

Report

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Planning

User research findings

We conducted 6 interviews and 6 field studies in our research. Some of interesting findings we found in interviews are:

- Trouble finding seeds and other agricultural supplies in great quality.
- Weather changes or bad weather are the common difficulties for raising some kinds of plants, eg. succulents.
- For some gardeners, their current access to gardening information is google, but they do need an app or website help them on gardening
- Difficulty diagnosing common disease of plants
- Not sure about the time when the amount of sunlight change that not enough sunlight affect the growth of the plants

In our field studies, lots of users pointed out similar pain points:

- No pictures in the variety exploration and review page
- The reviewed fields are too subjective, eg. for yield it's better to indicate the quantitative range
- Registration page onboarding is arbitrary and the required fields are too much
- Lack of guidance on the website (for example the home or back navigation)

- Users are not very digital

Note: see appendix for how we conducted user research

Target Users

Based on our interviewees space and findings, our user space is the non-digital novice and home gardeners with relatively small planting area.

User goals

- Explore and target potential plants/variety for gardening
- Share gardening experience through reviews on vegetable varieties
- Make the process of learning vegetable varieties easier

Persona



Photo courtesy of "The Startup Journey" blog

Name:	Jamie
Age	22
Pronouns	She/Her/Hers
Occupation	College Student
Major	Linguistic
Year	Senior
Hometown	Ithaca, NY
Skills	Drawing, Speak 3 languages, Intermediate to Planting, weak technical background
Attitudes, beliefs, values	Passionate, outgoing, health conscious
Past experiences	Green Onions, Potatoes, Tomatoes, Mints, Cabbages
Life goals	To achieve 100% vegetable independence.
End goals	To know what vegetables are easy and convenient to plant as a novice gardener.
Experience goals	Help her to choose suitable vegetables to plant.

	To reach a 90% crop yield.
Successes	She cooked with self-planted tomatoes and green onions.
Frustrations	Her tomatoes died because of an unknown disease. Her onions died because of bad weather.

Scenarios

Jamie was motivated by her grandma who was an experienced gardener and often let Jamie eat her own planted vegetables. Jamie liked how grandma was proud of her own vegetables and it tasted good. Jamie started to plant her own vegetables since Sophomore, and started to use VVG 6 months ago.

Jamie wants to gain more information about the plant. She heard that a lot of people shared the information about the various vegetables, then she would like to visit the website to check. She found that creating a profile is required to check other people's shared information, so she signed up an account and created her own garden profile(Task 1). Then she explored the "Tom Thumb" which is the lettuce type she's interested in(Task 2). By reading other people's reviews, she learned about the ease, taste, and yield information about that.

After Jamie gained the information she wanted, she also wanted to share the information she had for the plants(Task 3). Therefore, she started to write the

information about "Lisa King", which is a type of tomato she recently planted and submitted that review.

Value Propositions

Our application offers a one stop shop for all the information required for vegetable gardening. The costs and barriers to picking up our app is low. With intuitive features, even people with no strong digital experience can consume the information and share their experience on gardening with ease. Use this app to keep track of your gardening path and share your success/failure experience with the entire gardening community. Let this app be the best helper on your next plants so that you can focus on the work in the fields. This app is a great alternative for those who need the latest and personalized information for the vegetables in their gardens and would like to connect with the entire gardening community.

Design

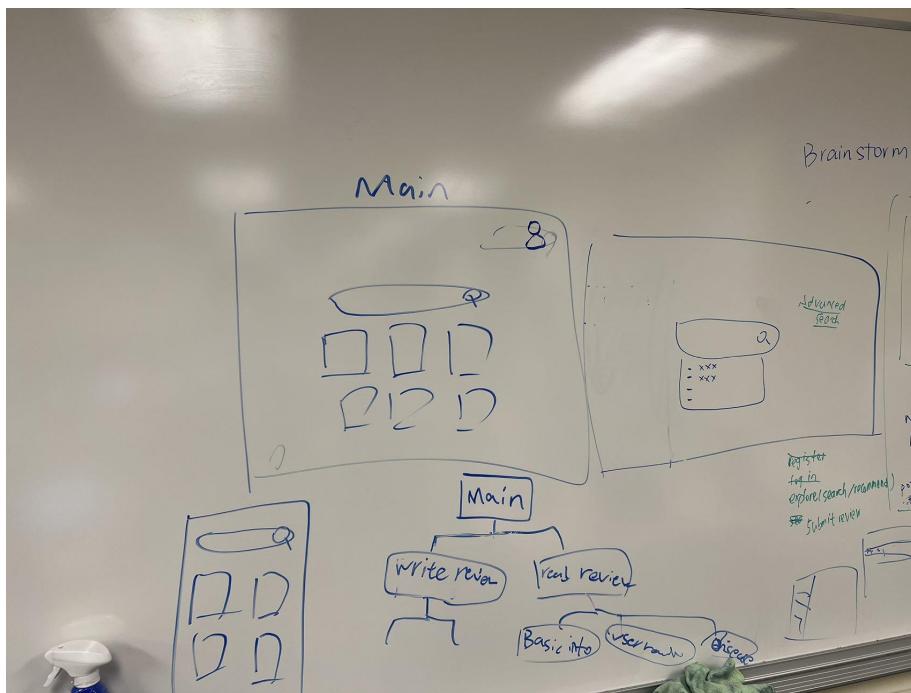
Sketches

Brainstorm

- The review page can be designed as sticky note layout to be more interesting
- In the vegetable information section on review page, we could add level attribute to mark the easy to plant level of the vegetable
- The submit page can be submitted with the forms of both the text and image/emoji

