



R3 - Design Ideas and Feedbacks

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Problem Statement



Help individual visitors (aged between 18-34 years) without relevant art background to be more engaged in their visiting experience at the High Museum of Art during the COVID-19 pandemic

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Introduction

Currently, the High Museum of Art doesn't offer a comprehensive digital experience to help visitors without art-related backgrounds better engage in their visits to the museum. Our overall goal in this phase is to develop initial design solutions to address user needs based on previous findings, and to explore the feasibility and problems of the design through feedback sessions with our target users, before moving on to the creation of the interactive prototype.

From research findings of the previous phase, we identified 4 user goals based on users needs:

- **Knowledge:** visitors want to have access to additional information on artworks as well as general information on museum policies and facilities.
- **Socializing:** visitors need methods for self-expression during their visit.
- **Navigation:** visitors want to have guides to assist with their visits.
- **Documentation:** visitors need methods to document their visiting experience.

We identified the following detailed user needs and design implications based on those 4 categories:

User Goals	User Needs	Design Implications
Knowledge	Prepare for the visit	Notify the users of the museum's policies and what's typical to bring for a museum visit.
	Find out museum-related information	Allow users to easily access museum-related information such as policies, events, facilities.
	Want more organized, concise, and understandable information about artworks	Offer artwork information that is understandable and informative to users of all levels of background knowledge in the art.
	Want to see connections between artwork and exhibitions	Provide storytellings that present backstage connections of artworks, artists and exhibitions.
Socializing	Share or receive information with/from others	Provide a platform for users to share their thoughts and read ideas from others.
	Share their experience	Support sharable content that users could directly send to other people or platforms.
Navigation	Find how to navigate around in the High Museum of Art	Provide accurate locating and intuitive direction guidance to the users based on their needs.
	Find an ideal spot for photography	Recommend personalized visit routes/spots based on user preferences.
	Know the estimated visiting time	Provide estimated time/how long is the rest of the exhibition.
Documentation	Keep a record of certain artwork	Offer methods for users to collect artwork-related content for personal use.

Those user needs and implications helped us conceptualize our solutions into 4 initial design concepts. Each concept addresses one or more user goals. More details are discussed in the Concept Sketches section of the report.

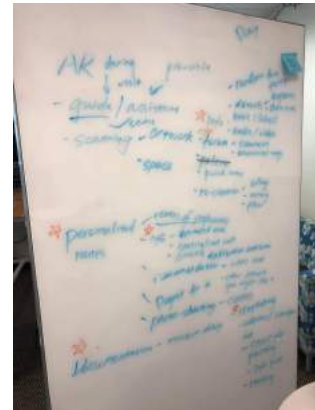
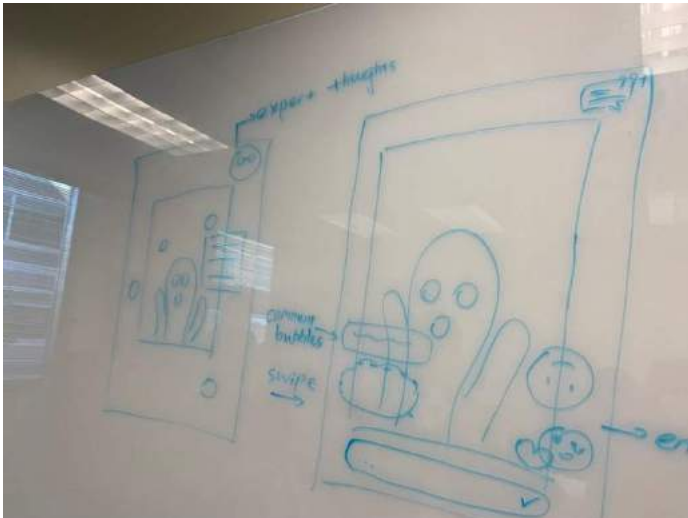
After conceptualizing our design solutions, we brainstormed the following **information goals** for our feedback sessions to guide us through the process with a clear direction.

- To explore users' intentions to use each design concept.
- To find out how do users perceive the value offered by the design.
- To understand how the design solutions affect their visiting experience in the art museum.

- How effectively does the design concept engage the users in terms of 4 user goals?
- To explore positive and negative reactions to the design.
- To learn about users' thoughts of learnability of each design concept.
 - Is the feature easy to understand?
 - How effective is the information presented in the design?
- To explore users' expectations during their interactions with design concepts.
- To explore future possibilities to improve the design concepts that haven't been noticed within the team discussions.

During this phase, we conducted 2 feedback sessions with 4 sketched initial design concepts, and then conducted another 2 feedback sessions with a set of wireframes that integrated previous design concepts into one connected system. We continuously iterated our design ideas and wireframe as feedback sessions proceeded.

Sketches



Concept 1 — Information Presentation via AR Scanning

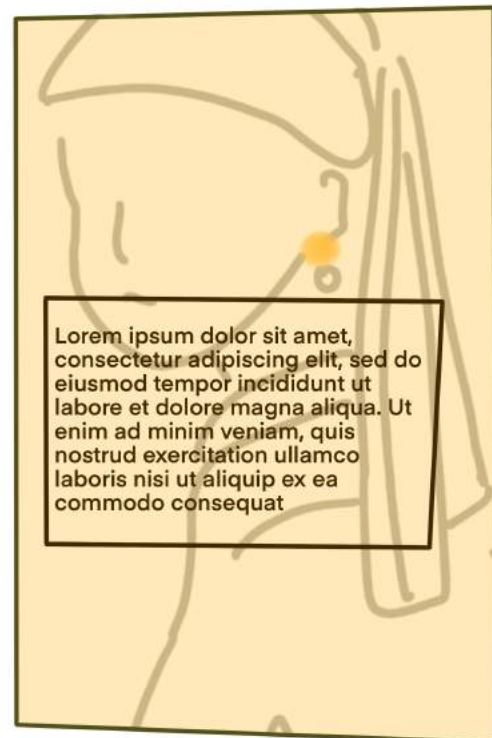
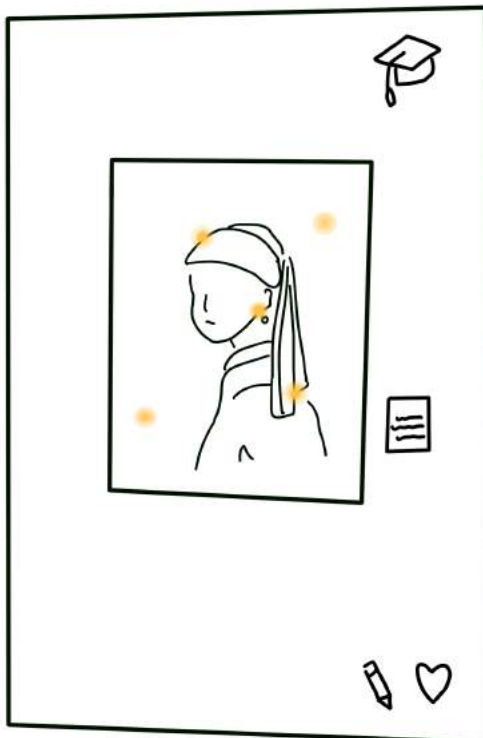
As we found in our previous research, users care a lot about the information of the artwork. They have also expressed interests in knowing more about certain artwork, which the currently provided information does not cover. Therefore, our first concept tries to help with this need by providing more in-depth information of a certain artwork via AR scanning. And we are going to provide a preliminary workflow of this concept and sketches to help explaining our ideas.

The users would first pose their phone towards the artwork with the AR scanning function turned on, and the system would start recognizing the artwork. Then the system would direct the users to a fixed screen with highlighted information spots on and around the artwork. If the users tap on the spots, there will be an

information page popping up and occupying the whole screen, presenting relative information about the artwork, including background information, artists' information, aesthetic analysis, additional audio and video resources, and so on. And if certain elements or areas of the artwork are meaningful or have corresponding analyses and comments, there will be highlighted spots. Other than that, spots will be placed randomly on the screen, waiting for the users to explore.

The icon on the upper right corner of the screen is for the feature providing experts' thoughts related to this artwork. And if the users are interested in this artwork and want to find a place to keep it or archive it, they would just need to tap on the heart icon on the bottom left corner to tell the system to save this artwork and its all related information for future references. All the saved artwork will be collected in a list for the visit. The users would also be able to write some quick notes or thoughts about the artwork if they tap on the pen icon right next to the heart icon, and their notes will also be saved with the artwork.

To exit this page, the users will be operated manually, i.e., the system will not close the page automatically.

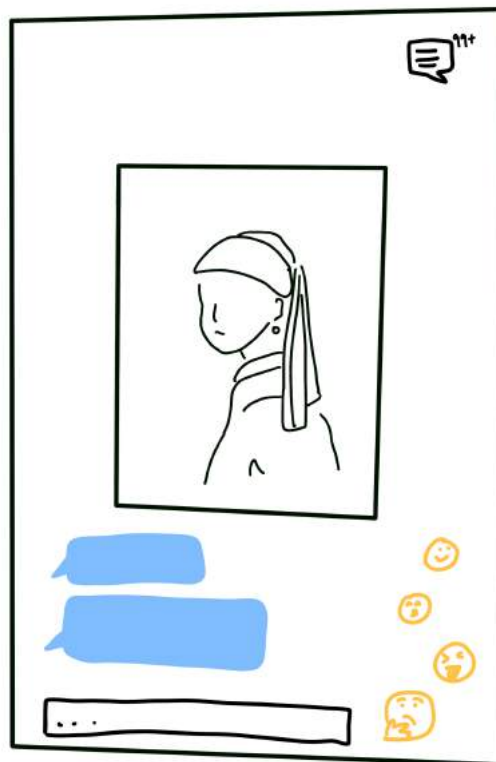


Concept 2 — Commenting and Live Reactions via AR Scanning

Our user needs research indicates that people like to discuss and exchange thoughts with other people. We also discovered that people enjoy interacting with others while viewing artworks. Our concept 2 design helps serve this user need and presents a way for users to interact with others on different artworks.

