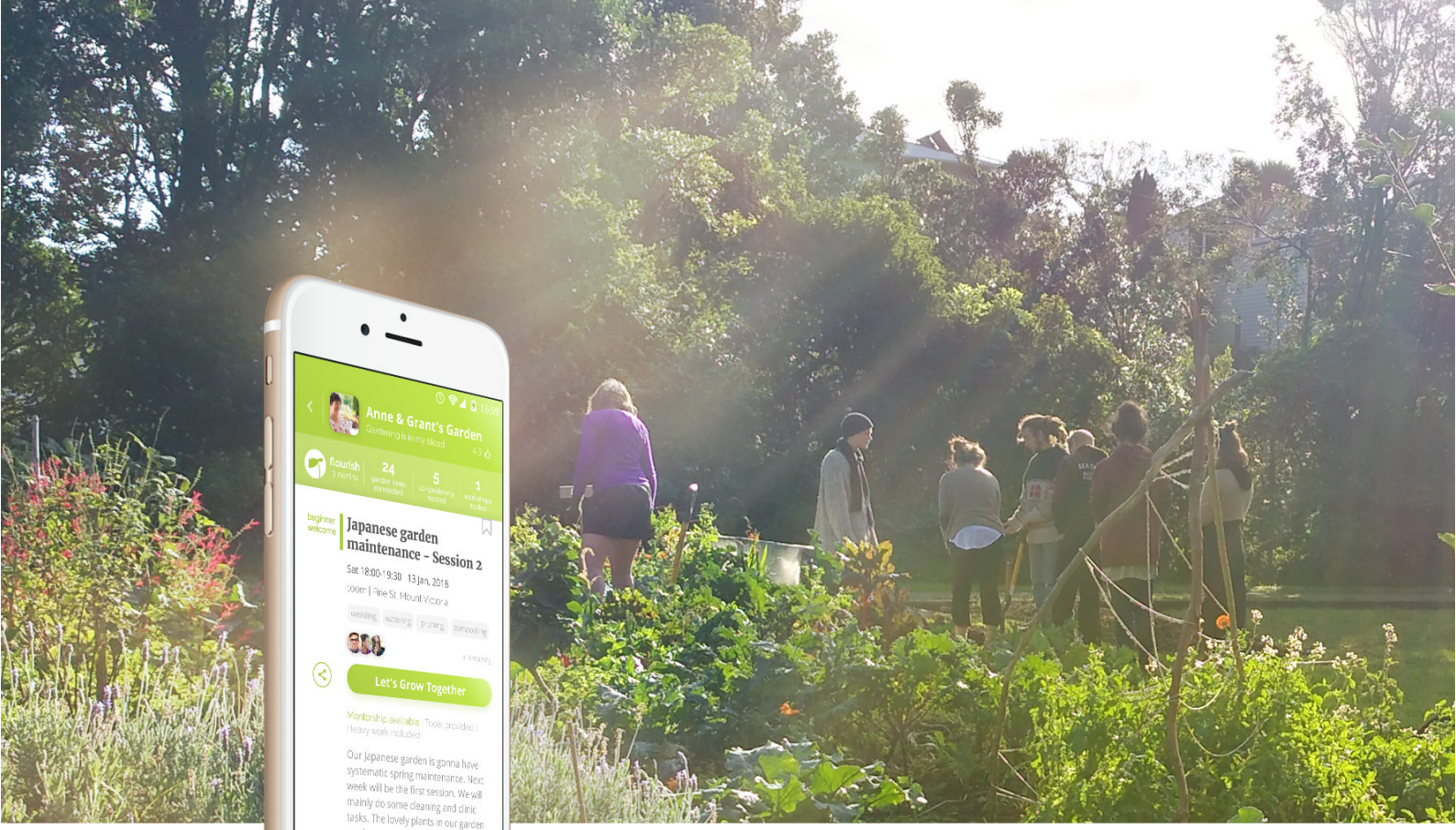

Connect | Share | Grow

Growing Together

Encouraging Emotional Engagement With Communal Gardening

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An exegesis presented in partial fulfillment of the requirements for the degree of Master of Design,
Massey University, College of Creative Arts,
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For everyone and everything that have brightly painted the start of my life adventure in New Zealand. Much love.

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To Daniel Winter, for everything.

Abstract

Community gardens are open spaces where food or flowers are cultivated, and are managed and operated by members of the local community. Their benefits range from producing food, building community, education and promoting health, to enhancing the resilience of individuals and environments. However, people who have been involved, and who recognise the value of those gardens believe engagement in community gardens is lower than desired. Moreover, there is an age gap of gardening experience: nowadays younger people have less experience growing their own food, while there are not opportunities for experienced older people to pass down their knowledge.

Informed by the success of digital services in engaging users, I addressed and delved into my research question:

> How can the methods and approaches taken from interaction design practice prototype a digital service that encourages emotional engagement in communal gardening?

During my research inquiry, I looked to interweave concepts from interaction design, emotional design and gamification; I went through a spiral design process combining deep engagement with potential users, and iterated my design to the final solution presented through an interactive prototype.

The final prototype offers an experience through a series of interactions which communicate main scenarios in a user journey. These interactions also illustrate how design can shape a digital service as a "joy maker" and as a "mutual friend", connecting the two roles in my proposed service: "gardening event host" and "garden bee".

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Chapter 1

Figure 1. Community garden co-working time (21/05/17).

Introduction

About me

Before coming from China to New Zealand to dive into user experience design in-depth, I was a digital product designer. Realising how much my designed digital services eased the work of end users inspired me to craft meaningful and delightful experiences for people, and to make a difference.

Soon after arriving in Wellington, I was introduced to community gardens (see Figure 1 on p. xviii). There I saw people grow and concentrate on and care for the land; I heard laughter, chat and discussions; I felt passion, positivity and knowledge flow. However, the deep connections between people, land and the community that I observed, reminded me of my experience in China: how generations gradually lost connections to their land, and human relationships become more distant than in the old days when they earned their living by growing. Then a voice became clear in my head – how wonderful would it be to open these experiences up to more people, to help people reconnect with the land, and to reinforce community relationships?

Research question and scope

> How can the methods and approaches taken from interaction design practice prototype a digital service that encourages emotional engagement in communal gardening?

In my research, "communal gardening" refers to gardening collaboratively in public or private gardens on a volunteer basis and often comes with mentorships; "digital service" means a digital platform which focuses on optimising a phone-based user experience. The output of this research will be an interactive Android-based prototype which demonstrates a series of interactions instead of documenting the whole system.

More background about communal gardening and digital service will be introduced later in this chapter. Then chapter 2 will review the scholarship that I have explored for encouraging emotional engagement: interaction design, emotional design and gamification.

It is important to note that this research is not about behaviour change (e.g. persuading people who do not like gardening to participate). Instead, I concentrate on how interaction design can facilitate engagement with gardening. Considering many garden owners and garden lovers are middle-aged or aged (Earle, 2011), this research will focus on individuals who have adapted to smartphones rather than who rarely use them.

Context

Global and local growth of community gardening

Community gardens are increasingly popular across the globe. They are defined as open spaces managed and operated by members of the local community where food or flowers are cultivated (Guitart, Pickering & Byrne, 2012, p. 364).

Community gardening has "multiple and inter-related benefits" (Earle, 2011, p. 12). Apart from producing food, community gardening also can enhance the well-being and resilience of individuals, communities and environments (Egli, Oliver & Tautolo, 2016). According to Earle's (2011) summary, benefits such as developing a sense of community; providing food and green spaces; and encouraging social and educational connections are also identified in New Zealand literature.

Aligned with a global tendency, Earle (2011) points out that community gardening is popular in New Zealand. The reasons include the benefits discussed earlier and a "growing your own veges" cultural inheritance (Earle, 2011, p. 4). Table 1 lists some examples in Auckland and Wellington before 2016.

Challenges of community gardening

Earle's (2011) research identifies four essential components of making a successful community garden: "active community involvement; passionate, practical and hardworking people; a suitable site; and time, knowledge and equipment" (p. 96). These are recognised as challenges faced by local community gardens. Specifically, my fieldwork in nine community gardens in Wellington showed that participation is lower than desirable by people who have been involved, and who recognise the value of those gardens.

Table 1. Types of community gardening activities in Auckland and Wellington (Earle, 2011, p. 67).

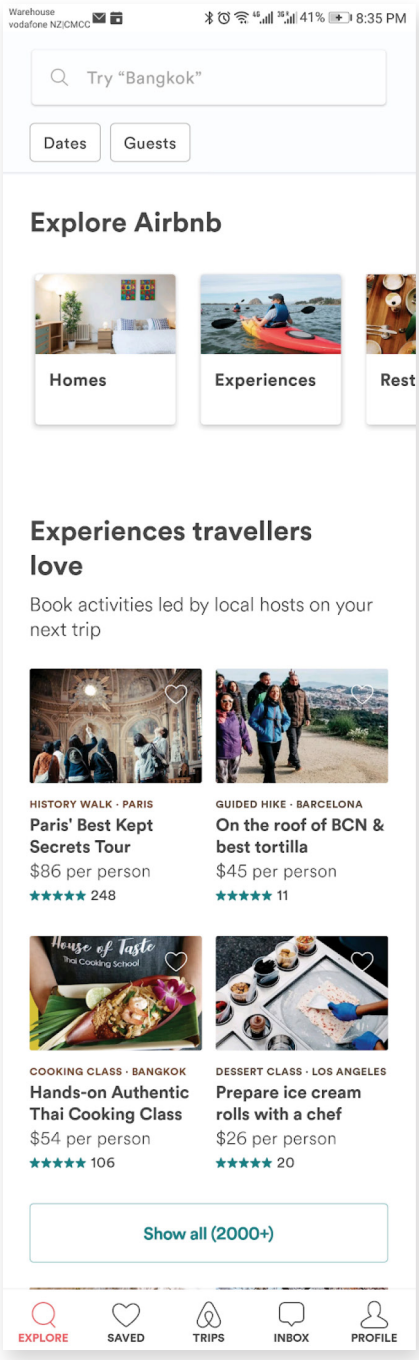
Type of gardening	*Description and/or example(s)*
Allotments	A garden in a public place where individuals or groups each garden their own plots
Communal gardening	A garden in a public place where the gardening is carried out communally
Shared gardening	Where a resident offers spare land for neighbours to garden or neighbours assist each other with their home gardens (often on a roster or working bee arrangement)
Initiatives to support people to garden at home	Initiatives that focus on enabling people to set up their own home gardens, eg Manukau Parks Teaching Gardens and Whare Taiki Hauora Gardening Project
Revegetation projects (a variation on communal gardening)	These projects usually focus on planting indigenous vegetation on public reserves. These sites sometimes also include community orchards and/or community gardens, eg Papawai Restoration Project in Mount Cook, Wellington
Work skills and horticulture training programmes	These include gardens in prisons, employment programmes and initiatives involving people with impairments or mental health conditions, eg Asert – Tātou Development Trust in Porirua and Kelmarna Organic City Farm in Herne Bay, Auckland
Guerrilla gardening	Planting on public or private land, such as road reserves, traffic islands, parks and empty sections, without permission

Community gardens have made efforts to increase engagement through promoting themselves and hosting events via diverse channels, for example, dedicated websites, Facebook pages, blogs, and sections on community service websites. However, from the audience's side, this information is poorly organised, scattered, and lacks efficiency.

Taken together, the factors that influence engagement in community gardening include passion, commitment, convenience, availability, knowledge, and having the resources to effectively communicate with the audience.

Furthermore, when looking more deeply, the current demographics of gardeners indicate a potential problem. Nowadays, younger generations have limited gardening experience because of the easy access to fresh food and less time for gardening (Earle, 2011, p. 4). At the same time, more experienced gardeners are getting older and losing their strength for heavy gardening tasks. The age gap hinders the elderly from passing down their experience and knowledge, while leaving their valuable garden assets abandoned or hard to maintain.

Figure 2. Airbnb, Inc. (n.d.). Airbnb app homepage on an android phone [Screenshot]. Retrieved 17/02/2018.



Opportunity

Connecting to private gardens

Although having the age gap is unfortunate, it indicates an opportunity – getting private gardens involved and encouraging mentorships to engage individuals in community-sense gardening. As an accessible and effective way for participants to learn gardening skills, mentoring is often seen in community gardens (Earle, 2011). Besides offering mentorships, home gardeners need less commitment from a participant than a community garden would expect. This opportunity is supported by the existence of "shared gardening" (Earle, 2011, p. 67). in New Zealand, which means opening up private gardens for neighbours to work together (see Table 1). In addition, requests for home garden assistance exist on local community networks, such as Timebank (see Figure 3 on p. 7), Neighbourly (see Figure 4 on p. 8), Facebook groups and geo-based communities. Therefore, it is worth connecting people in private gardens, which can bridge the age gap, enhance community relationships and spread the passion for gardening.

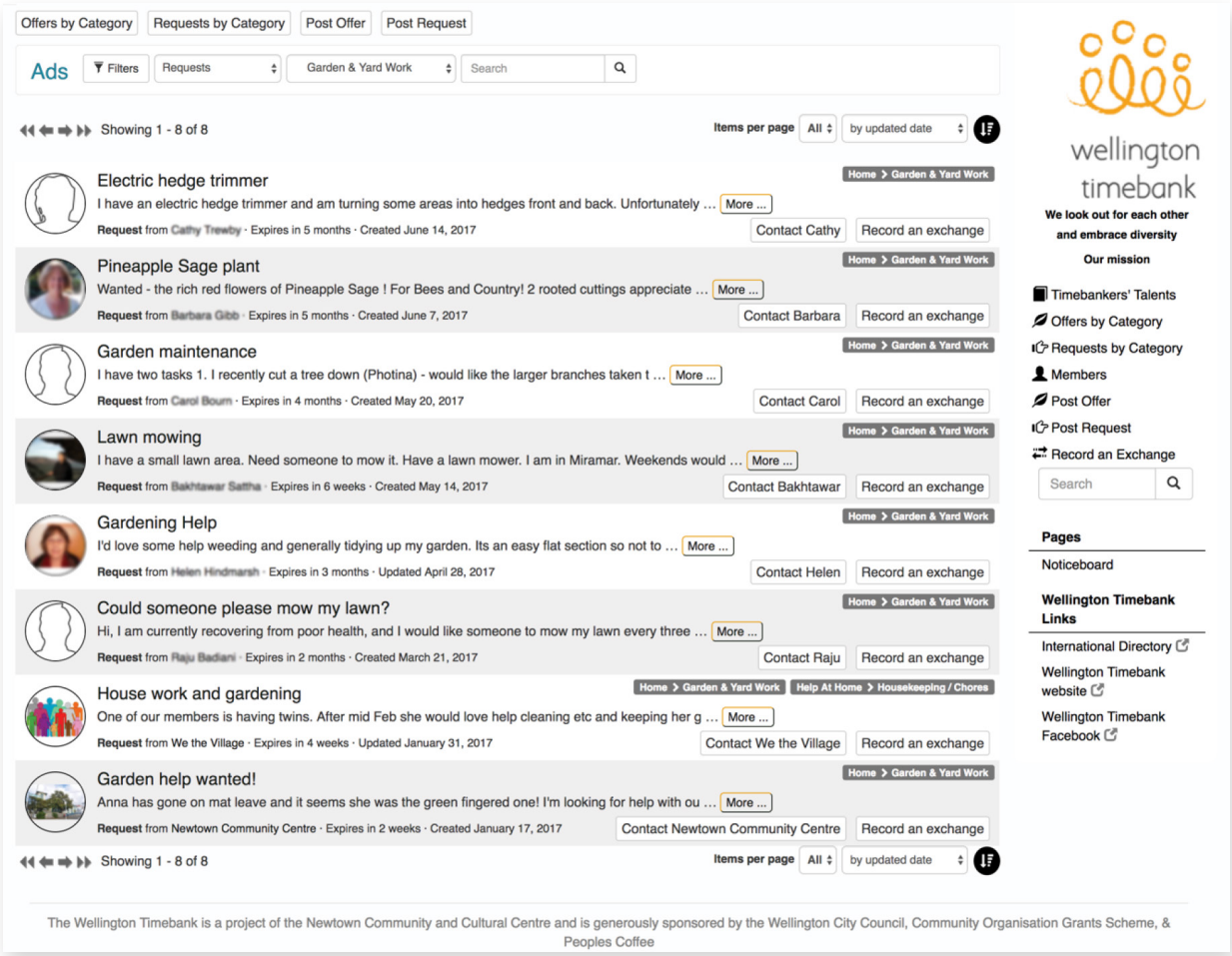
Engaging through digital service

Digital services can be described as "the electronic delivery of information including data and content across multiple platforms and devices like web or mobile" (Stephan, 2016). When it comes to connecting and engaging people, it is valuable to take digital service into account because of its outstanding success. For example, Airbnb (see Figure 2) is a digital platform for people to lease or rent lodgings, to participate in or facilitate local travel experiences, and to book restaurants. To date, this service has created millions of connections between hosts and strangers (Airbnb, Inc., 2016); Meetup (see Figure 5 on p. 9) is a digital platform that links people through events. Similarly, it has brought countless like-minded people together to create beautiful interactions in the real world. It is clear that a digital service can unleash social engagement by leveraging technology and improving communication.

Similar to Airbnb and Meetup, my proposed service will allow users to "find/host and connect" through gardening events. Two roles are involved in this service: gardening event host (host) and "garden bee" (participant), which references "working bee", a New Zealand term for a voluntary group doing communal work for good (Mahmood, 2013, p. 76). Hosts can range from

community garden organisers to private garden owners, while participants are people interested in gardening. Moreover, a user is welcome to shift between these roles.

My research inquiry went through a spiral journey comprising user research, conceptualising, developing and validating. After discussing the literature review and methods in Chapter 2, I will describe this design journey with my top four research findings, and present the final solution in Chapter 3. The whole journey and further thoughts will be summarised in Chapter 4.



