All participants were catered.

Appendix 10: Case study, interview questions

The interview is a semi-structured interview that, by the interviewee, is lead with a question that looks at existing practice prior to exploring Red Hen Recipe practice. The questions presented below offer a rough guide for which the interviewer can prompt discussion and dialogue. These suggested questions were developed through early results from Survey I and looking at the specific Red Hen Recipe that the individual participant created. This means that for an interviewee who in Survey I stated that they did all their shopping at a supermarket and went onto create a Red Hen Recipe with video and images that a question such as 'do you shop at farmer's markets?' would instead be modified by 'have you ever shopped at farmers' markets? Why? Why not?'. The suggested questions are comprised of a very open leading question, and potential follow-up questions that could be used to prompt a participant if they have difficulty answering.

Though these questions form some preparatory guidance for the interview, they are not adhered to if themes emerge during the conversation. When themes emerge, the interviewer follows these up in a way that cannot be pre-empted prior to that conversation taking place.

SECTION 1: Existing practices and an in-depth extension of the survey
Obtaining Food

- In your own words describe how you shop for food each week?
- Have you ever grown food of your own?
- What got you into farming?[3]
- I see from the survey that you shop at ___ why here?
- Why do you shop for food in these places?
- What is different about shopping in these places? Why there?
- When did you start getting food from X? And Why?
- Have you ever bought your food from a farmers market? If so why? Why do you not do this all the time?
- Do you find that you're provided with enough information about where your food is from and how it is produced?

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[3] Some questions are only suitable for commercial farmers etc.

Preparing Food

- How do you plan your meals- recipe book, recipe apps?

- What are these and why do you use them?

- What technologies do you use to access these- mobile phone, iPad/tablet, laptop, printed material like books?

- What about Twitter, Facebook, YouTube Instagram etcetera

Learning About Food

- Describe to me how you first learnt to cook?

- What got you interested in food?

- Have you ever created an online recipe before or food blog? Describe what you did? How was Red Hen Recipes different?

- How did you learn to grow X, farm Y? Etcetera

SECTION 2: Red Hen Recipe Practice

Early idea

- In your own words describe how you first came up with the idea for your Red Hen Recipe?

- Did you base your Red Hen Recipe on an existing recipe or did you make it up?

- If you based it on an existing recipe how did you find the recipe? e.g. cookbook, friends or family, online, Google search etcetera

- If you found this recipe online what device did you use? A laptop, a tablet, a mobile phone? Where were you when you searched the recipe?

- If this recipe was online did you print it off or view it on your mobile, tablet or laptop?

- Why did you choose to explore that particular ingredient? Why not other ingredients?

- How did you decide how you would go about finding out about that ingredient? Describe in your own words what you did.

- How did you find out about where and how the ingredient was grown?

- How did you capture this information:
  - Take photos
  - Take notes on phone or paper
  - Interview etc.?
  - Just remembered it?
- What was difficult or easy about finding this information?
- You used ____ modes to communicate how you created that recipe- describe how you took these photos and why you decided to do it this way.
- Why did you not use video or just written text? (alternative modes)
- Your recipe looks like it really explores ___ themes (e.g. animal welfare, personal memories, etc.) why this? Is this important to you?

Feedback and reflections
- What did you like or dislike about the Red Hen Recipe process?
- Did your Red Hen Recipe turn out the way you initially imagined? Was it better, worse, different? Did it surprise you in anyway?
- How was creating a Red Hen Recipe similar or different to what you would normally do (either shopping or cooking)?
- What did you learn from this experience?
- Is there anything you would like to do in the future- create more Red Hen Recipes? Try cooking something that you've seen on the website? Etc.?
- Is there anything you experienced during the Red Hen Recipe process that we haven't covered during the interview?

Appendix 11: Case study, exemplar interview transcript [excerpt]

Interview 1: Louise[4] (F, 26-30, Full Time University Student)

Date: 29th October

Time: 3.30pm

Audio Recording Duration: 46:53mins

Social Context: Participant's Garden with afternoon tea

Time	Person	Script
00:00	**J:**	O: *kay* (.) s:o? this is er for my records, because I'll lose it eventually (.) this is an Interview with *Louise* about her her Red Hen Recipe on the 29th [[of October]] O: kay so roughly the um interview just (.) sort of *touches* on (.) starts by touching on a few of er (.) um the things that you covered in the survey,
00:26	**L:**	Okay
00:27	**J:**	so what you [hmm [enjoy about food
	L:	Alright
01:02	**J:**	and how you go about shopping, how you make decisions about purchasing food and what you think about when you're doing that, what technologies or recipe books or things you use… ummm and then it'll just go on to explore the Red Hen Recipe practice (.) so your ideas (.) what you did (.) and the aim is just to look at the (.) the aim is just to explore how things like (.) web technologies (.) mobile technologies (.) and social networks can support people in understanding where their food comes from or exploring food (.)
01:11	**J:**	In terms of the interview (.) although I have some questions? the actual structure is "semi-structured" (.) so that means that if there's something you're burning to talk about
01:21	**L:**	Yes (.) yes (.) [laughter]

[4] To preserve participant confidentiality, the participant's name has been changed and identifying information (such as ingredient and recipe type) that would link this interview to the individual's profile on the Red Hen Recipe site, has been redacted.

01:22	**J:**	you can go off on a tangent (.) and just explore (.2) [laughter [explore the things that are actually of interest (.1) or come to mind (.) So there are a few example questions (.) but we don't have to stick to them.
01:29	**L:**	OK
	J:	but we don't have to stick to them
	L:	OK
1:31	**J:**	Um::: and as I've said before it's all confidential? (.0.5) and anonymised? (.0.5)
1:37	**L:**	Cool? (.) [yeah [O:kay? (.) I'll do my best (.) [laughter]
1:38	**J:**	Um:er:::alright (.) so just to start (.) so in your own words describe (.1) er (.) how you shop or think about purchasing food each week (.) Where do you go and why?
1:53	**L:**	O::kay (.1) ummmm well (.0.5) lately I've been going to the Organic Markets (.1) [umm [at Frenchs Forest (.) and quite early 'cause usually if you go any later than say 9 [am] it's really really busy (.) so:: the other day I went there about 7:30 (.) still quite busy but you could still go through without it being too hectic (.) um and plus there was all like a lot more stuff available too? (.) Um so:: they have like loads of stuff from like you know (.) fruit and veg (.) umm to smoothies (.) which I'm *addicted* to! Umm and like bread, croissants (.) and whatnot but um:: like that's where I got the ▮▮▮▮▮▮▮ from? so they were *gor:geous*, Um:: (.1) and [
	J:	[And so what made you start or decide to start shopping there? (.) Or getting food from there? [