- In the submit page, it's better to have the plant information from the review page, in this case, users could keep in mind which plant they are reviewing.
- A daily check-in page can be added to improve the user engagement
- Real-time weather information can be provided utilizing GPS information and external APIs
- Auto completion and recommendation can be added to the search function
- There could be a title and number of likes for the users, and this information can be displayed to demonstrate their reputation inside the community

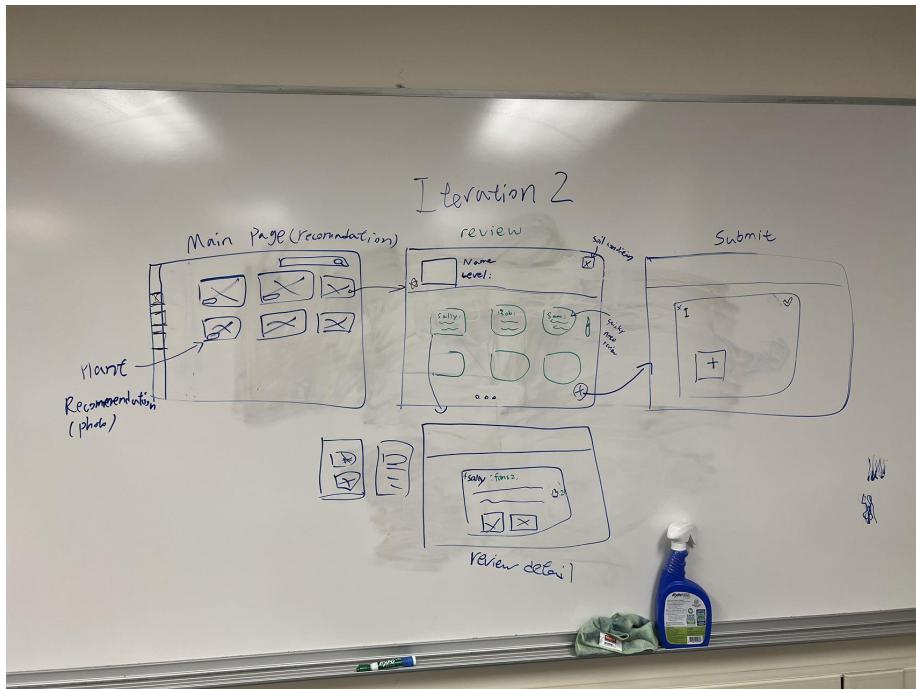
Iteration 1 (10.31)



In this sketch we aim at the search functionality for the main page, along with the demonstration of the plant exploration in the main page. There will also be autocomplete and recommendations as advanced features.

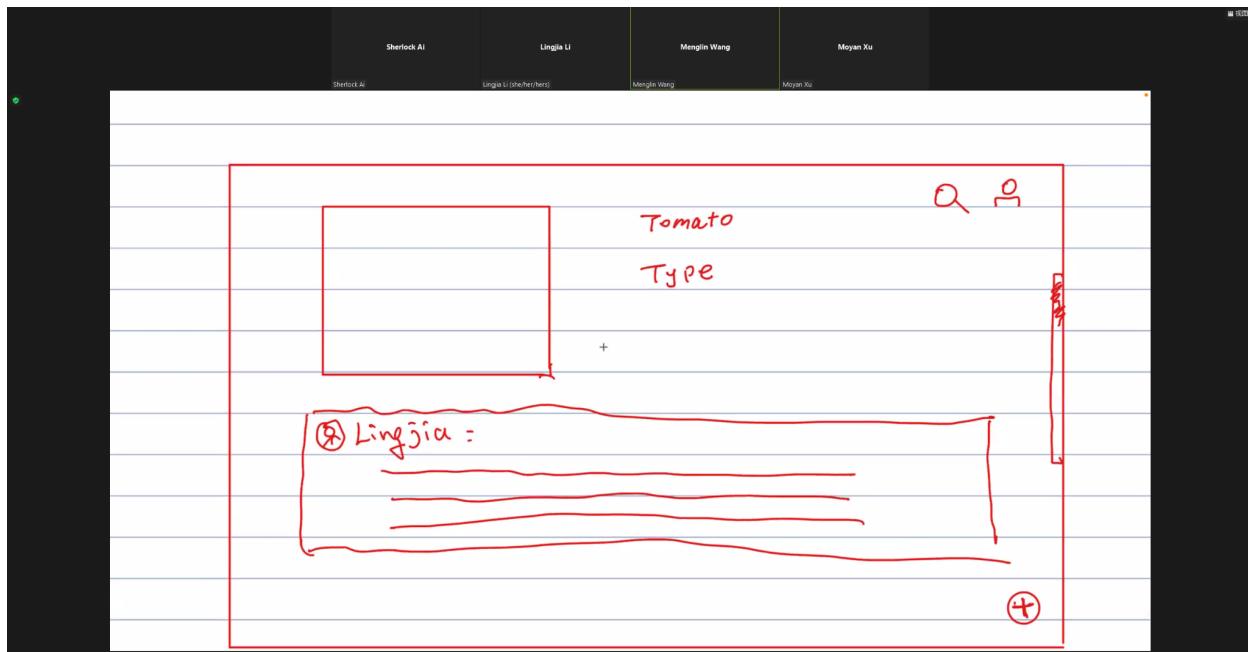
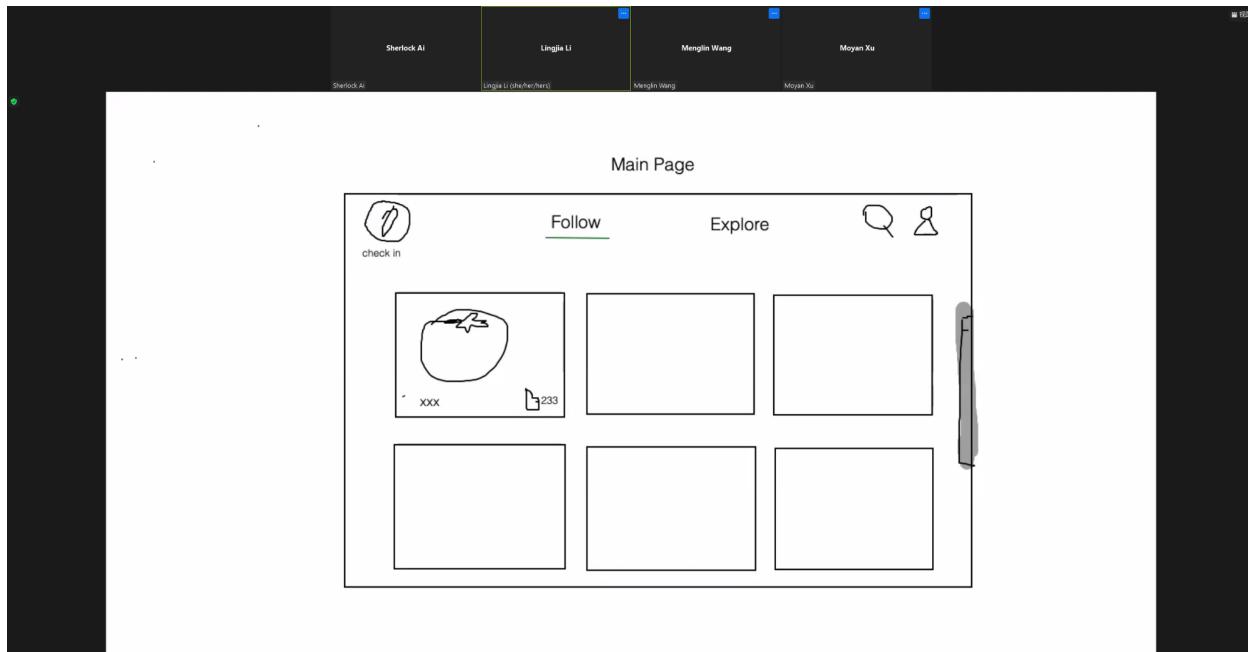
Iteration 2 (11.3)

