voices

Cultural Immersion through Personal Narratives

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CS147 Winter 2021

Arts and Culture Studio

PROJECT OVERVIEW

Illuminate your world with local narratives

Cultures are at the heart of identity, but representing them in a way that is genuine and authentic is increasingly difficult. Try to imagine the last time you traveled to a foreign country or unknown city, perhaps one where you didn't speak the language. You likely relied on mass-produced travel books, pre-curated tours, and impersonal Google searches in order to learn about the place and the culture. Now imagine a foreigner coming to visit your hometown or country. If they wanted to learn about your culture and the place you call home, would you recommend they simply go and buy the best-selling travel book on Amazon or book a tour? Probably not.

Cultural immersion calls for authentic narratives and personal stories. Oftentimes, as people travel to new places, the cultural meaning and significance of the places they visit are lost. Modern displays of culture, such as the tourism industry, often demonstrate a single narrative to foreigners, encapsulated by stereotypes and a prepackaged image. As Chimamanda Adicihie eloquently states, these single stories "are incomplete. They make one story become the only story." However, culture does not consist of a single story. Culture is composed of millions of individual stories that give people a shared sense of pride and community.

Our mission is to enable cultural immersion through personal stories and authentic perspectives . We want to empower locals of different cultures to share their stories—the stories that *truly* make up a culture. In turn, anyone interested in learning about that culture can do so by listening to these stories. This is how "voices" was born—an app that allows users to share and listen to local narratives, providing a more genuine understanding of cultures around the world.

FINDING OUR FOCUS

Discovering the Problem: Lessons in Needfinding

Coming into this class, we knew very little about what problem we would try to address apart from it being related to the broad field of arts & culture. We needed to ground ourselves in the experiences of users. We dove straight into needfinding interviews, conducting nearly a dozen interviews with a diverse sample of people. We prioritized finding "extreme users", both in terms of media usage and connection to the arts.

We interviewed a wide range of people, from an Olympic figure skater who now hosts a podcast to a computer science professor whose pastime is watching classical music snippets on Tik Tok. With each interview, we learned more and more about why it is so challenging to share culture in a way that feels true and faithful. Some of our most fruitful conversations came from talking to Participant 1 and Participant 2, two hula dancers who were connected to Hawaiian culture in very different ways. They revealed how sharing culture with outsiders felt burdensome because of a lack of mutual understanding and respect. We also met Participant 3, a young adult who decided to move to Mexico to understand the realities of life outside of the US. She showed us how hard it was to ask questions without feeling like a mosquito...really annoying. We also met many avid travelers, lovers of musical theatre, cooking aficionados, and people who just want to explore something new. With each new interview, we were awed by how much we could learn from people who repeatedly told us that they were "pretty normal" and were by no means "experts." Most of the people we interviewed didn't think of themselves as artists but we found that, across the board, one's artistic abilities never determine the value of their contributions. The perspectives of each interviewee helped shape this project. We wouldn't be here without them.

After these interviews, we were found ourselves in a blizzard of information, feeling a bit overwhelmed by the different experiences and insights we learned. We needed to find a way to integrate the many perspectives we heard and address some of the problems that people raised. There were several key threads that emerged across many of our interviews. Many people pointed to the flaws of modern social media, as it fails to feel intimate or personal to the user. Our conversations with performers revealed how toxic the performance environment can be. Being a performer subjects you to constant criticisms and exoticization based on stereotypes, making people feel uncomfortable sharing their art and culture with the world. Finally, when talking with travelers, they often expressed frustration with the reductionist representation of culture offered by the internet and tourism industry.

Each of these conversations revealed a unique problem that exists when trying to share and experience culture. With twelve different interviews, we were stretched into twelve different directions and knew we had to put things into perspective. We used empathy maps (such as the one pictured below) to start organizing these perspectives:

Figure 1: Participant 1's Empathy Map

Digesting interviews through the user's point of view

Our needfinding interviews allowed us to step into the shoes of users. They gave us a window into their lives by telling us about their feelings and experiences as they engage with the arts, whether they're planning a performance, or finding the next song that they will play on repeat for several months (that song is probably Driver's License for the majority of us). However, we couldn't jump to the solution quite yet.

We started by selecting three interviews that inspired us the most and evaluating the insights they provided through point of view statements (POVs). We then explored potential ways that we could address the issues in our POVs by asking ourselves a simple question: "How Might We…" Finally we brainstormed solutions and chose three that seemed the most inspiring for our team. We followed this process with the following three POVs.

POV #1: Participant 1 and Participant 2

We met Participant 1, a Hawaiian-Japanese **hula dancer** who is involved with the indigenous community, and Participant 2, a Filipino-Chinese competitive hula dancer.
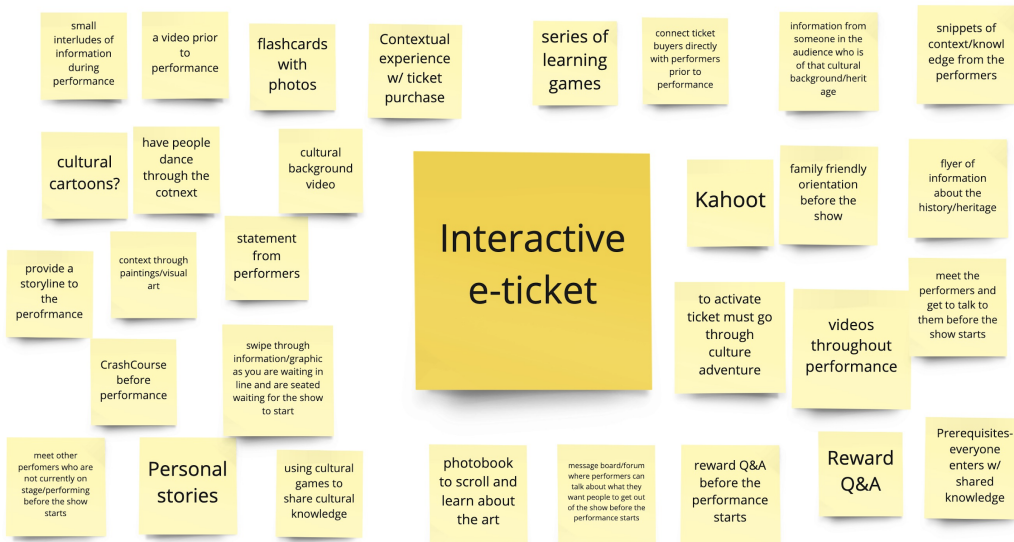
We were amazed to realize they felt **uncomfortable** during some performances because they could be **misinterpreted and exoticized** by audience members.