02:43	L:	My family actually (.) like mum and my other sister (.) usually go there for the fresh fruit and vegetables (.) Um:: and like (.) I normally wouldn't really think about it except by um:: from like reading Jamie Oliver books (.) he's like really wanting us to get organic food (.) and usually I shop at say Woolworths and stuff (.) but sometimes you can't find like the special ingredients (.) And I think also like the maize flour that I um (.) used in the Rosemary and Pear cake (.) was actually (.) like (.) from a health food shop (.) so like it's interesting (.) cause because when I was reading the recipe I was like- "where do you get cornmeal from? I've never heard of this before" so it really makes you look and explore different options… other than Woolworth and Coles and whatever.
	J:	OK (.) um (.) and just cause you've touched on it (.) just because you brought it up (.1) in your own words describe where you first came up with the idea for your red hen recipe
	L:	Um:: (.1) oh:: (.0.5) ah ok (.) tough question so I had no idea what to do (.) because (.) er: like I have (.) um (.) I have a lot of things that we grow in the backyard? and I was actually was discussing this with my, my *sister?* and she said to me (.) "why don't you do ████████████?" and I had never heard of ████ ████████ as a sort of ingredient together so I thought that would be really interesting and I had █████ (.) I grow that (.) and the ████ I *love* but I literally was actually thinking of using *tinned* ████ which aren't *really* organic, so that was how I decided to go to the organic markets.
	J:	OK (.) hmm (.) and you chose (.) I mean you could have chosen ████████████████████████ (.0.5) why *specifically* ████ Why that ingredient [to trace]?

04:37	**L:**	Oh:: well that was actually in the recipe that I Googled to look up (.) ▮ and (.hh) ▮ and ▮ combinations (.) and I was searching for one for *muffins*? which was interesting but it had a whole 25 other ingredients which I thought was complicated (hh.). So the one that I chose was through:: real, simple dot com [[realsimple.com]] umm(.)ahh and I thought oh this was *really* good because it didn't have like (.) umm (.h) like (.) it was just- mix it in bowls (.h) it wasn't like "use a Mixmaster or anything like that" (.) so it was *extremely* simple, and it only took, like you know? roughly about fifteen minutes preparation time or something (.h) and then (h.) whack it in the oven for about forty five minutes (.) So it was *really really* simple.
05:13	**J:**	so how did you find that particular recipe? (.) You just did a Google search?
	L:	um yeah I did a Google search (.) ummm (.) yeah, just like perused through everything (.) and it was sort of difficult trying to chose which recipe until (.h) like I said (h.) the simplicity of this one (.) yeah (.) was really what caught my eye.
05:37	**J:**	Now If this recipe was online- what did you (.) how did you access it- did you search for it on a mobile phone? Laptop? Did you:: print it off? Like? (.1)
	L:	Oh ok yeah (.) so ok I Googled it through my computer (h.) and then um (.) I saved it to my favourites [laughter] [hmm [and then (.) er (.) yeah I printed it off (.) I think (.) and um sort of (.) sort of (.) went (.) went through it (.) I actually (.) for the *website* I had to *rewrite* it 'cause it was in American (.1) sort of (.) Fahrenheit and it had like um? "use eight tablespoons of butter" which I thought was really (.) kind of confusing [hmm (.) [so I ended up (.) like (.) redoing (.) that part for like (.) for like Australian people?
	J:	Oh::O:kay (.) oh I didn't realize (.) hmm (.) that you'd sort of (.)
	L:	Yeah (.) I sort of [yeah [
	J:	Sort of rewrote it for [adapted it [for this audience

06:23	L:	*Yeah* so I sort of adapted it (.) but (.) so I didn't want to steal this person's recipe (.) so I'm like "It's actually by *this* person" and I just like (.) wrote "*adapted*" on the website so.
06:29	J:	Did you? Um change (.) [hmm:: [apart from changing the way the measurements were described? Did you do any other adaptions? Or?
06:36	L:	Um (.) the other adaption is changing it from ██████ to ██████ [hmm [which I think? is the same thing? Um, when I went to the health food [[shop]] and actually asked them (.) when like I couldn't find the ██████ she said ██████ (.) which I think is pretty much the same thing. [yep [but I changed the wording from ██████ (.) I think? to ████ or wrote "██████ *OR* ████" in the recipe.
06:57	J:	Um, so then when you thought "OK I'm going to trace the ██ and where it (.) where the ████ (.) came from" (.) um:er how did *you* go about finding out where it was grown (.) [hmm [like what did you do? When you went to the markets?
07:13	L:	Um there's so many different stores when it comes to fresh fruit and veg (.) and I was wandering past one (.) which was quite large (.) and had, like lots of stuff [hmm [*And* I actually went there twice! So the first weekend I bought the pears [hmm [and then I was a bit like "I wasn't sure what I was doing" so then I asked you about (.) about what questions I should be asking [hmm [and so then like (.) last week (.) then I went again and spoke to this *one* lady who was giving out tasters? [hmm hmm [so we like have three dollar rockmellon [yeah [and apples? [yep [because they are actually hugely invested in selling *apples?* as *well* as pears. Um and then *she* pointed me out to this other lady who (.) was like (.) a bit older and obviously knows *everything* about [hmm [the place and I think she was maybe one of the owners and she seemed really chatty (.) so she gave me a lot of information about how the business grows and all of the other stuff they're into (.) like:: the biodynamic?? Or whatever?

	L:	[yeah?? [[[laughter]] like *all that stuff!* There was actually a really cool sign and I wanted to take a photo of it [hmm [but it wasn't there this week (.) so I was like (.) ooh umm she gave me the information about ▮▮▮▮▮ that I put (.) um (.) on the website (.) which was really great.
08:28	J:	Um Now (.) how did you capture *this* (.) er (.) [hmm [information you're getting? um (.) you took a photo? [yeah I took a photo [or did you take several photos? [I took [and choose?
08:36	L:	I took *one* photo (.) which was actually quite good because it had the ▮▮▮▮▮▮▮ [[sign]] and the ▮▮▮▮▮ [yeah ?[on the sign (.) which was cool(.) um and that sort of got most of the produce in the photo (.) [yeah [um and then I (.) then basically (.) the other photos were taking of the method [yep [of my um recipe (.) um:: [and when you? [I possibly could have taken more? photos of? (.) yeah. (.)
08:59	J:	And (.) and when you were *at* the markets (.) did you take notes? Or did you just remembered the key bits?
	L:	I just remembered the *key* bits (.) yeah (.) [yeah [yeah (.) Um I felt so odd going there and kind of going "oh can you tell me *all* this information about your stuff" but she was *quite* happy [yeah? [to sort of tell me about everything and also I tried to get away (.) like (.) three times and she just kept telling me information (.) which was *great* (.) you know? (.) for her (.) so::
09:25	J:	When you've been to the markets before? [uhhuh [do you? (.) *normally* ask about (.) er? [[where food came from]]
09:31	L	Um (.) I haven't been in a while (.) because of Uni [[University]] (.) mainly (.) so:: so I used to really get my stuff from Woolworths? Umm:: and just try and mark out the organic chicken in the freezer section (.) [yeah ? [as Jamie Oliver told us to do (.) because I'm *obsessed* with him (.) [yeah? [((laugher))