In this iteration we moved our search button on top right of the screen and focused more on the exploration of vegetable varieties for the users. We also improve our review page by adopting a sticky-note style as well as for the submitting review and review detail pages.

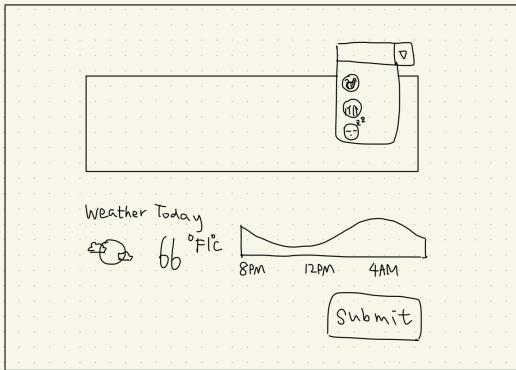


Iteration 3 (11.7 via Zoom, hand sketched using digital tools)

For this iteration, we moved the profile and search button onto the top right of the screen, still focusing more on the variety exploration. We also added a check-in page and weather function to improve user engagement and provide real-time weather information as an advanced feature.

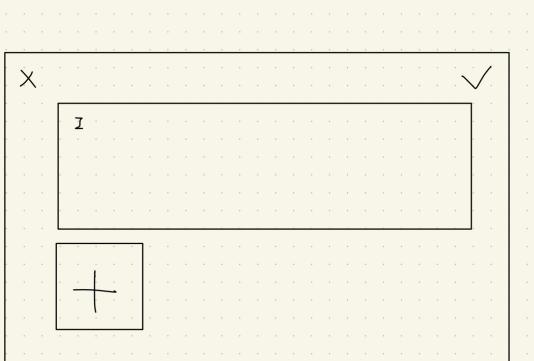


check-in page

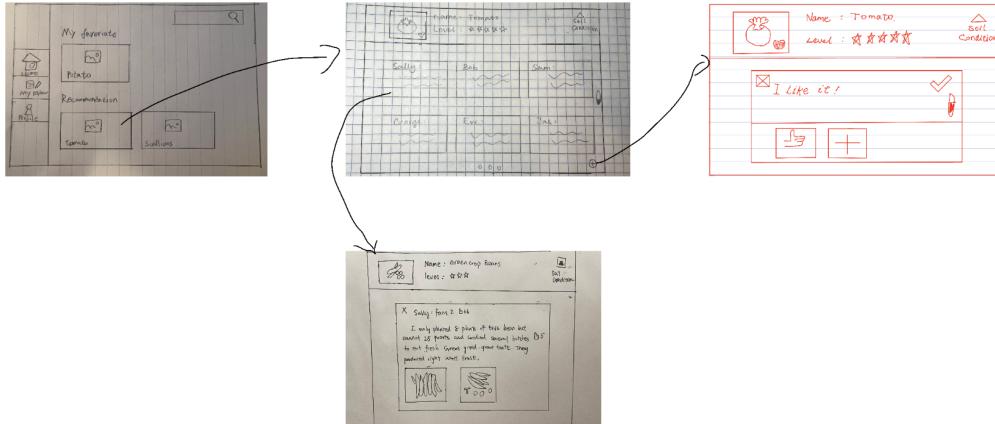


A wireframe diagram of a mobile application interface. At the top is a large rectangular input field. To its right is a vertical weather card with a small icon at the top, three circular icons in the middle, and a downward-pointing arrow at the bottom. Below the input field is a section titled "Weather Today" containing a sun icon, the temperature "66 °F°C", and a line graph showing temperature fluctuations from 8PM to 4AM. At the bottom is a rounded rectangular button labeled "Submit".

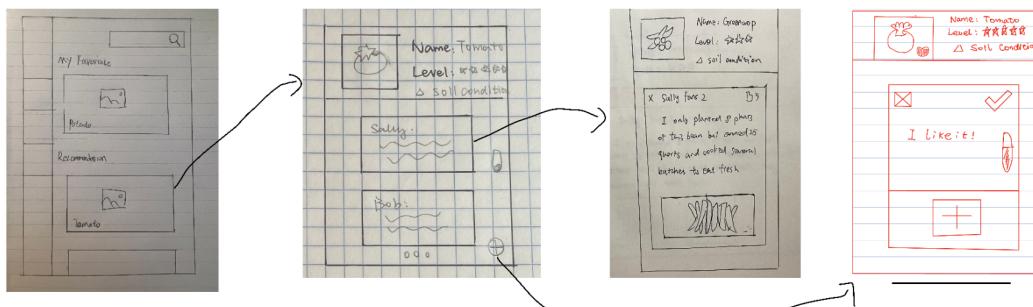
Submit



Wireframe