It would be game-changing to help their audiences gain the **culture context** of the performance to **fully understand the beauty** of the performance.

From this POV, we created **How Might We** statements to explore different ways of addressing this issue. These included:

HMW make a Crash Course for cultural context?

HMW make cultural context rewarding?

HMW use context to enhance performance?

Solution Brainstorm: HMW make cultural context rewarding?

small interludes of information during performance

a video prior to performance

flashcards with photos

Contextual experience w/ ticket purchase

series of learning games

connect ticket buyers directly with performers prior to performance

information from someone in the audience who is of that cultural background/heritage

snippets of context/knowledge from the performers

cultural cartoons?

have people dance through the cotnext

cultural background video

family friendly orientation before the show

flyer of information about the history/heritage

Kahoot

statement from performers

Interactive e-ticket

provide a storyline to the perofrmance

context through paintings/visual art

meet the performers and get to talk to them before the show starts

to activate ticket must go through culture adventure

videos throughout performance

CrashCourse before performance

swipe through information/graphic as you are waiting in line and are seated waiting for the show to start

meet other perfomers who are not currently on stage/performing before the show starts

Personal stories

using cultural games to share cultural knowledge

photobook to scroll and learn about the art

message board/forum where performers can talk about what they want people to get out of the show before the performance starts

reward Q&A before the performance starts

Reward Q&A

Prerequisites- everyone enters w/ shared knowledge

POV #2: Participant 3

We met Participant 3, a healthcare lawyer based in Dallas, Texas who was **nervous** to be randomly paired with a roommate at a retreat because of his sexual orientation.
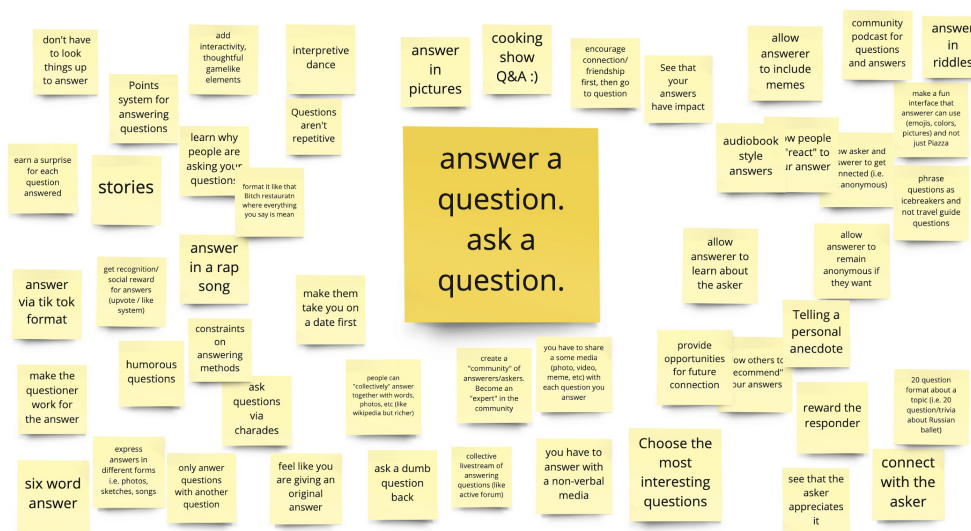
We were amazed to realize that after Participant 3 **immersed himself in his roommates culture** during the retreat, he took the initiative to address diversity issues at his company.

It would be game-changing to allow people like Mitch to **engage with people who inspire** them to pursue positive endeavors with regards to diversity.

Again, we devised some **How Might We** statements to explore ways of addressing the problem. These included:

HMW make a uncomfortable situations growth opportunities?	HMW make cultural context rewarding?	HMW use context to enhance performance?

Solution Brainstorm: HMW make questions fun to ask and answer?

POV #3: Participant 4

We met Participant 4, a white Stanford student from Utah who is **working in Mexico City on her gap year**

We were amazed to realize that she is **hungry to learn about local cultures** in Mexico, but **feels like a burden** when she asks too many questions of the people around her

It would be game-changing to help her connect with local cultures in an **authentic way without feeling like a pest**

Same as before, we grounded ourselves in HMWs:

HMW make asking questions less intrusive?

HMW make cultural learning an adventure even if you can't be there in person?

HMW empower the voices of locals?

Solution Brainstorm: HMW cultural learning an adventure?

don't have to look things up to answer

add interactivity, thoughtful gamelike elements

interpretive dance

answer in pictures

cooking show Q&A :)

encourage connection/ friendship first, then go to question

See that your answers have impact

allow answerer to include memes

community podcast for questions and answers

answer in riddles

Points system for answering questions

Questions aren't repetitive

make a fun interface that answerer can use (emojis, colors, pictures) and not just Piazza

earn a surprise for each question answered

stories

learn why people are asking your questions

format it like that Bitch restauratn where everything you say is mean

answer a question. ask a question.

audiobook style answers

w people "react" to ur answer

w asker and swerer to get nnected (i.e. anonymous)

phrase questions as icebreakers and not travel guide questions

answer via tik tok format

get recognition/ social reward for answers (upvote / like system)

answer in a rap song

make them take you on a date first

allow answerer to learn about the asker

allow answerer to remain anonymous if they want

make the questioner work for the answer

humorous questions

constraints on answering methods

ask questions via charades

people can "collectively" answer together with words, photos, etc (like wikipedia but richer)

create a "community" of answerers/askers. Become an "expert" in the community

you have to share a some media (photo, video, meme, etc) with each question you answer

provide opportunities for future connection

ow others to ecommend' ur answers

Telling a personal anecdote

20 question format about a topic (i.e. 20 question/trivia about Russian ballet)

reward the responder

six word answer

express answers in different forms i.e. photos, sketches, songs

only anwer questions with another question

feel like you are giving an original answer

ask a dumb question back

collective livestream of answering questions (like active forum)

you have to answer with a non-verbal media

Choose the most interesting questions

see that the asker appreciates it

connect with the asker

After hours of brainstorming, we came to four solutions that truly got us inspired to create an app. We could feel ourselves getting closer to the solution, but first we had to check whether the foundations of these solutions were reasonable. To test each solution, we created an experience prototype that tested a couple of assumptions that our solution was based on.