Appendix 12: Case study, initial coding and interview analysis

Interview 2 ████████ (M, 26-30, Research Student)

Date:	20th November 2014
Time:	14:00
Audio Recording Duration:	59:07
Context:	University Lab- with tea and cake provided

Time	Person	Script
00:00	J:	((the participant was already informed of the semi-structured style of the interview prior to the recording starting)) O::*kay* so:::: how the *interview works* (.) is we'll start off with, just a few general questions:: on::: um:: er::: ? (.) like (.) that just *tie* into the first survey? (.) um:: we won't spend too long on that (.) um:::: ah::: and:: then move on to::: er:: the sort of experience of *creating* (.) a Red Hen Recipe? (.) which you did [hmm, [*and* sort of *your*:: (.) how you went through that process (.) it's mainly focused on what you *did* (.) and that practice (.) so:: [O:: kay [so::umm (.) just to start er:: (.hh) in your own words (.) can you just describe how you make decisions about where to *buy* food each week (.) or *where* you shop (.) or *what* you buy. (.)
00:48	D:	Um::, I would say, (.) well the first word that comes up (.) is convenience. [hmm [um:: *for me* (.) I hardly ever go to a special shop for (.) [hm:: [for groceries or that kind of thing (.) so I usually just stick to supermarkets? (.) [yep [uhm:::: and then (.) I mean I live close nearby er (.) in student housing (.) [hm [so (.) on Harris Street (.) so quiet a few supermarkets nearby? [hmm:: [(.) um::: I tend to go to the one furthest away (.1) that (.) or at least the one furthest away, that I still think is within walking distance? [yep [(.1) It's the Coles on Broadway shopping centre? [yeah:: [um:::
01:19	J:	Why do you go to *that* one in particularly? [well [I mean you've got a *new* (.) cause you've got a new Woolworths that has just opened up [
	D:	The new Woolworths is really small (.) [yeah [so if I would (.) were to just have (.) If I were to want *choice* (.) I mean if I were just to need three things that I could eat [hm [(.) I would go there. (.) [hm [But usually (.) I only go there when I forgot something (.) [yep [I mean, if it's Sunday morning and I run out of bread (.) then I go there (.1) and then (.) I usually go to Coles because it furthest away (.) and it has the larger choice (.) and the reason that I go to places furthest away (.) *is* to have a

Appendix 13: Case study, interview vignettes

David (IV2)

David is 29 and from Europe. He moved to Australia to work in research full-time and lives by himself in a small apartment in Sydney's city center. On arriving to the country, David has had to develop shopping and cooking skills since prior to emigrating he lived with his parents. Furthermore, he previously lived in a rural area in his home country where seeing food in the fields and foraging for food were easy. Much of David's experience with food is described comparatively between his home country and where he lives in Sydney now. Though not interested in food and describing himself as 'not a good cook', David was curious about the Red Hen project and wanted to see whether he could learn something. David does all of his shopping in the large supermarkets that are near his flat. He likes the supermarkets for their choice and availability and tries to buy what is 'normal' to avoid labels that he doesn't trust or understand. David thinks organics may be meaningless, that information on produce might be marketing tactics. He resolves these feelings by buying 'normal stuff'. For cooking David doesn't use recipes since he just selects foods that he 'likes', these are typically unprocessed raw ingredients such as fruit, vegetables and meats. He makes combinations of the foods that reflect his taste preferences and his concern for healthy eating. For David's Red Hen Recipe he looks at the website to get ideas from other writers and then sets aside time in his schedule to do his shopping and the cooking and recipe writing. David buys his main ingredient at the supermarket and finds a label that tells him where the produce came from. He later researches this ingredient online and finds out more about it. David describes this process as a more conscious way of shopping and looking for food. He does not take any photos of the produce as he feels self conscious about doing this in the supermarket. David's interests in creating his Red Hen Recipe were focused on where he came from, and the recipe is a cultural and personal reflection of that. David's recipe was a dish he grew up with and had made on previous occasions. Turning this into a published recipe on the Red Hen website meant formalizing the intuitive way he would normally cook into a written and videoed artifact. The process of putting this recipe 'on paper' helped David to think about his own cultural history 'and see where within that history my recipe fits in'. Though he had made this dish previously David saw the Red Hen Recipe process as a chance to be creative and add his own twist to his native dish in

a way that reflected the country he now lived in. As an avid photographer David also wanted to try making a stop-motion film and found that this was a good opportunity to do this with his professional camera and software like Photoshop and Lightroom. David enjoyed the Red Hen Recipe process but found it took a long time and had a few problems uploading files to the website from his laptop.

Zoya (IV3)

Zoya is 40 years old and lives with her husband and two children in a house in suburban Sydney. Zoya grew up in Europe and emigrated to Australia with her husband when she was in her twenties. She learnt to cook through trial and error. Starting by using ready-made foods and then looking at what was in these and trying to replicate it herself. Having two children and working means that shopping is done once a week in a single location. Shopping is done as a family at Woolworths and occasionally 'top-up' shopping or 'buying for nice items' is done at the local IGA. As the family is on a tight budget the family watches their budget. Part of managing their household budget involves using a shopping list to plan out the week's meals. The whole family contributes to the shopping list, which is held on the fridge with a magnet. This kind of planned and cost conscious attitude to shopping is not only driven by cost but is also a reflection of Zoya's personality and upbringing. She describes herself as organized and a 'planner' and grew up with her parents using shopping lists in this way. However, planning food in advance does not rule out the occasional ad hoc purchase, especially if things are on 'special' and being sold at a cheaper price. In creating her Red Hen Recipe Zoya had several ideas for what she wanted to do. Originally she wanted to write a story about her main ingredient, which she grew in the back garden, from that ingredient's perspective. However, once she began the process of creating her recipe a story emerged that was not comedic or quirky, but rather a 'straight' story in which she explored of her own identity and relationship to food. For Zoya this recipe writing process allowed her to reflect on the life in this country that she had created and domestic and family life that was different to the one she had growing up. Zoya took photographs on her iPhone and drafted the story about the food on her laptop. She felt very strongly in this interview was the preference for participant choice of mode and technology to use. Zoya

loved the Red Hen Recipe project and felt that new technologies enabled people to express themselves in new and creative ways. However, she feels that it is important to give people a choice in *how* they do this, both in what they write about and how they write it. For Zoya she felt that other people might be good at making videos but that this was not a media that she connected with. Rather, as someone who writes and likes writing Zoya enjoyed writing her story and supporting this with pictures. Since Zoya grew the produce herself, her main learning experience from the Red Hen Recipe process was a reflective experience in which she considered herself and her own relationship to food.