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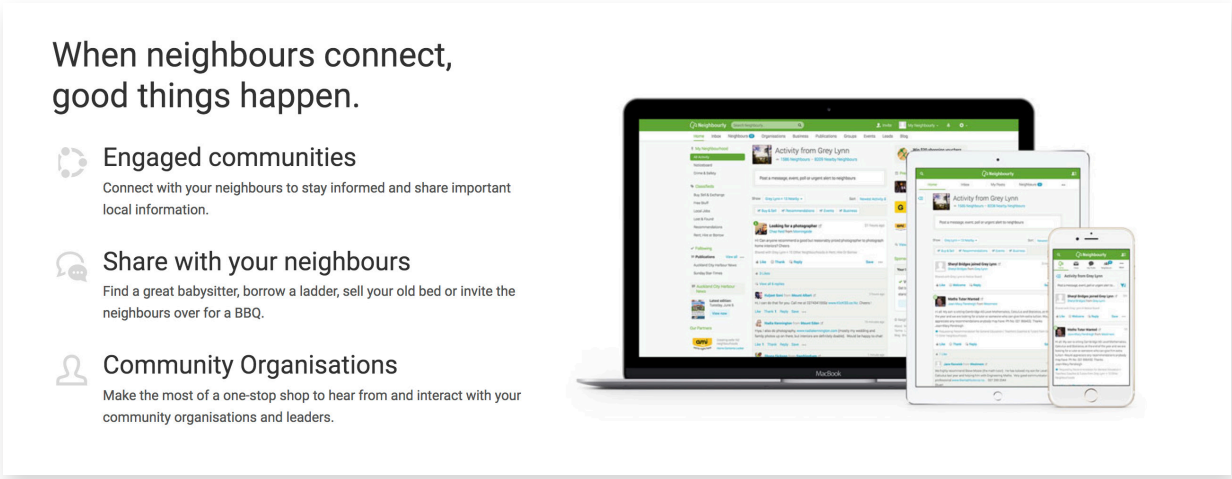

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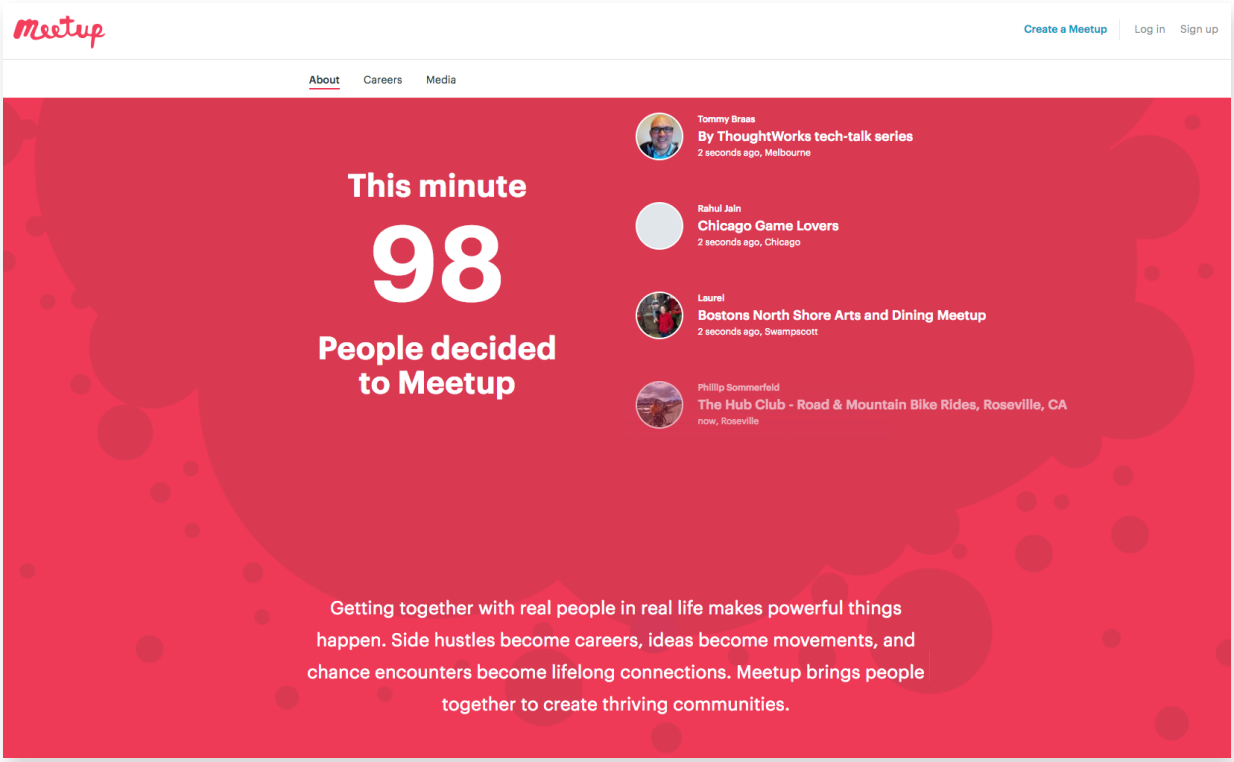
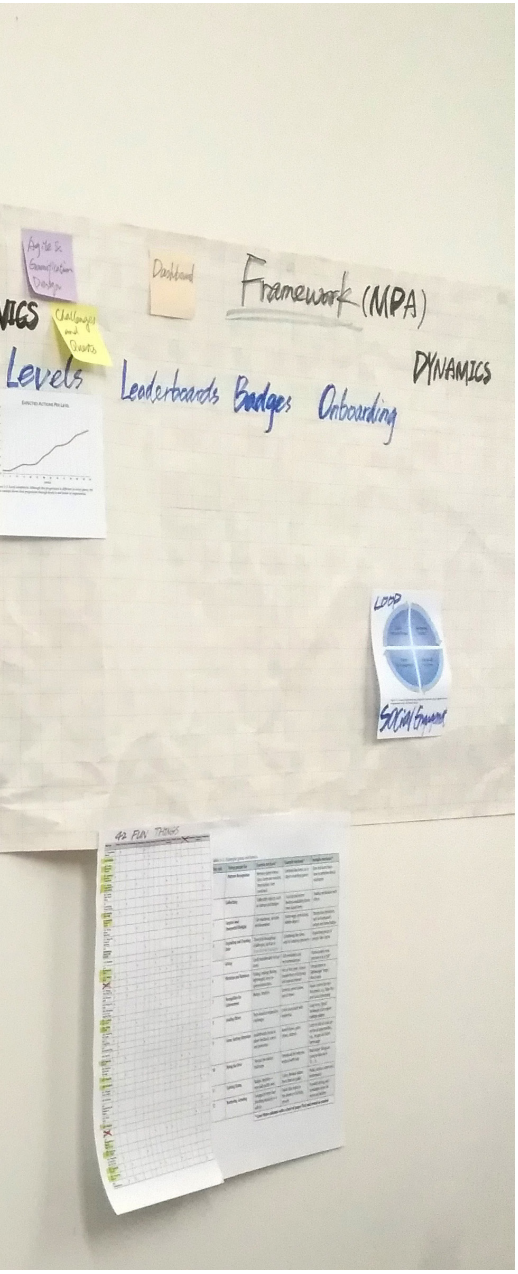


Figure 5. Meetup (2018). Meetup About page [Website]. Retrieved 18/12/2017, from https://www.meetup.com/about/.

Chapter 2

Figure 6. Mapping gamification elements to user journey (28/06/17).

Literature Review and Methods



This chapter details three distinct areas of scholarship that I have reviewed in the course of my research: interaction design, emotional design and gamification (see Figure 6). The research methods employed during my inquiry will be introduced in the second half of the chapter.

Interaction Design

> "Interaction design is the art of facilitating interactions between humans through products and service" (Saffer, 2007, p. 4).

A considerable amount of literature has been published on interaction design. According to Preece, Sharp & Rogers (2015), interaction design can be defined as "designing interactive products to support the way people communicate and interact in their everyday and working lives" (p. 8). In essence, interaction design involves systematic thinking and a thorough understanding of users, which builds on artefacts and expands to craft an experience. As Dewey (1997) maintains, an experience has its beginning, middle and end. This view reveals that time flow is crucial for an experience, and so for interaction design. Correspondingly, "the fourth dimension" (Kolko, 2007) is proposed to emphasise the awareness of time flow on interaction design. This dimension means that as a designer, one needs to start designing with the end in mind (Burgmans, 2017) and conceptualise a service holistically. This viewpoint is supported by Simon Clatworthy (2010), who states that a service is "a series of interactions between customers and the service system through many different touchpoints during the customer journey" (p. 80).

Interaction design can also be interpreted from a communication perspective. In Norman's words (2013), "Communication is a key to good design" (p. 20). Further situating languages in communication, Uday Gajendar (2007) argues that "Language is a potent force for designers to comprehend in crafting effective interactions" (p. 116). For instance, fundamental concepts of language contributed to my research, such as metaphors, framing and the creation of meaning. Specifically for metaphors, in *Metaphors We Live By*, George Lakoff and Mark Johnson (as cited in Kolko, 2007) define them as "ways of interpreting our daily world with previously experienced and known relationships/associations to enhance meaning, and achieve shared understanding" (p. 116). Further digging into these aspects which influence our interpretation of the world, emotional design comes to the stage.

Emotional Design

> "An overarching goal of interaction design is to develop products that elicit positive responses from users…" (Preece, Sharp & Rogers, 2015, p. 131)

Various theories about emotional design have been put forward. For Preece, Sharp & Rogers (2015), emotional interaction is to understand emotions and use the knowledge to design for user experience. Four pleasures have been identified by Patrick W. Jordan (2003) as the principal determining factors in emotional design. They are physio-pleasure (the pleasure derived from sensory organs); socio-pleasures (the enjoyment derived from relationships with others); ideo-pleasure (the value and meaning a product conveys) and psycho-pleasure (relating to the usability and experience of a product). For example, in terms of my research setting: gardening with others is fun and beneficial for people who are interested, and on its own it achieves physio-pleasures, socio-pleasures and ideo-pleasures. Related to the four pleasures, Norman (2004) proposes that emotions operate at three levels: visceral (how the design looks and feels), behavioural (functionality and usability), and reflective (how the design reflects the self-images of users and impacts them beyond the direct interactions).

There are many ways to address all three levels of Norman's model. In the technology field, expressive forms such as emoticons, icons, motions and imagery aligned with aesthetics are suggested to convey emotional states and/or evoke emotions (Preece et al., 2015). Likewise, an emerging term – microinteraction is drawing more attention. For Dan Saffer (2013), microinteractions are subtle moments centred around accomplishing a single task. When it comes to applying microinteractions to design, Dan Boyarski (as cited in Henderson, 2015) sees every element on screen as an actor on a stage – a character that designers are directing and shaping through its behaviour and personality. Sharing the same perspective, Rebecca Ussai Henderson (2015) developed the term "UX choreography" to illustrate techniques of applying motion to creating captivating moments in user experience (see Table 2).

Table 2. Information summarised from Henderson's (2015) Principles of UX choreography principle.

Principle	Definition
Feedback	Demonstrate the result of a user's interaction, whether it was successful, and why.
Feedforward	Provide hints to prepare users for what is about to happen and what to do.
Spatial Awareness	Help orient users with their environment and clarify the relationships between every element.
User Focus	Guide user's attention and clarify change states.
Brand Tone of Voice	Strengthen the brand to help users recognise it.

A great example of emotional design is the "Memories" feature of Photos, an app on iPhone (see Figure 7), which resonates deeply with users and adds real value and meaning to them.

> Photos automatically scans your library for significant people, places, holidays, and more, and presents them in curated collections called Memories. Day after day, you'll find new Memories ready for you to enjoy. You can also create your own Memories, view Memories as slideshows or as automatically-edited movies, and share them with friends and family. (Apple Inc., n.d., para. 2)

The Memories feature addresses the three levels of Norman's model from different aspects. At the visceral level, the feature leverages users' data and maximises its value through theming, like "Best of the year" or "At the coast". These results create familiarity and curiosity. At the behavioural level, the feature is enjoyable because of its highly automated functions that do not require complex input from users. On top of that, this feature helps users rediscover favourite and forgotten moments, and makes unique movies for them to tell personal stories. Rendering the mood through sound, rhythm and transitions, a movie not only amplifies the emotions, but also inspires users when reviewing their moments.

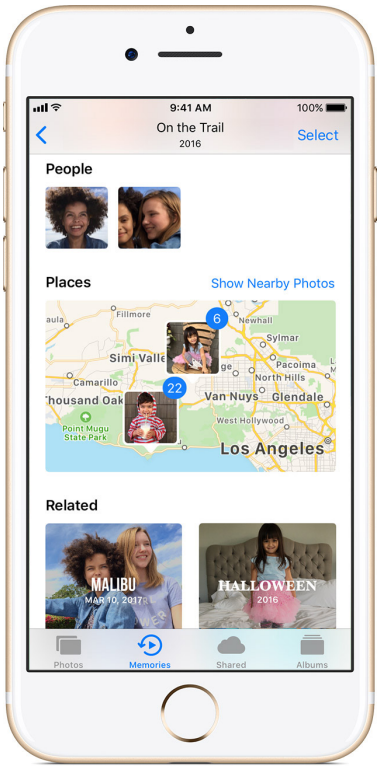


Figure 7. Apple Inc. (2018). Memory feature showcases [Website]. Retrieved 28/12/2017, from https://support.apple.com/en-nz/HT207023.

Gamification

> Gamification helps align our interests with the intrinsic motivations of our players, amplified with the mechanics and rewards that make them come in, bring friends, and keep coming back. Only by carefully unpacking consumer emotions and desires can we design something that really sticks. (Zichermann & Cunningham, 2011, p. x)

Being applied to both game and non-game contexts, gamification is leading the movement of making experience more fun (Zichermann & Cunningham, 2011). Echoing emotional design by leveraging users' emotions and desires, the process of game-thinking also reflects behavioural psychology and the success of social games. From a behavioural perspective, Stephen Wendel (2013) summarises the practical rules that would encourage people to take actions, including: making things easy, achievable, familiar, rewarding, beautiful, urgent and leveraging peer impact. These rules are often seen in implementations of gamification. To enhance a gamified experience, it is acknowledged that the MDA Framework is frequently used (Zichermann & Cunningham, 2011). The MDA Framework (Hunicke, LeBlanc & Zubek, 2004) comprises Mechanics (the components to gamify experience), Dynamics (users' interactions with those mechanics over time) and Aesthetics (the desirable emotional responses evoked from the interactions).

Seven essential mechanics and some advanced examples of combining mechanics and dynamics are introduced in *Gamification by Design* (Zichermann & Cunningham, 2011). These mechanics are points, levels, leaderboards, badges, challenges/quests, onboarding and engagement loops. Table 3 is a collection of inspiring ideas, which blend these mechanics with dynamics. These ideas reinforce a close relationship between emotions and gamification that enhances user experience. Interestingly, among the mechanics, "Using a Metaphor" is introduced in the "Levels" section. Observing the repeat of metaphors in my literature study sparked me to embed a gardening theme in my solution. This idea expanded the potential of metaphors to strengthen the meaning of my designs.

Table 3. Example game mechanics in *Gamification by Design* (Zichermann & Cunningham, 2011, p. 80). Ideas weaving mechanics and dynamics of gamification.

Dice roll	Things people like	Example mechanic*	Example mechanic*	Example mechanic*
1	**Pattern Recognition**	Memory-game interactions: items are revealed, then hidden, then combined	Combine like items, as in object-matching games	Earn and burn: learn how to optimize virtual economies
2	**Collecting**	Collectible objects, such as stamps and badges	Scarcity and return: limited-availability items, time-based items	Trading mechanisms with others
3	**Surprise and Unexpected Delight**	Slot machines, variable reinforcement	Easter eggs, geocaching, hidden objects	Unexpected dynamism, such as Foursquare's unique and funny badges
4	**Organizing and Creating Order**	Time/job/throughput challenges, such as in *Diner Dash* or *Chocolatier*	Combining like items and/or creating symmetry	Organizing groups of people, like a team
5	**Gifting**	Easily transferrable virtual items	Gift reminders and recommendations	Karma points: only purpose is as a "gift"
6	**Flirtation and Romance**	Poking, smiling, flirting: lightweight, easy-to-ignore interactions	Hot or Not style: choose people from a list/group and express interest	Virtual items or lightweight "props," shout-outs
7	**Recognition for Achievement**	Badges, trophies	Contests, game shows, award shows	Kudos system for reinforcement, e.g., Nike Plus and Lance Armstrong
8	**Leading Others**	Team-based or cooperative challenges	Levels associated with leadership	Long-term, "great" challenges that require multiple players
9	**Fame, Getting Attention**	Leaderboards based on player feedback, scores, and promotion	Award shows, game shows, contests	Large or out-of-scale promotional opportunities, e.g., images on Flickr's home page
10	**Being the Hero**	"Rescue the maiden" challenges	Friends ask for help, you respond with help	MacGruber: things are going to blow up in 10…9…
11	**Gaining Status**	Badges, trophies—especially public ones	Scarce, limited-edition items that are public	Public, obvious scores and leaderboards
12	**Nurturing, Growing**	Tamagotchi style: feed this thing regularly or it will die	Points that expire in the absence of activity, growth	Pyramid scoring, with cumulative scores for teams and leaders
		*** Cover these columns with a sheet of paper first and reveal as needed**		

Drive (NZ Transport Agency & Accident Compensation Corporation, n.d.), a New Zealand free website and learning tool for driving, is a good example of applying gamification (see Figure 8). Drive breaks down the road code into chapters and units for users to learn step by step. Users' goals determine what skills they need. Accordingly, Drive wrapped the process of achieving the goals into challenges: "Get your learner's", "Get your restricted", "Prepare for the full" and "Teach someone to drive". Moreover, these chapters and units are visualised as badges, and a collecting process is embedded to encourage users to advance (see Figure 9). Also, a sense of reward is sprinkled around the whole experience of Drive.

Together these studies provide important insights into the essence of understanding users, resonating with them through design and adding value to their lives.

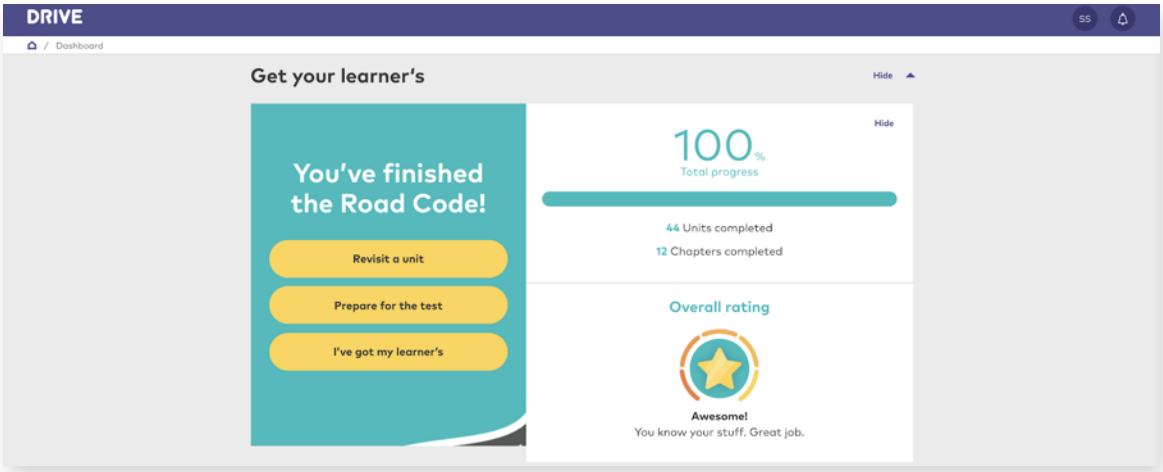


Figure 8. DRIVE (n.d.). The progress of preparing for a learner's licence on a user's dashboard [Website]. Retrieved 28/12/2017, from https://drive.govt.nz/.