Preliminary Testing: Experience Prototypes

Our first solution was to create an interactive e-ticket to enhance cultural performances with cultural context. Our idea behind this was to provide users with videos, articles and pictures of the behind-the-scenes action that audience members do not typically see.

This prototype relied on two assumptions:
- People are willing to exert effort to prepare for a cultural performance
- Seeing the hard work and significance of the performance for an individual makes viewers more appreciative of the art.

To test this assumption, we created a role-playing experience prototype where users had just bought a ticket to a hula show. They were then presented with some videos (like the one presented here), as well as pictures and background readings to look at prior to the performance. We asked them which mediums they wanted to look at and how it influenced their views of the actual performance. Through our interviews, we came to the realization that although these videos, pictures, and readings were valuable in shaping viewers' perceptions on

performances, viewers are not inclined to go through the effort of preparing for a performance. It felt forceful and almost like added work for someone who just wants a ticket. In the end it just made people feel exhausted. However, we did learn that the best time to introduce people with cultural information like this is when they are bored. During a pandemic, it is very easy to get bored when you have a break from not feeling stressed. We kept this in mind as we sought out a better solution.

Our next solution was a Q&A forum where users have to always respond with a question. Our intention was to divert the pressure of answering questions to both parties, and make the relationship mutual. However, this relied on the assumption that people would want to put in the effort of continuing a conversation. To test this assumption, we did a role play interview where we would constantly ask each other questions. We found that our user was confused as to why they were going down a rabbit hole of questions. Furthermore, the conversation became disengaged as time went on. People want direct answers to their questions. Thus, we quickly scrapped this idea and moved on.

Next, we explored two different ways to make cultural learning more of an adventure. Our first solution was to provide a cultural learning experience through memes, a solution that might appeal to members of the younger generation. With this solution came the assumption that people will seek
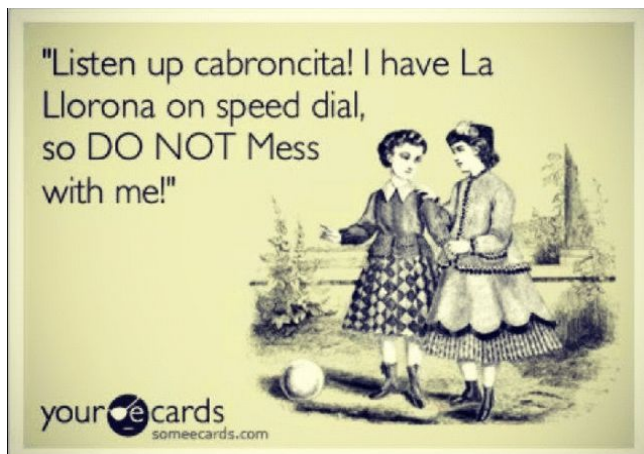
information about memes they can't understand fully and that memes would facilitate more curiosity regarding new cultures. To test this, we showed people a series of memes that required cultural context and understanding in order to be fully appreciated. Both of our assumptions held true, however,

our users were hesitant to accept the memes as facts. The memes were treading a thin line between reducing a culture to stereotypes and engaging a new audience. Yet, we were pleasantly surprised that people wanted extra information in order to 'be in on the joke'. Jokes were not seen as exclusive, but very inviting.

Our final prototype was to make buildings talk. You may think this idea sounds totally far-fetched and fantastical. You'd be right. And that's why it made us excited. We knew that each building and site had a story behind it. We also knew that these sites are where memories are made. If buildings, statues, fountains, or parks were alive, they would tell the best stories. So why not make them the story tellers? In order for this solution to work, we had to know whether travelers would actually stop to learn about buildings and sites as they are exploring a new place. We also needed to test whether travellers were interested in personal stories when visiting a new place for the first time. Thus, we created a roleplaying situation that brought our interviewees to Vietnam. We took them on a virtual tour and observed what prompted them to stop at a given location and learn more. Amazingly enough, both of our assumptions held true! People felt appreciative of personal stories and smiled from ear to ear as they read them. Much to our surprise, people often preferred them to the contextual information that is traditionally offered by travel books or professional tour guides. Our interviewees complained that the historical context that you find on plaques at monuments often "detached." But the lived experiences of local residents gave our interviewees a new, fresh understanding of the culture of the place.

DESIGN EVOLUTION

After our prototype interviews, we all agreed that the solution that would best address the needs we identified was to make physical sites tell stories—to "make buildings talk". We found that people valued personal perspectives on culture more than prepackaged information presented in travel books and Google searches. This solution also allowed us to integrate our conclusions from testing our other experience prototypes. By incorporating local voices, we avoid treading the fine line of insensitivity and cultural reduction that memes brings about. Another key benefit of making buildings tell stories was how it makes cultural immersion effortless. During our e-ticket prototype, we learned that people don't want to feel forced to learn about other cultures or exert an extensive amount of mental effort to be able to explore a new culture in an authentic way. What is more effortless than putting in a set of headphones and listening to a story? We listen and share stories during our everyday lives, from bedtime stories as children to conversations with friends. It is a normal part of life that we think has the power to change perspectives.

Identifying Tasks

Prior to sketching out a complete user interface, we needed to decide what users should be able to accomplish with our app. Inspired by each of our interviews and our mission statement, we created the following tasks to guide our design process:

Simple Task: find and listen to a story. The entire premise of our app is listening to stories by locals to gain a stronger understanding of new cultures. Since it is the main idea and would be the most frequent user interaction, we decided to make this our simple task. After all, for our solution to work, a user should be able to easily listen to a story wherever they want, whenever they

want. We figured that this task flow would likely be familiar to users who are used to streaming services like Spotify or Apple music, making it more intuitive for users as well.

Moderate task: create a playlist. As users embark on their journeys of cultural immersion, they need some way of organizing the voices they have listened to. We determined that the best way to organize stories was through a familiar layout of playlists. Users could customize their playlists by themes, locations, or their own mood. They can also use these playlists to plan out adventures or day trips. We made this a moderate task as it requires more familiarity with app and the concept behind it, and requires users to plan how they would like to organize their information.