Annie (IV4)

Annie is 27 years old and originally from New Zealand. She lives in Sydney's city center in an apartment with her fiancé and works as a marketing manager. Annie is passionate about food and a self described 'foodie'. She is a member of the Youth Food Movement and an urban community garden where she grows her own vegetables. She is incredibly motivated by the need to change and improve the food system. She sources food from a wide range of places, such as ethical butchers, farmers' markets and other providers. She is highly aware of issues that affect the food system, from problems with animal welfare (she used to be a vegetarian) to farm labour, food mileage and taste. In addition to being an active member of the Youth Food Movement and her urban Community Garden, Annie also has her own food and cooking blog. Annie first became interested in sustainable food through a persuasive writing assignment in high school; Annie selected the topic of vegetarianism after hearing a piece on the radio from someone who had become vegetarian for environmental reasons. After hearing this radio piece, Annie went on to research this 'ended up converting herself'. Annie grew up with migrant parents who grew their own vegetables in order to replicate those they had in their home country. Though not interested in gardening when she was growing up, she rediscovered this as an interest at University. Annie describes how she learns about different food from different people and different places, piecing together what she has seen at her local markets or shops, what she sees in the community garden and then asking someone what to do with it. Having sourced information on a new ingredient

and how to cook it Annie tries a new food. However though she has learnt something she does not like the taste and decides not to cook it again. Taste is also important. Annie has a passionate interest in photography and owns several digital cameras. For her recipe she uses a professional digital camera, light reflecting panels and Adobe Lightroom and Adobe Photoshop to create a professional looking photo of a dish. She made her final dish with produce she grew herself and an adapted recipe she found online, on one of her devices (she thinks that it might be her mobile phone but isn't sure). She does not print the recipe off, but instead displays it on a large monitor that faces the kitchen in her home. For Annie, she did not learn much from the Red Hen Recipe process as she grew the produce herself and already knew where and how it was grown. Annie states that she would have learnt more had she done something that was different to what she normally does, like talking to a farmer at the farmers' market. However, Annie did learn from reading other recipes on the website. Her favorite recipe was the one about the Australian robotic dairy farm. She liked everything in the Red Hen Recipe process but struggled with the user interface, as it was slow to upload images.

Peter (IV5)

Peter is 60 years old and works as a consultant. Peter is a self-described 'foodie' who lives with a vegetarian and vegan and, as a result, thinks a lot about the vegetable content of meals. Peter describes being interested in food from a very young age and watching his grandmother making food and pretending to make food in a toy kitchen when he was little. His parents emigrated to Australia when he was little, and although he has spent most of his life in Australia he continues to be fascinated by the cuisine from both his home country and other countries around the world. He starts cooking more when his mother starts working. He draws from recipes such as *Womens Weekly* and 'giving things a go'. At university he becomes a hippy and interested in the wider food system and, for reasons of cost, bulk buys fresh produce from Paddy's Markets. Peter describes his entire life being 'about food' and avoids the supermarkets so as to support local producers and local food. Though Peter has run and taught cooking classes, he personally doesn't like to learn cooking in this way. He prefers just 'giving

things a go'. He draws and contributes information from a wide range of online and offline communities. Peter has previously written articles about food in food specialist magazines, attends lecture series on food at the University of Sydney and subscribes to academic journals on the issue. Food is also inherently social and he is part of a group of 'foodies' who meet up for meals and discuss how they cooked things. Peter learns about food from the variety of places he goes to. He describes anecdotes around discovering new ingredients in one place (for example when abroad in Italy) and then asking the farmer at his local market about that ingredient with the hope that farmer will then try growing it. For his recipe, Peter explored an ingredient that he discovered at his local farmers' market. He found out about this ingredient from the farmer and then supplemented this understanding with knowledge online. Though he had never cooked with this ingredient before, Peter used this ingredient with a recipe of his own making that is reflective of his own cultural heritage. He used his mobile phone to take the photos for the recipe as he feels the device is 'easy and convenient' and the quality of the images 'good enough'. Peter's learning experience with the Red Hen Recipe process was in thinking about *how* people create recipes and *how* to best write these. For Peter, learning about food occurs through people talking to one another and having conversations. He loved that Red Hen Recipes was not about celebrity chefs but about home chefs. For Peter Red Hen Recipes was just a different style of conversation.

Sarah (IV6)

Sarah is 43 years old and lives in an apartment with her partner in a Sydney suburb where she works as an artist. At school Sarah did Home Economics but it was only in her twenties that she became interested in food and learning how to cook and 'put things together'. This interest was sparked by a cooking course that 'opened her eyes' to what went into food. Sarah sources food from a range of places and is largely interested in the look of the produce and its freshness. Though she sometimes wonders about the pesticides that have gone on her foods, and will occasionally buy organic food, she is largely not too obsessive about this and finds that the cost of organic food means that she can't buy that much of it anyway. Sarah describes herself as a creative person. Cooking for Sarah is a creative act and something that bonds her to her family. She like

cooking for others, and feels cooking for other people to be a bonding experience that 'makes people happy'. This focus permeates the Red Hen Recipe that she created. Sarah cooked the Red Hen Recipe for her grandfather who is 89, lives alone and normally eats a lot of pre-cooked and ready-made meals. She cooked her Red Hen Recipe for her grandfather and her Red Hen ingredient came from her grandfather's lemon tree. Sarah's recipe was created in a variety of places: she took photos at her house, sourced the ingredient and did the cooking at her grandfather's house and wrote the recipe at her own home on her laptop. Sarah learnt more about herself and why she liked cooking and felt that Red Hen Recipes offered a reflective writing process in which to think about her relationship with food, primarily her relationship with cooking since this was what her primary interest is, not food provenance or environmental issues. She also learnt, and is going to try, cooking with fresh Arrowroot after reading about this ingredient on the website.

Hendricks (IV7)

Hendricks is 35 years old and works a farmer of rare breed meats. Hendricks lives in a rural area and, prior to returning to work on the family farm, had a career within a large mobile learning development company. Hendricks is a young fairly switched on farmer who has done a lot of work in promoting local food and native breeds. The farm's main source of income is free-range chickens. Rare and native breeds are a subsidiary form of income and include cattle, sheep, and pigs. Alternative chicken breeds are not permitted on the farm due to rules preventing cross-contamination. Hendricks grew up on the family farm and grew-up picking potatoes, barley and straw. The farm was a mixed farm that kept cattle and different crops on a small scale. Returning to the farm as an adult Hendricks has promoted the farm through 'tongue to tail' dining events in which an animal's life is followed online across several social media platforms and eventuates in a dining event that serves up different parts of the animal. Such nights involve a collaboration between the farmer (Hendricks), the butcher, a restaurant and local chefs. These nights tend to attract locals and people interested in food. Hendricks uses Facebook, Twitter, Pinterest and Instagram to promote the farm and its work. Though he wanted to set up a Moodle online learning course he wasn't sure who the target

audience for that would be. This project not only stalled because of Hendricks uncertainty as to who the intended learner would be but also because of the limits in time that Hendricks has. All daylight hours are devoted to running the farm and evenings are spent catching up on emails and diversifying the business through events and catering work. Hendricks uses both his mobile phone and digital SLR to take photos for the farm's social media accounts. Generally these decisions are motivated by whether it is an 'ad hoc' picture for Instagram™ or something a bit 'nicer'. He uses his mobile phone to take video content. His experience with engaging people in his work is through different social media. He notices that 'cute' images get better responses and that it is difficult to really engage people with the realities of farming as they 'don't want to see muck'. For Hendricks who has been tracking food from 'farm to fork' and 'nose to tail', Red Hen Recipes was not a particularly new experience. However, having to take one ingredient and consider how to represent his product, his farm and himself in a new way was nice as these are things that though he does daily he probably takes for granted.