[View](#)



[View](#)

Photos for working together



A screenshot of a video conferencing interface. At the top, it shows four participants: Lingjia Li (she/her/hers), Menglin Wang, Moyan Xu, and Sherlock Ai. The main area displays a whiteboard with a red-outlined rectangle containing the text "plan name:" and "-type =". Below this is another red-outlined box containing the text "(*) Lingjia =:" followed by three horizontal lines. The interface includes standard video conference controls like Mute, Start Video, and Share Screen, along with a Participants list on the right side.

Rationale

Home Page: We decided to show recommendations based on users' preferences because our research indicates that users want to explore new varieties of vegetables. Favorite allows users to easily view vegetable details and track the reviews. Vegetable Cards match later sticky notes, giving it a contextual experience.

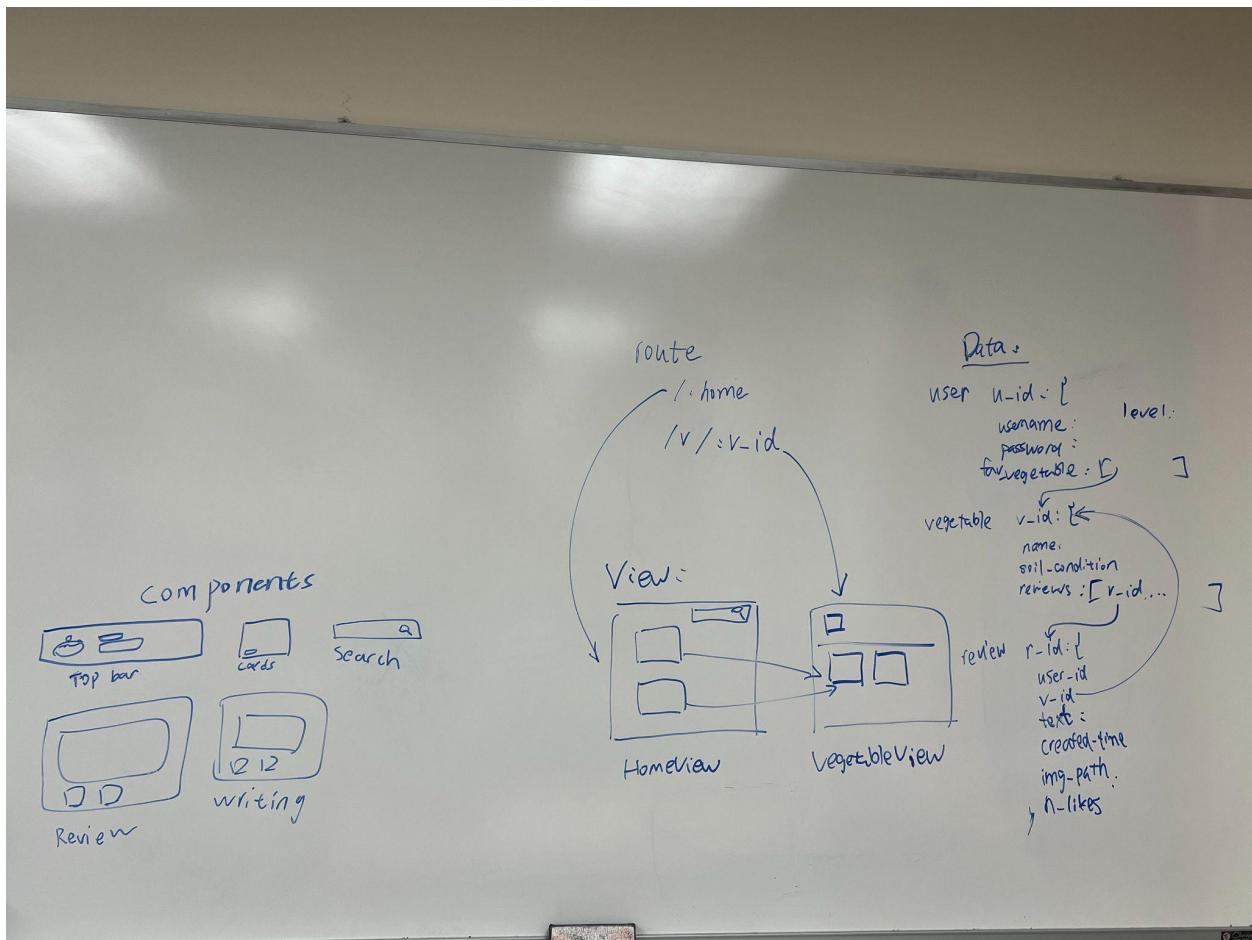
Review Page: We decided to exhibit the reviews based on a sticky note layout. The page will first show the information of the plant and the level of it, and then show the reviews because our research indicates that users want to review the vegetable details easily. Users could also create new reviews from the review page through the "+" sign on the bottom right corner.