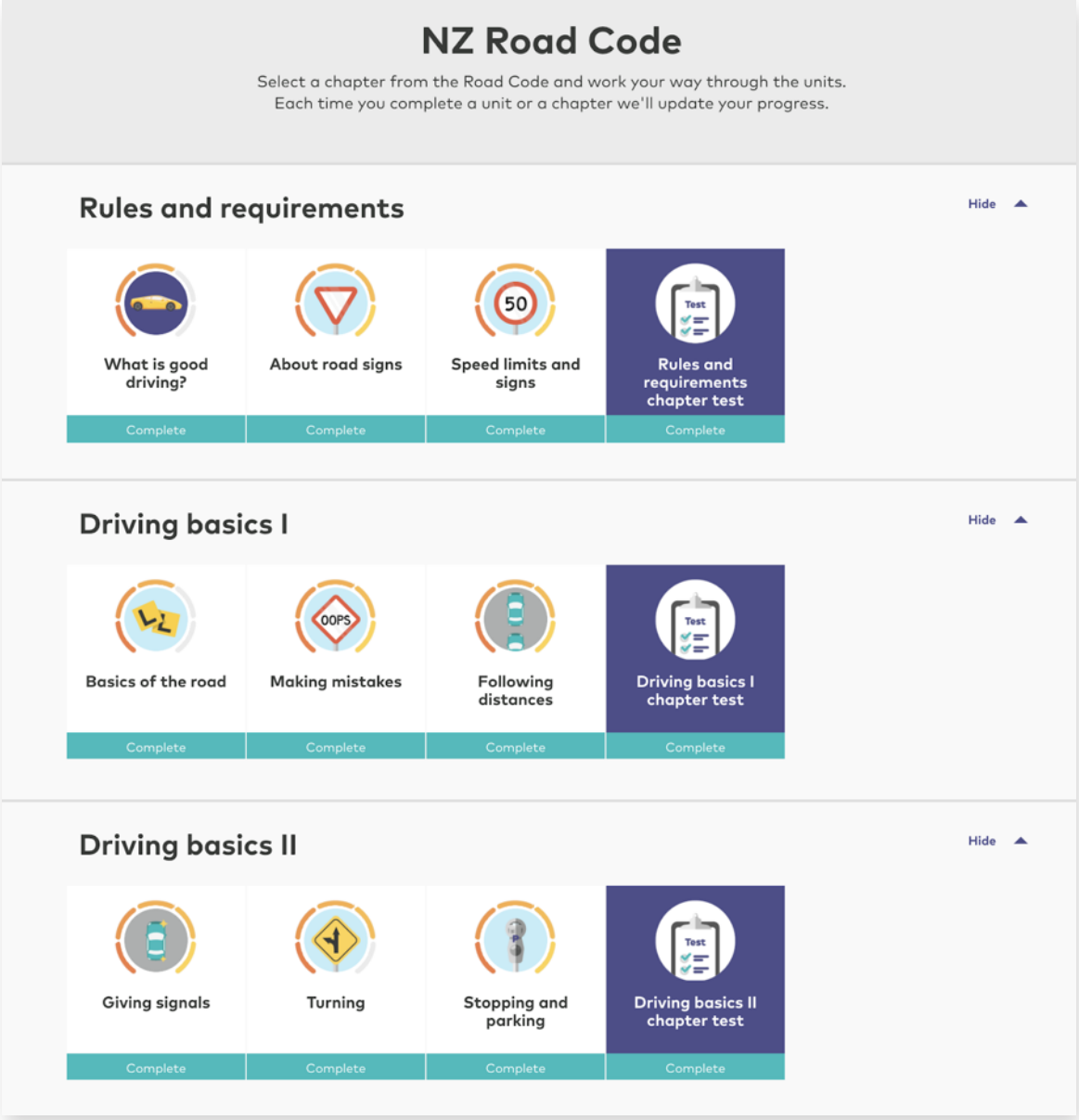


Figure 9. DRIVE (n.d.). Part of the learning content of preparing for a learner's licence [Website]. Retrieved 28/12/2017, from https://drive.govt.nz/.

Methods

This study employed the following methods: fieldwork, semi-structured interviews, focus groups, journey mapping, personas, storytelling, divergent and convergent thinking, prototypes with progressive fidelity and usability testing.

User research

Fieldwork

Fieldwork is "a study carried on in the context of people rather than in design studio or a laboratory", and "involves observing or interviewing people in their natural environments" (Curedale, 2013, p. 132). Through fieldwork, I gained a holistic understanding of my potential users and the environment in which my proposed service would be used (see Figure 10, 11).

Figure 10. Some community gardens I have visited as part of my Wellington fieldwork.

Semi-structured interviews

A semi-structured interview is a qualitative research method (Ayres 2008; Flick, 2014; Galletta, 2012) in which researchers ask participants prepared, open-ended questions, designed to flexibly guide the interviewer and the interviewee. I gained rich data from the interviews, with which to inform my design. Also, new insights were often discovered from one interview then unpacked in another or through fieldwork. Pseudonyms are used in place of actual participant names throughout the research.

Focus groups

A focus group is a gathering of selected people who participate in a planned discussion designed to "understand the perceptions, opinions, ideas, or attitudes toward a given topic" (Stickdorn, Hormess, Lawrence & Schneider, 2018, p. 123). The interactive process with my participants brought in ideas that other methods could not draw out.

Conceptual design

Journey mapping

A journey map visualises a user's experience from beginning to end (Stickdorn et al., 2018). Through journey mapping (see Figure 13), I identified and strategised key moments in my proposed service as well as defined the scope of my final prototype.

Personas

A persona is "a profile representing a particular group of people" (Stickdorn et al., 2018, p. 41). Using this method helped me to identify different scenarios and the needs of specific groups. It also assisted in achieving empathy and examining ideas.

Storytelling

Storytelling shares insights and concepts through compelling narratives (Stickdorn & Schneider, 2010). This technique allowed me to convert deeply resonant insights into user experiences. As a result, I could gather feedback from my audiences who were unfamiliar with my project but understood it sufficiently from the narratives.

Divergent and convergent thinking

Divergent thinking is a thought process to seek or create opportunities, while convergent thinking makes decisions based on diverse options to arrive back at promising ideas or solutions (Stickdorn et al., 2018). I paired divergent and convergent thinking to ideate and iterate my solutions (see Figure 12).

Design development and validation

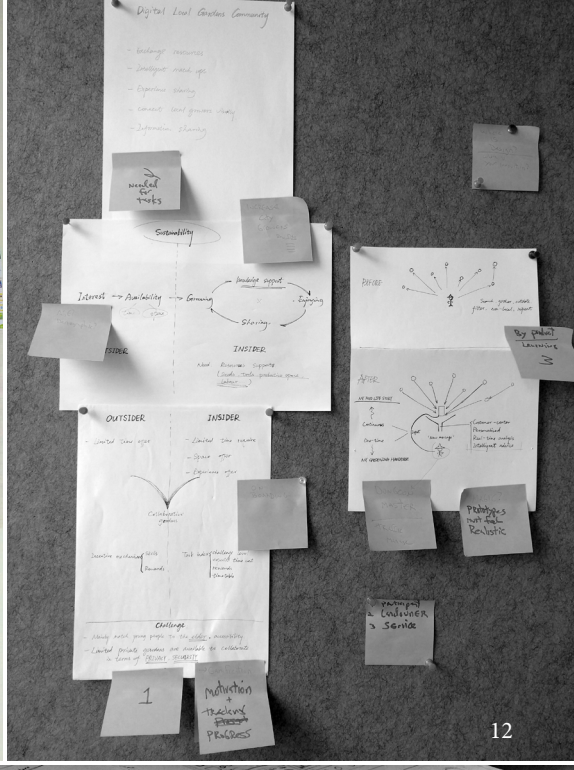
Prototypes with progressive fidelity

A prototype is a simulation of the proposed solutions to be tested "in something approaching a 'real world' environment" (Stickdorn & Schneider, 2010, p. 192). Through prototyping, I tested and developed my concepts, and provided the interactive user experiences as the output of this research.

The fidelity of prototypes refers to how closely it matches the final state of the system (Pernice, 2016). Aligned with Tyler Tate's (2010) perspective that each design method exists on a continuum of fidelity, my prototyping started with low-fidelity (Lo-Fi) sketches (see Figure 14) and progressed towards high-fidelity (Hi-Fi) prototypes. This progression served distinct purposes across the design process at a modest expense.

Usability testing

Usability testing refers to "evaluating the degree to which a product meets specific usability criteria" by testing it with representative users (Rubin & Chisnell, 2011, p. 21). I used this method to discover problems with my design and gain insights and feedback on how those problems could be corrected.



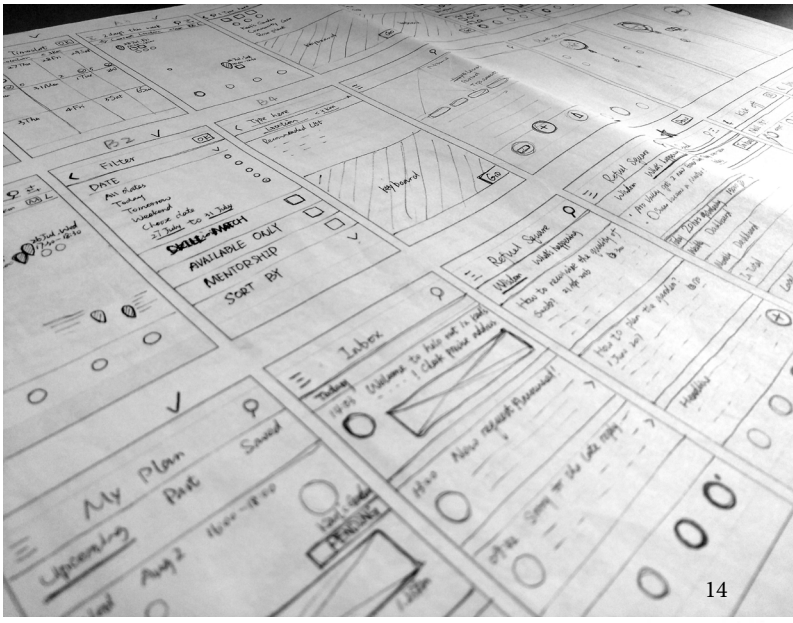


Figure 11. Landscape research.

Figure 12. Divergent and convergent thinking practice.

Figure 13. Drawing draft.

Figure 14. Paper prototype.

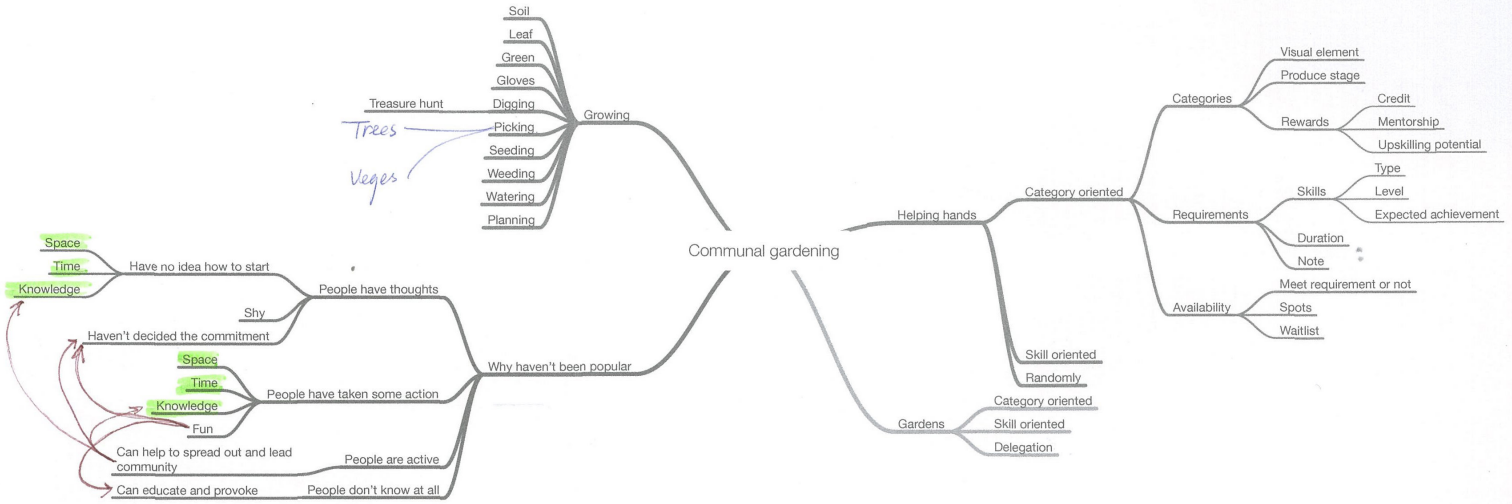


Figure 15. Mindmapping gardening elements.

Chapter 3

Figure 16. Looking from outside of a community garden (21/05/17).

Growing Together:
A Collaborative Design Journey

This chapter will describe the research process, discuss my top four research findings, and outline four key research outcomes.

Figure 17. Design development example: simplifying the date filter.

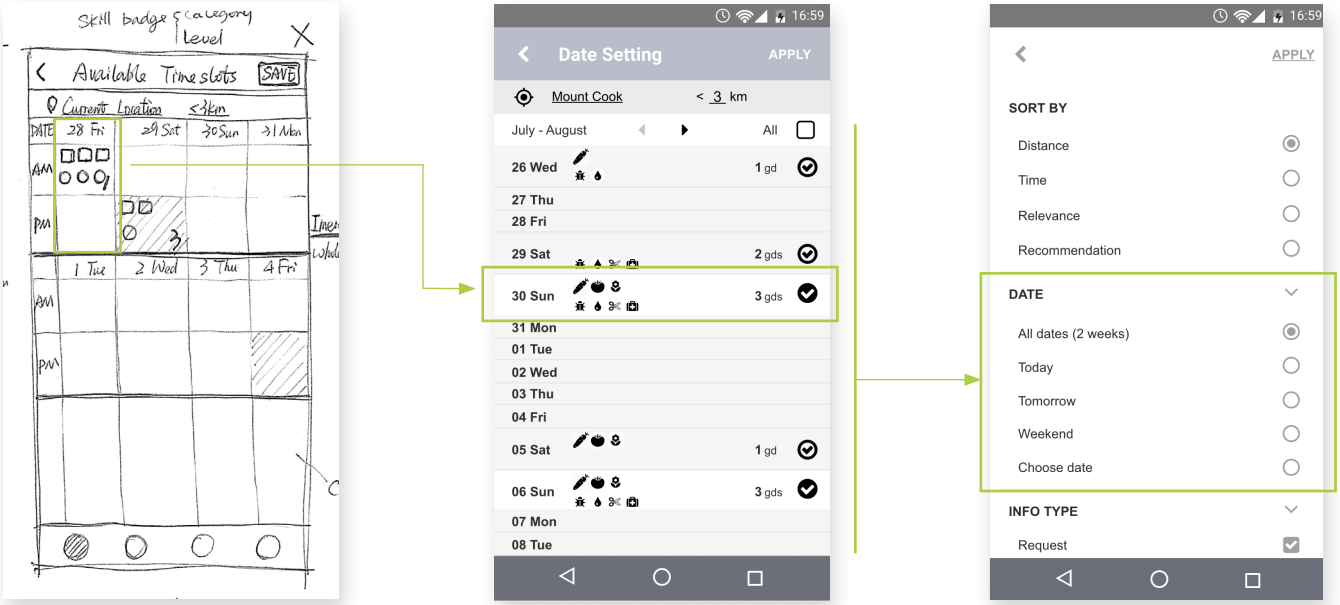
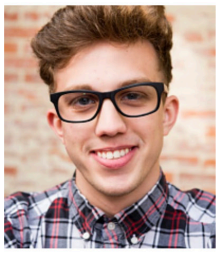


Figure 18. Johnny's profile.



JOHNNY

I want to experience gardening.

Demographics:Young generation

- 27
- Bachelor
- IT Engineer
- Works 9-5
- Lives in apartment in city

Key characteristics: Zero experience, interested in gardening

- Experience gardening
- Learn some skills
- Get to know new people

Description/User story:Johnny starts his gardening journey through co-gardening

- Find a suitable event to attend
- Meet and garden with neighbours
- Feel good and continue to explore
- Keep motivated and become passionate

Goals:Easily to have a taste of gardening then start his co-gardening journey

- Decide to attend an event
- Gain a good experience from the event
- Engage with more events and grow his skills
- Share with friends
- Become an event host

Frustration: Hard to start his own gardening journey

- Lack of space and knowledge
- Too much for him to have a long-term commitment
- Uncertain if he is a good fit for an event and the group of participants

Trigger words: Welcome, explore, Wow, inspired, enjoyable

Figure 19. Anne's profile.

ANNE

Happy to have people come to my garden and enjoy gardening together

Demographics: the elder

- Garden lover
- University lecturer
- Retired
- Smartphone user

Key characteristics: knowledgeable, mentor, can't do heavy work

- Welcome people come to help with gardening
- Keen to share her gardening skills and knowledge
- Always give back to the community

Description/User story: Have right people come to garden and enjoy the time together

- Plan a gardening session
- Publish a co-gardening event
- Experience a good connection
- Continue to host more events

Goals: Successfully host a co-gardening event

- Publish a co-gardening event
- Approve garden bees' response
- Connect with garden bees and do gardening together
- Gain good comments and leave positive comments for garden bees
- Continue to host events and bring more people onboard.

Frustrations: Too much time and attention

- Annoying to organise gardening tasks in text
- Not sure whether a person is a good fit or not
- Too many notifications to deal with

Trigger words: Mentor, share, 'I'd enough'

Don't expect me to do much on my phone!

Design Research Process

My design journey started by conducting user research with the methods introduced in Chapter 2. Based on user research, I identified the personas and outlined the journey map for exploring solutions (see Figure 6 on p. 10). Later on, I developed concepts by divergent and convergent thinking and established the design output – a prototype of a digital service to connect people through gardening. By making design tangible in progressive fidelity and continuously gathering feedback, I validated and developed the ideas (see Figure 17). This spiral process led to the final design solution: a mobile-focused prototype of a digital service named "Growing Together", which connects event host and garden bee to garden communally.

Journey mapping the personas and their stories was a critical technique in my design development, from which I revealed design opportunities and shed light on pain points (see Figure 20). While continually responding to feedback, I culled my personas from four (Johnny, Kelly, Susan, Anne) to two (Johnny and Anne). This allowed me to simplify the storylines and centre on gardening beginners and experienced garden owners as the main user groups. Additionally, the integration reminded me to maximise the value of one persona by extending the experience journey. For example, in the final prototype, Johnny transitions from being a garden bee to an event host. Doing so replaced the former persona, Susan, who was originally both a host and a garden bee.