The design allows users to view people's thoughts and comments about an artwork represented with the dialogue bubbles on the left. The user has an input box at the bottom to enter and share their own thoughts about the artwork. We also identify that emojis are a popular way of visually representing different reactions. As a result, besides written comments, we leverage the use of emojis in the design to allow people to share their quick visual reaction to the artwork. The comments and reactions are present as an overlay on the artwork to provide a visual overview about the community's thoughts on it. The design also accommodates for users to view more details and interact with these comments in a detailed view using the chat icon on the top right of the sketch. In this detailed view, users can upvote comments, reply to comments, and receive notifications on their own comments.

We also acknowledge that some people may leave comments that might be irrelevant to the artwork or may contain profanity. To counter this, we leverage the ability to add profanity filters and a "sort by" functionality that sorts comments by relevance for the user and gives less priority to comments that might not be relevant to the art viewing community.

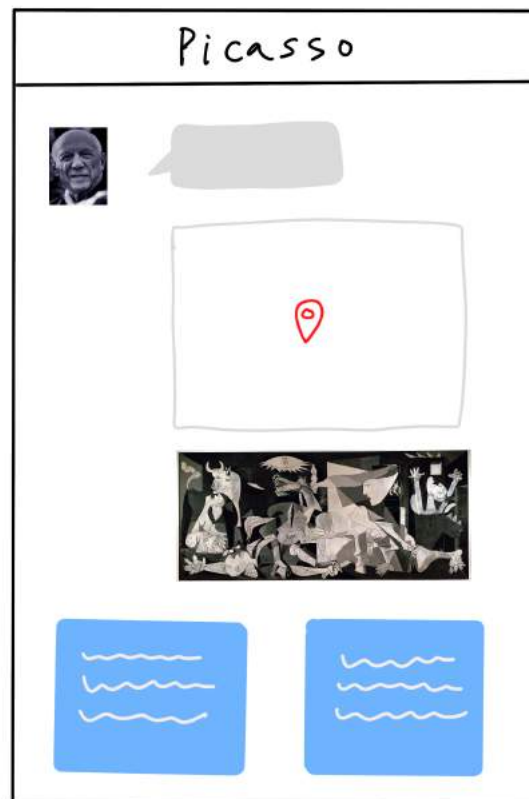


Concept 3 — Artists Chatbot

Based on our previous research, visitors in the art museum prefer to have personalized visiting guidance to suggest on visiting routes and guide their directions. We also found storytelling is a desired method for visitors to better learn about art and the museum itself. Therefore we designed this concept to offer a chatbot that gives personalized visiting suggestions and art information with storytelling.

This design provides several different artist options that users can choose to chat with. After choosing an artist, the virtual avatar of the artist will chat with the visitor using tones that match the artist's personality. Conversations with the artist cover topics including information related to artworks in the museum, museum history, policies, facilities, and events.

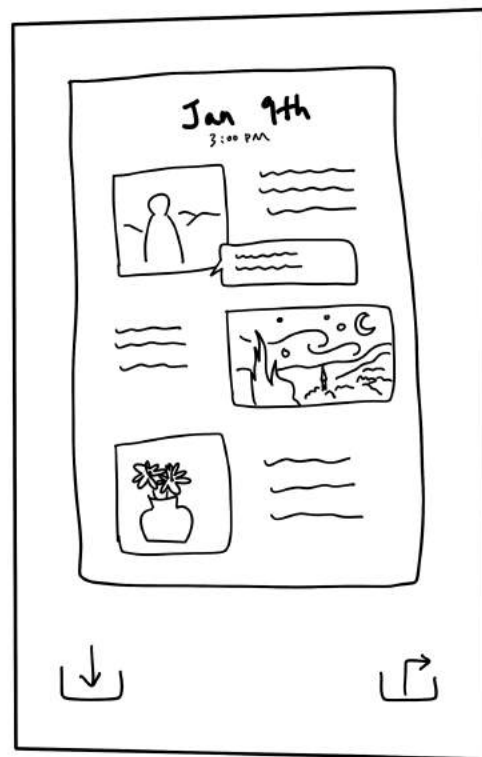
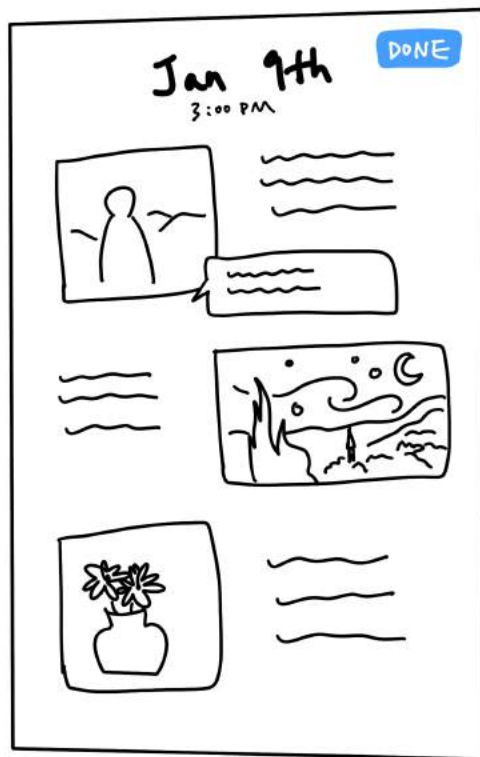
In the case when users choose to chat about artworks in the museum, the artist, or chatbot, will initiate conversations to find out users' preferences on artworks, and offers suggestions on what artworks to visit. Images and related information of the artwork will be offered during the conversations. A map that locates visitors' current locations and guides them to the target artwork will also be offered. To help users navigate through the storytelling/chat with less effort, choices with pre-set replies for users to choose from and to interact with the artist are also provided after each question, shown as two blue conversation bubbles on the screen; users don't need to and won't be able to type in their replies.



Concept 4 - Create Diary and Postcard

Our previous research indicates that many museum visitors seek a way to document their visiting experience. In the contextual inquiry, participants would take photos of some artworks, and would take photos of wall labels when they want to note down the art-related information. This is further confirmed by our survey responses, as many respondents confirmed that they would use their phones in the museum to take photos. In addition, one interviewee also shared that they would compile a diary after their museum visit.

These demonstrate the user need of museum visitors to document their visit. The group tries to address this need in concept 4, where we designed a diary function that helps users conveniently document their visits. If the user clicks on the heart icon in the bottom right of the sketch for concept 1, the artwork would then be saved to a list. The system automatically generates a museum diary with artworks in the list for the user. For each artwork, the diary would include a photo of the artwork, basic info about it, and the user's comment on it when applicable. After the diary is generated, the user would then be able to edit it, specifically to add text or images to the diary. The user can then tap the done button and the system will turn the diary into an image, which allows the user to download and share it.



Session Design and Feedback - Sketches

Session Design

Plan

After we finalized the concepts we wanted to explore in this stage, we started to plan for the feedback session. Before coming up with questions, we set some informational goals such as "positive reactions", which is for determining which concepts are worth going further, "disadvantages of the system", which is for finding the issues, and so on. Then we came up with questions and rationales based on the information goals and the final list of questions with justifications are presented in the table below.

Question Planning

Information Goals	Questions	Rationales
Positive reactions	Which ones are impressive? Why?	To understand which concept excites the user the most and what they like the most about the concept.
Information presentation	What confuses you when going through the design?	To check whether the concepts are self-explanatory.
	Concept 1: What are your thoughts on the moving forward function? How can it be improved?	To check whether users understand and could learn how to gain the information in a short time.
Engagement	Concept 3: What are your thoughts on the current way of storytelling?	To evaluate the level of engagement of the concept.
Satisfaction of user need	Which features were missing that would make you want to use it?	To find out whether the concepts are comprehensive.
	Which functions were missing that would make you want to use it?	To find out if there's any user need that we fail to cover.
Intention of use	Rate the level of likeliness you will be using this system(1-5, 5 = the most). Why? What are the key benefits/problems of it?	To get the level of users' motivation and the level of the concepts' practicality and collect users' thoughts.
Disadvantages of the system	If we are getting rid of/taking off any part of the whole system/concepts, which part do you think we should take off? Why?	To understand whether the design worsens any discovered pains and if the concept is causing any additional pains.
Improvements/general feedback	Feel free to annotate any changes or corrections that you feel would improve this concept.	To find out improvements on the concepts.
Similar designs?	Are any specific products you are thinking about/comparing when you see our concepts?	Understanding the context of the users' feedback.
Expected Functionality	Concept 1: What do you expect to happen after you tap on the heart?	To understand what the users assume the system will do for them.
	Concept 1: How do you expect to navigate/switch between the information spots?	To explore the potential design of the workflow.
	How do you expect to switch between concept 1 and concept 2 and how to quit?	To explore the structure of the design.

Procedure

Interviewees

We recruited three interviewees for the feedback session of the sketches. However, there are some noteworthy issues in the representativeness of our interviewees. First, three of them are all female, which makes our feedback lack some opinions from the male users. Secondly, their personas, realized by us after our discussion and analysis of the session, are not covering the social persona "Brittany" in our previous

research. Therefore, this may also lead to a skewed (probably biased) preference for concepts in our feedback findings. We would pay attention to both factors during our analysis and discussion and consider this as we decide how we would move on with our concepts.

Procedure Details

We had two rounds of feedback sessions and slightly different ways of running the feedback session. We did the first round with participant 1 (P1) and the second round with the other two participants (P2 & P3) together.