Complex task: record your own story. Our most complex task is at the heart of our app and represents an integral part of a user's experience. One cannot listen to stories if users do not have a way of sharing stories. In order to empower local voices, we streamline a recording process within the app, allowing users to share their perspectives without additional software or equipment. We categorize this as a complex task as it requires the most time and mental effort for users to complete. Our goal is to make this complex task feel much simpler than it is to encourage everyone to share their narratives.

Choosing an Interface

With these tasks in mind, we headed straight to the drawing board. Well, more like drawing paper. After all, there isn't just one way of getting a building to talk. We explored options that harnessed a variety of interfaces, making dozens of quick sketches to bring these interfaces to life. One that caught our attention was augmented reality similar to Pokemon Go, where users would point their phone at buildings to hear their stories. We also considered a wearable interface that would encourage users to actively explore new areas through a guided tour of stories in a city.
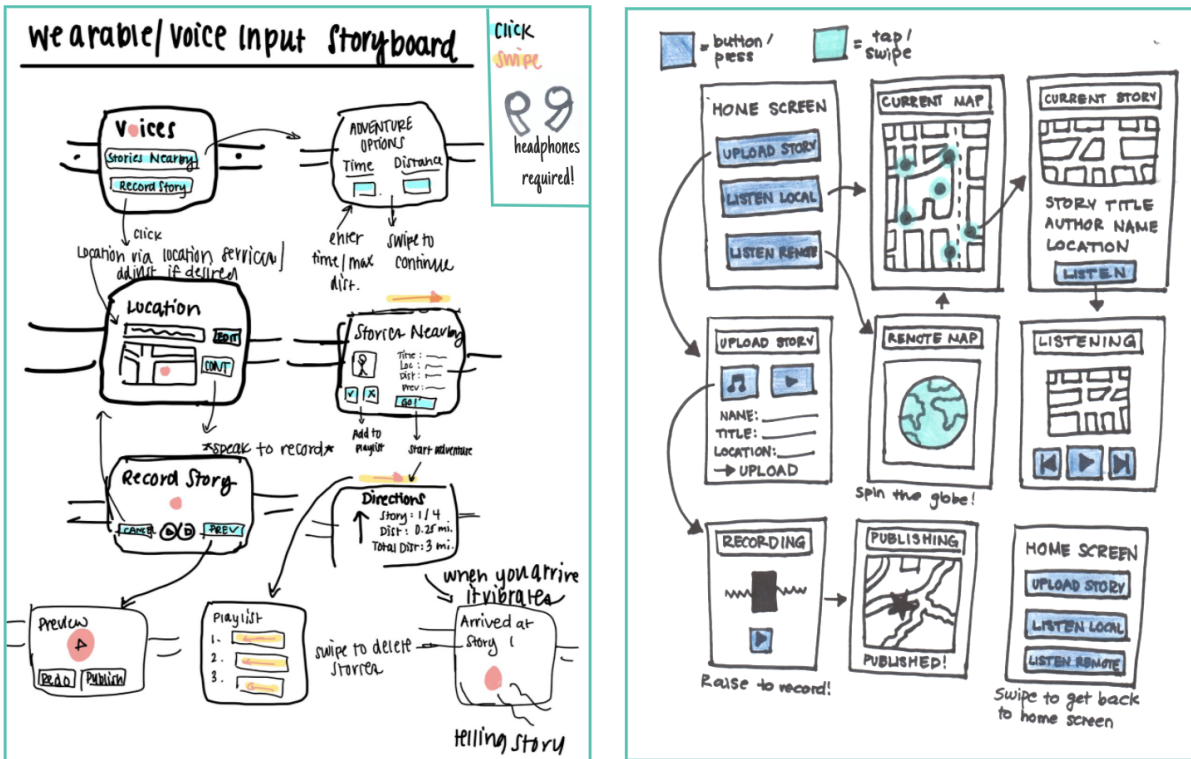
Figure 2: Wearables interface (left) and Map interface (right)

Each interface had its own merits, be it ingenuity, the act of physical exploration or simplicity. However, our most important criteria for a design interface was accessibility. Our mission statement revolves around the empowerment of locals, regardless of their background. We want this app to be as inclusive as possible so that all voices can be heard. Because of this, we decided to centralize our design on a map-based interface. More people have access to smartphones than devices like Apple Watches. Furthermore, an augmented reality iteration of this solution doesn't allow people to explore new cultures if they don't have the means to physically travel to the place. Plane tickets are incredibly expensive and vacation days are a luxury that many can't afford. A map based interface allows people to explore new areas without the financial barriers or accessibility barriers that some of our other solutions would pose. Stories are meant to be listened to and told *by all*. We want to remove any barriers to encourage this.

Designing a Prototype

As we developed our solution, we focused on creating a user interface that would allow users to complete all three tasks and accommodate many of our goals. We started with a low-fidelity prototype, which is essentially a bunch of rough sketches showing how our interface might look with respect to the three tasks. First, the user might want to explore stories locally, by looking on a map to see stories near them. Here is a sketch for doing this:
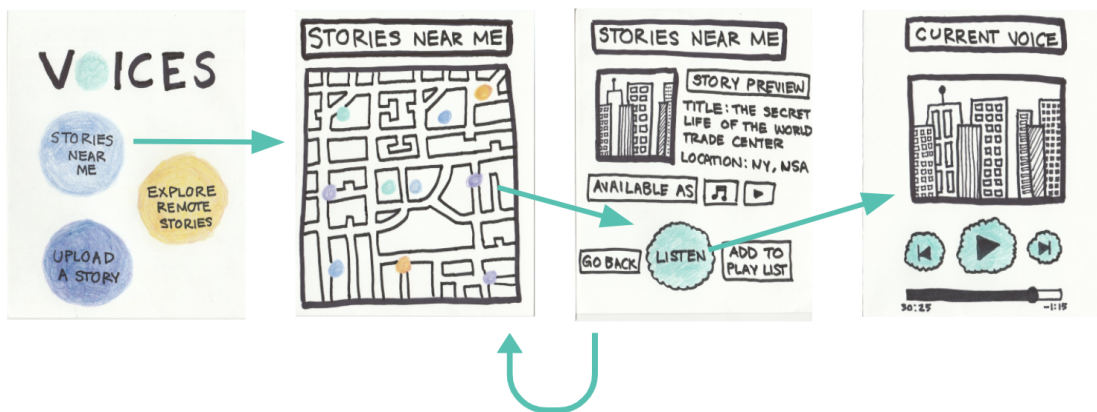
Figure 3: low-fi sketch for simple task of finding and listening to a story near you