As the two core personas, Johnny represents a garden bee, while Anne represents a host. Figure 18 and 19 show their complete profiles. Johnny wants to occasionally experience gardening somewhere near his apartment, and would benefit from mentorship and instruction. Anne wants to garden with someone and share her gardening knowledge.

Figure 20. Early journey mapping on the whiteboard (17/12/17).

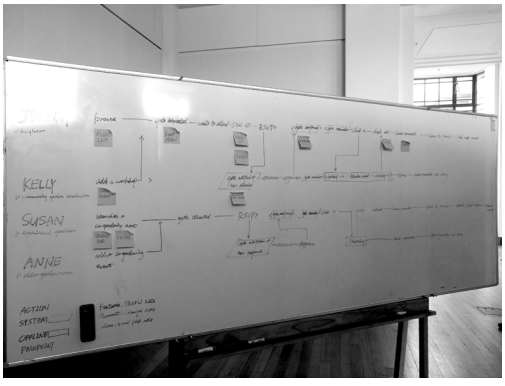


Figure 21. Upskill focused system plan and interface wireframe example.

Research Findings

In this section I will introduce the top four findings that impacted my design process.

Research Finding 1: Engaging users by being a "joy maker" rather than an "upskill facilitator"

In my research, it was crucial to understand user needs and explore how to engage them. Initially, gamification theories inspired me to develop my proposed digital service as an upskill "shepherd" (Zichermann & Cunningham, 2011). Playing a shepherd role who guides users to explore their skill pathways is commonly used to enhance user engagement. I built the shepherd role using consolidation of gamification mechanics and dynamics (2011), such as collectable skill-based badges, level-based user identity, and establishing a challenge system (see Figure 21).

However, after engaging with users during the design process, I found that my initial focus on gamification was problematic and I redirected my design to revolve around people more than simply building skills. This "eureka" moment came to me while I walked one of my participants (Lisa) to a focus group. In my field notes, I relived the special moment:

"You can have a try. It tastes sweet but a bit bitter". Her patient voice flowed in the air of the natural fragrance, reducing my uncertainty. Looking at the flower with freshly bloomed orange petals in her hand, I was persuaded to have my first bite of juicy flowers (see Figure 22). With no doubt, my interest in plants and gardening lifted to a new level.

Also, I observed how her gardening passion became tangible. While sharing her knowledge of plants spontaneously, Lisa danced her fingers through the natural beauty. Though it was a short walk and we had never met before, her passion flowed into and touched me. Imagining myself as a garden bee and Lisa as a host on my proposed service, I was fascinated to think that I could design a service to bring such an experience to more people.

The psychological high of being touched by this passion reminded me of more notes from previous fieldwork: "It's in my blood" was frequently heard when I asked people what brought

Figure 22. The streetside garden space where I tasted the fresh flower (25/11/17).

them to gardening; "my family" was a common response to the question of who brought them their first gardening experience; and excitement and accomplishment often showed on people's faces when they talked about their gardens. All of these formed a voice – enthusiastic and passionate gardeners can be the gold to engage others with gardening. This voice was further amplified when I listened to the interviewees' stories about how their gardening interest connected them with neighbours. Borrowing Lisa's words: "You can compost your soil, and dig out joy", I saw "gardening joy" as the essence of my service.

This realisation resulted in the re-prioritisation of designs: human connection and matching people came first, with less emphasis on gamified experience. This decision significantly shifted the service staging, which was previously positioned as a shepherd to facilitate users to upskill. Instead, I addressed the service as being a "joy maker". Although both "shepherd" and "joy maker" reflect the notion of gamification (Zichermann & Cunningham, 2011), "joy maker" connotes more emotional elements.

These emotional elements include surprise and unexpected delight, an experience of nurturing things, a gardening theme, and personalities. Interweaving these elements within my proposed service formed a useful emotional layer. Meanwhile, the orientation of "joy maker" avoids hooking users in the gamified upskilling process. These results echo Airbnb's insights:

> "By building a platform that provides continuity, structure and guardrails, while remembering to step back and let our community shine, we can let individuals and their real-world experiences take centre stage". (Katie Dill, n.d., para. 16)

It is not surprising that crafting a joy maker broadly changed my previous designs. One major adjustment was on "service rhythm" (Stickdorn & Schneider, 2010, p. 40), which closely relates to time flow and influences the mood of users. A good service rhythm prioritises wonderful and meaningful moments with more resources, while speeding up the dull moments in a suitable manner (2010).

At the shepherd stage, the rhythm of the online journey was slow, as it embedded rich gamified mechanics to engage users in

further exploration. At the edge of the offline interactions, the previous user journey also had check-in and check-out sections for when a user attends events. These sections were intended to increase social engagement by provoking social media sharing. Once I shifted to a joy maker approach, the change in rhythm reprioritised the immersive offline experience by limiting online distractions. This aligned with what I have observed in gardens: people seldom use, or avoid using phones when gardening.

As a consequence, I downplayed the components for an upskilling journey. For example, apart from eliminating the skill-based badge system, I highlighted real-world connections in dashboards rather than achievements in skills (see Figure 23). My iterated design measured and visualised users' contributions to the community through the growth of plants (see Figure 24). The metaphoric measurement enriched the meaning of digital numbers, and resonated with one of the gardening motivations I gleaned from my user research – seeing the growth in the garden.

Figure 23. Upskill focused dashboard vs real-world connections highlighted dashboard.

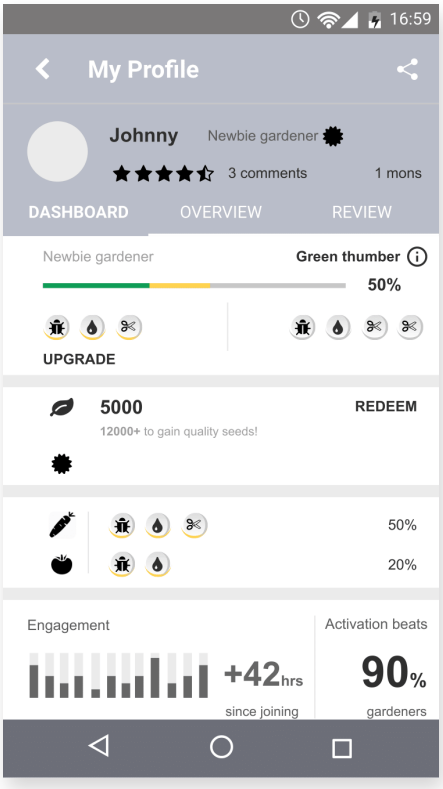


Figure 24. The growth of plants indicates a user's engagement with the community.

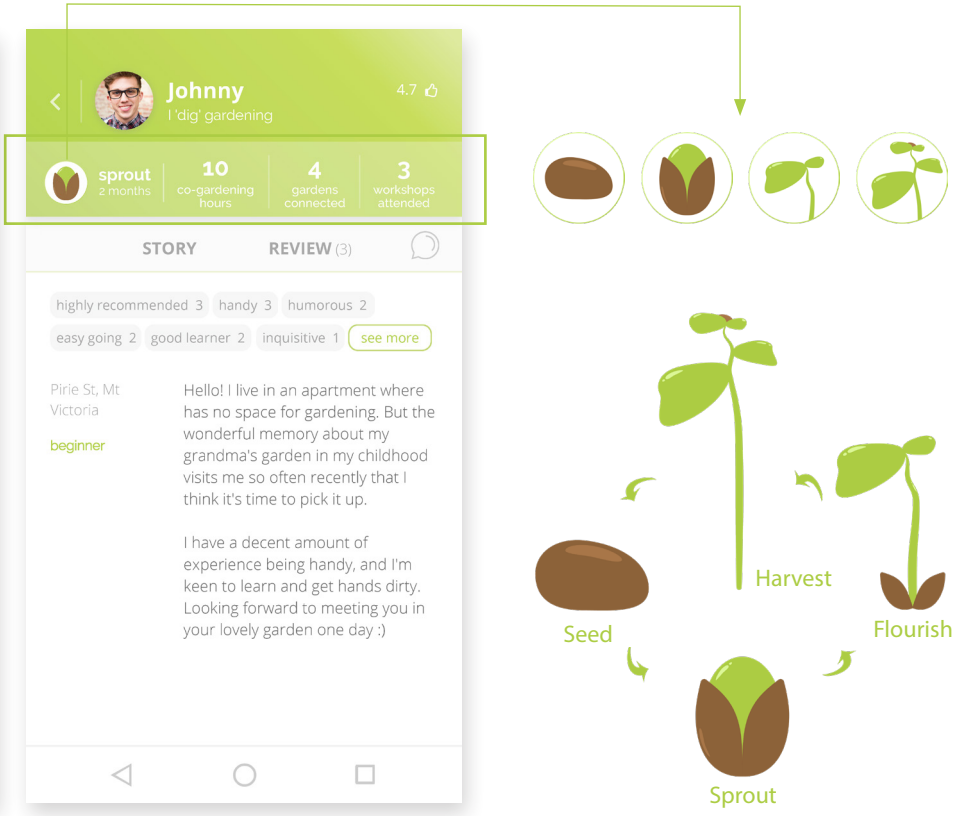


Figure 25. Warm fuzzy bee with two states: anticipating and appreciating.

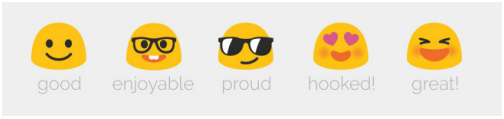


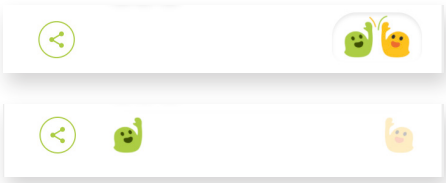
Figure 26. Delightful emoji on "Tell us your mood" page.

Developing a garden theme opened up opportunities for creating emotional associations and connections, such as the service's name, Growing Together; the participants' moniker, garden bee; the metaphorical measurement of contribution; and the system colour. Moreover, I created the character of "warm fuzzy bee" (fuzzy bee) to facilitate the growth of the online community (see Figure 25). Fuzzy bee distributes anonymous positive feelings expressed through emoji or text, to other users as a surprise. This action emotionally links users and spreads positivity across the online community. While bringing new personalities to the service, fuzzy bee also echoes gardeners' love of real bees.

Furthermore, emoticons, animations, and imagery were applied to convey emotional states and evoke emotions (Preece, Rogers & Sharp, 2015), as well as knit a solid emotional layer (see Figure 26). To enhance the emotional experience, I also explored microinteractions which inject personalities and vitality into designs. I blended emoticons and animation into my proposed service with the guidance of UX choreography principles. One example is the microinteractions series of "high-five" emoji. The series is first triggered when a garden bee taps the "Let's Grow Together" button on the event page to express interest in participating (see Figure 27 on p. 32). The high-five emoji has two states: anticipating to give, and giving the high-five. With different states, the emoji can: give feedback to users once they express interest in attending an event; indicate an invitation from the host is being waited on; and inform the user of an invitation. The emoji humorously nudges garden bees to tap the button, and amplifies positivity and incentive. On the interface where a host assesses responses, the same emoji on the right end of the "Let's grow together" button is eager to give a high-five (see Figure 28 on p. 32). Creating a hospitable atmosphere, this eager emoji also mirrors the same emoji giving the high-five in the ensuing welcome message to the garden bee (see Figure 29 on p. 32) (see these microinteractions in Appendix E).

In short, my engagement strategy positions the digital service as a joy maker rather than a shepherd, values human connection, and leverages an emotional layer.

Figure 27. Event page and the changes of emoji from being on the two sides to being together.



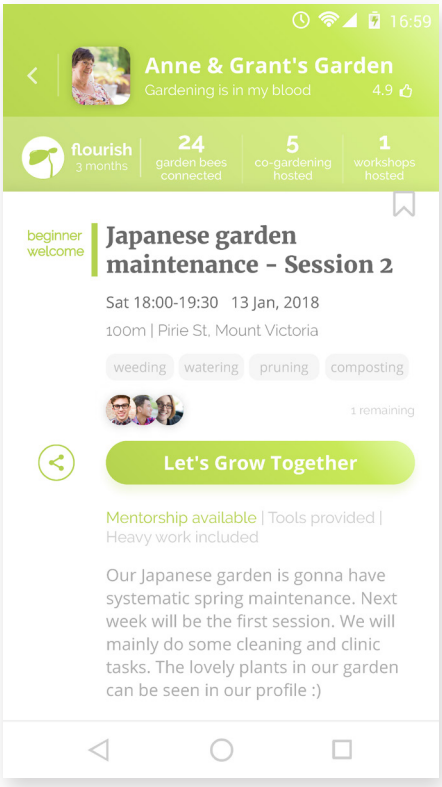


Figure 28. Assess responses page.

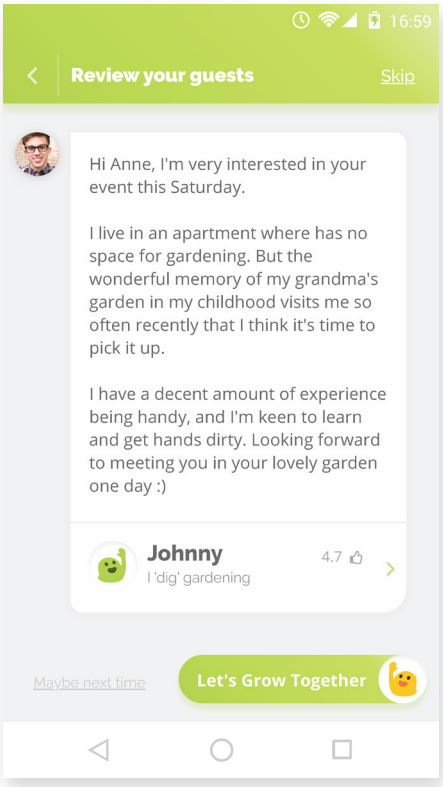
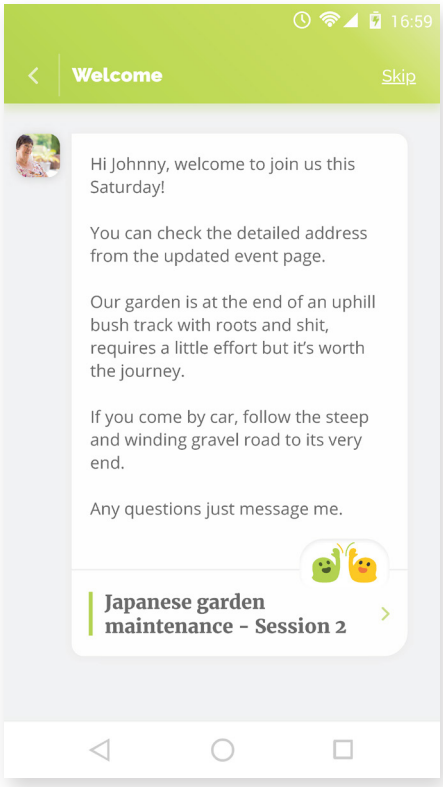


Figure 29. Welcome message.



Research Finding 2: Building trust by being a "mutual friend"

My user research clarified that trust is fundamental for communal gardening in private home gardens. Not surprisingly, I observed that gardeners are cautious about revealing their addresses to strangers and letting them onto their properties. Encouraging people to open home gardens to strangers is similar to Airbnb's challenge: convincing hosts to welcome strangers into their private homes. Airbnb's CEO, Joe Gebbia (2016) has said that "stranger-danger bias" forms during childhood, however, Airbnb's well-known success has proved that this bias can be overcome through design.

> We bet our whole company on the hope that with the right design, people would be willing to overcome the stranger-danger bias. What we didn't realise is just how many people were ready and waiting to put the bias aside. (Gebbia, 2016, 09:29)

A well-designed reputation system laid the foundation for Airbnb's success (Gebbia, 2016), which is also in line with gamification. In a reputation system, encouraging and guiding users to give feedback is vital (2016). While offering incentives to encourage users, Airbnb also guides users to produce content with hints like elaboration, examples and the size of the input areas. However, by my user research suggested, I develop a different approach: while people are interested in getting involved with my service, they are not ready to commit much time and effort to assessing and commenting on others. Therefore, I decided to make giving feedback easier, engaging and fun through three steps.

The first step is to reduce typing by providing options and labels (see Figure 30). The second step is to frame the feedback process as a conversation, which enhances the human-centred experience. Additionally, the flow of a conversation naturally moves users forward in the process. The third step is to emotionally empower users, for example, by including a section for them to express their after-event feelings through emoji, text and media. This section is added before users rate other participants, during which the system looks after users' emotions by responding with positive and humorous language (i.e. cheering them up and cheering them along). When the feelings are positive, fuzzy bee appears, inviting users to share

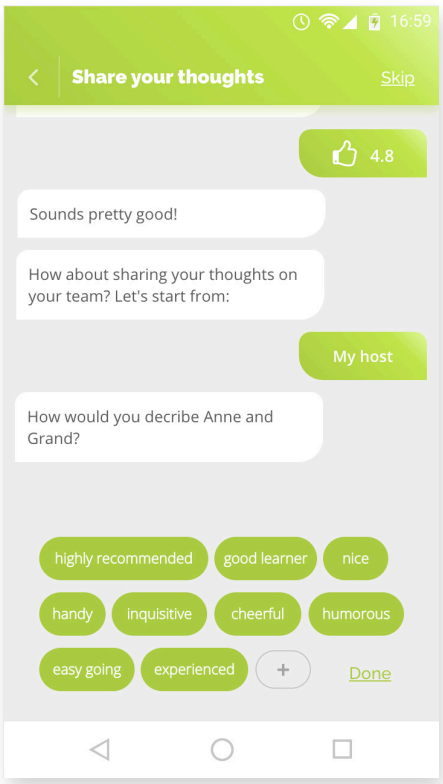


Figure 30. Share your thoughts page for users to comment.

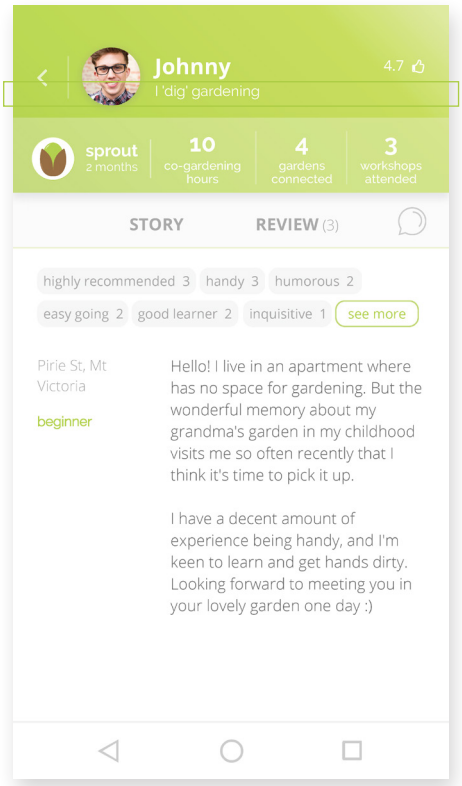


Figure 31. One-line statement of motivation on profile page.

the mood before they enter the rating section. In addition, emoji make emotions tangible in a user's storyline. Thus, the third step engenders positivity within the online community.