- P1

Moderator: Holly Sun

Note Taker: Avery Ao, Abhinav Thukral

Observer: Catherine Yang

For this round, we had a pure virtual feedback session with all of us meeting online on MS Teams. The moderator presented the sketches by sharing their screen. We started each of the concepts by showing the participant the sketches while introducing the concept and the intention of each visual element on the sketches. Then we asked whether there is any confusion before we go on to discover some obvious and preliminary problems. Then we asked those concept-specific questions to collect feedback for design decisions of certain features. We ended each concept section by asking general questions for each concept, for example, "what confuses you when going through this design?".

After going through all 4 concepts, we asked questions about the general and global views of the participant for all the concepts, for example, "Which ones are impressive? Why?". During the whole session, we also made sure that we did not miss any follow-up questions and interpreted the participant's opinions accurately by confirming with them.

We had a meeting after this round to do a recap and we realized two primary problems: first, providing too specific details about our intentions and ideas about the sketches may be leading to the participant and eliminating potential confusion which would be discovered if we do not prime them; second, the questions asked were slightly out of order. Therefore, we reordered the questions to build an improved script with a clearer structure and we changed the strategy of concept presentation.

- P2 & P3

Moderator: Avery Ao

Note Taker: Catherine Yang

Observer: Holly Sun

For this round, we conducted a hybrid feedback session with the moderator sitting together with the participants and the rest of us staying online via Facebook Messenger. The moderator also provided a screen for the participants for explanation and expression of confusion by drawing. We started each of the concepts by still first showing the sketches, but this round we only provided a general description of the purposes of the concepts, for example, "concept 1 is for providing information to the users", and then we asked the participants' interpretations of the sketches to explore any potential different understandings of our concepts from the participants that could help us identify both problems and inspirations. Then we

followed the steps as we did in the previous round by asking concept-specific questions and general questions.

We also made sure that we collected not only issues and problems, but also valuable design ideas from either the participants or ourselves sparked by the discussion during this session. And we tried to keep the accuracy of our understanding by confirmation.

Then all of us met together to discuss and analyze information collected during our feedback session.

Findings

Then all of us met together to discuss and analyze information collected during our feedback session.

Concept 1 Sketch Findings

Overview of Issues	Evidence	Design Implication
It's unclear how to access the AR mode and go back to a main menu	"Expectation to add more buttons to go back or to go to collections for basic functionality" - P1	The system should offer a onboarding guide for first-time users
The system lacks a confirmation of the written-down notes by users.	"On how to check the comments - maybe having the comment visible below the artwork" - P1	The system should present some confirmation messages after the users complete and save the quick notes
Participants were concerned with the moving forward design due to museum restrictions	"Museum might have restrictions moving close/stepping close to the painting" - P1 "Museum constraints on distance" - P3	The system should consider abandoning the move forward idea for now
The system needs more instructions and explanations of how to use the features.	"Don't know what the "graduation hat" means" - P1 "expectation to add more buttons to go back or to go to collections for basic functionality" - P1	The system needs an onboarding guide/wizard tutorial to guide first time users. In addition, the high fidelity designs should contain appropriate labels and CTAs.
There might be too many info tags appearing for complicated paintings	"What if there is a complicated painting with many dots clogging?" - P2	The system need to restrict the number of dots on a painting
There might be too many info in each info tag	"I would read basic/simple information from the dots and check experts' thought for detailed info instead" - P2	The system should keep the information clear and concise, and might consider to categorize the info tags for people with different degrees of interest
Participants thought that the switch between info tags are confusing, and recommended several ways of switching	"switch in certain direction to the next point, not left and right but to the direction that you want to look at next" - P2 & P3 "zoom out and go to the next point" - P2 & P3	The switch between info tags should be more intuitive and easy to use
Participants have different expectations regarding the tap interaction with the heart icon	"I think it shows whether you like it or not or how many people like it." - P2 & P3	The system needs a confirmation message after the heart icon is tapped to give feedback on users' interaction.
ACCESSIBILITY CONCERNS		- add explanations to jargons & terminologies - provide audio resources

Concept 2 Sketch Findings

Overview of Issues	Evidence	Design Implication
Participants are confused about how to add an emoji	"Do I add emoji by tapping on the emoji icon or from the comment text box?" - P3	The system should make how to add emojis more clear.
Participants are concerned with sharing their comments with the public since they want to keep them personal	"I like to talk about this with my friends but not with the general public" - P2	The system may offer more flexibility to post comments.
Participants are concerned that there might be irrelevant comments	"How to keep the comments only related to the painting" - P3	The system should be able to organize comments in terms of relevance.
ACCESSIBILITY CONCERNS	Add voice typing for commenting	

Concept 3 Sketch Findings

Overview of Issues	Evidence	Design Implication
Participants are confused about having the artist as the avatar	<p>Participants expect that the artist avatar would only provide info that the actual artist once said, while the design initially plans that the avatar would provide more synthesized information, including those not said by the actual artist</p> <p>"weird cause the artist is not talking about his masterpieces, only talking about art in this museum" -P2</p> <p>"Out of place if just using the bot to get whatever info" -P2</p>	The system might use other avatars to avoid confusion
Participants find it time-consuming to select responses in order to get to certain information, but would rather prefer to type and have the system recognize keywords	<p>"Not so much flexibility in deciding info that I want to got, what if I don't want to choose either options given" -P3</p> <p>"If I am outside the museum, may want the options. when in the museum, may want keywords to save time" -P2</p>	Support user type in own questions with keyword recognition that offer possible concerns for users to select from while typing.
Participants express their need to go back to the information they did not choose to know	"Is it only one way? can I go back to the last conversation?" - P2	The system would provide the options until all are chosen or the users choose to end the current progress.
ACCESSIBILITY CONCERNS		Add a button for the users to call real people/staff for support and help

Concept 4 Sketch Findings

Overview of Issues	Evidence	Design Implication
Participants are concerned about the quality of the photo added	"How to ensure that photo to be nice?" -P2 Reflections and lights will affect photo qualities	The system may use digital images from the museum database to ensure the quality, but should also allow users to manually add photos for personalization
Participants expressed a need for including different types of information.	The participants say that they want to also add the background information of the artwork to the report.	The system should differentiate between different types of information in the UI design
Participants recognize the need of saving the diary in both the system and as the image for future reference	"The app itself should be able to store the notes" - P2 & P3	The system should allow the users to go back to the report
Participants find it time-consuming to type down the notes but would prefer to add video/audio clips to the diary	"I'm too lazy to write down all my thoughts. It'd be nice to have an audio clip for me to record for future reference." - P3	The system should support multi-media documentation in the diary
Participants want more forms of sharable content.	"I would rather share a postcard." - P2	The system should add more different forms and formats of the content for users to share that with other platforms.

General Findings

Through our feedback session on our sketches, our team analyzed common user issues, preferences, and thoughts towards the concepts presented. We collated this data and inferred some general findings across all participants.

Finding 1: Participants show a preference for concept 1

| C1 is what I really need when going to a museum, others I might want to use.

We observed that the participants showed a preference for Concept 1 (Information Presentation via AR Scanning) as opposed to other concepts. They mentioned that concept 1 is the primary feature for their museum visiting experience.

Finding 2: Participants show less interest and more confusion towards concept 3

Participants also displayed a lack of interest towards Concept 3 (chatbot) and were confused about its purpose and application when going through the sketches. Though the participants were intrigued by the overall concept of storytelling, they were confused by the chosen method of using chatbots to deliver the

experience. We believe there is merit in pursuing storytelling as an engaging interaction for users to navigate through the museum, however, we acknowledge the limitations of a chat bot interface for this purpose.

Finding 3: Participants show a need for navigation between concepts and features

Our participants also showed a need for navigating between the different concepts and features presented to them. We realized that the sketch concepts solve for different and unrelated user needs and appropriate navigation methods are required to allow users to seamlessly switch context between these features. We plan to highlight more details on navigation with our wireframes by adding home screens, relevant buttons, a first-time user's guide and a low fidelity representation of user flow.

Our reflections/Issues discovered

Beyond participant feedback, conducting these sessions helped us self-evaluate our design ideas and discover new issues. Based on these discoveries, we were able to reflect on our design and consider possible solutions for these issues.

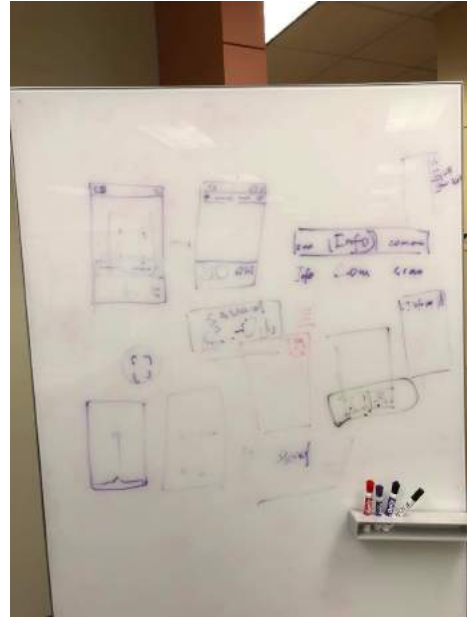
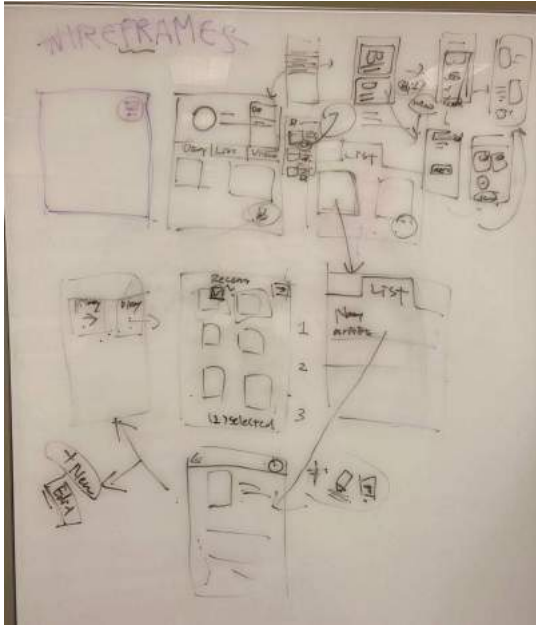
Reflection 1: Scanning landscape-oriented artworks on a mobile phone

Our first reflection is based on how scanning artworks would be functional for landscape-oriented paintings in a mobile's portrait orientation. These paintings are likely to appear smaller on the screen and would make the concept of using and navigating between information tags inconvenient for the user. We aim to address this problem by designing for different artwork sizes during high-fidelity prototyping as well as including a landscape mode for the app.