Review Detail: The review detail page inherits the sticky note layout. The page will first demonstrate the general information of the plant on the top of the screen (name, level of difficulties, soil condition, image, etc.). Then the author information for the review will be demonstrated, including the user's title in the community and number of likes. The detailed text information of the review will be displayed below, along with the images for the review, in a responsive manner.

Submit Page: We decided to show half of the page (basic plant information) heritage from the review page, when users edited and texted the review, it could help them keep in mind which plant they are texting, other than checking it back and forth. On the other part of the page, we design a text and image/emoji combined submit page, users could click 'ok' on the right up corner to confirm submit the review, and click the left up corner

to go back to the review page. This provided a very simple but comprehensive approach for users to submit a review.

Implementation



- For the high fidelity prototype, we plan to have four views (home page, review home, writing views page and review details page)
- We have five components in total: NarBar.vue, ReviewItem.vue, TopBar.vue, VegItem.vue and Write.vue

- We have customized paths for different routes and pass the corresponding vegetable or review id after the path to the target view pages
- We create 3 json files: review.json, review.json, user.json. We created mock data for 12 veggies in total, and multiple reviews.

(Implementation contributions merged below)

Contribution

Lingjia Li: Drafted the interview questions; conducted 2 interviews and 2 field studies; drafted the persona part and value proposition part. Sketch all screens and wireframes with the team, and add corresponding rationale. Implement review detail views, construct the mock data file, implement image loading, and add routes configurations.

Menglin Wang: Drafted interview questions; Conducted 1 interview and 1 field study; Drafted interview questions and revised the whole report for submission. Sketch all screens and wireframes with the team, and add corresponding rationale. Implement the top bar, add mock data, and add route configuration.

Moyan Xu: Drafted the interview questions; conducted 2 interviews; drafted the scenarios part and pain points. Sketched all screens and wireframes with the team, added corresponding rationale. Implement writing review pages, image uploading and add routes configuration.

Sherlock Ai: Wrote interview questions; Conducted 1 interview and 1 field study; Drafted user findings, target users and user goal. Sketched all screens and wireframes with the

team, and added corresponding rationale. Implemented vegetable item and search bar component.

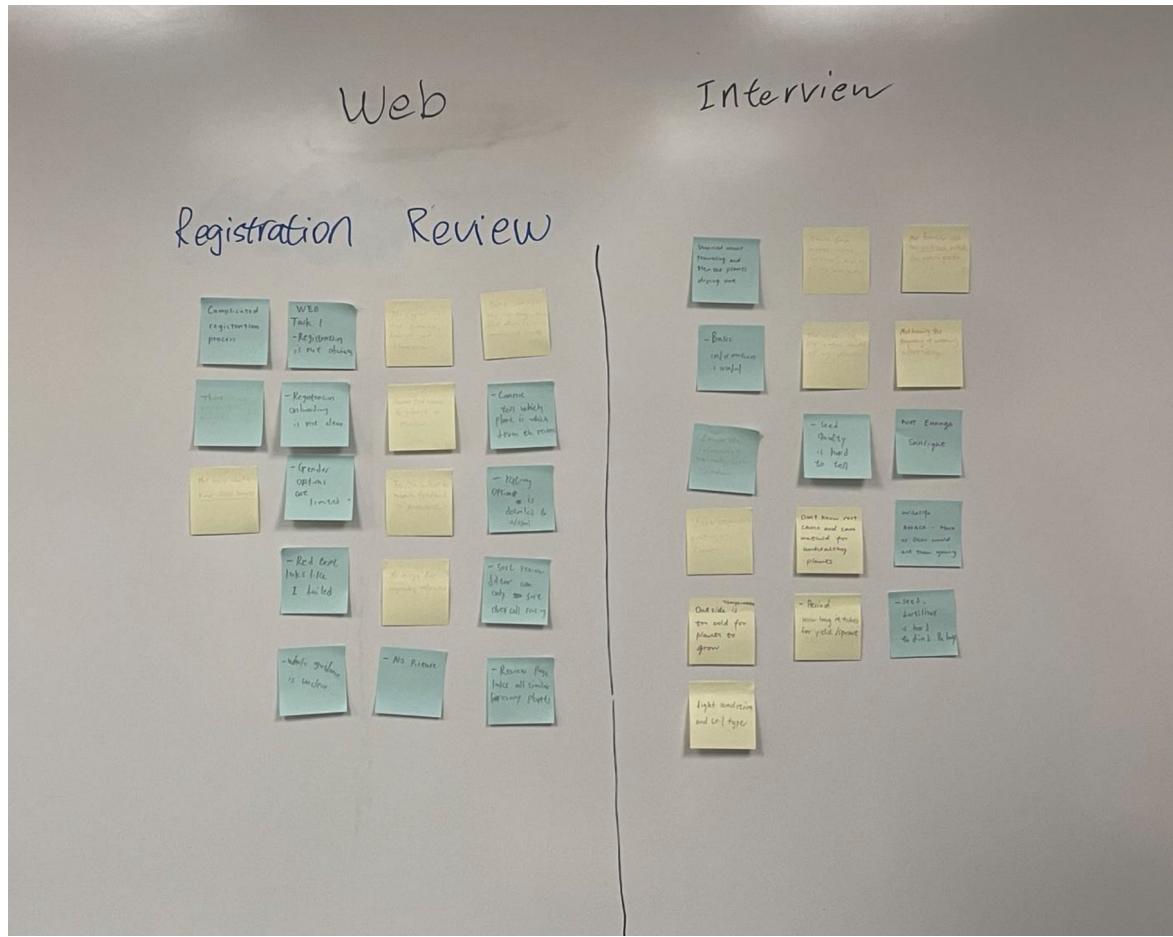
(We participated in each part, but each one is responsible for several parts)