Apart from the reputation system, my proposed service also eases gardeners' cautiousness by setting up an assessment flow. In other words, a garden bee can only see the host's detailed address once invited. The host's first impression on garden bees is pivotal when it comes to offering an invitation. To help build a better first impression, I conceptualised the feature: automatically generate visual stories for a user based on visual materials they share on the service. As well as these visual stories, a user's profile also positions a one-line statement of motivation (see Figure 31). This responds to my interviewees' concerns about what motivates the participants.

To improve acceptance, I chose the conversation-based visual style again for online connecting, in order to deliver authenticity, and fit into the most familiar and comfortable way of online communication: text message rather than voice (Judith, 2009). As Stephen Wendel (2013) emphasises, when doing familiar things, people are in a habit mode. Garden bees are also encouraged to write personal notes to a host when expressing interest in participation. These notes build trust, as they reveal users' sincerity and personalities. Through the conversational style and individual notes, hosts are able to identify the right people online, which establishes an optimum communal gardening experience and long-term engagement with the service.

To conclude, my solution of building trust combines a reputation system, an assessment flow, and the facilitation of building a great first impression and connections. These interplaying components enable the service to serve as a "mutual friend" of hosts and garden bees, who helps the conversations between the two roles flow smoothly and confidently.

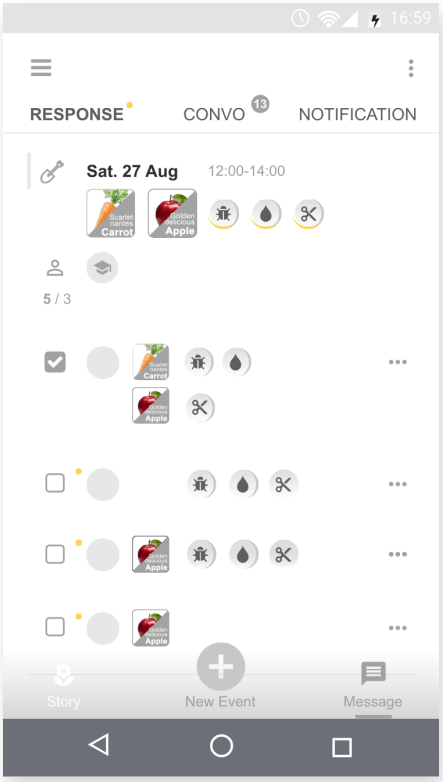


Figure 32. A host receives task-based interest from garden bees.

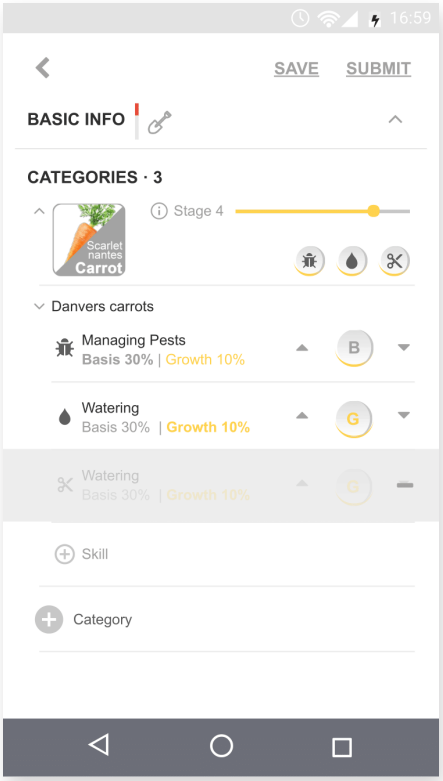


Figure 33. Add new event page.

Research Finding 3: Iterating the event information structure

Events are the essential touchpoints both offline and online in my proposed service, so determining clear event information is vital. During iterating event information structure, I was informed by my potential users' voices, although this once led me "up the garden path".

While testing the wireframe which reflected peer feedback on my original concept, I sought gardening experts' advice on event information structure. As part of this, I had an in-depth discussion with Lucy, a gardening professional, after testing the flow and components of my wireframe. Surprisingly, her experience conveyed that hosts would commonly clarify what to expect from an event via text, including detailed tasks and reminders. This insight was different to what my early user research implied – that potential hosts are likely to be less organised and avoid heavy-text for detailing their events.

Guided by this fresh insight, I researched online gardening tasks that were acknowledged by people familiar with gardening. These tasks revealed a pattern of gardening events, which informed a redesigned co-gardening event structure. The adjustments included: changing the hierarchy between plant category and task, deepening the detail level of event information; and making it available to express interest at the task level. The iterated design resulted in a task-based event structure, which allowed garden bees to clarify their interests in tasks (see Figure 32).

The process of publishing a new event inextricably links to the event information structure. Inevitably, this process became more complicated, though techniques have been used to minimise input, such as symbolising categories and tasks, combining preset and self-defining options and streamlining the publishing flow (see Figure 33).

However, in the following validation of the updated design with potential users, I realised that I had been distracted by Lucy's insight on the hosts' preference of publishing an event. The preference comes from a commercial context where hosts pay for gardening tasks, which extended beyond the scope of my research. A task-based event information structure gives a sense of a command or commercial trade, which is something garden

lovers surely want to avoid. Instead, it would be preferable to offer a cup of tea or share a meal when the atmosphere is conducive. Considering gardening is primarily independent, to host an event should be easy and compelling, rather than cumbersome with a complicated publishing process.

Being "led up the garden path" in this way reminded me that some factors might dilute the validity of feedback. In this case, the commercial experience of a gardening professional did not work well in the non-profit setting. My potential users would organise gardening sessions differently to those who pay for gardening. This finding reoriented my design direction.

Combining the feedback from my further user engagement, I simplified and optimised the event information structure through consistent experiments and validations (see Appendix D). The final solution flattened the structure; streamlined event-publishing into five steps: Event basis, Event requirements, Event facilities, Event introduction, Event title; and minimised the tasks in each step while balancing the process length.

Beyond the information structure, the final design solution facilitates publishing an event by leveraging a user's history. For example, the system pre-fills most required new event data with the last event content or preference settings, such as location, time and maximum team size. As a result, users only need to check and input a small amount of data to create and advertise a new event.

This research finding reinforced my reflexive approach and made me continuously validate my designs as a design researcher.

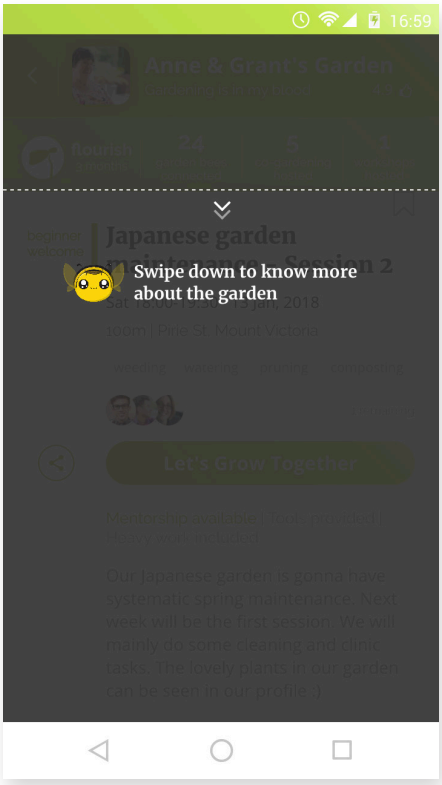


Figure 34. First-visit hint on event page.

Research Finding 4: Embedding workshops to onboarding strategy

Interestingly, "workshops", as an event type in my proposed service, was not planned at the beginning. My involvement in gardening-related workshops enlightened me about their value for my proposed service (see Figure 35).

Although the reputation system facilitates trust-building, an as-yet empty reputation status challenges every new garden bee looking to join their first co-gardening event. From a service point of view, this is a real hurdle to getting users thoroughly on board. As Gabe and Christopher (2011) stressed, onboarding is critical in user engagement. Although onboarding components such as landing page and first-visit hints have been included (see Figure 34), none of these could make a real difference in conquering the empty status.

Attending workshops is a powerful and meaningful channel for tackling this problem. First of all, participants can gain feedback from hosts and other attendees in order to jump out from their empty reputation status. Secondly, the participation implies a sense of certification, illustrates the interest and motivation of the participant. Thirdly, in the workshops I attended, the naturally flowing conversations between strangers showed that a workshop would be an ideal touchpoint to connect people. Last but not least, workshops have remarkable educational value for a large audience, which prepare people for gardening practice.

Figure 35. Some workshops I have attended as part of my Wellington fieldwork.

Furthermore, workshops are seen as a preferable way for my potential users to learn and exchange their gardening experience. “Sparked interest” and “very helpful” were often heard when gardeners shared their opinions on workshops. Also, from organisations (e.g. community gardens and charities) to individuals, the wide range of potential workshop providers could bring the service an outstanding level of traffic and number of users.

In response to this thinking, I extended the event types to include both co-gardening and workshops. While adjusting the event structure to suit both types, I reorganised the user journey to embed workshop experience as part of the onboarding process. In order to avoid a workshop host having to check every garden bee who expressed interest, the assessment flow offers a setting to automatically confirm and invite those garden bees. This also minimises garden bees’ waiting time.

Most beneficially, the combination of workshops and co-gardening events creates the possibility for the service to become a better matchmaker. For example, the service will prioritise beginner-welcome workshops when recommending events for new visitors. On the other hand, when a user becomes less active, a popular workshop will be recommended to the user to reignite the interest.

In this finding, I was informed by my fieldwork, and recognised the value of workshops for my service. By reshaping the user journey and redesigning all the relevant components to embed workshops, my proposed digital service is able to offer garden bees a smoother and more beneficial onboarding experience.

Chapter 4

Figure 36. Viewing garden profile on the phone. From http://freemockupzone.com/free-person-holding-smartphone-mockup-front-screen/ (modified).

Design Concept

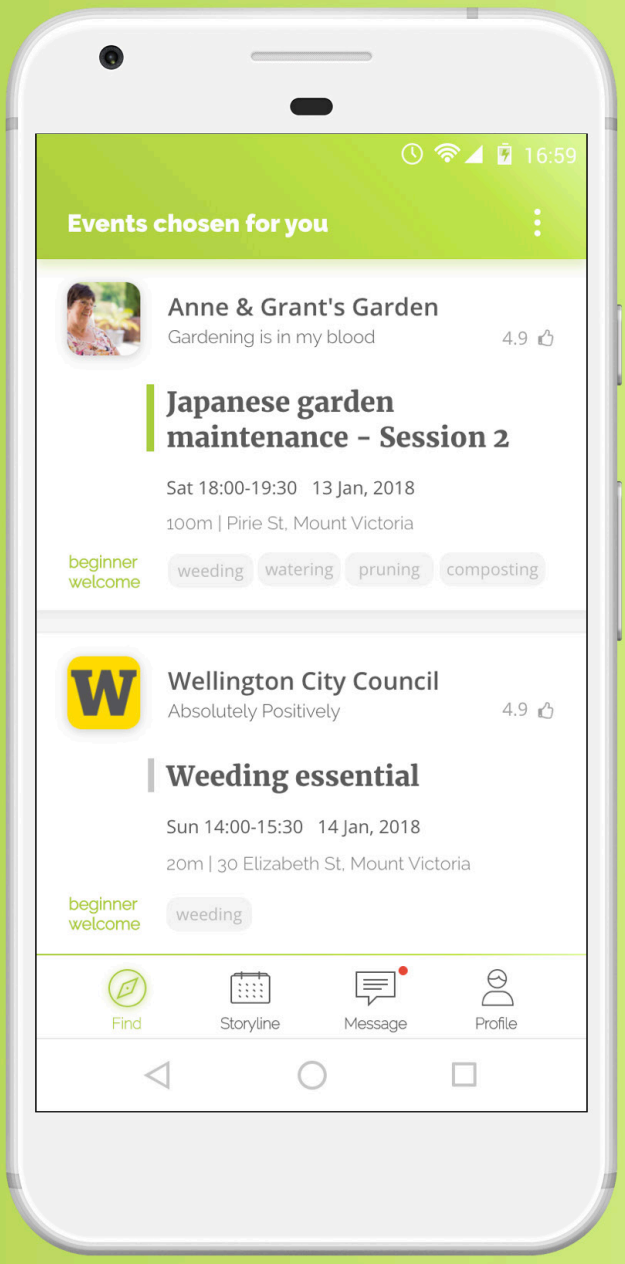
My proposed service serves as a "mutual friend" between hosts and garden bees, and spotlights human connection to make communal gardening engaging from the four primary aspects:

1) Seed Events – Host and Find Events;
2) Sprout Connections – Grow Together;
3) Cultivate Community – Empower Emotionally;
4) Harvest Growth – Witness Your Growth.

This chapter will detail these aspects and demonstrate three design scenarios to show how my digital service works. Meanwhile, this chapter will give a sense of how a potential user can be changed from standing outside of a garden (see Figure 16 on p. 24) to engaging with communal gardening (see Figure 76 on p. 68) by using my proposed service (see Figure 36).

Seed Events

Host and Find Events



Host events in your community

Find events near you in one place

Seed Events – Host and Find Events

Garden bees can find workshops and co-gardening events hosted by people and organisations from the local community.

This aspect (see Figure 37) removes the hassle for potential participants of finding suitable gardening events scattered over the internet. Meanwhile, it opens up the opportunity for private home gardeners to share with, and have assistance from the community. For garden bees, this aspect also articulates that gaining experiences outweighs committing to one garden. Doing so responds to one of the challenges of community gardening introduced in Chapter 1: committing to a garden hinders potential participants from getting involved.

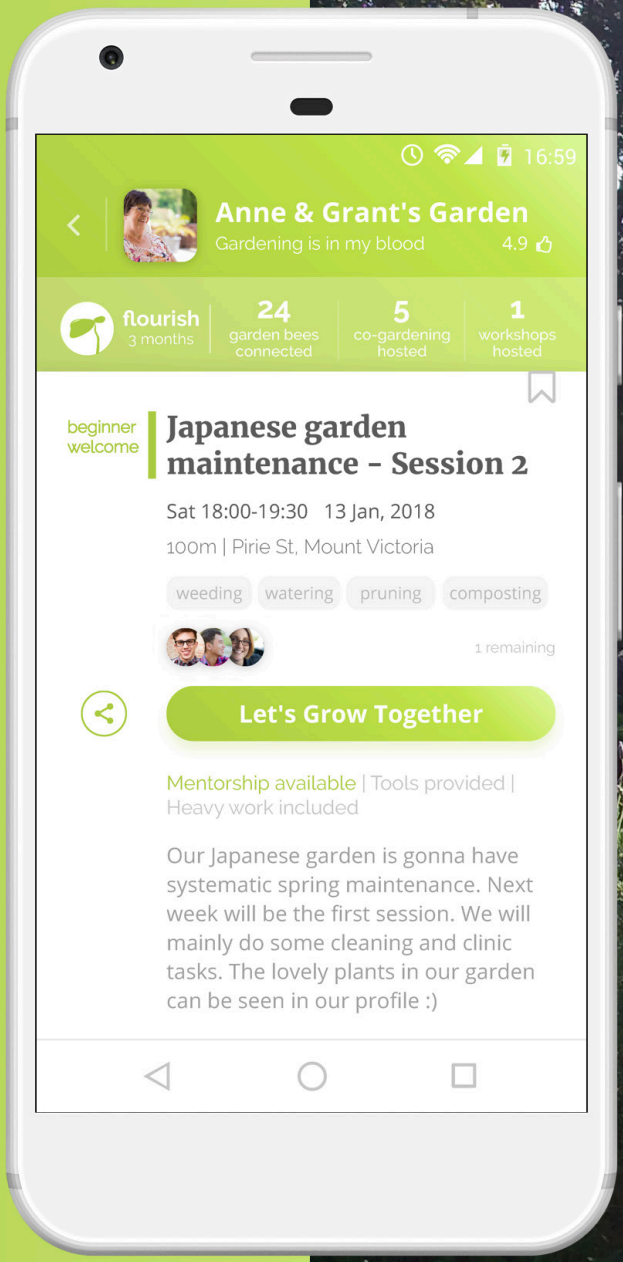
- To ease and expedite publishing events, the system will pre-load the default or the latest event data, which reduces hosts' input.

- To convert more visitors to the service, the system will recommend events within neighbourhood distance based on users' locations, and prioritise events to match users' needs, such as workshops for beginners.

Figure 37. Design aspect 1.

Sprout Connections

Grow Together



Express your interest

Welcome your new guests

Sprout Connections – Grow Together

Garden bees can express their interest in events, then hosts will receive their responses and confirm their spots.

This aspect (see Figure 38) facilitates matching garden bees and hosts online. Beyond the functionality of connecting, there are several design concerns in promoting connections:

- To leverage the emotive power, microinteractions, encouraging language and a visual emphasis, are applied to the elements contributing to connections.

- To improve the acceptance, the system helps with building a great first impression and encourages garden bees to send personal notes for events.