Reflection 2: Incorporating static information view after AR scanning

Another reflection during our feedback process was the limitation of using an augmented reality interaction to view information about artworks. Our initial idea centered on the user scanning the artwork and pointing their camera/phone towards the artwork to continue looking at its information tags, expert comments, and general information. However, we realized that artworks can be placed at various locations and holding the phone pointing towards an artwork for a long duration can be inconvenient for the users. As a result, we introduce the concept of scanning the artwork leading to a static information page in our wireframe designs.

Session Design and Feedback - Wireframes



Session Design

Plan

After we made the wireframe, we started planning for the feedback sessions in order to better evaluate our design. We decided to first do thinking aloud testing, where we ask participants to walk through the design and share their thoughts throughout the process, and then ask them some follow-up questions that ask them to evaluate the whole design. To make sure that the participants walked through the whole design, we listed out major tasks that users should conduct and made sure participants do them during the feedback sessions. In these tasks, we also labeled some primary tasks that we ask participants to conduct. We then came up with follow-up questions and ask them at the end of the feedback sessions.

Major Tasks

- Scan the artwork
- In the "Information" page
 - Get basic information
 - Switch between information tags
 - Go back to the static info page
 - Read experts' comments
 - Bookmark the artwork
 - Add notes
- Switch between information and comments page

- In the "Comments" page
 - Comment
 - React in comment
 - React
 - Read comments
 - React to the comments
- Go back to the scanning page
- **Primary task: what if you accidentally clicked on the cross?**
- Get to my menu
- View my diaries/postcards
- View my collections
- **Primary task: Create a diary with audio clips in it and download the diary**
- **Primary task: Create a postcard and share a postcard**
- **Primary task: Add new content to an existing diary**
- View history

Follow-up Questions

Question	Rationale
What confused you?	To check if there are any left-over confusions that users have while going through our design.
Are there any redundant steps?	To check if there's any redundancy in our design.
Which features were missing that would make you want to use it?	To explore whether there are other features that users would expect our system to have.
Tell us about the feature that you would be most likely and least likely to use, and why?	To understand how users think about the overall design: what's the best and worst part of it? What causes such comments? This helps the group to evaluate if we should make modifications to the existing features in our system.

Procedure

Interviewees

We recruited four interviewees for the feedback session of the wireframe. Three of our interviewees did not participate in the sketches feedback session, and one participated in both. After we finished the feedback sessions, we recognized one issue with the representativeness of our interviewees: our interviewees for the wireframe feedback session does not emphasize documenting their visiting experience as much as our previous participants for the sketches feedback. In other words, participants for the wireframe feedback sessions belong to different personas in comparison to participants for the sketches feedback sessions. This informs us that we should take such bias into consideration when analyzing the findings and making decisions based on these findings.

Another issue of the feedback sessions is that three of them together participated in one feedback session, and one participated individually. Having multiple interviewees at the same time has some advantages and disadvantages. Participants would form discussions and were inspired to share more thoughts as a result. We also observed them debating with each other and sharing many valuable insights as they try to argue for their standpoints. One downside of having multiple participants in the same session, however, is that participants would be influenced by each other's viewpoints in some cases. This mitigates the reliability of their comments. The group recognizes such strength and limitation of the user-centered research method, and take this into consideration while analyzing the findings.

Procedure Details

We have two rounds of feedback sessions. As discussed previously, the two sessions differ in the number of participants. We did the first round with participants 1, 2, 3 (P1 & P2 & P3) and the second round with participant 4 (P4).

- P1 & P2 & P3

Moderator: Abhinav

Note Taker: Avery, Holly, Catherine

Observer: Avery, Holly, Catherine

This feedback session was conducted in person. The moderator showed the wireframe to participants on their laptops while the note takers and observers recorded participants' reactions. Starting from the landing page, participants would identify certain interactions that they want to try out, and the moderator will offer the next screen accordingly. Hints and guidance were given throughout this process when needed. The moderator made sure that all the major tasks are covered, and raised follow-up questions after participants walked through the whole design. After all the pre-planned questions are asked, the observers then raised extra questions in order to better understand some of the feedbacks.

We had a brief meeting after this feedback session to double-check on some concepts in our design. During the feedback session, we realized that we do not share a consensus on some of the questions raised by the participants. Therefore, we made sure that group members share the same understanding. We also made some modifications to our design based on the feedback.

- P4

Moderator: Catherine

Note Taker: Avery

Observer: Abhinav, Holly

This feedback session is conducted online and involves only one participant. Instead of having the moderator share their screen to guide the participant through our wireframe, we decided to turn the wireframe into an interactive prototype and share it with the participant. We then asked the participant to share their screen and show us how they explored the design. By adopting such a method, we are able to directly see how the participant walked through our design by observing the movement of their mouse. This is easier to observe than having participants pointing to certain parts of the screen with their fingers or through verbal descriptions.

Since our prototype is super naive and some of the interactions are not successfully established, there has been some confusion about which screen should come up next once the participant made a clicks. Therefore, we updated the prototype and verbally explained some of the interactions throughout the process. While conducting the feedback session, we realized that adding interactions to the wireframe has its disadvantages as the attention of the participant is distracted by the form of interaction while the goal is to have them focus on the component of each screen.

We then met together and analyzed the findings of the two feedback sessions.

Findings

During our feedback sessions, we noted down participants' reactions, questions, confusions, expectations, and suggestions. In our analyzing meeting, team members went through notes of each participant and readout problems discovered and questions raised during sessions. To better understand the common patterns in users' feedbacks, we organized issues and our discussions into a table of **issues, evidence, and design recommendations**. Following are general findings summarized from issues from feedback sessions. More detailed findings can be found in the table below.

General Findings - Wireframes

Issues and findings from our feedback sessions can be divided into two key categories: **feature-related** issues and **non-feature-related** issues. Feature-related issues focus on users' expectations, values, and flows, and possible improvements to better meet users' goals; non-feature-related issues focus on clarity and effectiveness of visual elements and information presentations, and possible solutions to reduce the confusion and increase the understandability of the design.

Feature-Related Issues

Finding 1: Users want more control over their interactions with content.

“I want to have more freedom when looking at artworks. I want to get as many details about the artwork as possible instead of given a limited number of zoom-in parts to look at.”

Participants showed their interest in having more flexibility when reading the AR information tags. They wanted to be able to move around the painting image freely in order to look at art details based on their needs. Other participants also expressed their tendency to bookmark and like experts' comments, which were not supported during the feedback session.

Finding 2: Users prefer fewer clicks and more simplified flows.

Users want to complete tasks within as few steps as possible. When creating diaries with bookmarked contents, for example, participants wanted to see fewer bookmarked lists as too many lists will cause extra clicks and be visually overwhelming.

“I only want one collection because it’s not like I’ll visit the museum every so often.”

Multiple participants also expressed their lack of interest in interacting with others in the comment section, and they preferred to simply read comments and send reactions that required less effort to complete than writing and replying to comments.

Finding 3: Screen flows should better match users’ mental models.

“If I click on the back icon, do I go back to the editing mode or the home page? ”

Users’ expectations on what happens after clicking on a certain icon didn’t match what really happened in our design, which could cause confusion and frustration on the design. The task flow of our design should be adjusted to align with most users’ expectations for interaction.

Non-feature-Related Issues

Finding 1: Additional feedback on system status is needed to inform users on how to interact with features.

Confusions on how certain feature works are found due to fact that we didn’t include enough feedback messages after users performed certain actions. For example, participants didn’t understand what would happen if they tap on the bookmark icon twice in a row, which could be solved by showing a message telling users the bookmark is canceled after tapping the icon for the second time.

Another example is when participants felt unsure about whether they can keep editing the diary or not when tapping the “generate diary” button. Clear indications on what users can do within the screen should be designed to reduce such confusion.

Finding 2: The language used in the design should be more descriptive.

Our word choices for some of the tags and feature names were found misleading to participants. Repetitive terminologies used in different features have caused confusion, as users expected to see similar functionality when they are labeled in the same words.

“Why do the ‘Expert’s comment’ and ‘Comment’ have different designs?”

Additional descriptions also need to be added to clarify the feature’s purpose. For example, participants questioned whether the note-taking feature within the AR information feature was public or private, which suggests we add a “personal note” to further distinguish this feature from the public comment feature.

Finding 3: Visual elements should be less distracting.

“I'll want to click on the dot if it's there.”

Visual elements such as the status indicator should be designed to convey feedback without disturbing users' flow when using the primary features.

Finding 4: An onboarding tutorial is necessary to help first-time users understand complex interactions.

For designs that are not familiar to users, we should add basic on-screen tutorials to inform users how those features work. One example of the complex interaction in our design could be zooming in&out and dragging around the art image when reading AR information tags.