Katherine (IV8)

Katherine is 40 years old and works in the creative industries. She lives with her partner and dog in a flat in a Sydney suburb. Katherine first became interested in food through watching the lodger in her family home cook. She learnt to cook through members of the household: first by watching, then by assisting and finally doing. She draws on a range of resources and used to write a food blog. In her twenties her interest in food was largely focused on gourmet cuisine and fine dining; during this period of time she wrote a food blog. However, her interest in food changed in her thirties. During this period of time she witnessed her mother resolve health issues through a dietary change. This experience prompted her to change her diet to a 'paleo' diet, which is roughly defined as a diet high in protein and vegetables and low in refined sugars and carbohydrates. Sarah describes becoming more interested in the food system as she got older: 'I got more interested in the sustainability and the health aspects' of food, and the 'economics behind' the food system. She learnt about these issues incrementally through exposure to books by Michael Pollan, documentaries such as *Food Inc.* and general engagement with voices from sustainable food discourse. Today, Katherine avoids shopping in the

supermarkets and instead sources her food from a range of independent stores, and markets. She describes herself as much more 'environmentally minded' and goes out of her way to source things as ethically as possible. In creating her recipe Katherine used a combination of written word and images that were taken on her smartphone. She says she isn't into food blogging anymore as she doesn't have the talent or interest in photography. Katherine couldn't say specifically *what* she learnt from the Red Hen Recipe process but felt that learning about food was incremental and that 'every time you're involved in something like this or have conversations or read a book […] it pushes you a little further in terms of thinking about these issues.' For Katherine it wasn't a radical change but a way of continuing existing thought process around food and the food system.

Eloise (IV)

Eloise is 41 and lives in an apartment in central Sydney with her partner. She works part time as a solicitor. In her spare time she writes a food blog that has a modest following. She also volunteers with Oz Harvest, a charity that connects potential wasted food with the homeless. Eloise's interest in food first came through learning to cook at home with her mother. However, even though she enjoyed cooking she found it hard to do this regularly when she started working 15 hour days as a solicitor in the city. Since working part-time she now gets to cook more often. Eloise's interest in the wider food system was triggered by a documentary they saw on a plane that connected health to a diet that was vegan and high in grains, vegetables and fruit and excluded refined sugars, processed foods and alcohol. Eloise and her boyfriend try this new diet for 2 months as an experiment. Though they feel amazing and notice that they lose weight, the diet is difficult to maintain. Some of this is socially driven (e.g. being able to go out with friends and go to various restaurants, dinner parties etc. without differing too far from the norm) some of this is driven by access (e.g. the participant, when working in the city got all of her lunches from one place since very few places did that vegan wholefood meal). They adapt the diet to allow for some dairy and occasional meat eating when they eat out. Both Eloise and her partner identify as 'mainly vegetarian'. Eloise created her Red Hen Recipe in response to the weather that was very hot at that time of the year. She

used vegetables that were abundant from her parents' neighbors' garden in Brisbane and a recipe from her mother's folder of recipe clippings. Eloise adapted the recipe and photographed the final results in a stylistic way using a professional digital SLR camera. She wrote the recipe up using her laptop when she returned to Sydney. Eloise's learning from the Red Hen Recipe process was being made aware of how, despite being actively engaged in food blogging and being part of the Youth Food Movement and Oz Harvest, that she is not that aware of where her food comes from. Her experience in the project is one of feeling more conscious or aware of her decisions around sourcing her food.

Appendix 14: Case study, Survey II, expert review process

The Table below provides a reference number for each reviewer and their relevant area of expertise for the individual to be able to provide expert feedback on the Survey tool.

Reviewer Expertise

Version	Review no. #[5]	Person[6]	Job/Role	Relevant Area/s of Expertise[7]
Supervisor Meetings 1st, 2nd & 3rd Iteration	1	Principle Supervisor	Senior academic and lecturer (UTS)	• Mobile and Blended Learning • Adult education • Higher education
	2	Co-Supervisor	Adjunct academic and senior lecturer (UTS)	• Information systems • Qualitative research methodologies
Expert Review 4th/Final Iteration	3	Sarah	Educational technologist at a Sydney Educational Tech Development Company Part-time Doctoral student (UTS)	• Interaction design • E-Learning • Mobile Learning • Distance Education
	4	John	Adjunct academic and senior lecturer (UTS)	• Information systems • Qualitative research methodologies
	5	Holly	Commercial Communications of medical science research	• Scientific/experimental research • Science and research communication
	6	Jennifer	Doctoral Candidate and HCI researcher	• Design research • User experience studies • Technology development
	7	Julie	Academic and lecturer (UTS)	• Software Engineering • Ethnography • Design research • User experience • Higher education
	8	Andy	Senior academic and lecturer (UTS)	• Software Engineering • Creative Practice Research • Design research • User experience
	9	Anna	Doctoral Student (UTS) and IT/IS Workplace Trainer	• Anthropology/Ethnography • Information Systems • Workplace Learning

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[5] The reviewer number is used to identify reviewer comments in the table 'Feedback from 4th Iteration of Expert Review'.

[6] Names changed to protect anonymity

[7] All persons had some expertise in qualitative research.

Feedback from 4th Iteration of Expert Review

Introduction

This section details feedback from the final iteration from seven reviewers. Though earlier feedback from face-to-face meetings formed an essential part in the survey's early drafts and development, the informal and integrated nature of such feedback and discussion do cannot be formally documented in the way that formal expert review and pilot surveys can. Therefore, only the final expert review is presented here.

Overview of trends in Expert Review

- Reviewers general feedback on the survey was largely positive
- Reviewers' comments can be seen to cluster around problematic sections of the survey. More comments were targeted at Questions 1-9 of Section 2 and all of Section 3.
- Specific issues can be seen in near identical responses of different reviewers to the same question. For example: "Maybe a broader question? What did you want the reader to take away from your recipe?" (#3) and "Is it definitely about learning? "Take away" would be less leading if you want to make it more open" (#9).
- Not all suggestions from reviewers were suitable to implement. However, treated holistically the expert review process allowed the researcher to identify problems within the survey and rewrite questions to address these issues.