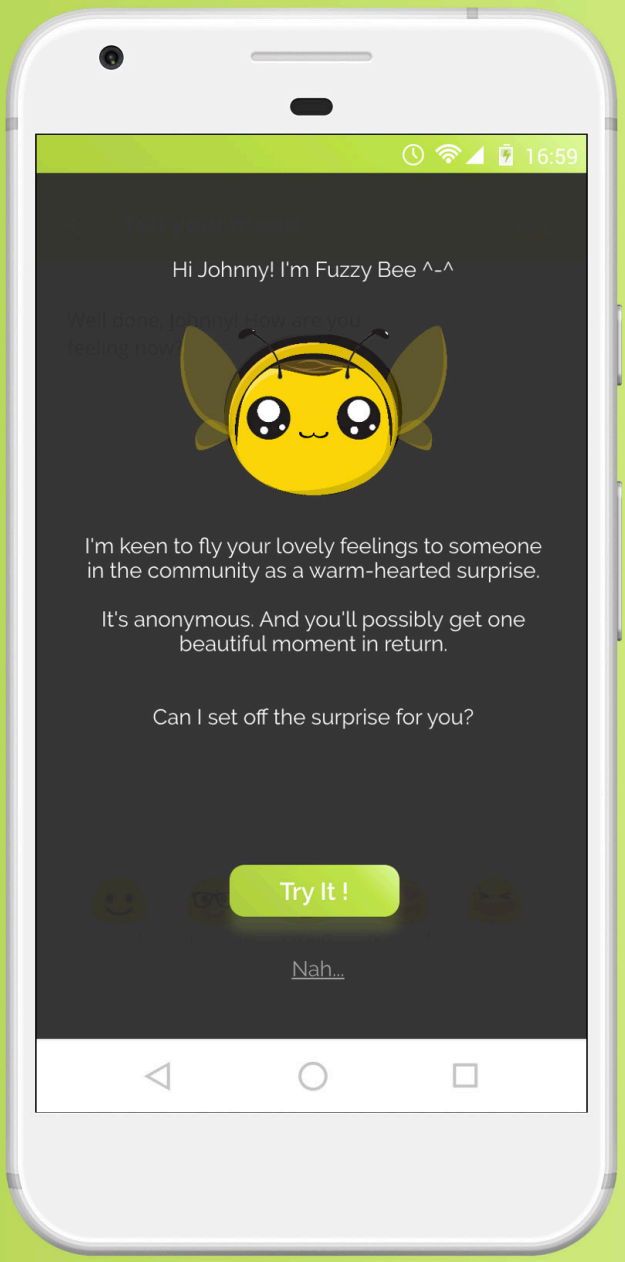
- To enhance a sense of familiarity and neighbourliness, users can see the street name and suburb for the address before seeing the full address with an invitation from the host.

- To help garden bees decide to join an event, the service allows them to strike up an online conversation with the host. Also, saving and sharing events provides them with secondary options to decide later or invite friends. As my interviewees suggested, it is more likely for them to participate in a gardening event with friends.

Figure 38. Design aspect 2.

Cultivate Community

Empower Emotionally



Share positivity

Support each other

Contribute together

Cultivate Community – Empower Emotionally

Users can switch roles between garden bee and host on the service to connect with others through events. They can also share positivity anonymously through fuzzy bee's distribution across the online community. Furthermore, they can build their reputation along with their journeys on the service.

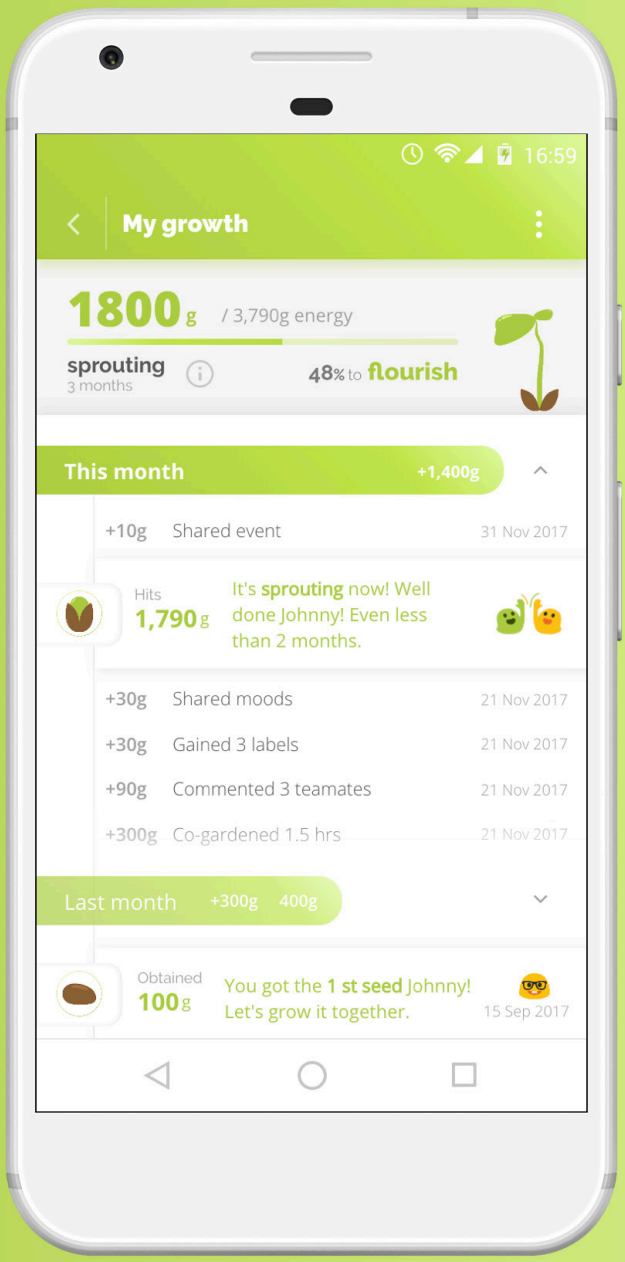
This aspect (see Figure 39) grows the community from multi-channels. First of all, events create opportunities to experience gardening while sharing knowledge and building human connection. Secondly, personalised event recommendations elevate the overall user engagement. Thirdly, at the emotional level, the service magnifies positivity and spreads gardening passion across the online community. The approaches to doing these include:

- Creating fuzzy bee to flow and cultivate positive feelings across the online community.
- Facilitating users' feelings becoming tangible and sharing experiences through emoji and auto-generated visual memories.
- Making the feedback process enjoyable and producing positivity by using a conversational style, prioritised labelling, playful gesture etc.

Figure 39. Design aspect 3.

Harvest Growth

Witness Your Growth



See your contribution through plants' growth
Enjoy your growing memories
Cultivate your interests of growth

Harvest Growth – Witness Your Growth

Users can trace their contribution to the community by obtaining energy credits to grow their virtual plants. In their "Storyline", all gardening experiences are documented visually and automatically. Hosts can record their garden life through "Flashback", which will be introduced shortly.

This aspect (see Figure 40) further examines emotional design and gamification by creating the measurement system of virtual plants. This system lines up with my user research finding – garden lovers admire the growth and stories in their gardens. By making their input tangible with digital rewards and assisting in documenting their garden memories, this aspect not only motivates users, but also benefits them at the personal level and reinforces long-term engagement with the service:

- The principle of the measurement system is to appreciate all contributions made through the service. The contribution is measured by the growth of a single virtual plant and the diversity of plants. The combination supports the consistent running of the service. Each plant has four phases of growth: seed, sprout, flourish and harvest. Each phase requires a certain amount of energy earned through participation, sharing and commenting on events, and sharing photos, videos and moods. When reaching the harvest phase, users can either choose a specific plant seed with extra energy or a regular seed assigned by the system. Each positive label given by others also earns the user additional energy to breed their digital plants.

- Flashback is an album system that sequences and plays photos taken from the same spot to mimic a documentary of their garden life. A host can take new photos easily with the previous photo translucent in the shooting screen.

The following section will illustrate three design scenarios to explain how the service works, and show the final design by walking through: Johnny's journey, Anne's journey and Johnny becomes a host.

Figure 40. Design aspect 4.

Scenario A: Johnny's journey

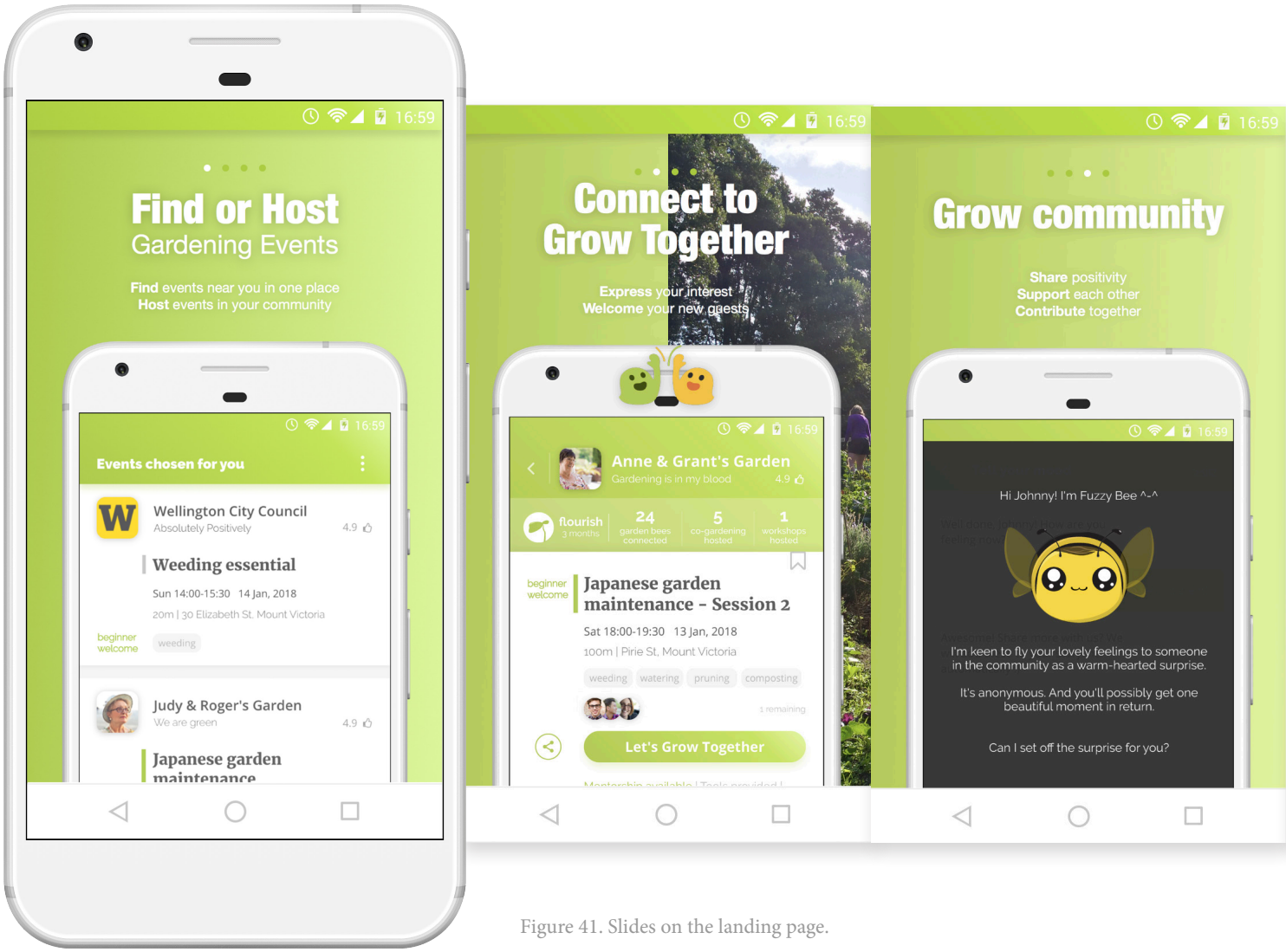


Figure 41. Slides on the landing page.

Johnny first visits and attends a workshop

Johnny sees that a friend has shared their participation in "Growing Together" on social media. The idea of communal gardening seems interesting and meaningful, and he would like to get involved. Johnny taps the link to access the service. The landing page illustrates how the service works (see Figure 41), followed by an event list comprising recommended events (see Figure 42 on p. 52).

Figure 42. Homepage of a garden bee.

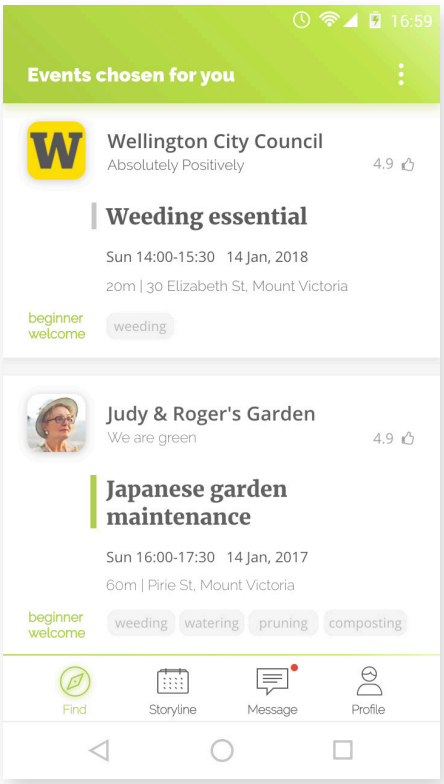
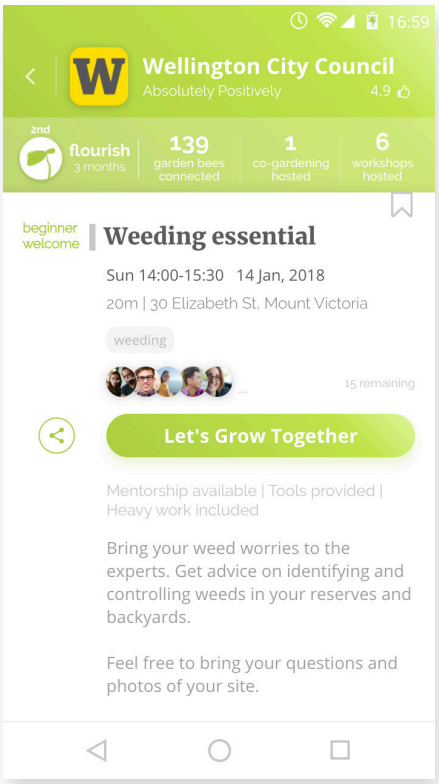


Figure 44. Event page - workshop.



Available workshops

View workshop details and decides to join

Register an account and get a seed

Reserve a spot

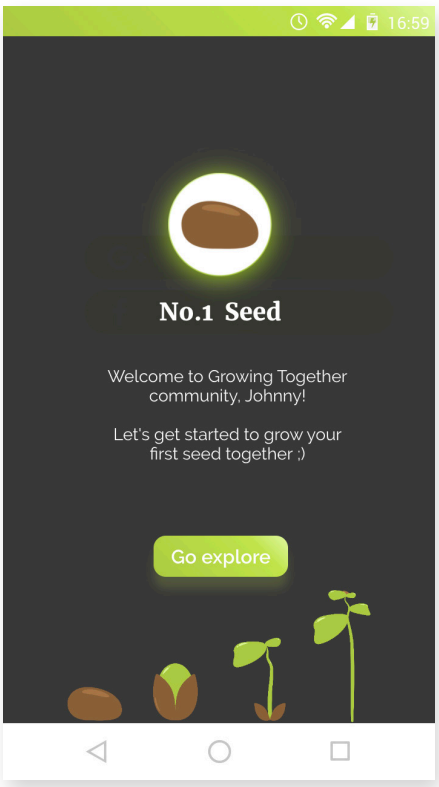
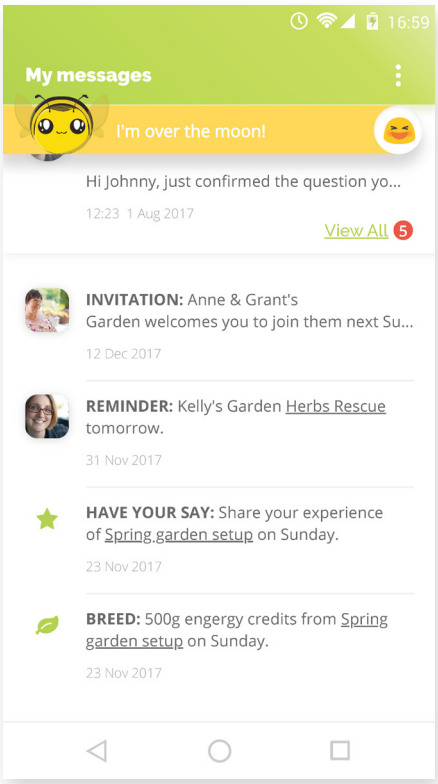


Figure 43. Notification when finishing registeration.

Beginner-welcome workshops catch Johnny's eye. He chooses a workshop that is three days away to have a taste of gardening. He taps the button and the system guides him to register an account. When finishing the registration, he is presented with his first virtual plant seed (see Figure 43).

The system then guides him back to express his interest in attending the workshop (see Figure 44). Soon he gets the welcome message from the host. One day ahead of the workshop, Jonny receives an event reminder with an updated attendee list.

Figure 46. Notification after attending an event.



Get connected and learn

Review event experience

Get growing

Continue the journey

Figure 45. Gardening workshop [Photograph]. Retrieved 05/03/2018, from https://pixnio.com/people/community-gardening-group-people.

During the workshop, Johnny gains knowledge and chats with other participants (see Figure 45). Leaving with feelings of accomplishment, he gains 500g of energy from his attendance (see Figure 46). This energy sets off the growth of his virtual plant. Then he also earns different amounts of energy from sharing his feelings, giving comments for others, and receiving his initial labels and reviews. This newly gained energy makes his plant break ground to enter the sprout phase. Driven by excitement and inspiration from the workshop, Johnny thinks it is time to get his hands dirty.

Figure 47. Homepage – Event list.

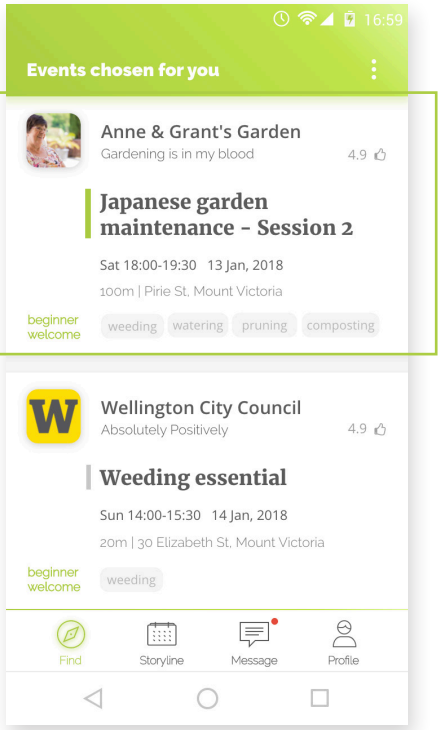
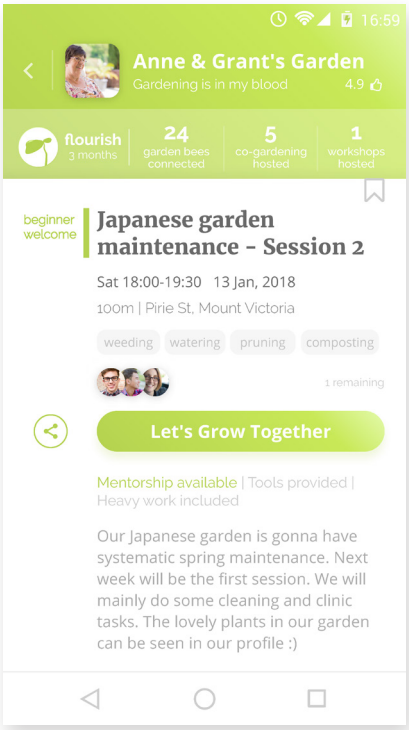


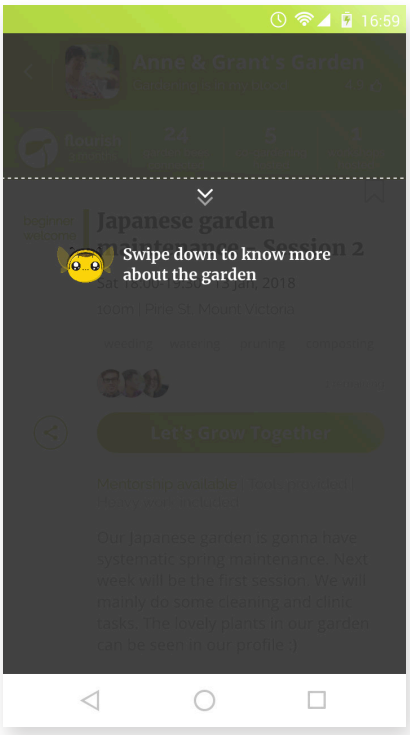
Figure 48. Event page - co-gardening.