Now imagine you are looking to learn about Japanese culture. You may not physically be in Japan, but you'd like to listen to a story from Kyoto! You can find a list to a story "remotely" in a very similar way to listening to a local story:
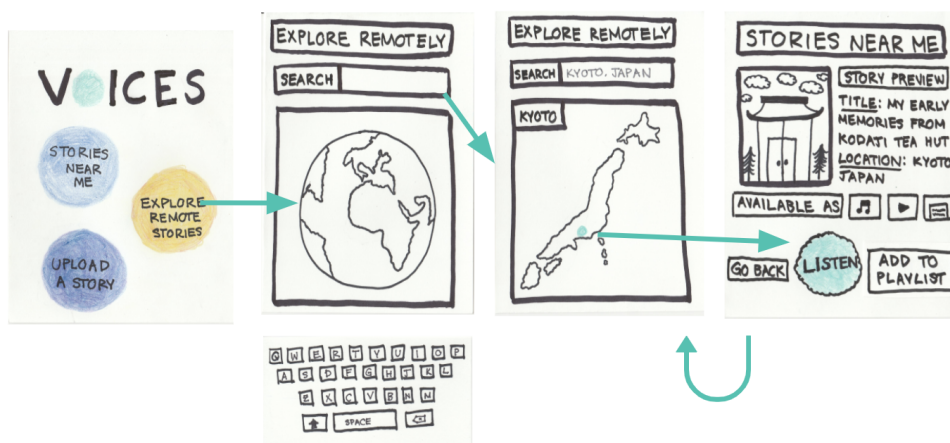
Figure 4: low-fi sketch for simple task of finding and listening to a story remotely

There are so many stories you'd like to listen to that you can't possibly listen to them all now. Perhaps you can save some to a playlist to listen to later?

Figure 5: low-fi sketch for moderate task of adding to a playlist

Finally, you'd like to share some stories of your own. There are so many secrets to Washington, DC that have yet to be shared!
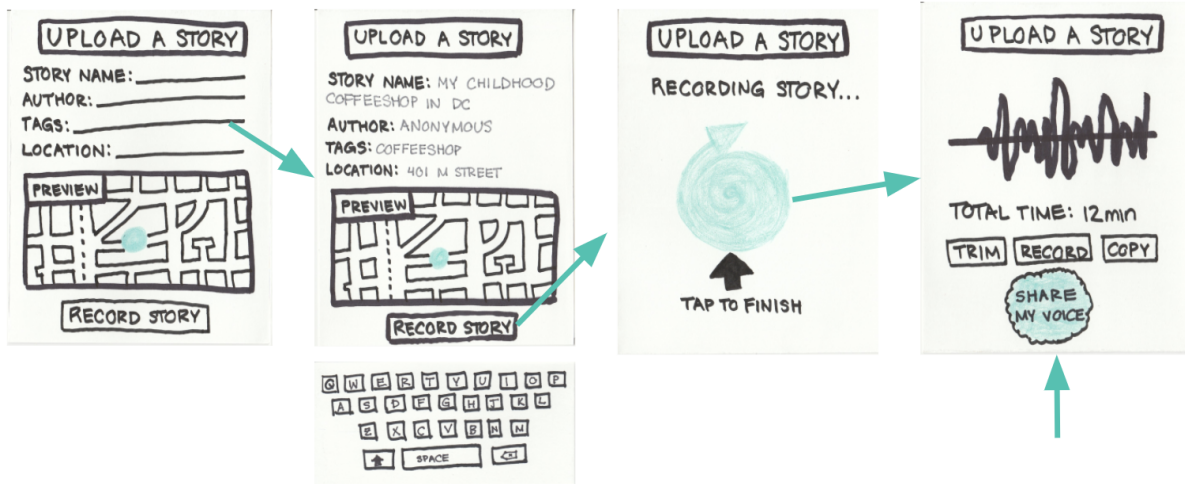
Figure 6: low-fi sketch for complex task of sharing a story

Revising our Prototype

Once we had a low-fidelity prototype, we conducted even more interviewees to make sure that our interface was intuitive and that our concept was clear. These interviews would prove integral to helping us with subsequent iterations of our implementation and fine-tuning any challenges with completing our three proposed tasks. When designing our low-fi prototype, we had some initial ideas of what we wanted users to accomplish with our prototype, but we didn't know what about our design would be confusing or counterintuitive.

One of our key findings from testing our low-fi prototype was that users did not like the side-swipe menu we had initially envisioned. They wanted to be able to easily navigate through different parts of the app. To accommodate this, we decided to replace the side swipe menu with a persistent navigation bar at the bottom of the screen.

Users were also confused by the separation of "remote" stories from "local" stories. When designing this solution, we wanted users to be able to explore stories in their geographic vicinity as well as around the world even if they aren't physically there. In our thinking, these were two very distinct features of our app. But as our users correctly pointed out, there is very little difference between searching for a location near you and searching for a location on the other side of the world. For our medium-fi prototype, we decided we would combine these two into a single screen

The final point of confusion that users noted was that stories on the map were marked using different colored markers. Naturally, they asked "do different colors signify different things?" When designing our low-fi prototype, we wanted to use colors to draw users' attention but we didn't realize that having different colors for different stories might lead users to think that colors have further significance. We ultimately decided to get rid of the different colors and to choose a single color—yellow—for all stories.

