

Timber - A Gardening App

Project Deliverable # 4

Final Report



Executive Summary

Timber is an app directed at gardeners of all skill levels. It directs them to find plants that they are interested in through multiple methods, and helps them grow it themselves with the aid and experience of other gardeners.

Design problems that our team experienced during this process were catering between novice and expert users - in this case, novice and expert gardeners. As there is a visible and distinct difference in skill between the two, we needed to draw the line; however, there was no apparent way to discriminate between the two with a single app interface. Thus, we had to build the app around the idea that not everyone would be immediately at ease with certain symbols or ideas. Another design problem was one's method of interaction with the app. As gardening tends to be a hands-on and hands-full activity, it's not very common for a gardener to also be able to use their phone at the same time. We had to account for that by building a nose-friendly user interface, where the user can use their nose-tip instead of their fingers. Finally, we had to account for the amount of information a user may need in a single use of the app, such as the split between just the appearance of the plant and further details such as how to plant and grow it.

We mainly had three research methods: Secondary Research, Body-Storming and a Survey. Each one of these provided us with interesting insights into gardening, such as:

1. Secondary Research
 - a. Most gardening apps use very similar interfaces that do not allow for a lot of flexibility on the user's part. This is where we could springboard in search of other ideas.
2. Body-Storming
 - a. Gardening is a physical activity, which doesn't allow for a lot of time on the phone.
 - b. Not a lot of people, and novice gardeners especially, aren't confident in their gardening skills.
3. Survey
 - a. Filtering capabilities provide a lot of depth to plant selection methods.
 - b. Novices use odd sources, such as YouTube, as gardening resources.
 - c. The aesthetics of the plant were possibly the most important factor in gardening.

We recognized several heuristic violations after our high-fidelity implementation of the application. In this report we will discuss the heuristics violated with the greatest severity.

For the next iteration of our app, we intend to include features such as expanded plant biographies, including a video playlist that teaches users the basics of gardening, a wiki-like system where users can introduce plants to the database, as well as a 'My Plants' page that is essentially a personal list of all the plants the user owns or is interested in.

Next, we will discuss the origins of this idea as well as the design problem.

Introduction

Timber - A Gardening Guide is an app intended to be a guide for amateur gardeners to shape their nurseries and backyards into something they can be proud of. This will generally be accomplished using gardening tips, processes, seasonal advice etc. to help the gardener come to their own decisions, giving them the confidence and allowing their garden to reflect themselves. Our app is intended to be used as a focal tool for all gardeners, for example to compare prices in local stores or to see gardening processes for specific types of plants.

Design Problem

The design problems that we face were revolved around how a gardener would interact with their mobile device and mobile application. We needed to cater to the needs of the gardeners. This means that we also need to take into fact he various levels of gardening experience. The level of experience could range from novice to expert. Novice in this case being a person that wants to garden but does not have the knowledge to back their desire to garden. Experts on the other hand are users that have the knowledge to garden and to care for plants given clear instructions. In the case expert users would most likely need a quick method to look

up the care information about the plant. Another design problem we had to overcome was the method of interaction. For a gardener, they do not have an extra hand at their disposal. Since, most gardeners wear gloves, we needed to learn how they would use the application while not being able to use the phone with their hands. This is why we had to adjust the design of our application to meet these restrictions. Another design problem we faced was with the type of information that the user was presented with. With regards to the users level of knowledge, we needed to find a balance between having less text and more descriptive symbols. In our research we found that other applications just have big blocks of text. Which we discovered to be not as informative as it could be.

Speaking more about catering to the needs of our various user segments. We discovered that there is no clear division between the levels of gardening expertise. The problem designing software around this was dealing with what information needed to be presented. Also we needed to decide which features are needed to address the needs of our user segment. We designed our application based on the two extremes. Novice gardeners and expert gardeners are the ones that we focused on. The approach we took was to put ourselves in their shoes. The quickest what to overcome the design problem with regards to novice users was to put ourselves in their shoes. This made sense because we did not have experience with gardening and could accurately portray a novice user. A valuable lesson we got from this was that we only need to present information about plants that they are interested in. So, with that in mind we formulated a strategy around that mindset. For the expert user we just interviewed them and extracted the information that we thought was necessary. All this combined together helped use come up with a design that was easy to use and quick to gather the information that they needed.