Appendix

User research process

Our research was conducted with 12 home gardener users, in which we conducted 6 interviews and 6 field studies of our current website (detailed interview questions and field studies listed in appendix). Due to the fact of limited VVG (Vegetable Varieties for Gardeners) users, we observed the users to use the website for their first time and then we asked them for feedback of the experience to perform the given tasks.

We used Affinity Diagram to analyze and categorize our results.



Interview questions

User research records

Menglin's Research:

1. Tell me about your experience with gardening?

a. How long have you been gardening?

I have 4 years and kinds of like a master gardener

- b. Which types of plants did you garden?

Mainly for Succulents, I experienced with several subtypes of this kind of plant

- c. How often do you plant?

I need to care for them every day, like to check their growth status and water them

- 2. How do you learn news and information about a new variety?

I mainly use searching platforms like Google to look up for my favorite varieties, but sometimes I also search for them on YouTuBe.

- 3. How often do you need access to variety information?

Especially I need this access at the beginning, at that time, I had no idea how to care for a plant and how often it needs to be watered, etc.

- 4. Do you think the current access is useful or enough for you? (have you ever used website/app to gather information)

I think it's useful. The current access is useful, but there could be website or app that collected relevant information and I can filter or search would be better

- 5. Do you like to collaborate with other gardeners or work independently?

Prefer independently, post on the forum when my plant is sick

- 6. What would you like to know to get started on a new variety?

How often do you feed water, what condition it likes, how do you its sick, what treatment

7. What were some initial problems you encountered while starting a new variety?

Because the plants are shipped to me, so their conditions weren't great at the beginning, you have to be especially careful, and observe their conditions daily.

8. Are you caring for any plants right now?

- a. If yes, What variety is it?

Hen and chicks (Succulents)

- Would you like to share its information online with others?

No

- b. If not, What varieties are you interested in planting?

9. Could you walk me through a time you explore planting a new variety?

Watch the videos and they look cute, watch some of the tutorials on how to grow.

10. What do you think is the most difficult part about caring for your plants?

The most difficult part for me is that the weather in New York is very unpredictable and so cold in the winter. I think the main reason that my plants died is for the weather

Sherlock's Research:

Interview questions:

1. Tell me about your experience with gardening?

Because my family needs silicon and my cats need food

- a. How long have you been gardening?

2~3 years, when I lived in New York

- b. Which types of plants did you garden?
- c. How often do you plant?

Scallion.. It just keeps growing, so basically 2 month . cat grass 1 month,

- 2. How do you learn news and information about a new variety?

Isn't it common sense? My mom told me how to plant the silicon and I've seen cat grass on the internet

- 3. How often do you need access to variety information?

One time thing, scallions and cat grass are very easy to plant. You get the bud and just remember to water it

- 4. Do you think the current access is useful or enough for you? (have you ever used website/app to gather information)

It's kind of enough for now? But I once wanted to plant lizhi, but it failed

How does it failed?

It's very complicated, but it'

Environmental problem.

Once I planted a spider plant with white hair growing on it. I suspected it was a worm's egg, but I didn't know how to check it, so I just threw it away.

Looking online, I can't find the problem. Quarter, geography, and season all matter.

5. Do you like to collaborate with other gardeners or work independently?
6. What would you like to know to get started on a new variety?

Basic information, look at the temperature, how often to water. After buying flowers it will tell you what temperature and water.

Three things, what soil to buy, what fertilizer to use, and how often to water.

7. What were some initial problems you encountered while starting a new variety?
8. Are you caring for any plants right now?
 - a. If yes, What variety is it?
 - Would you like to share its information online with others?

Yea, if there's a useful platform

- b. If not, What varieties are you interested in planting?
9. Could you walk me through a time you explore planting a new variety?

Generally see what looks good (flowers), then look up its name, look up its survival information, and then buy seeds and fertilizers, pots. This time is the most annoying, many places can't buy it and can only buy it online.

10. What do you think is the most difficult part about caring for your plants?

Remember all the information, and lay the soil, hands will get dirty.