Breakdown

Reviewer feedback is presented in Table X. Reviewer comments are displayed next to the section or question that they relate to. Reviewers as listed in Table X. Reviewer Expertise (e.g. #5 for *Reviewer 5*). Where reviewers have provided several comments for one section, each comment is given a number (e.g. i, ii, ii). Thus if the section "Information about the research" has a comment labeled "#6ii" this identifies that comment as Reviewer 6's second comment pertaining to that particular section.

Reviewer Feedback and Implementation

Section/Question no.		Reviewer Feedback	Implementation
Header	Information about this research	**#6i:** This part says you will be matching the before and after survey using participants' email addresses but in Part 1 you collect First Name and Surname **#6ii:** In the opening sentence – do I need to know that "This is the second of the two surveys"? Bit confusing. **#6iii:** Change "participating in this project may have…" to "how your participation in the project may have changed the way you think about food" **#6iv:** Change wording to "The survey asks about your experience on the Red Hen Recipes project. These are general questions with no right or wrong answers. Additionally, if you no longer wish to participate in this survey, please feel free to stop at anytime." AND "If you agree to be part of this research and for this survey data to be published, in a form that does not identify you, please continue by answering the survey questions"	**Accept #6i:** Instead of collecting email address (as people can have more than one) reword to collect name. **Accept #6ii** change the statement to a simpler one. **Reject #6iii** though 'change' is simpler it is more causal and stronger than intended. **Accept #6iv** –this is simpler wording
		#8 I've had a look at it and it looks ok to me. My main question is: why do this as on online survey rather than an interview? Are there a very large number of participants? The reason I ask is that an interview is very much more flexible and you can adjust the line of questioning if need be (eg. if participants are not understanding a particular question). However, of course this becomes impractical if you are going to have hundreds of participants.	**Reject #8** – Though the use of a structured interview would potentially generate richer data, and fit with the aims of the study, it is not a sufficiently flexible enough method to allow for the "rolling enrollment" that an informal project like this has. Moreover, for some participants who did not want to be interviewed this method is exclusionary. Since reviewer #8 found the survey to be largely fine (with a few corrections that are addressed below) the researcher continued with the survey as a web-survey instead of structured interview.
Part 1	You and the Red Hen Project	**#6:** "Why do you need <first name & surname> won't the email address you capture give you my identity? **#3i:** Is it possible to have the "select a number" option start at 1? And have none as the last option? I've found participants respond better (at work anyway) when your first assumption of them is positive. **#3ii:** Also I would be interested in also finding out why they DID create a recipe – i.e. what drew them to wanting to contribute in the first place (disregard if you've already answered this in other parts of your research).	**Accept #6** Changed in line with information in the header. **Reject #3i:** Good suggestion, but one that also means that none might get missed out in a drop down box. Also emphasizing that is OK not to have created a recipe is important so **Reject #3ii:** Already addressed in other research

Part 2	Creating a Red Hen Recipe	1	#4: I suppose this is very relevant to your thesis, but it is partly covered in part 2, questions 15&16. I think it would be better to ask "How was the Red Hen Recipes experience different or similar to the way you usually create or adapt a recipe, or share it with other?"	Reject #4 – though reviewers 4, 6 & 9 all found problems with this question, the alternative question suggested by reviewer #4 doesn't quite address the research question
			#6: Reword to – "How was the Red Hen Recipe experience different/similar to how you usually seek information about your food?"	Accept #6 – Though not accepted entirely feedback from reviewers was used to generate a more clearly worded question.
			#9i: Suggestion to use 'skip logic' for participants who do not answer Part 2 #9ii: This question is a bit wordy- could it be changed.	Reject #9i – UTS survey manager software unable to do this. Accept #9ii – Question is rewritten.
		2	#3: My first thought here was that you're making the assumption that the user wanted the reader to learn something – maybe they didn't and just wanted to share a recipe they thought was tasty? Maybe a broader question? What did you want the reader to take away from your recipe? Or maybe why did they post that particular recipe? #6: Reword – recipe to recipe/s #9: Is it definitely about learning? "Take away" would be less leading if you want to make it more open	Accept #3 – I have integrated this comment into the existing question for allowing both "take away" and "learn" this opens up the question a bit but provides the word "learn" as a clear word that would be understood by participants who have English as a second language. Accept #6 Accept #9: Original question is better suited to addressing the research questions. Therefore a hybrid of the reviewer 9 & 3 with the original question is adopted.
		3	#6: Reorder the tickboxes to keep mobile devices together (e.g. digital camera to follow mobile phone)	Accept #6 - the lists for all devices have been sequenced from "more mobile" (e.g. phones, cameras) to "less mobile" (e.g. laptops and desktops). Tablet devices are positioned in the middle
			#9: A lot of the earlier questions are about what device they used. Is this really of high importance? If not, I'd suggest moving these questions to the end.	Reject #9: The structure currently keeps questions directed at "Creators of Red Hen Recipes" in a single place.
		4	#6i: People might get confused over the difference between a digital camera and a mobile phone unless they can immediately see the two as different categories next to each other. #6ii: Make the above question 3a and this one 3b then you can simply ask "why?" #9: The "alternatively" part is confusing. Are they only answering this part if they have used images from the internet?	Accept #6i Reject #6ii – UTS survey manager software unable to do this. Accept #9: This is definitely ambiguous and was rewritten without the word alternatively.
		5	#6: Divide questions into "a" and "b"	Reject #6 – UTS survey manager software unable to do this.
		6	#6: Divide questions into "a" and "b" #9: The "alternatively" part is confusing. Are they only answering this part if they have used images from the internet?	Reject #6 – UTS survey manager software unable to do this. Accept #9: This is definitely ambiguous and was rewritten without the word alternatively.
		7	#5: Replace "my Red Hen Recipe" with "Your red hen Recipe" #6i: Divide questions into "a" and "b" #6ii: Recolour and reformat the questions	Reject #6i-6ii – UTS survey manager software unable to do this.
		8	#9: The "alternatively" part is confusing. Are they only answering this part if they have	Accept #9: This is definitely ambiguous and was rewritten without