View garden details on Event page

Find Anne's event from Event list

View event details on Event page



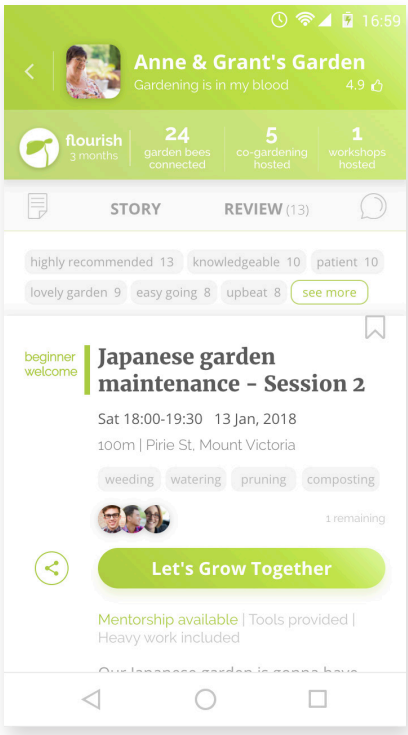
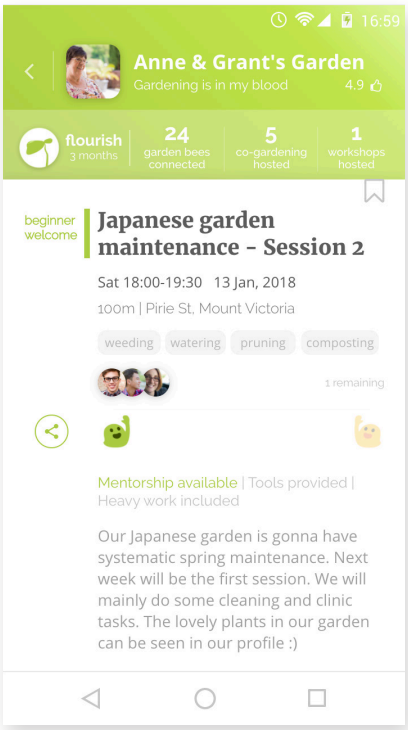


Figure 49. Onboarding hint for the first time visit.

Figure 50. Event page – swiping down to see garden profile.

Figure 54. Event page - co-gardening when interest has been expressed



Johnny finds Anne's event and connects online

This time, the service prioritises co-gardening events among his event options (see Figure 47). Johnny views a co-gardening event hosted by Anne (see Figure 48) and reads through the garden's profile (see Figure 49-53). Happy moments, nice labels and comments, mentorship and rich experience all make him feel excited. He taps the button to express his interest. The microinteractions of high-five emoji delight him and remind him that it might take a while to get invited by the host (see Figure 54).

Later, when receiving the notification that he has been invited to the event, he reads the welcome message from Anne, which gives clear instruction in a personal tone for arrival. Meanwhile, this event in his storyline updates the emoji from two separated ones to two giving the high-five (see Figure 55 on p. 57).

Reserve a spot — Get invited — Auto-update the storyline — Continue the journey

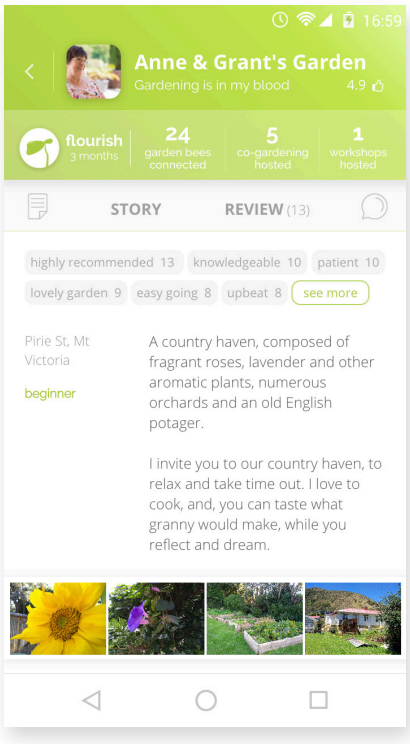


Figure 51. Event page – garden profile.

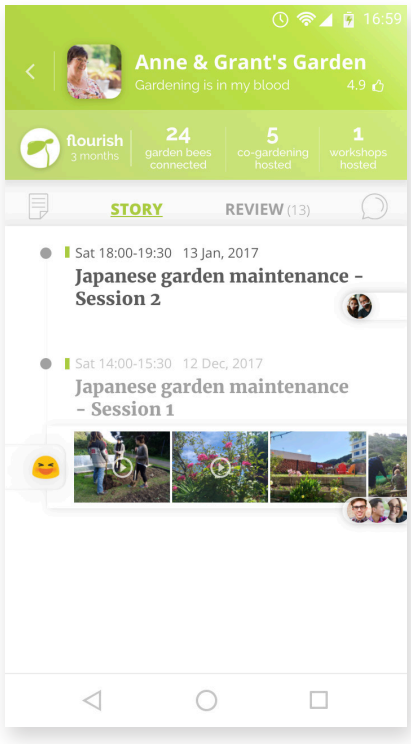


Figure 52. Event page – garden story.

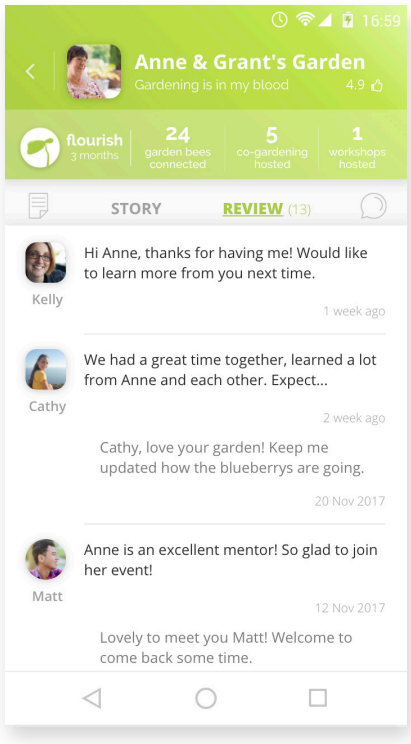


Figure 53. Event page – garden review.

Johnny connects offline with Anne

On the day of the gardening event, Johnny connects with Anne at her garden with another two garden bees (see Figure 56). They have a good time and learn from Anne's excellent mentoring. Anne invites them to help themselves to the fresh produce from her garden. Everyone goes home with joy and real rewards from the garden.

Go to the garden and connect

Finish the event

Continue the journey

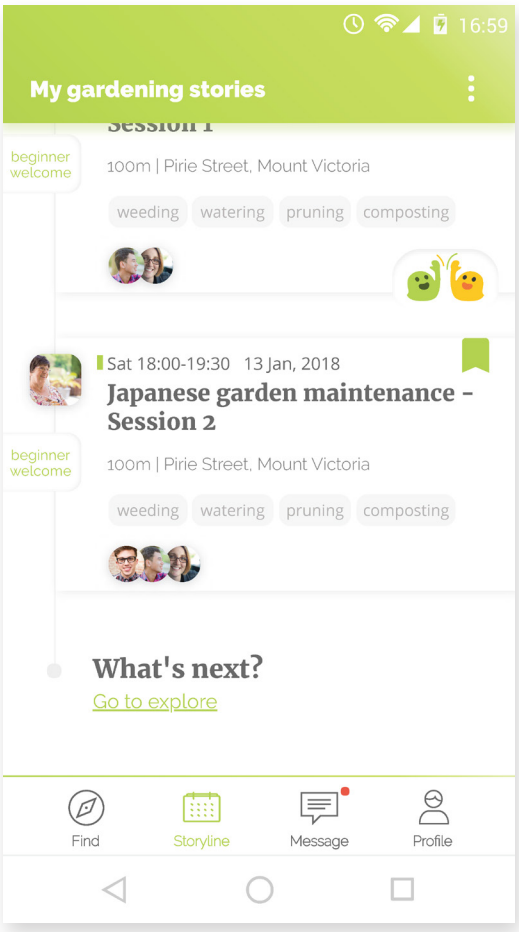


Figure 55. Storyline page.

Figure 56. HELP AUCKLAND (2018). Two people are gardening [Photograph]. Retrieved 26/11/2014, from http://helpauckland.org.nz/youth-garden-opening. Used with permission.

Figure 57. Tell us your mood page – express emotion.

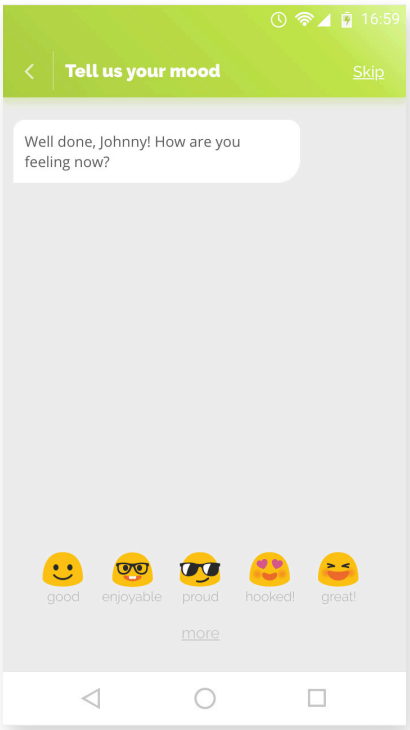


Figure 58. Tell us your mood page – share more feelings.

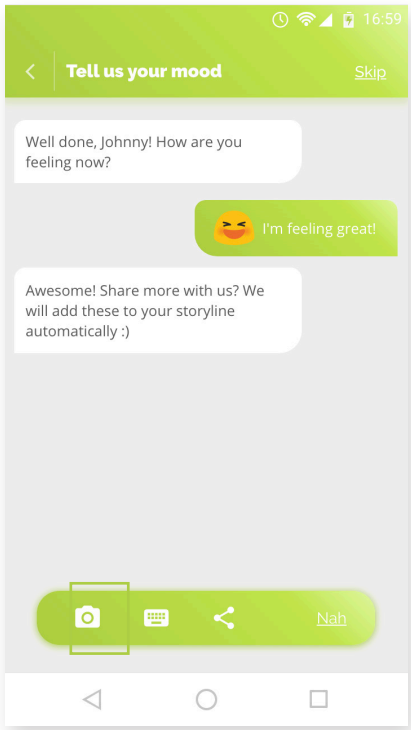
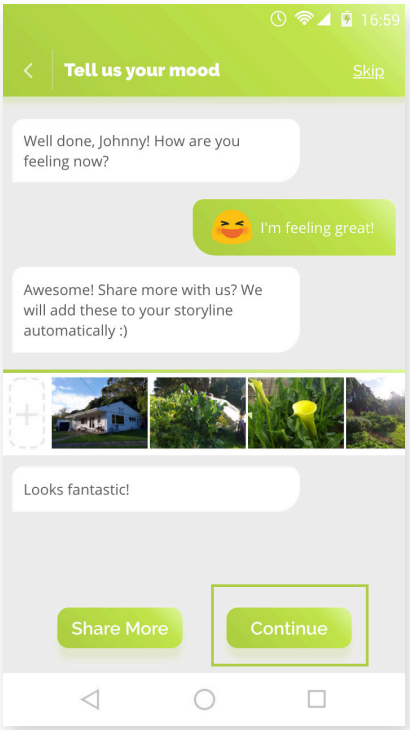


Figure 59. Tell us your mood page – continue.



Receive the follow-up message about event experience

Tell the feelings

Fuzzy bee encourages to share the feelings

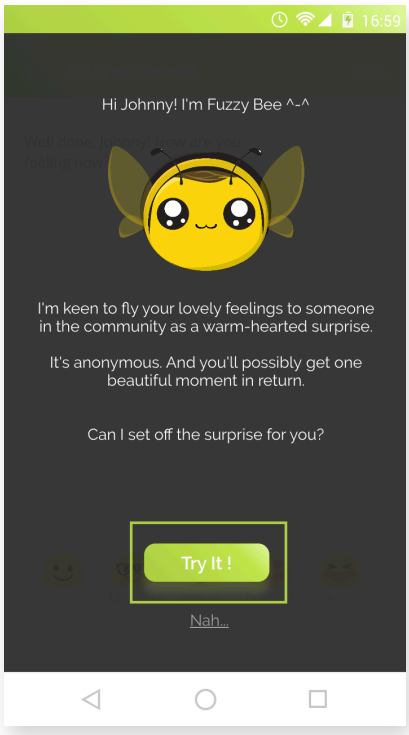


Figure 60. Tell us your mood page – warm fuzzy bee appears to invite to share the positivity.

Johnny reviews the experience of the event

The system follows up to appreciate Johnny's contribution and looks after Johnny's feelings about the event (see Figure 57). Choosing the "feeling great" emoji to express himself (see Figure 58), he also shares the happy faces and moments captured in the garden (see Figure 59). Having typed some short words to remind himself of the wonderful day, he taps "Continue". Here comes fuzzy bee asking if he wants to share his happiness in the community (see Figure 60). In return, sometimes he will be shared the feelings of someone else after gardening. Regarding this as a joyful surprise, Johnny gives it a go (see Figure 61), then moves on to comment to the host and other participants (see Figure 62, 63).

Comment the host and other participants

Get growing

Attend more events

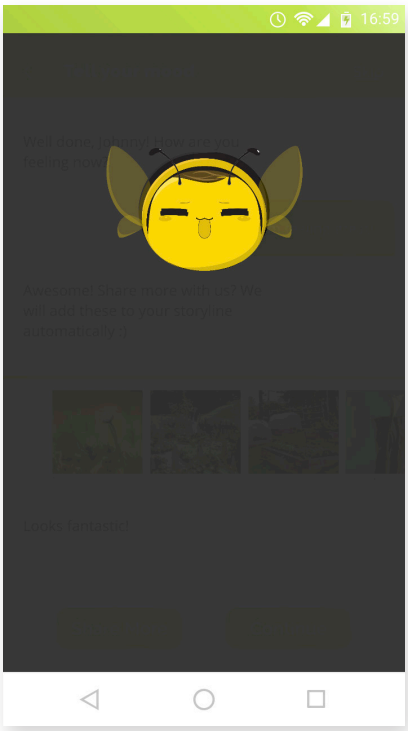


Figure 61. Tell us your mood page – warm fuzzy bee flies away after getting permission.

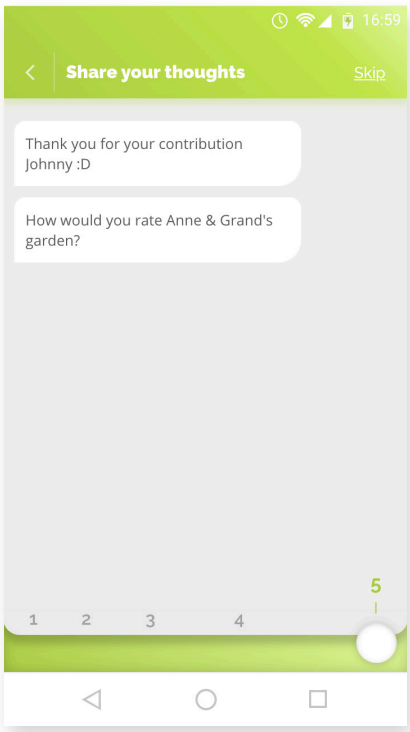


Figure 62. Share your thoughts page – rating.

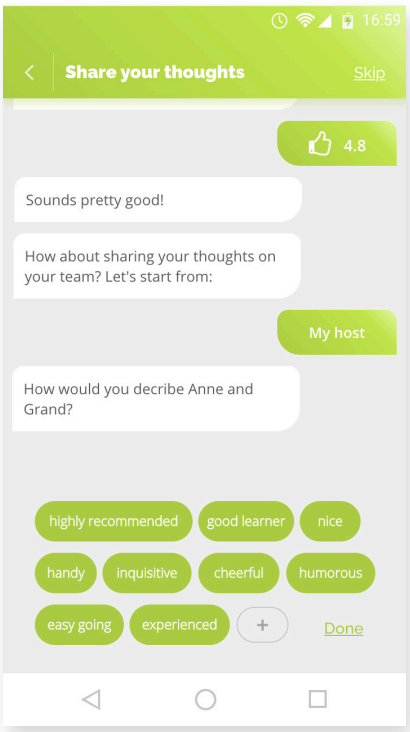


Figure 63. Share your thoughts page – labelling.

Scenario B: Anne's journey

Anne published the event

Back to one week ago, Anne was planning the garden maintenance for the next weekend. Her previous enjoyable experiences through "Growing Together" drove her to publish another co-gardening event. She followed the five steps to create a new event efficiently with pre-loaded data (see Figure 64, 65).

After previewing (see Figure 66), she published the event and earned 200g of energy which got her digital plant into the flourish phase. Then she went to "My Garden" to enjoy her "Flashback" gardening memories.

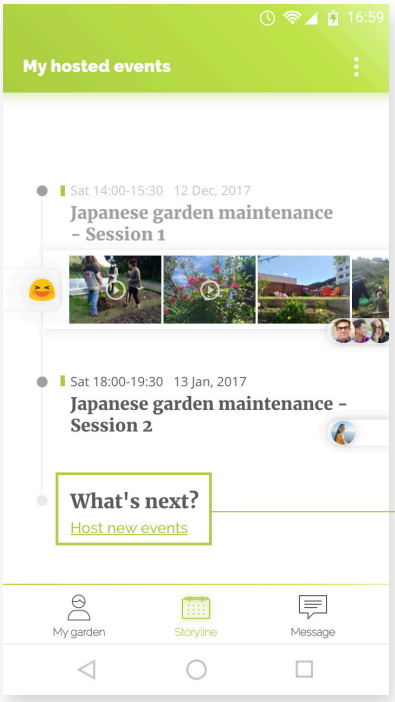


Figure 64. Storyline page – Host new events.