It is difficult to buy seeds, and it is difficult to judge the quality of seeds without knowing where to buy seeds of good quality.

Moyan's Research:

Interview questions:

Tell me about your experience with gardening?

How long have you been gardening?

- Informally, half a year.

Which types of plants did you garden?

- Sweet potatoes, potatoes, ginger, tomatoes, green onion, garlic, succulents, etc.

How often do you plant?

- Whenever there is left-over food that is either not good for eating (half rotten/ sprouted potatoes, etc), and when I have the time and space to plant them.

How do you learn news and information about a new variety?

- I do not learn much about those. Perhaps passively picking them up when surfing the internet.

How often do you need access to variety information?

- I feel like I have more information than I actually demand.

Do you think the current access is useful or enough for you? (have you ever used website/app to gather information)

- Quite enough. I do not actively look for them so I don't know if there is any good website that does recommendations or so.

Do you like to collaborate with other gardeners or work independently?

- Work independently.

What would you like to know to get started on a new variety?

- I tend to pick those that require minimal labor/ care. Those properties would be what I am looking for. I also would like to know the best season/ temperature, humidity conditions for the plant. If they fruit/ produce some edible parts, I would like to know how long before that after planting, and in what form does the product come (e.g., you would expect underground stems for garlic, but in what shape? How long before it is good to dig them up?)

What were some initial problems you encountered while starting a new variety?

- Not enough sunlight in my garden; wildlife attack -- hare or deers would eat them young.

Are you caring for any plants right now?

- Yes

If yes, What variety is it?

- Sweet potatoes, gingers and succulents.

Would you like to share its information online with others?

- Maybe... depending on how they look.

If not, What varieties are you interested in planting?

Could you walk me through a time you explore planting a new variety?

- We have a left-over sweet potato that sprouted. I decided to plant them since I knew they would grow. I planted the whole sweet potato in the garden. It did grow as I expected, so I waited for 3 months before digging it up. To my surprise the entire old sweet potato is still there and no new ones were produced. That was when I learned that it was different from potatoes as you would need to take each individual stem off of the original sweet potato as "slips", and then plant that. I did so, and since the weather is cold already, I now keep them indoors in pots.

What do you think is the most difficult part about caring for your plants?

- Traveling. If you need to travel for a long time and the weather is really dry, you would start worrying about the plants drying out. However I am aware of the availability of automatic watering systems – I am just not willing to invest that much on gardening.

Interview questions:

1. Tell me about your experience with gardening?

a. How long have you been gardening?

1. Informally, half a year.

b. Which types of plants did you garden?

1. Green onion, garlic

c. How often do you plant?

1. Once half year
2. How do you learn news and information about a new variety?
I learned mostly from Google
3. How often do you need access to variety information?
Every time when I plant, I would need access
4. Do you think the current access is useful or enough for you? (have you ever used website/app to gather information)

Yes

5. Do you like to collaborate with other gardeners or work independently?

I like collaborate with other gardeners so that I can gain more information

6. What would you like to know to get started on a new variety?

Soil, humidity, sunshine

7. What were some initial problems you encountered while starting a new variety?

Have no clues why my plants die or not healthy

8. Are you caring for any plants right now?

1. If yes, What variety is it?

Green onion

§ Would you like to share its information online with others?

yes

2. If not, What varieties are you interested in planting?

9. Could you walk me through a time you explore planting a new variety?

I would first start to search the information, then purchase the necessities such as the soil/container to plant it. Then I would regularly water it and check the status of it.

10. What do you think is the most difficult part about caring for your plants?

Make it healthy!

Lingjia's user research:

User Interview transcripts1

Interviewer: Lingjia

Interviewee: Judy

Interview setting: interview conducted via zoom. The interview was conducted at 3:00 PM on Monday.

Interviewer: Please tell me about your experience and habits with gardening

Interviewee: I have been gardening for two years. I like to plant vegetables, like small tomatoes, mints, and basil. I do gardening almost every day.

Interviewer: How do you learn news and information about a new variety?

Interviewee: Mostly, I get to know the latest information on suitable vegetable types through talking with my friends and relatives, I would also search online or browse

through some apps where some people may share their experience on gardening, sometimes I will go to the market directly and look for the seeds for this season.

Interviewer: How often do you need access to vegetable variety information?

Interviewee: About twice a month, but it depends on the growth of the existing plants.

Interviewer: Do you think the current access is helpful or enough for you? (Have you used the website/app to gather information)

Interviewee: Yes, I think it is fair enough.

Interviewer: Do you like to interact with other gardeners or work independently?

Interviewee: I like to communicate with my fellow gardeners to exchange information, but I prefer to work independently in my yards.

Interviewer: What would you like to know to get started on a new variety?

Interviewee: The most critical information I need is the growth condition for this new variety, like what the proper light and soil condition would be for this variety. Then I could make better preparation and improve the probability of success.

Interviewer: What were some initial problems you encountered while starting a new variety?

Interviewee: The biggest challenge is choosing suitable soil to ensure the proper moisture and soil type and how to provide the right light condition. Another challenge is where to buy the seeds.

Interviewer: Are you caring for any plants right now? If yes, what variety is it? If not, what varieties are you interested in planting? Would you like to share its information online with others?

Interviewee: I am interested in planting some cabbages and spinach at the current time. Sure, I would love to share my success and failure experience online with others in the community if possible. I believe it is an excellent way to meet new friends and improve my gardening skills.

Interviewer: Could you walk me through a time you explored planting a new variety?