			used images from the internet?	the word alternatively.
		9	**#5:** Reword to remove "I" making this in line with other Qs. E.g. "What device did you use to…"	
		10		
		11		
		12		
		13		
		14		
		15		
		16	**#3:** I probably wouldn't know what to put for this response – it threw me being so general after the one before was so specific.	**#3:** the order/structure of questions was problematic for this person. Possibly keep the order but change the phrasing to make it better.
		17	**#8** Creating a Red Hen Recipe let me..." The provided responses condition a particular response and may cause people to go back and change their responses to earlier questions. I'd suggest leaving this as an open question.	**Reject #8:** The suggested responses, though potentially conditioning, are derived from the interview data and reduce participant load. The researcher is concerned that left entirely open that individuals would not have any guidance for how to answer this question. "Creating a red hen recipe let me…" (e.g. learn to write a recipe?).
Part 3	Using the Red Hen Website	1	**#5:** What did you find out \<insert: about food\> through reading or viewing…	
		2	**#5:** Do you want specific learnings to be attributed to specific recipes? If not, split this up to make it easier for respondent. **#9:** Soften the tone of this question. Suggested: "Which recipe names can you remember? What did you learn from them?" Also do they have to remember the name of a recipe to learn from it? You may want to open this up a bit to allow for responses like "the one with the lemon herb" or other vague things that people latch onto. **#8** Which recipes can you remember and what did you learn from reading them?" Split into several sub-questions: 1. Do you remember any recipes? If so, which ones? Did you learn anything from them? If so, what?	**#5:** valid point that is addressed by rewriting the question using **#9's** suggestion **Accept #9:** Good point about participant memory of names and how the tone could be softened. Rewrite this question. **Accept #8:** In modified form the wording of this question is changed to allow for what Reviewer 9 argued should be a "softer tone". By softening the tone of the question it eliminates the need to "break up" or "split up" the questions.
		3	**#5:** "Indicate examples of "other ways" **#9:** I think I would struggle to answer this one. I can see that this is part of what you are trying to get at with your research, but I think you need to make it a bit more accessible. Perhaps: How do you normally find things out about food? was this similar or different? (two question boxes)/.	

			#3: I think this Q is very similar to Q1 from the first section. How is what you're trying to find out here different from the original q?	
Part 4	Likes and Dislikes	1	**#9:** Why 150 words? I would separate these into two questions, otherwise people tend to only answer with a like or dislike. **#3:** I'd split this into 2 Qs	**Reject #3 & #9:** This question allows likes and dislikes to be in the same place, so it is less dichotomous. Also from experience this question has worked better than two separate questions when used in other surveys on educational technology.
		2	**#9i:** I would rephrase this to "Do you have any other comments or suggestions?" to keep the same tone. **#9ii:** I'm not entirely sure that the aim of your research is coming through. What is the key information you are looking to capture?	
Footer	Thank-you and Other Information		**#8** Will all the questions be compulsory? At the moment it looks like none of them are, which in one way is good, because you are not forcing people to respond when they have nothing to say. On the other hand, what conclusion will you draw if people do not answer a particular question? Will it be that the question was not relevant or that they simply forgot..?	**Accept #8:** Several questions are made compulsory, however those that apply only to content creators are left open since not everyone who uses the survey will fall into this category.

Appendix 15: Case study, Survey II, final survey instrument

Red Hen Recipes Feedback Survey II

Thank you for contributing to Red Hen Recipes

Information about this research

This is the final survey of the Red Hen Recipes Project. This survey is to be answered AFTER you create your Red Hen Recipe AND/OR have used the Red Hen Recipes website. This survey will take between 20-30 minutes to complete.

The purpose of this online survey is to find out about how participating in this project engaged you in thinking about food. The survey will begin by asking you to give your first and last name: this is used to match your first survey with your last survey.

The survey asks about your experience on the Red Hen Recipes project. These are general questions with no right or wrong answers. Additionally, if you no longer wish to participate in this survey, please feel free to stop at anytime.

If you agree to be part of this research and for this survey data to be published, in a form that does not identify you, please continue by answering the survey questions.

This research has been approved by the UTS Human Research Ethics Committee (Reference No. 201300070).

Thank you for agreeing to participate in this survey and research project.

Part 1: You and the Red Hen Project

First Name

Family Name

How many recipes did you contribute to the Red Hen Recipe website?

Select a number.

If you did NOT create a Red Hen Recipe briefly explain why.

Part 2: Creating a Red Hen Recipe

If you did NOT create a Red Hen Recipe skip this section and go to "Part 3: Using the Red Hen Recipe Website".

1. How does the Red Hen Recipes experience compare to how you usually seek out and/or share information about food?

2. What did you want the reader to learn or take away from reading/viewing your recipe/s?

3. If your recipe/s included photos, which device/s did you use to take these?
Tick all that apply.

☐ Mobile phone
☐ Digital camera
☐ Tablet (e.g. iPad, Nexus 7, Microsoft Surface)
☐ Laptop computer
☐ Desktop computer
☐ I used existing photos from the internet or other sources
Other: [   ]

4. Why this device/s?
Also, if you used existing images from the internet, explain where you found this content and why you used it.

5. If your recipe/s included video/s, which device/s did you use to take this?
Tick all that apply.
   Mobile phone
☐ Digital camera
☐ Camcorder/video camera
☐ Tablet (e.g. iPad, Nexus 7, Microsoft Surface)
☐ I used existing video from the internet or another source
☐ Not Applicable
Other: [   ]

6. Why this device/s?

Also, if you used existing video from the internet, explain where you found this content and why you used it.

[ ]

7. When writing the words for my Red Hen Recipe, which device/s did you use to write these?

Tick all that apply.

- [ ] Mobile phone
- [ ] Tablet (e.g. iPad, Nexus 7, Microsoft Surface)
- [ ] Laptop computer
- [ ] Desktop computer
- [ ] I used existing content from the internet or another source

Other: [_____]

8. Why this device/s?

Also, if you used existing words from the internet (or elsewhere) explain where you found this content and why you used it.

[ ]

9. I uploaded my final recipe/s to the website on the following device/s:

Tick all that apply

- [ ] Mobile phone
- [ ] Tablet (e.g. iPad, Nexus 7, Microsoft Surface)
- [ ] Laptop computer
- [ ] Desktop computer

Other: [_____]

10. Why this device/s? Why not other devices?

[text box   ]

11. Did you edit your photos and/or video?

This may include: cropping, adjusting colour or light, etc

○ Yes
○ No

12. If you did edit your photos and/or video briefly say what you did and why.

[text box   ]

13. Describe the ways you tried to engage the reader/viewer in your recipe.

[text box   ]

14. Did you find researching and creating a Red Hen Recipe easy or difficult? Why?

[text box   ]

15. In creating a Red Hen Recipe what did you learn about where your food came from?

[text box   ]

16. What else did you learn or experience?

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17. Creating a Red Hen Recipe let me...

Tick all that apply.

- ☐ Do something creative
- ☐ Contribute to a research project
- ☐ Be part of an online community
- ☐ Learn about where my food came from
- ☐ Do something different
- ☐ Think about my own relationship with food
- ☐ Reflect on the things I do everyday but take for granted
- ☐ Share my knowledge with others

Other: [   ]

Part 3: Using the Red Hen Website

1. What did you find out through reading or viewing recipes on the Red Hen Recipe website?

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```

2. Which recipes can you remember and what did you learn from reading them?

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│                             │
│                             │
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```

3. How does reading/viewing a Red Hen Recipe compare to how you normally learn or find out about food?

[text box]

Part 4: Likes and Dislikes

1. What did you like or dislike about the Red Hen Recipe project?

[text box]

2. If you have any additional comments, suggestions, or concerns, please write them here.

[text box]

Thank you

Thank-you for taking the time to complete this survey and for being a part of the Red Hen Recipe research project. If you have any further questions about this research please contact the researcher either on email Jessica.Frawley@uts.edu.au or by phone (+61) ▮▮▮▮▮▮▮. You are free to pull out of this research at any point without consequence.