One big problem was dealing with the method of interaction. This meant that we have to design the layout to allow the user to interact with the application without having to the uses of their hands. As our knowledgeable and benevolent TA, the great Terrance Mok pointed out. Most people use their noses to interact with the touch screen. With this in mind we had to ensure that this was performable. So we fine tuned the layout of the screen and buttons so that we could comfortably access the features with our noses. As a result, the solution that we came up with was to keep the interface simple and minimalist. We made the buttons larger and made it harder to miss with your noses, because noses are not as precise as using our fingers.

Our last design challenge was to ensure that we only present information that was needed. This problem really dealt with not having too much information presented to the user. We discovered that when gardeners are presented with too much information at once it becomes a tiresome task. This resulted in the user leaving the page of text and trying to find another source that had information that they wanted. We also was made aware that there are standard symbols that plant cards have. These symbols gave information to the user in a easy to consume manner. So, we worked on incorporating this into our design.

User Research and Findings

Research Method #1: Learn: Secondary Research

In this user research method, we decided to use other apps currently on the market in order to learn as much about the scope of our gardening app as possible. Our rationale for this was mainly that following our competition would be a smart thing to do regardless of the kind of app we were to create, but more importantly it would be an important building block to explore the possibilities from where we could start building features. Most importantly, we could also examine preliminary ideas that we had built to see if they were feasible or if other apps had not already done it.

We decided to primarily explore gardening apps, but we also decided that examining the dating app Tinder would be a good idea. With the gardening app, we came to the conclusion that many gardening apps lacked diversity, and were mostly similar list-based interfaces which the user interacted with. This, we thought, would be an interesting point to diverge with the current market of gardening apps, as it would set us apart from competitors by having something unique within our app that wouldn't be entirely list-based. We also found through the gardening apps that there were many gardening-specific symbols that represent characteristics of a plant or represent instructions for the plant, which we decided to implement as part of our app for the sake of consistency amongst gardening resources.

The dating app, on the other hand, was driven by us wanting to develop an appropriate user interface early on in the design. There were many things we liked about the dating app, such as the swiping interface to select individuals that the user liked; we thought something similar would be interesting, or at least novel, in a gardening app. Moreover, we also thought that the app's method of displaying details on-demand after tapping on the picture of an individual was quite interesting, and we resolved to place some similar details-on-demand feature in our own app.

Research Method #2: Try: Body-Storming

Body storming was something that we thought would be a unique and interesting challenge provided by gardening. Since gardening is, indeed, a very physical activity, we decided it would be most appropriate to follow in the spirit of the task and do some gardening ourselves, in order to experience how exactly it feels to garden. We chose a simple gardening task (depotting, which involves removing a potted plant from its plant while keeping as much of the soil in the pot at the end of it) and decided to record the troubles and experiences of not knowing how to perform this simple task. To 'record' this, we had our novice gardener speak out their thoughts on the gardening experience, as well as their method on how to solve the problem, twice: once before and once during the task. This was motivated with a desire to better learn the mental method of a complete beginner.

What we learnt gave us a lot of input on our app. Firstly, gardening, being a very physical and (quite literally) dirty activity, doesn't afford our users to be digging through the ground and their phone at the same time. Especially considering the large gloves gardeners wear, we decided that the user interface must be something that the user does not have to fiddle around too much with. If they were to, then the buttons are still usable using one's nose, the closest alternative to a finger. Gardening confidence was also something plaguing our novice gardener, who would constantly doubt and double-back on some activity they had previously done. For example, when

they would try to dig up the soil, they would start with a couple of hits, and then stop while saying “I don’t think this is how you do it.” This was also something to consider taking into account for in our app.

More importantly, it also helped us to understand that some people may very well garden without any sort of guidance at all, and it may lead to disastrous results for the plant, the nursery, or the gardener himself. As such, we decided to implement as much aid as we could within in order for the app itself to be a respectable, and portable, source of gardening tips and guides, and also helped us consider where gardeners may get help from, as well as what kind of help they would be likely to ask. It helped us to keep the physicality of gardening in mind as we drafted out future ideas for our app in the Ideation phase, and as such, was very much a valuable part of our research.

Research Method #3: Ask: Surveys and Questionnaire

The survey/questionnaire was perhaps the most eye-opening method of them all. We decided to talk with a novice gardener, because we thought their approach to gardening problems would be novel, or at least unconventional. This did indeed turn out to be the case, but it was still not in the way we expected. We sat down with our interviewee for roughly three-quarters of an hour and asked him questions that ranged from his favourite plant in his backyard to his own personal reasons for gardening.