Detailed Findings

We iterated on our wireframe designs and fixed some of the UI design-related issues after the first and second feedback sessions. Issues that have been fixed after the first session are marked with **green color** in the table cell, changes made after the second session are marked with **purple color**. Following is the table of key issues and detailed findings from our wireframe feedback sessions.

Categories	Issues	Evidence	Design Recommendations
Feature-Related Issues	Participants want to react to expert's comments	"What if I want to like a comment?" - P1	The system should provide "like" or "bookmark" buttons to the comments from experts.
	Participants are less likely to interact with others' comments when looking at artworks	"I do not want to read comments in the museum too much because that would distract me from the visit." - P1 "I prefer the live comments cause I don't need to click on anything else and I can look at the art." - P3	Remove the "View All Comments" section which has an extended list of all comments. Instead, combining the "All comment" section with the rolling comments in the live view, which allows users to look at artworks while browsing through others' comments without extra clicks.
	Participants expect more flexibility when looking at artworks in detail with the AR information feature	"I want to have more freedom when looking at artworks. I want to get as many details about the artwork as possible instead of given limited number of zoom-in parts to look at." - P2	The design should include multiple ways to interact with the information tags in the zoomed-in view. It should allow users to move painting images around more freely to see art details as they'd like to. Such design may involve finger gestures that are not fully intuitive for all users, so an instructional guide for first-time users on how to interact with this view will also be provided.
	Participants want to know more about the credibility of the information	"I want to see the expert's profile. I want to know who those people are." - P3	The system should provide more detailed information about the identities of the experts to prove their credibility and support their expertise. Information could be offered in the form of a brief text introduction of their professions/works/titles.
	Participants want to know more about the connection between artworks	"I could not understand how artworks relate to each other." - P3	The system should provide contextual information to show connections between artworks and artists in the "Learn more" section. Connections can be shown through storytelling that presents artworks based on similarities in timelines, techniques and artists.

	Participants are overwhelmed by collection lists	<p>Multiple participants mentioned that they thought lists of collections weren't necessary due to their limited times of visits.</p> <p>"I only want one collection because it's not like I'll visit the museum every so often." - P3</p>	Rather than creating a personalized list to collect different artworks, the system should allow users to bookmark single artworks and offer easy search & sort through their bookmarked contents.
	Participants prefer to generate diaries with fewer clicks	<p>The current order of generating the diary doesn't match participants' expectations.</p> <p>"I would want to see the final presentation of the diary after clicking on "generate" without having to click on the "Done" button again. I will further edit the content if I need to." - P3</p>	The system should allow participants to directly export the diary upon generating it, instead of having to name the diary and confirm their edit.
	Participants are confused by the flow of screens after creating a diary/postcard	<p>The current flow directs users back to the content editor page after generating the content, which differs from the user's expectation.</p> <p>"If I click on the back icon, do I go back to the editing mode or the home page? I thought I will go back to the bookmark page but it's editor now." - P4</p>	Modify the screen flows to better match users' mental models. Offer options to go back directly to the bookmark/my diary&postcard page when finishing content generation.

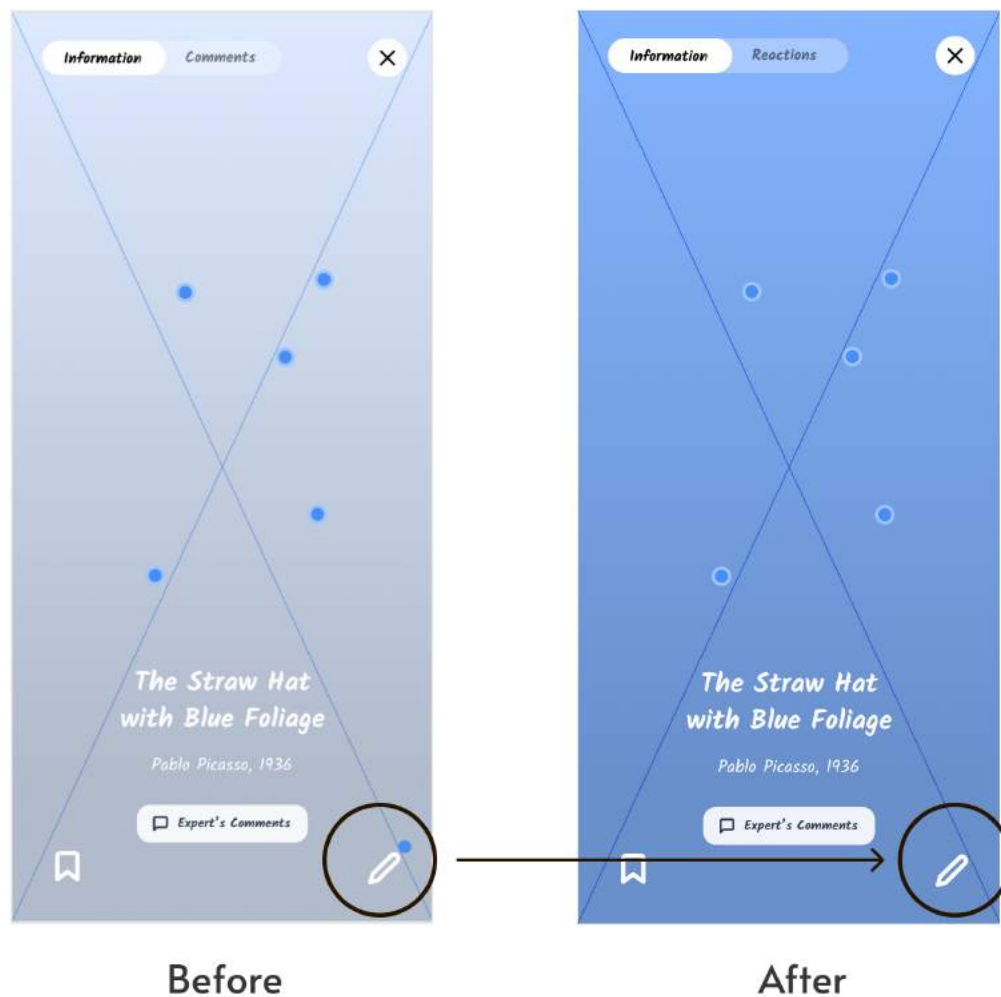
Nonfeature-Related Issues	Repetitive Terminologies cause confusion for users	Participants were confused by the difference between the "Expert's comments" section and and "Comment" page. Both of them shared the same term but had different designs and functions.	Change the "Expert's comments" section to a "Learn more" section to reduce the confusion.
	Participants are confused about the dot on top of the note-taking icon	"I'm bothered by the pencil with the dot, and I don't understand its meaning. And it looks similar with the dots on the painting." - P2 "I'll want to click on the dot if it's there." - P1 Misunderstood the ball on top of the pen to be the dot on the painting -P3	The system should use an alternative representation to indicate notes have been taken. Users should also be able to access previous notes anytime when they tap on the pen/note icon.
	Participants are confused by the difference between notes and comments for paintings	"Add notes is something personal but I don't know if the notes are personal from the screen." - P3	The system should use clear language to describe features to reduce confusion. For this case, using language to emphasize "personal notes" and "public comments".
	Participants are confused by the name "My Collections" that is used for the bookmarked content page	"What's the difference between "My Collections" and "Viewing History"?" - P3	The system should use terms that match users' mental models, such as "Bookmark", which matches the icon used for the action of saving content.
	Indication for editing mode isn't sufficient for participants; they don't know if the content is editable when they are on the diary editing page	"Not everyone understands this is editing mode. There should be a button that allows you to edit the content." - P3	The system should have clear indications of the current mode the users are in while creating content.
ACCESSIBILITY CONCERN		"Maybe use audio since I can look at the artwork while hearing it." - P3 "I use my phone to listen to the audio guide when in the museum." - P2	The system should provide more audio options in addition to textual information.

Prototype Design

The two rounds of feedback sessions provided us with a great amount of valuable information and sparked discussions about improvements and modifications of the design of our concepts. We did some editing after each round of feedback sessions. We will provide a detailed presentation of our major improvements and changes to our design and a justification for these based on the stages they were implemented.

Stage 1: After the first feedback session of the wireframe (with participants 1, 2, 3)