Finish >   Page 1 of 1

Appendix 16: Case study, Survey II, participant device usage for RHRs

Device or Approach	Task (no. of people)	Reason		
		Themes	Refs	Excerpt
Mobile	Taking photos (9)	• Ease and convenience	**6**	This device does the job easiest and quickest
		• Context – good for the time and place	2	Because it was easy to take it into the kitchen and, as I was cooking, leave it on the bench nearby or in my pocket.
		• Good camera	2	Because my phone is always handy and has a good camera.
		• Handy or accessible	2	It's my phone, it doesn't leave my side, it takes photos, so it is accessible.
		• Quick	2	Using the mobile phone was a quick way to take a picture without interrupting too much the flow of the recipe
		• Uploading from phone	1	Easy to take photos while I was preparing and then just upload them from my phone.
	Taking video (1)	• Ease and convenience	**1**	Convenience. Easy to carry, capture and upload to dropbox.
	Writing text (1)	• Handy or accessible	1	My sister txt me through the recipe quite some time ago, I had txt it to myself so I could access it whenever I wanted (I don't usually get a lot of txts from myself so when I look through its usually right there).
	Uploading recipe (1)	• Used in tandem with other devices	1	My laptop is set up as a desktop, connected to 2 screens. This is the device I was on at the time (afternoon break at work). So technically I was looking at my iPhone while typing the recipe into the website on my laptop/desktop computer.
Digital Camera	Taking photos (9)	• Quality of photos	3	I wanted the photo to be nice :)
		• Context – good for the time and place	1	A mobile phone would not be able to pull off the image quality I was able to get now in a relatively dark and confined space. This is also because I used a tripod to use longer exposure times, something that's easy to pull off with a flexible DSLR but it's quite hard with other photo-taking devices.
		• Familiarity or usual practice	1	I have a food blog, so I usually take photos with my digital camera and upload them onto a laptop computer for processing onto the blog.

	Taking video (1)	• Ease or convenience • Access and ownership	1	I made a timelapse video with my DSLR hooked up to my laptop, the latter working as a timer and controller for the camera. Again, the camera was on a tripod for hands free operation. I guess a modern smartphone on a tripod would be less hassle, but I used what I had easy access to
Tablet	**Writing text (1)**	• Ease or convenience • Screen size	1	A larger screen size on my iPad. I could have done it on my phone, but it was more convenient on the iPad.
	Uploading recipe (1)	• Ease or convenience • Screen size	1	Convenience. Size of screen.
Laptop	**Writing text (9)**	**Characteristics or Features (11)**		
		• Ease or convenience	8	Easy to type, easier to see and use the website.
		• Familiarity or usual practice	2	My laptop is my life... I use it to write and for research, including obsessing over FoodTube
				Convenience and familiarity
		• Fast	1	Typing faster allows the words to flow more easily
		• Keyboard	1	the keyboard is bigger than on a phone and easier to type
		Access and ownership (3)		
		• No alternative device	3	I should note I don't possess the alternatives, like a capable tablet.
		Other Tasks (6)		
		• Searching the web	2	I believe a computer is the easiest tool to bring together text entry and editing, plus photo editing.
		• Compiling media	1	
		• Content from online	1	
		• Viewing the RHR website	1	
		• Editing photos	1	
		• Searching for ingredients	1	

		Characteristics or Features (7)		
	Uploading recipe 11	• Ease or convenience	4	This device is easier to use
		• Familiarity	2	Convenience and familiarity
		• Reliability	1	I usually experience less IT issues with my laptop (cf. mobile devices).
		• Large screen	2	because it has a bigger screen and i can use a keyboard
		• Keyboard	1	
		Other tasks or activity (5)		
		• Compiling media	1	The reasons are similar to the answer above: my laptop is the best suited for a task where text and photo editing are key in bringing something together, especially if it's more than a 5 minute job (as was the case here).
		• Editing photos	1	
		• More involved tasks	1	
		• Sharing on social media	1	
		• Writing	1	
Desktop	**Writing recipe (2)**	**Other tasks or activity (3)**		
		• Compiling media	1	I was then on the right device for uploading my images and text onto the website, which would have been difficult from any other device.
		• Saving my work	2	I didn't type straight onto the website because I didn't want to have to worry about the internet crashing and losing my work. In Word I can save my work regularly.
	Uploading recipe (3)	• Context – good for the time and place	2	I find it easier to give my full concentration to a project in front of my desktop computer which is situated in an office. When I am in the office I do not have as many distractions and can give my full attention to any project at hand.
		• Access and ownerships	1	I don't have a tablet. My mobile phone doesn't support Word documents. My laptop is so old it doesn't have Intel and therefore cannot display many websites properly.

Use Existing content	Photos (2)	Existing photos taken by participant (1)		
		• Access and availability	1	I had some existing photos on my desktop computer which were taken with a digital camera. I didn't have this particular project in mind when I took those photographs.
		Existing photos taken from the internet (1)		
		• Lack of time	1	I wanted something that looked good to attract people to my recipe. I didn't have the time to take something myself so I decided theft was the best option. A google image search did the job.
		• Quality of photos	1	
	Video (2)	Existing photos taken from the internet (2)		
		• Producer video	2	The producer put up a great educational video on YouTube of how the tomatoes I used are grown, and where.

Appendix 17: Additional web analytics data

Technology Use

People used a range of operating systems and Internet browsers with these devices. For mobile devices, where OS and device are more rigidly paired, platforms reflected their device ownership with 160 iOS users, 57 Android users, and 8 Windows mobile users. For desktop users, Windows (369), Macintosh (147) and Linux (86) were the most popular operating systems. Browser choice was diverse. Out of the 1,510 sessions individuals conducted on the website Chrome accounted for 52% (n=789) of browsers used. Safari (378 sessions), Mozilla Firefox (154 sessions), Microsoft Internet Explorer (113 sessions) and Opera (14 sessions) were also used. Whilst browsers like Chrome, Safari and Internet Explorer were seen to be used both desktop and mobile devices, some browsers were used solely on a mobile device. These include Safari (in-app) (32 sessions), Android Native Browser (28 sessions), Windows Phone Browser (1 session) and Opera Mini (1 session). Browser variation is rendered more diverse when browser version is taken into account. Though it is important to acknowledge different browser versions (e.g. Explorer 9, Explorer 10) as yet another way users' experience is customized, the specifics of such data do not assist in addressing the research question. As such this data is not included here.