We learnt a large amount of both trivial and important things, many of which would become crucial parts of later development. For example, the scope of the amount of information a ‘plant biography’ page should have was established in this part of the research stage, as our interviewee brought up the point that reading large walls of text was unfeasible, especially if the user is out gardening at the time. There were also a plethora of other ideas, of which the most important subset is described below:

- Filtering capabilities, including splitting the plants based on what season they fell into. We ultimately decided that this would be more of a built-in feature: since plants take a long time to sprout, we would only show plants that were plantable in that season to begin with. However, this did lead to other filtering ideas, such as based on the amount of sunlight the plant would need.
- Include sources from unlikely places, such as YouTube. Our interviewee surprised us by telling us that their favourite resource for gardening was actually YouTube rather than a gardening guide or perhaps professional advice. This threw us off at first, but we then had the idea to integrate the YouTube playlist into the app to begin with; as we learnt in the body-storming method, it would perhaps be easiest to have a physical guide for a physical activity.
- Focus on the aesthetic of the plant first, as that’s what draws people in. We learnt from our interviewee that one of the main things that drives him to garden as much as he does was simply the fact that other people were gardening around him, and he wanted to ‘keep up’, as it were. Therefore, one of the key points to his criteria of selecting a plant or pursuing a project was simply ‘how good would the garden look to others?’ This was a key point in us deciding that the looks of

the plant should be the most important, and it helped us decide on the Tinder-esque idea of deciding at a quick glance on the first time, and the user may choose to pursue more details if interested. This point was also a key point in adding a camera feature to our app, as it may not be all the time that someone finds the perfect plant for them in the app; they may also find it out in the world. This issue was also brought up by our interviewee, and we decided to build that functionality into our app.

Design and Justification

This is an overview of the features that we have in the final system. We have photo searching, manual searching and plant descriptions. With these pages in the application we applied all the knowledge that we learnt through our user research and heuristic evaluation to the design of them. First, we kept in mind the range of possible users of the application. Second, we had to deal with the method of interaction for our application. This dealt with the fact the gardeners do not always have free hands to use. Lastly we had to overcome the challenge of how we present our information to the gardener. We had to feed information to the user that was quick and easy for them to consume. These are the design problems that we faced while developing the application.

To address the first problem we had to research what it's like to be a novice gardener and an expert gardener. The research we performed help guide our application become more user centric. In the end we narrowed down the necessary features. We discovered that gardeners need to know information that is relevant to them. Which means that other information is not really needed to be displayed. That is why we only have to options that lead the user to the plant information that they want. The **Justification** for this is that based on our user research, gardeners only need to see the information about the plant(s) they are interested in. That is why we have photo search and manual search. With these to options that user can quickly find what plant they are interested in and read the information about it in the plant description page. This caters to the needs of both novice and expert gardeners.

We also needed to address the issue was the interaction of the application. We found out that many mobile phone users often use their noses to act as a replacement to their finger. This overlapped with what a gardener face when they need to interact with the phone but are wearing gloves. That is why the design of the interface is laid out in this manner. We have large buttons for the user to interact with and incorporated a design the minimized the amount of error with regards to precision. The **Justification** for this was that this issue needed to be addressed. We have all experiance this before will on the transit. If the buttons are not laid out with this in consideration the application becomes frustrating to use. If we design the interface around this we can appease the user's needs and address an issues that not all developers have in consideration.

Lastly we used symbols and minimal text in the plant description page. As discussed earlier there is an issues with how information is presented to the user. Through the research, we gathered that users do not like to be presented with large amounts of text about the plant. This leads the user to turn tail and find another site or application that provided information more

effectively. That is why we designed the plant description page to be as minimal yet informative as possible. The **Justification** is that when you provide information in the form of symbols it becomes easier to consume. The symbols that we used are standards around the gardening community. Therefore it is easier to understand for gardeners. That way the plant description page becomes neater and only provide the information that the user is interested in. We also included maintenance information curated to the needs of novice gardeners that might not fully understand what the symbols mean.

Heuristic Evaluation and Findings

Issue 1: No indication to see if the preference was picked when trying to sort plants by their features, such as ‘Amount of sunlight required’. This major issue violates the “Consistency and Standards” heuristic, as the user has to wonder their selection has been successful or not. Moreover, this doesn’t follow platform conventions of clearly showing the user that an option has been selected. A proposed fix would be a small check mark that denotes the successful selection of a preference.