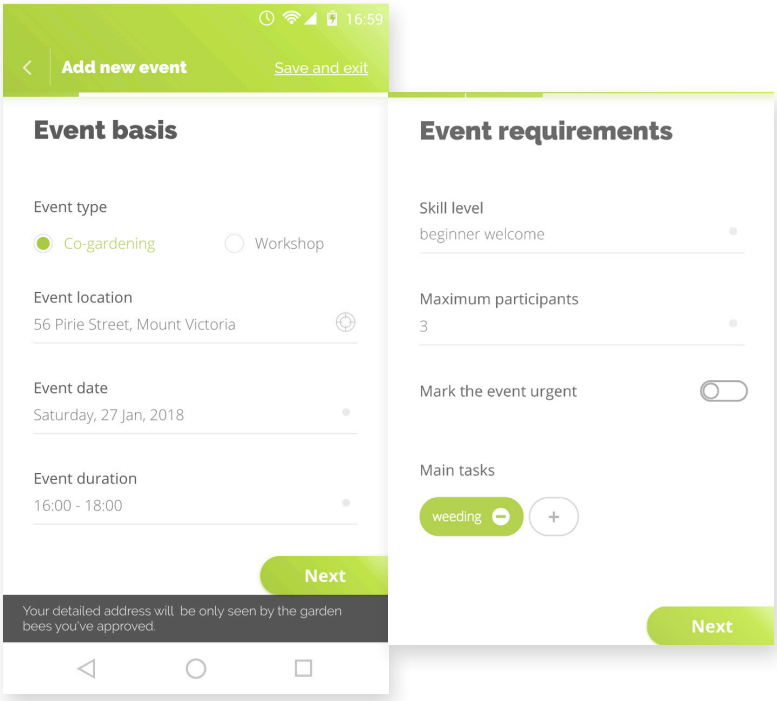


Figure 65. Add new event process.

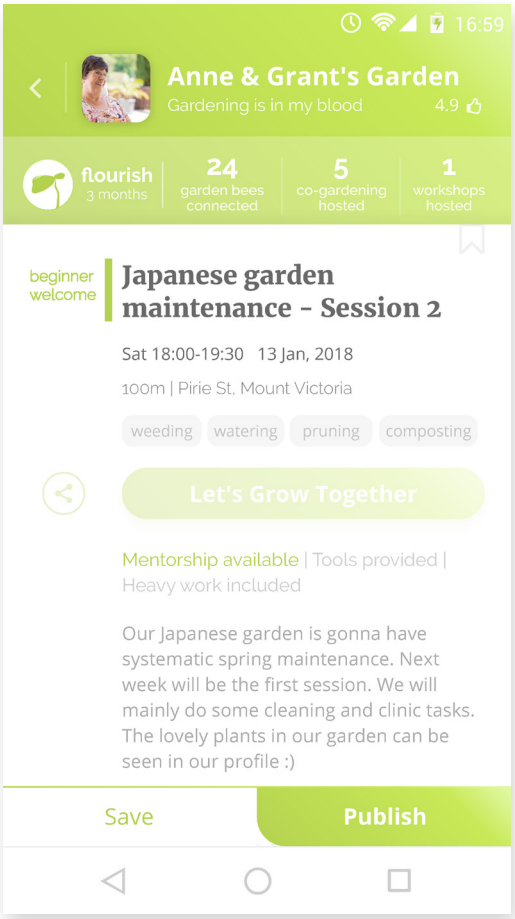
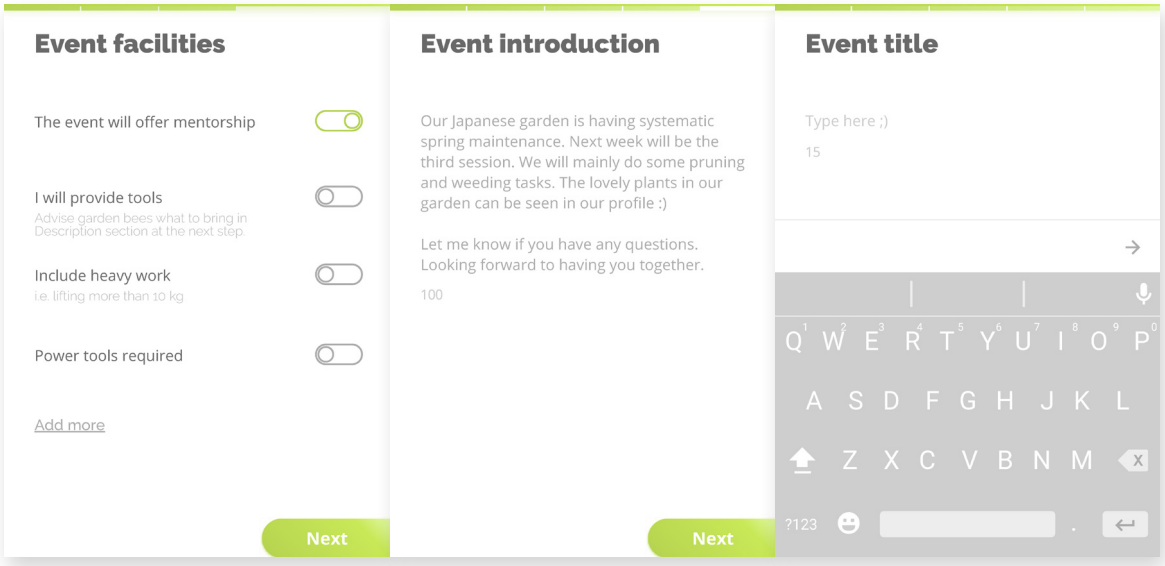


Figure 66. Add new event process – preview.



Anne assessed Johnny's response

Later, Johnny's response arrived on Anne's phone through a notification, which led her to the interface showing his message (see Figure 70). The genuine self-introduction and personal tone, plus the eager high-five emoji, convinced Anne to look at his profile (see Figure 67-69). His involvement in the workshop coupled with his ratings, positive labels and comments, gave Anne a sense that Johnny would be a good fit. She approved the response to welcome him to the event (see Figure 71), and he turned out to be a lovely new friend on the gardening day (see Figure 72-74).

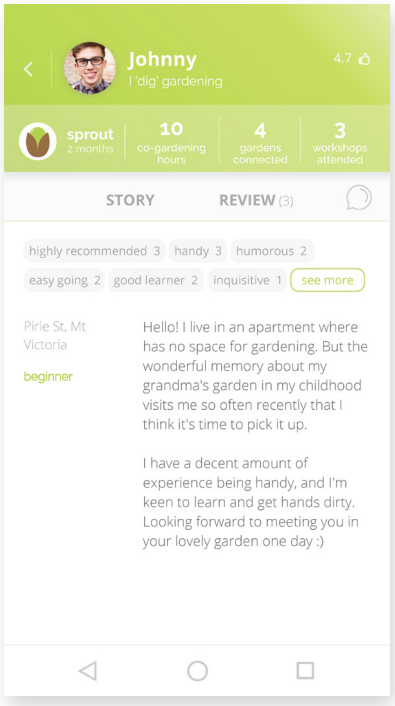


Figure 67. Guest profile page.

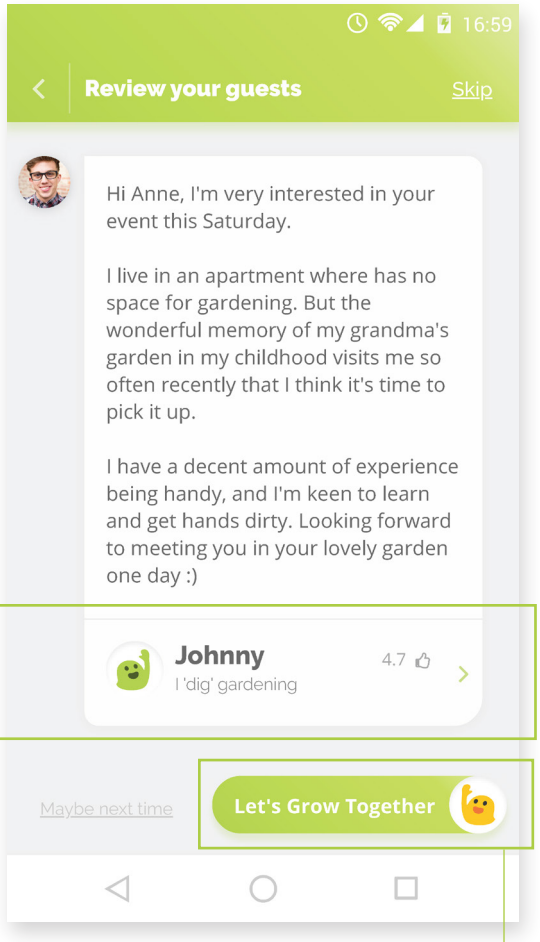


Figure 70. Review your guests page.

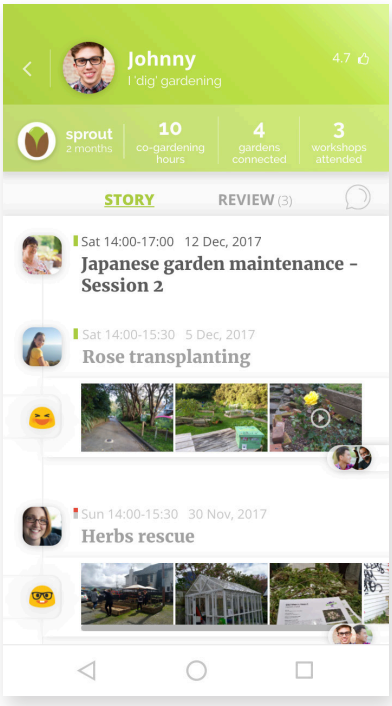


Figure 68. Guest profile page – story.

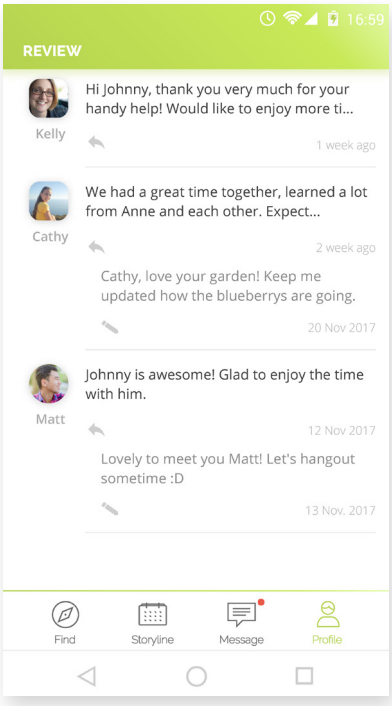


Figure 69. Guest profile page – review.

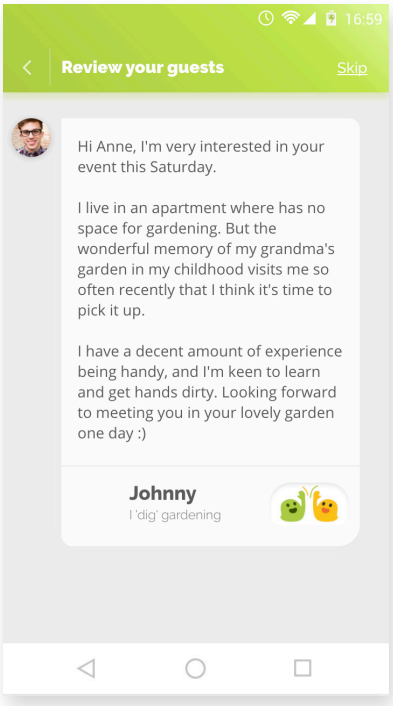


Figure 71. Review your guests page – approved the participation.

Figure 72. Taking a selfie [Photograph]. Retrieved 01/03/2018, from https://pxhere.com/en/photo/824456. Used under Creative Commons CC0.

Figure 73. HELP AUCKLAND (2018). Two people are happy when working in a garden [Photograph]. Retrieved 26/11/2014, from http://helpauckland.org.nz/youth-garden-opening. Used with permission.

Figure 74. People are gardening together [Photograph]. Retrieved 26/02/2018, from https://pixnio.com/people/children-kids/group-was-about-to-introduce-a-purple-colored-flowering-plant-to-the-garden.

Scenario C: Johnny becomes a host

A significant amount of time later, Johnny sets up his own garden enthusiastically. He has shifted his role to that of a host (see Figure 75) and keeps learning and engaging with the community. Various virtual plants have flourished along with his journey on the service, representing his contribution and personal growth. His long storyline offers him lots of wonderful memories to share with his family and friends.

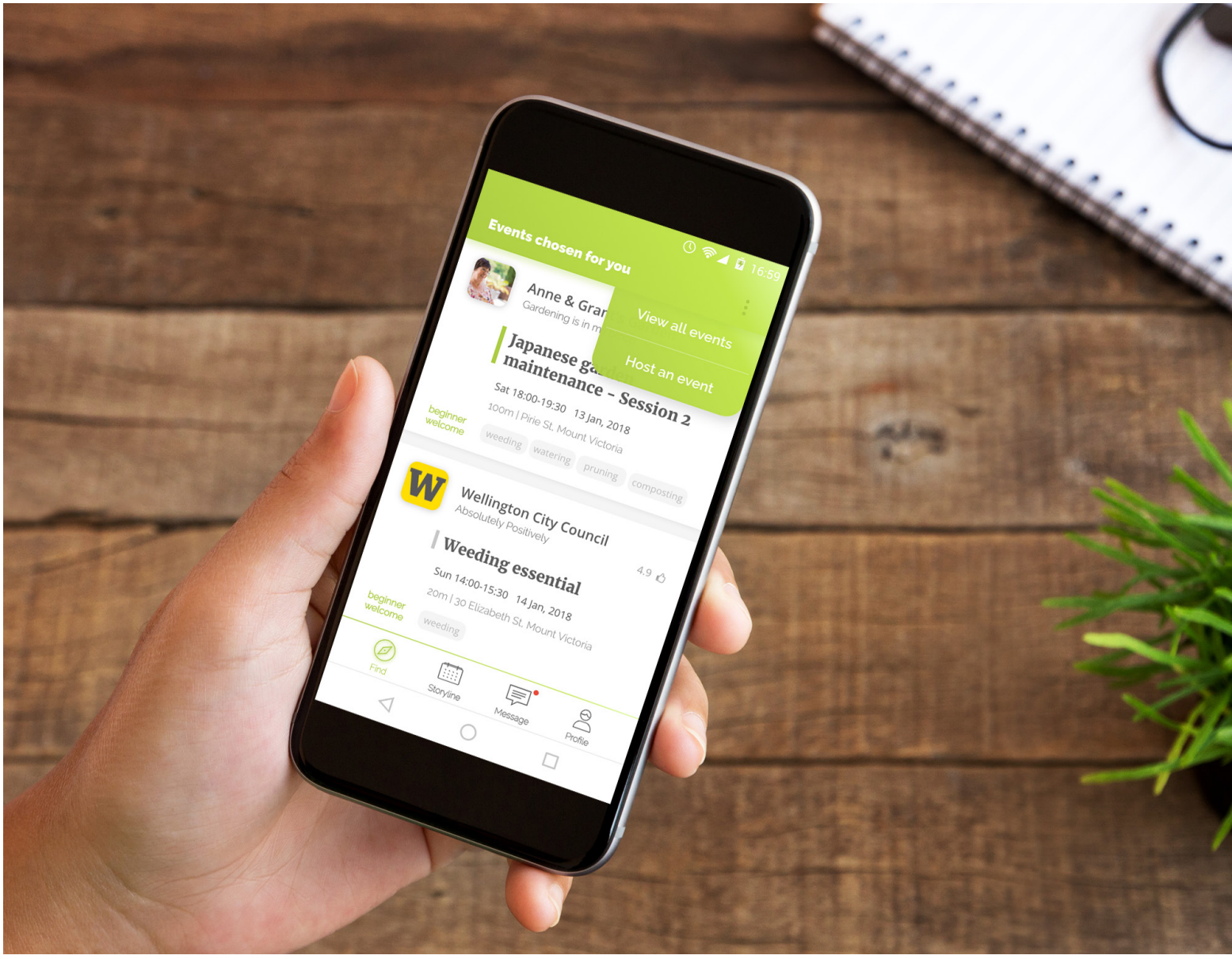


Figure 75. Switching to the host role on the phone. From http://freemockupzone.com/free-hand-holding-clean-smartphone-mockup/ (modified).

Chapter 5

Figure 76. People are gardening together (21/05/17).

Conclusion

How can the methods and approaches taken from interaction design practice prototype a digital service that encourages emotional engagement in communal gardening?

To answer my research question, I explored the literature around interaction design, emotional design and gamification, then adapted and blended these concepts into my design solutions. As well as the knowledge I gained from literature and examples of industry, my engagement with potential users played a key role in my whole research journey.

My final design solution addressed the research question through a progressive process. User research set off my design process and laid the foundations for drawing out the requirements of my proposed service. I then conceptualised the solutions from the functionality aspect while equipping myself with literature on interaction design and gamification. Later, I validated the functionality solution and adjusted the requirements through gathering feedback on the active interactions from potential users. Based on the validated functionality solution, I explored sprinkling gamification components into the structure to motivate users and make the experience more fun.

During ongoing interactions with potential users, I was deeply touched and inspired by their gardening passion and individualism. My personal experience enlightened me that emotion should be a powerful element in building the solution. Based on constant validation, I explored to create emotional connections and associations as well as triggers to resonate and build a solid connection with users. In the end, the final solution combines the thinking of interaction design, emotional design and gamification to craft the digital service as a "job maker" and "mutual friend" for potential users.

Iteration has been imperative for my research journey. Each time, responding to feedback helped me navigate the design direction and reminded me to think critically. I also appreciate how much I have been influenced by the potential users I have interacted with. The real users' images live in my mind and often pitch the vision: the existing gardening passion is spread out through my proposed service, which connects people, grows the community and brings personal value to users. Mapping to

Norman's model, the vision of this design solution could achieve all three levels. These thoughts all inspire and empower me to continue developing this topic after finishing my study.

Furthermore, while exploring different possibilities and seeking inspiration from a broader landscape, I found that the approaches and framework of this design solution are transferable to other contexts. Also, putting the solution into an implementing environment, my proposed service is able to sustain and grow itself by bringing in third parties to fully power up the rewards system on the basis of my proposed measurement system. This could mean that users can redeem their energy for products or services provided by third parties. Alternatively, users can exchange their resources based on the measurement system. Either way will pave the process of building an ecosystem. Paired with marketing activities such as campaigns and regional-level events, the gamification aspect of the final solution allows scalability. Though these possibilities have been put aside during my exploration, in which a minimum viable prototype was the goal, I am eager to further unleash the potential of this digital service.

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