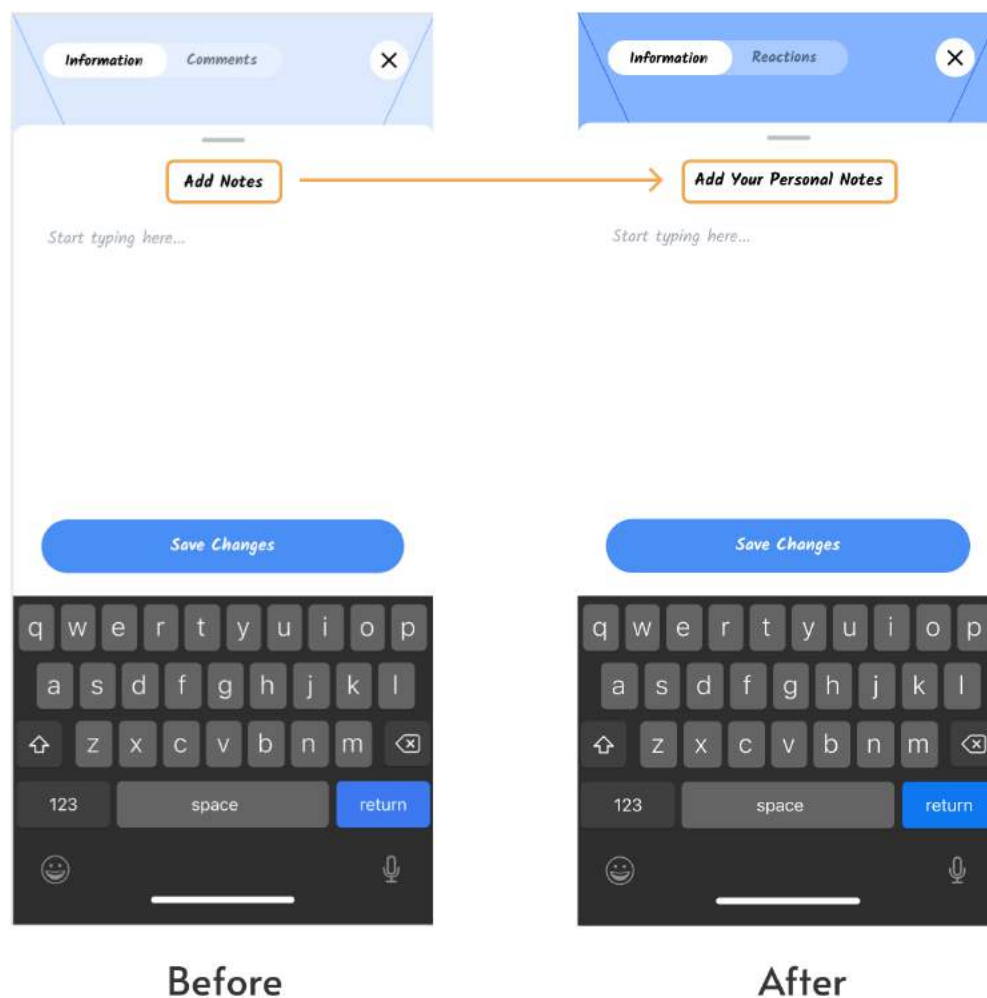
Modification 1: Get rid of the confusing element in the feature "Personal Notes"



In our initial wireframe, there would be a dot at the top right corner of the pencil icon after the users enter their personal notes, indicating that there has already been added note(s). However, during our first round of feedback sessions, our participants were bothered by the dot on the wireframe because its meaning is not clear to them and it would also distract them by calling their attention. We discussed what users really want to know considering their notes and we reached the agreement on the idea that people may not need an

indication that simply tells them whether they had a note; instead, if they want to know whether they had written down anything before, they would also want to know what exactly they had written, so they would need to tap on the pencil icon anyway. Therefore, we decided to get rid of the confusing dot, and at the same time provide more feedback after the users tap the pencil icon, for example, presenting both previous notes and an entry for creating a new note for users to either check their notes or write a new one when they have already entered some thoughts.

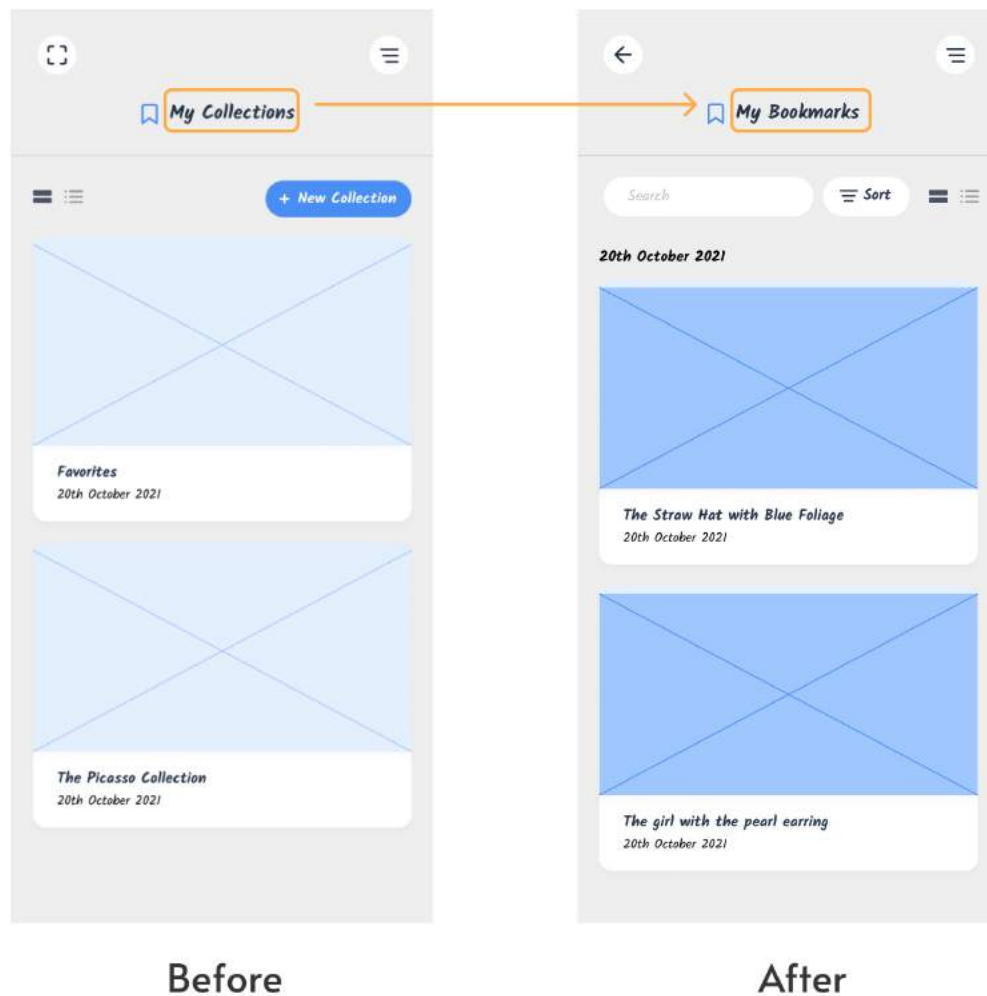
Modification 2: Add more descriptive words to provide users with a clearer understanding of the "Personal Notes" feature's characteristics



During our first round of feedback sessions, there were also problems raised by our participants asking whether the notes added on the information page are personal or not. After the discussion, we realized that this is probably caused by the similarity of the "Personal Notes" and the "Comments" feature. Participants thought that their comments posted on the other page were public so the notes added here would be

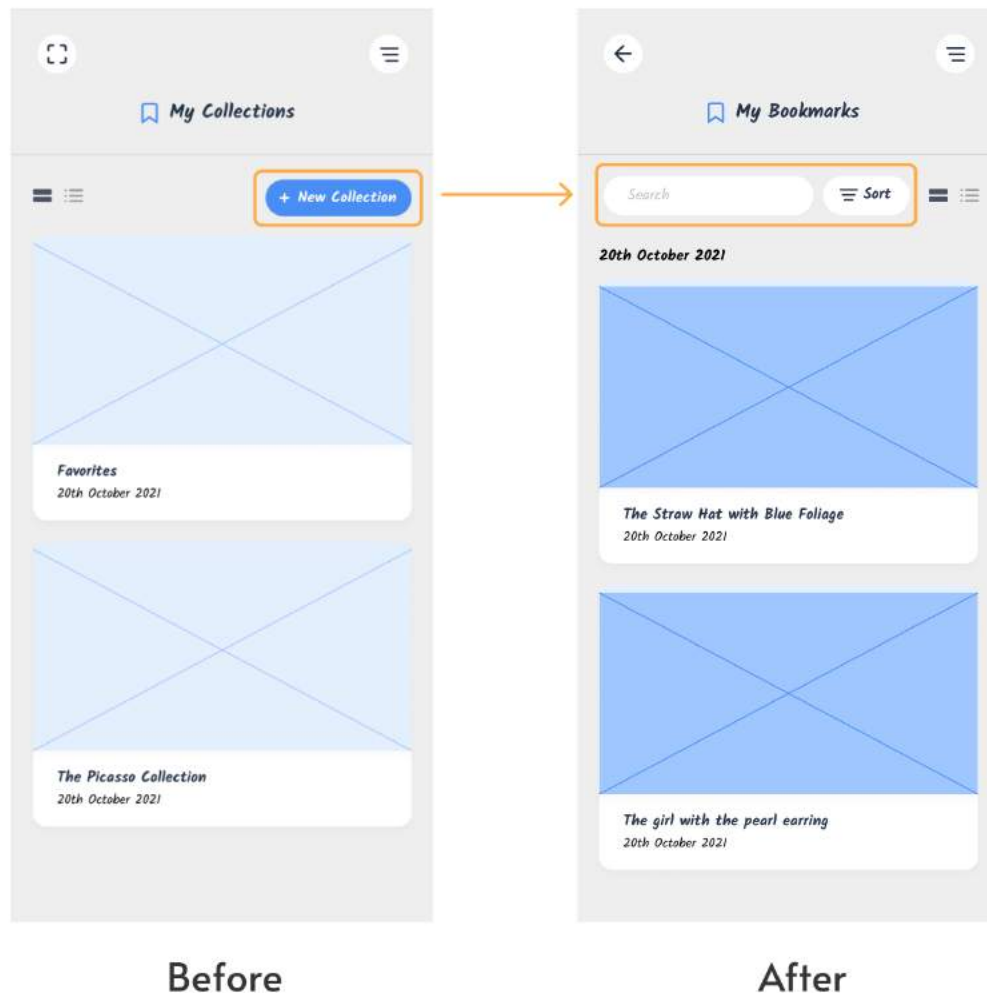
personal. However, there was no further information that allowed them to confirm that this note is private. Considering this, we decided to change the instruction from "Add Notes" to "Add Your Personal Notes" to confirm the users that this is private content. We would also try to test whether it reduces the confusion in later evaluations.

Modification 3: Change the confusing and inconsistent term indicating bookmarked artwork



We used to name the feature that allows the users to get back to their saved artwork "My Collections", indicating that all the artwork was collected by the users. However, our participants were confused by the term "collection" and we also noticed the inconsistency that we used a bookmark icon for the saving action and the corresponding page while we then use the word "collection" which is much less relevant to the definition we given via the icon. Because of that and considering the suggestion given by our participants, we changed the page title from "My Collections" to "My Bookmarks" to give the users more clarification and consistency.