Issue 2: App crashes when user attempts to scroll down on a Manual Search. This major issue violates the “Help users recognize, diagnose, and recover from errors” heuristic such that though the error message is expressed in plain English, the message doesn’t suggest a way to resolve the crash and simply exits the app. A proposed fix would be to have the manual search take up fewer resources in the app.

Issue 3: Tapping the search results in the photo search does not lead to its description. This major issue violates the “Match between system and real world and Visibility of system status” heuristic such that the system doesn’t keep the user informed about what is going on after the user is not taken to the selected plant’s description. Similarly, selecting a result to no response violates real-world conventions. A proposed fix would simply be to get the functionality into the app, as it was most likely an oversight.

Issue 4: Symbols don't have definitions, and new gardeners may not understand what they mean. This major issue violates the “Help and Documentation” heuristic. Though the system may be used without documentation or help, giving the users were given description of what the symbols represent would be more conducive to the user’s tasks and is friendly design in general. A proposed solution would be having a little pop-up that describes the symbol when it is held down on.

Recommendations for Next Iteration of Design

For our next design, we have many ideas on what exactly to work on. During our planning phase, we had come up with a plethora of ideas and many could not be implemented to our standards. While the photo recognition itself is simply at a prototypical level, even the map that we implemented could not live up to the wide range of ideas that we had decided the app should have. For example, locations being displayed on the map should also have been sortable based on distance; prices; and stock. The map would also portal to the websites of the stores,

allowing the user easy access to contact them if they would like to, as well as link back to plant biographies of the plants at the store.

Of plant biographies, we wanted each plant to be describable not in words, as is expected of plant guides, but instead through pictures and videos so as to appeal to the beginner gardener. However, in this regard we also could not implement as much as we would like, as our initial ideas included video-playlist guides for each of the plants - such as how to plant them, or what conditions they would need to grow. We could not implement this feature to this degree, even though we were able to include descriptions of the plants through pictures through icons that indicated how much lighting the plant would need, or how much fertilizer, etc. Ultimately, this was something that we were hoping would be for the user's sake, as during our user research we had already established that beginner users were keen on using video tutorials for gardening. As far as implementation goes, we found that this was perhaps the most reasonable to do, as we could maintain a pre-curated YouTube playlist that the app could simply link to, if it could not display the videos on the app itself. Of course, this also implies that we would need a pre-curated playlist for every single plant, but this may be where the next feature comes in handy.

We would also have liked to make the entire system similar to a gardening-wiki: no entirely user run, but with definite user input. The idea was that should a gardener not be able to find a plant that they have spotted and taken a picture of, they would be able to upload it to our app as a possible new plant. The plant would then be either identified, or else added to the database by a more experienced gardener, thus making the entire system more collaborative rather than something only the developers can touch and fiddle with. To build off of the previous idea, the pre-curated playlist of videos may even be created by a helpful and experienced gardener. On top of this, there was also the idea of each user being able to comment and rate on certain plants, and maybe even provide gardening help on each plant's biography page, so as to perhaps aid other gardeners without needing to go to multiple resources. In terms of implementation, this would perhaps be the most resource-intensive, but it still seems feasible given the popularity of social media sites.

Finally, and perhaps most importantly - also building right off the rating and commenting idea - was the need for a 'My Plants' page that would contain all the plants that the user likes, or owns - preferably with some kind of sorting functionality that would be able to discriminate between the two. This would mean that the plants one owns (or else would really like to own) are all in a single page that would neatly encompass the user's interests. From there, the user would easily be able to find gardening tips for the plants they own - without having to search the entire database again - or else be able to go to the nearest/cheapest store that stocks the plant that they like. This would be perhaps the simplest feature to implement, as it is only, really, creating a new list of plants that is saved for the user.

Conclusions

In conclusion, it is perhaps most honest to say that while our prototypical app did not contain many of the features that we had hoped would be present even during our initial group meeting, it did contain very much both the mechanical and thematic core of our app in discovering, and enjoying, the plants around oneself, as from there comes the root of one's

passion for gardening. Moreover, the quote “You must fail at gardening to master it.” holds true for this iteration of this application. We had to continuously fail (Heuristic Evaluations) to create a better user interface and system for our stakeholders throughout this term. Thus, it may be the end of this project but the team has gained valuable knowledge and will take these lessons learned into our future ventures.