Interviewee: First, I would ask my friends or fellow gardeners where to get the seeds and what their favorite varieties are at this specific period or season. Next, I do some research online or browse information through the apps for the seeds, easiness, and detailed information for conditions to see whether the plant is suitable for my current state. Finally, if I decide to plant this variety, I will go to buy the seeds and compare the prices as well as the seed companies and brands.

Interviewer: What's the hardest thing about caring for your plants?

Interviewee: Choose proper soil (suitable moisture, type) and provide the proper light condition.

User Interview transcripts2

Usability test

Interviewer: Lingjia

Interviewee: Yuting

Interview setting: interview conducted via zoom. The interview was conducted at 2:00 PM on Monday.

Task:

- Explore the Varieties of your favorite vegetable
- Explore the Varieties of your favorite vegetable
- Submit a Review

Questions

- What are the pains you are having when using the website
- Is there anything interesting you want to share?

Sign up/Log in for an account (Create a garden profile)

- There are far too many blanks to fill out (and most of them are required) – I don't want to proceed during the process of signing up if I were not asked for
- It is awkward that I need to retype the email during the registration.
- I am not sure what the Frost-Free Season is, and when I click on the NY map and national map, it shows the link is invalid; I need to know the actual number of days by googling or calculating by myself.

Explore the Varieties of your favorite vegetable

- I could not understand the difference between crop and variety
- There is no image for different varieties – thus, it is hard for me to get a general idea of what the variety looks like

Submit a Review

- It is challenging to navigate where to submit a review
- The yes or no button to submit feedback to the review is awkward.
- Cannot upload my picture for a variety

User Interview transcripts3

User interview

Interviewer: Lingjia

Interviewee: Jessie

Interview setting: interview conducted in person. The interview was conducted at 3:00 PM on Friday.

Interview questions:

Interviewer: Tell me about your experience with gardening.

Interviewee: I have been gardening for over one year since I moved to Ithaca. I mostly garden for house plants and easy vegetables for novice gardeners. I plant about once every week.

Interviewer: How do you learn news and information about a new variety?

Interviewee: If I want to explore new varieties, I usually search online and integrate information based on my personal preference and conditions.

Interviewer: How often do you need access to vegetable variety information?

Interviewee: Each time I want to plant a new variety, approximately once a week

Interviewer: Do you think the current access is helpful or enough for you? (have you used a website/app to gather information)

Interviewee: No. This information often is too conceptual and could not provide real practical experience and be put into actual use when I plant a new variety of vegetables.

Interviewer: Do you like to interact with other gardeners or work independently?

Interviewee: I mostly plant independently, and I sometimes communicate with my friends or classmates who grow the same plant as me.

Interviewer: What would you like to know to get started on a new variety?

Interviewee: The conditions, how difficult it is, and the period it takes to harvest

Interviewer: What were some initial problems you encountered while starting a new variety?

Interviewee: I do not know the frequency of watering it and what condition that plant is suitable for, and this causes the failure of my plants in a short period after I get started.

Interviewer: Are you caring for any plants right now? If yes, what variety is it? If not, what varieties are you interested in planting? Would you like to share its information online with others?

Interviewee: I am not caring for some specific variety right now. I am looking forward to planting pod peppers, green onions, and Bok Choy, which I can harvest and cook for my meals.

Interviewer: Could you walk me through a time you explored planting a new variety?

Interviewee: Sure, generally, I searched on apps and websites from the search engine. I searched about the period and season at that time. Then, I went to the farmer's market or supermarkets to look for seeds or plants.

Interviewer: What's the hardest thing about caring for your plants?

Interviewee: I do not know the frequency of watering it and what specific details of the condition are suitable for the plant's growth when I begin to work on a new variety of vegetables.

User Interview transcripts 4

Interviewer: Lingjia

Interviewee: Amy

Interview setting: interview conducted via zoom. The interview was conducted at 2:00 PM on Thursday.

Task:

- Explore the Varieties of your favorite vegetable
- Explore the Varieties of your favorite vegetable
- Submit a Review

Question:

- What are the pains you are having when using the website
- Is there anything interesting you want to share?

Sign up/Log in for an account (Create a garden profile)

- too many required blacks and forms
- For some of the information, I don't fully understand what the actual meaning is.

Explore the Varieties of your favorite vegetable

- no instruction on what to type in in the search bar
- No image, do not know what vegetable variety the term represents

Submit a Review

- Need to log in in order to submit a review
- Could hardly find the button to write a review

Usability tests

Explore the Varieties of your favorite vegetable

1. Register an account
2. Explore the Varieties of your favorite vegetable
3. Submit a Review

Questions

1. What are the pains you are having when using the website?
2. Is there anything interesting you want to share?

Sherlock's Research:

Task:

- Sign up/Log in for an account (Create a garden profile)

No registration, press button is so funny. Gender options is limited. Is race really important when registering?

What is the difference between Profile name and display name.

Required information seems like a fraud.

Forest free season? Map not showing

Red text information looks like failure notification

- Explore the Varieties for your favorite vegetable

No pictures =

- Submit a Review

Share your review is hard to find.

What are the pains you are having when using the website

The entire guidance is not clear, and the place where a user wants to do the most is not highlighted

The Main page doesn't even have a registration page, it's not obvious

And somehow I cannot login.

After clicking on the review, each plant page is similar. If you don't look carefully, you don't know what kind of plant this page is. An icon would be much better.

Review list is not paginated.

The filter of Sort review can only see the overall

Is anything interesting?

Rating system is detailed