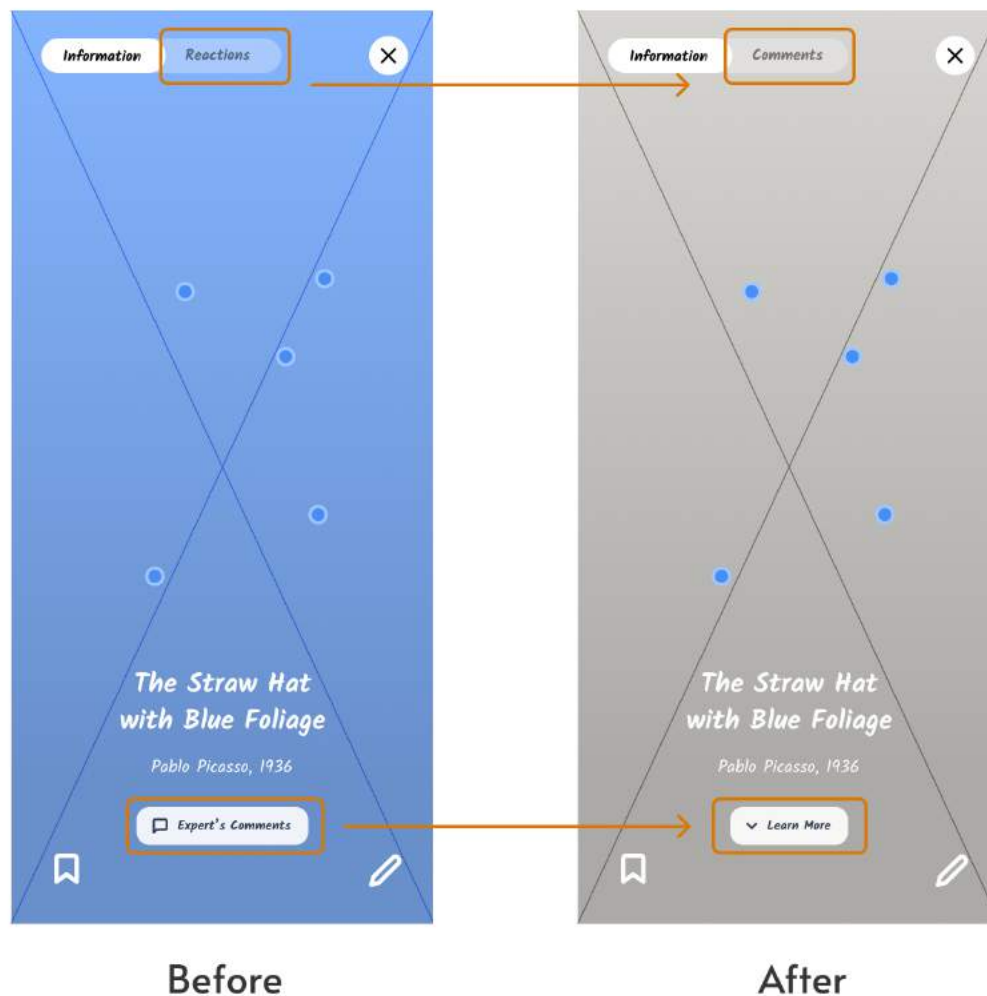
Modification 4: Reduce the number of collections to 1 to reduce redundancy and add a "search" and "sort" function to bring more flexibility



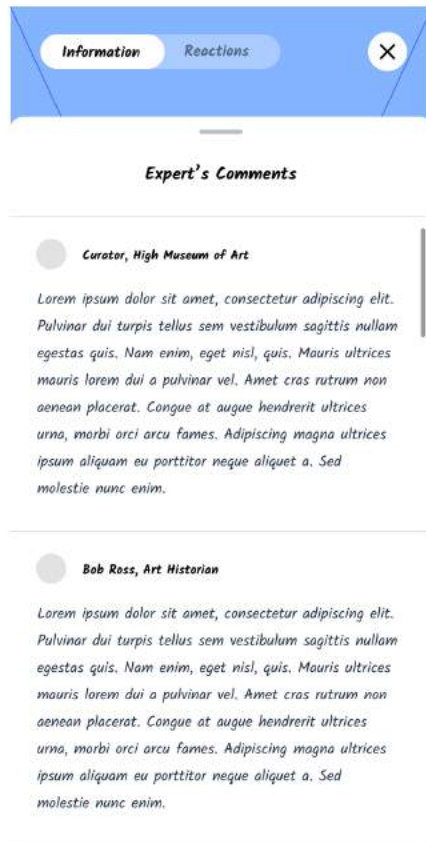
In our previous concepts, we would want to allow users to create different folders for their saved artwork. In the feedback session, our participants expressed their need for only one single list and the ability to do a quick search and sort. We considered the fact that most of the users might not be frequent visitors so it would be redundant for them to create a folder manually each time and to go in different folders to find the artwork they want. Therefore, we decided to first only provide a single list where saves all the bookmarked artwork, and second, add a search and sort function that allows users to do a quick lookup or sorting action.

Stage 2: After the second feedback session of the wireframe (with participant 4)

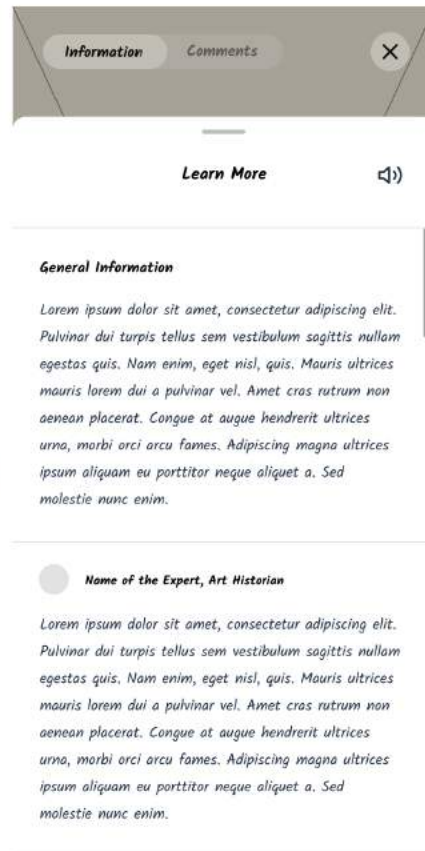
Modification 5: Get rid of repetitive and inaccurate terminology by rearranging current and additional functions



During the whole feedback session, the word "comment" is causing most of the confusion because, according to our participants, it appears at multiple places while indicating slightly different content, for example, in the previous "comments" section (which was then changed to "reaction") and in the "expert's comments". At the same time, the word "expert" sounds inaccurate to one of our participants. Additionally, our participants express needs for more information, for example, timeline and more artwork by the same artist, which might not be properly presented with the current information tags, so we then decided to make a "learn more" section which contains both the expert's ideas on the artwork and the extra information suggested by the participants. We also realized from the feedback session that, the current information tags make the participants think that the information is about specific areas instead of also containing general information. Therefore, we also added general information in the "learn more" section.