From Paper to Figma: Medium-Fi Prototype

After synthesizing our findings from usability testing of the low-fi prototype, we were ready to create a medium-fidelity prototype—something that looks a little bit more like a digital app. We said goodbye to the pen and paper and transitioned to Figma—an online prototyping tool where we could all work together on a first stab at our app. Figma was new to us so there was definitely a "learning period" where we learned that making "components" is better than pounding "command-c, command-v" thirty times in a row, and that a vector is more than just a concept we never really understood in high-school geometry. (Fun fact: we all prefer the design world's "vector" than the math world's "vector.") We used Figma to create our medium-fi prototype, where you could listen to stories:

Figure 7: med-fi prototype for listening to a story

Perhaps, you'd like to record and share story? You can do that too!
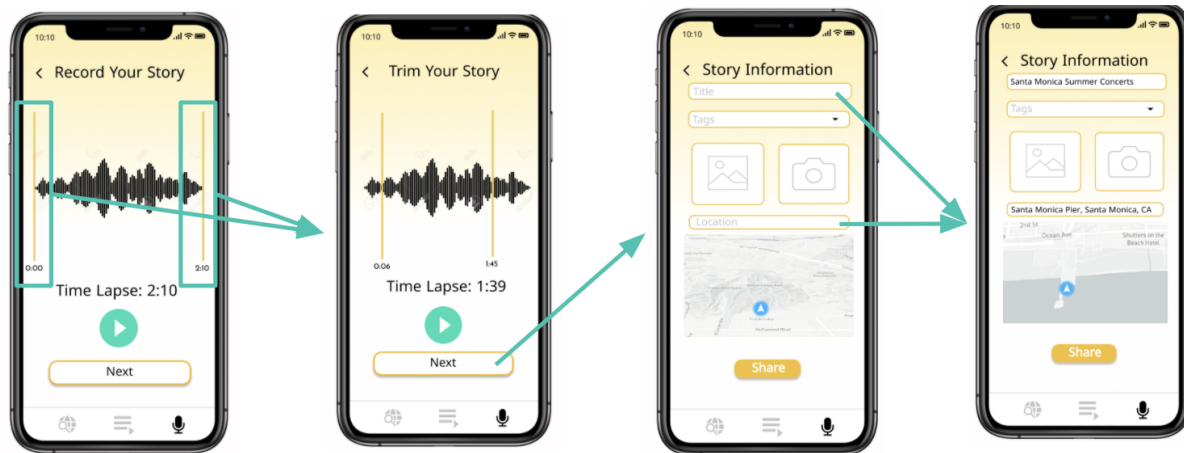
Figure 8: med-fi prototype for sharing a story

Flagging the Errors: Heuristic Evaluation

Our app was really starting to come together and we were getting excited! After nearly five weeks of revising, refining, and fine-tuning, it looks sort of real. However, before diving into the nitty-gritty coding, we needed to do one last round of testing and fine-tuning: heuristic evaluations! It's no fun using an app where you can't even enjoy what the app is supposed to do because you're too busy trying to figure out how to navigate from place to place and crossing your fingers that you don't accidentally delete the really, *really* important note you wrote in some file three screens before that you can't seem to find—where did it go? Our heuristic evaluation results helped us identify some usability errors that might prevent a user from being able to use the app to its fullest extent.

Specifically, our evaluators found around 15 low-severity 1-2 violations and 8 severity 3-4 (think "big red flag, this is not a drill") violations. These identified violations were crucial in ensuring that users would not face any mishaps when using our app. Overall, our evaluators noted that most of our

usability issues stemmed from failing to clearly show the system status to the user and not including enough error prevention. Many of our most severe violations came from a few particular screens which allowed us to really hone in and rethink how these features of our app were implemented. To show how we incorporated these changes, here is a step-by-step illustration of how we addressed our most severe violations:

"Can you hear me now?"

Recording a story and sharing one's own voice is an integral part of our app. However, our evaluators found a number of violations with the usability of this feature in our app. The first key violation occurred right when a user started recording their story because there was little visibility of the system status (H1). A user wasn't able to tell how long they had been recording for. Was their story five minutes long or five hundred minutes long? No way to tell! Users need an ability to track how long they have been recording for so we decided to add a timer to the recording screen.

Our recording interface was also a little restrictive—indicating a lack of user flexibility and efficiency (H7)—given that it didn't allow a user to upload a file of a pre-recorded story. Without the ability to upload external stories, our app would exclude all users who record stories out-of-app. We needed to add a way for users to upload a pre-recorded story. Our evaluators also noticed that our terminology was often confusing and differed from industry standards, thereby limiting user control and freedom (H3). Does "continue" mean "continue recording" or "continue to the next page"? We clearly needed to fix our terminology and design so that it would be clear and intuitive. Here is how we incorporated some of these changes:

Figure 9: changes to recording screen to improve user flexibility and visibility of system status based on results from heuristic evaluation

For our recording screen, our evaluators also noted that it was really easy to accidentally delete a story one has recorded, which makes error prevention (H5) a difficult task for the user. We wouldn't want a user to accidentally delete their story after they had spent so much time and energy sharing their personal experience with the world. We knew we needed to add error prevention so there would be no disappearing stories. Here is our revised design:
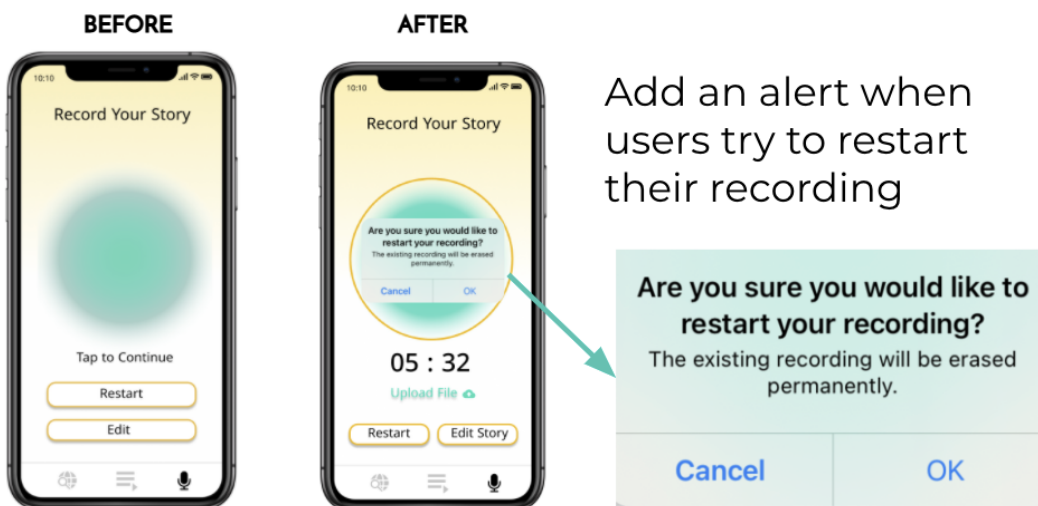
Figure 10: changes to recording screen to prevent accidental deletion of stories

"¿Hablas español?"