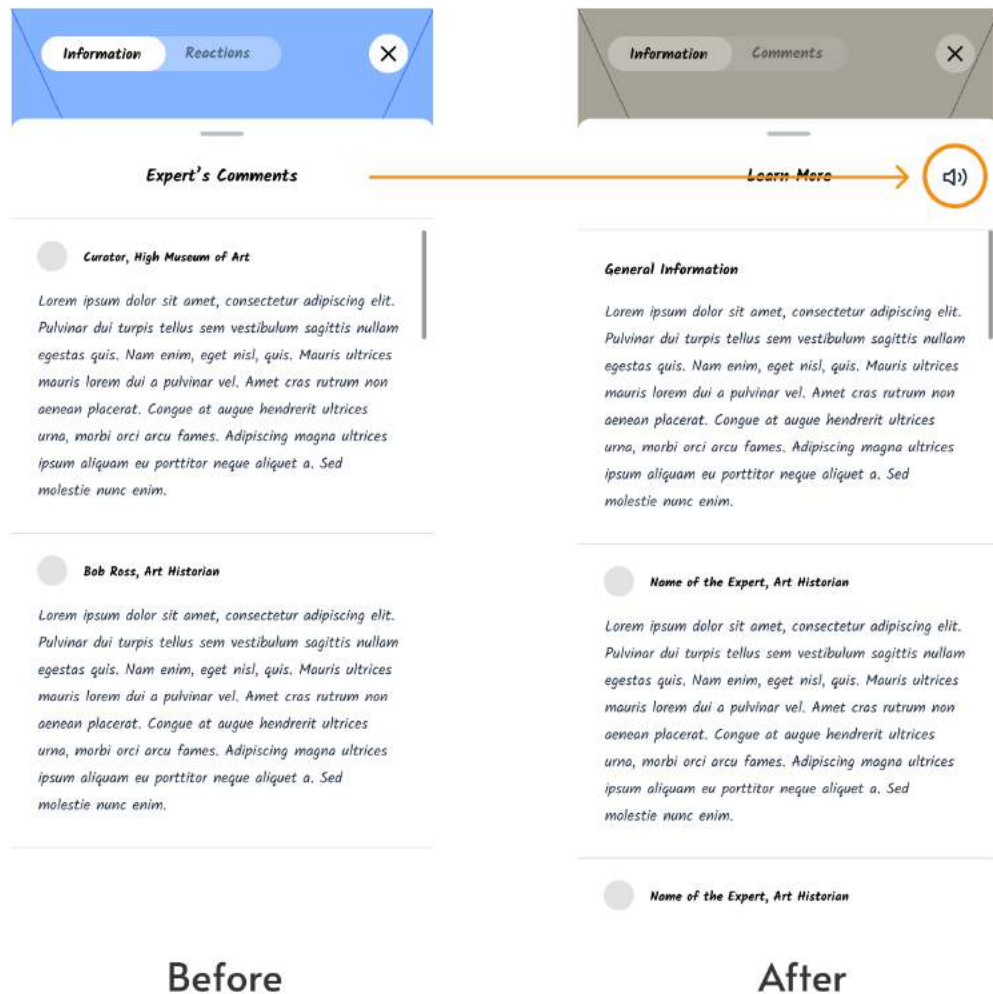


Before



After

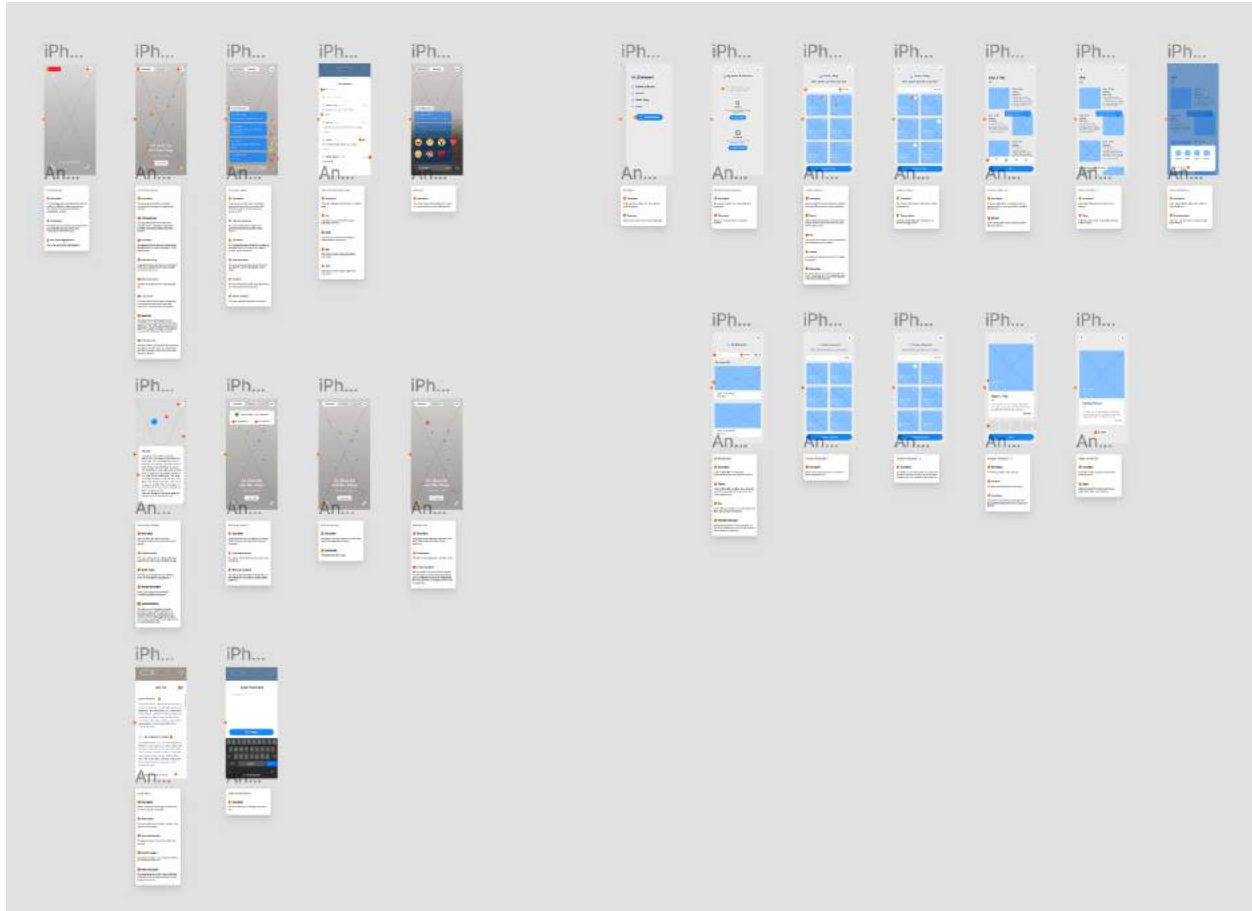
Modification 6: Increase the level of accessibility



We also got feedback about accessibility-related issues. Our participants express their preferences on audio options about textual information. We considered that adding the audio options not only reduces the burden of users brought by holding their phone continuously but also makes the textual information more accessible.

As we temporarily finalized our design in this phase, we will provide the finalized wireframes with detailed annotation explaining functions and features.

Wireframes



For all of our wireframes and more details in the annotations, please view the Figma file following the link below:

<https://www.figma.com/file/MIq53axhMeipUvShzbhOMu/?node-id=98%3A5311>

At the same time, we have some problems that still need further discussion and feedback on how to address them. We would also present them with an explanation and some suggestions for potential improvements.

Unsolved Problems and Suggestions for Improvements

Problem 1: Fewer needs for comments interactions

Description

Our participants expressed their idea that they may not be using the comments' replying function because they do not want to focus too much on their phones while visiting.

Potential improvement and justification

We may consider removing the "All comments" section because we agree with the idea that users may want to focus more on their in-museum experience and interaction with the artwork, instead of staring at their phone too much. However, this outcome may also be caused by the fact that our participants are not purely representative in the way that they are not always visiting museums on their own.

Problem 2: Ways to switch between information tags

Description

Our participants also showed different interpretations of how to switch between information tags and their preferences in different ways.

Potential improvement and justification

We are considering allowing two ways of switching between pieces of information: first, the original arrows that users can tap on them to go to the next or the previous; second, we would also allow users to zoom in and out and drag around to check for more information. We would consider the first way better and more proper for artwork with fewer information tags because this way saves more time and goes more directly and the second way may work better if there are a lot of information tags so the users can go straight to the next area or specific information. However, the second way needs more discussion and experimentation on how we are going to implement it and guide the users to learn it.

Problem 3: The order of exporting the diary

Description

Our participants suggested a different order of the steps of the diary creation. Now we are allowing the users to first edit the diary and then come to the preview and share page. They would prefer first to be presented with a preview of the report and the share button, and then they could choose to either edit it or share it.

Potential improvement and justification

We may modify the screen flows to better match the users' mental model because we agree with the idea that users might be "lazy" and do not want to do extra taps when they do not need to do so.

Furthermore, we added and would also want to add more features that would increase the accessibility of our design.

Accessibility Considerations

We had already mentioned the audio option for textual information in the "Learn More" section for increasing accessibility. And we have also discussed some possible addition during the summary of findings of the feedback session of sketches. We would explore more possibilities in later design and try to improve our ideas on this aspect.

Lessons Learned

Teamwork

As team members are getting more familiar with each other, the collaboration becomes smoother. We identify the strength of each group member and assigns tasks accordingly. In the meantime, we also identify that each member wants to try out as many new roles and tasks as possible. Therefore, we started asking questions like "do you want to try this out?" "is there anything that you haven't tried out?" to make sure that everyone gets a chance to try out tasks that they want to learn. During this process, groups members would also learn from

each other. There is thus a very positive teach and learn environment within the group, and everyone is confident sharing their thoughts and concerns.

Challenges

We mainly met two challenges. The first one is how to put down information goals. We learned that it would be helpful to set information goals and then come up with feedback session questions accordingly. Therefore, the group decided to give it a try. While coming up with information goals, however, the group was confused about how information goals should look like, and how to make sure that they don't overlap with each other. We resolved this by finding examples and discussing each of the information goals that group members proposed. We ended up summarizing them into a few and used them to plan for feedback session questions. Such experience informs us that setting information goals is helpful since it helps us to better organize our thoughts so that we can plan accordingly.

Another challenge is how to make sure that our wireframe provides just the right amount of information for participants to focus on during the feedback sessions. We wonder what degree of fidelity should our wireframe look like and what else can we do to make sure that our feedback session would not go off topic. As we are creating the wireframe, we tend to polish it in order to better inform our design ideas through the wireframe. It turns out that in the feedback sessions, participants would sometimes get distracted since we make our wireframe too detailed. We learned from such experience that we should limit the amount of information given in a wireframe to help participants stay focused only on the content of the interfaces, and that we should make sure that elements in our wireframe follows the conventions so that participants would not get confused about what certain colors or symbols represents.

What went well

The teamwork is going very well and members had nice collaborations. Everyone voluntarily takes their tasks and did a great job completing it. Everyone got the chance to try out different tasks and learn from other group members. We also keep reflecting on our previous experiences to make improvements to our user-centered design and research methodologies.



We also created a cute little piggy face by accident when we are coming up with the wireframe!

What was more/less valuable?

This class project provides us with a perfect opportunity to try out a lot of things. We are learners in UX and we don't know what is the better way of doing research/design before we actually try them out and reflect on the results. In a professional setting, we would probably not have as much opportunity to experiment since there are many limitations that we need to address. In this class, however, we got the chance to try out different methods. We learned how helpful setting an information goal is since we tried it out. We understand the strengths and limitations of different forms of feedback sessions because we experienced them ourselves. Therefore, such opportunity is most valuable part of the project.

What would you do differently?

We would plan more in advance in order to save time for feedback sessions. As we recognized the issues with the representativeness of our participants, we realized that the best way to fix this issue is to conduct more feedback sessions to make sure that we cover all personas. If we could improve our planning, we would be able to leave more time for the feedback sessions and better polish our design.

In addition, we would remember not to use a sharpie on a whiteboard.