Our app is all about cultural immersion and listening to local and authentic voices. What better way to ruin the experience than by excluding non-English users? Our evaluators noted that the option to set one's language preferences is only available to a user once they start listening to a story, which is a clear violation of the match between the system and the real world (H2). This means that a user is forced to navigate a large part of the app (such as the onboarding page, the map, and the search bar) in English even if they are a non-English speaker. We clearly needed to address this so that non-English speakers could use our app just as well as English speakers. In order to ensure that all users feel welcome and that language is not a barrier, we allow a user to set their language preferences during the onboarding process:
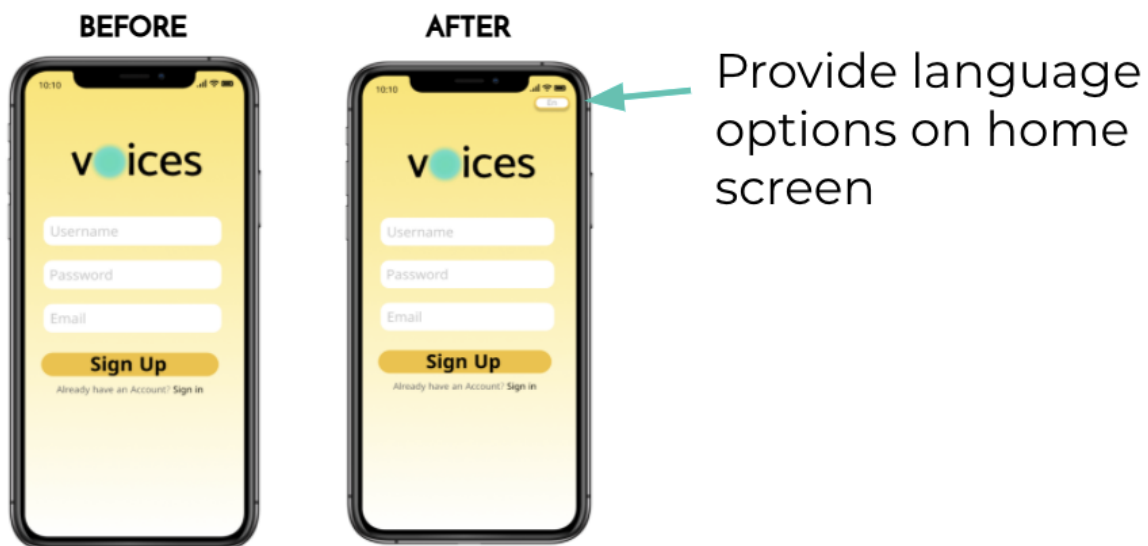
Figure 11: changes to language preference selection based on heuristic evaluation

"Buttons, Buttons, Buttons"

Apps require a user to click through a number of screens in order to navigate to various features. Navigation should be effortless and intuitive. Our evaluators noted that there was a lack of consistency between our buttons (violating H8) such that action buttons often had different shapes, sizes and colors. Buttons that should have been disabled were often not meaning that a user could, for instance, start editing a story before even having recorded it for the first time. In order to address this violation, we standardized the appearance of our buttons across all screens as follows:
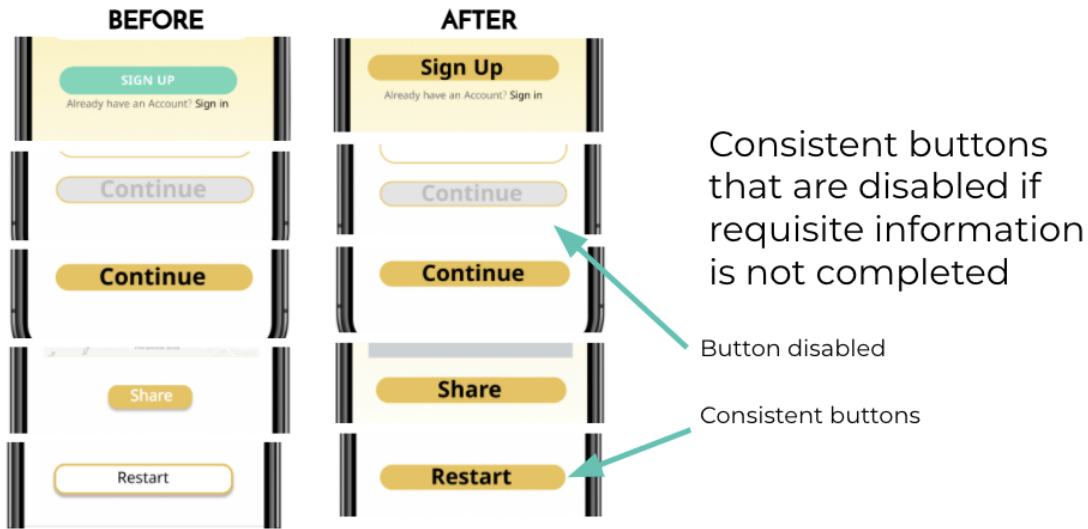
Figure 12: standardization of buttons across all screens based on heuristic evaluation results

"Fix Me Not"

Based on the results of our heuristic evaluation, we identified a number of key changes that needed to be made in order to improve the usability of our app. There were, however, some violations that we choose not to address in the suggested way. There were two specific violations that we did not incorporate into our revised prototype design. First, our evaluators noted that there is no indication or limit of the maximum story length. We decided not to place a limit on the length of the story because we do not want to limit users or

constrain them in telling their story. Setting a predetermined maximum length for a story seems arbitrary and restricts the storytelling opportunities that are available to a user.

The second violation we choose not to address related to the information that is available to a listener about a given story. Our evaluators noted that there was no information—such as a written description—about a given story prior to listening. Our evaluators suggested adding a written description that would serve as a "preview" for a story. Here, too, we decided not to address this violation because we think it would be too burdensome to ask users to write a description of their story after they have already gone through the process of recording a story. We want to empower local voices, not to place an increased burden on them. Furthermore, we think that the transcribed transcript that is available for each story serves a similar purpose and is intended to provide a listener with written information about a given story.

In addition to these changes from the heuristic evaluation, we also made a significant change to our storylist screen. The storylist screen is used to display all of the available stories at a given location. However, as some of our evaluators alluded to and as we noted ourselves, the format of the story list page was both repetitive and reductionist. Originally, our storylist screen was a scrollable list, similar to the display of songs on an app like Spotify or the display of podcasts on an app like Stitcher. However, we feared that this layout of stories would encourage mindless scrolling through the various stories and would prevent users from giving the necessary time and attention to appreciating a story. We wanted to convey that each story is truly its **own, unique** story. We wanted to trigger a "stop-and-think" moment for the user so that they could, at least for a few seconds, step into the shoes of the voice behind that story.

Our redesigned storylist is meant to encourage a user to try and really appreciate the story they might choose to listen to. By focusing on one story at a time, the user can learn about all the details and context for that story before deciding whether or not they want to listen to it. Furthermore, we thought the circle list design was novel and engaging, and differed significantly from existing apps that display similar audible content.


Figure 13: original design of story list view (left) and revised design of storylist view (right)

The Final Iteration

After incorporating our recommendations from the heuristic evaluation into a revised design, we were ready to build our final prototype! After nearly 8 weeks of iteration and design, we were ready to build what would be our final product. When building our high-fi prototype, we grounded ourselves in the tasks we had initially outlined, adding extra features and finishing touches were appropriate. To show you how we did this, here is a step-by-step walkthrough of our app.

When first entering the voices app, a user is brought to the homescreen map, allowing the user to explore stories nearby and listen to these stories. When listening to a story, a user can open the transcript to read the transcribed version of the story. In terms of our outlined tasks, this would correspond to our simple task of listening to a story:
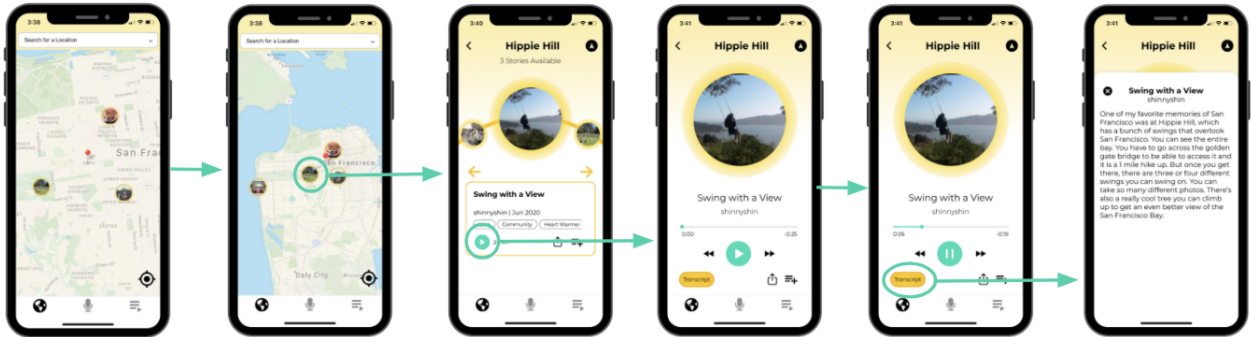
Figure 14: task flow for listening to a story nearby

However, the goal of voices is to allow users not only to listen to stories nearby, but also to listen to remote stories anywhere around the world. A user could, say, search for a story in Barcelona and listen to it in a similar way:

Figure 15: task flow for listening to a story in Barcelona. The user would first navigate to Barcelona, perhaps scroll through some stories, and then listen.

After listening to stories, a user may want to create a playlist of their favorite stories, perhaps to plan out their day or simply collect their favorite stories in one place. When adding to a playlist, you can either add to an existing playlist or create a new one:
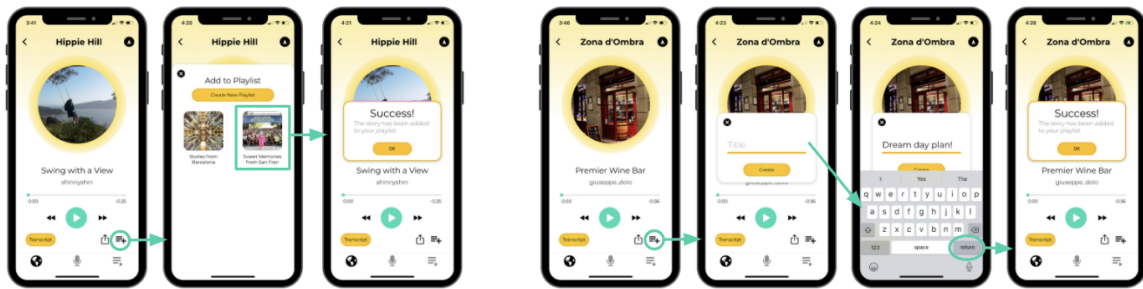
Figure 16: Adding to a playlist by adding to an existing playlist (left) or creating a new playlist (right)

After adding to a playlist, you can go to your playlists to see that the newly added story is there.
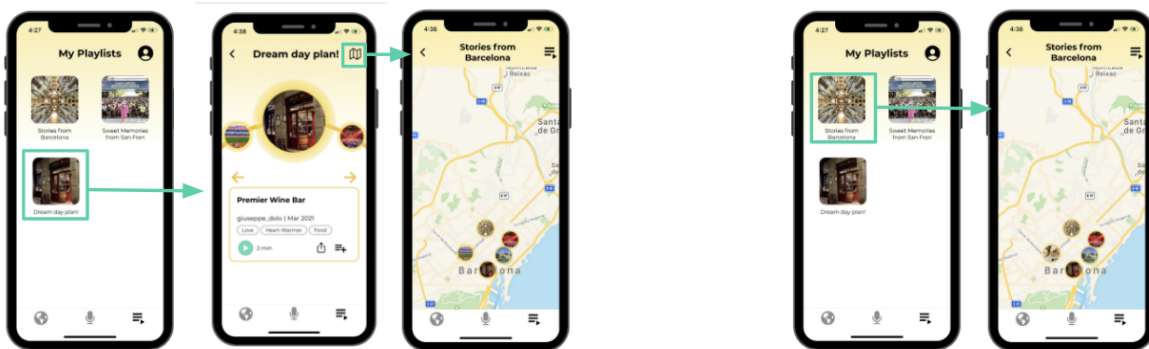
Figure 17: viewing newly added playlist on My Playlists (left) as well as existing playlists (right). Playlists can be viewed in either list view or in map view.

After listening to others' stories, a user might want to record their own story. It's time to share their voice. To begin, the user would record the story itself. The user can either upload a file or record in-app:
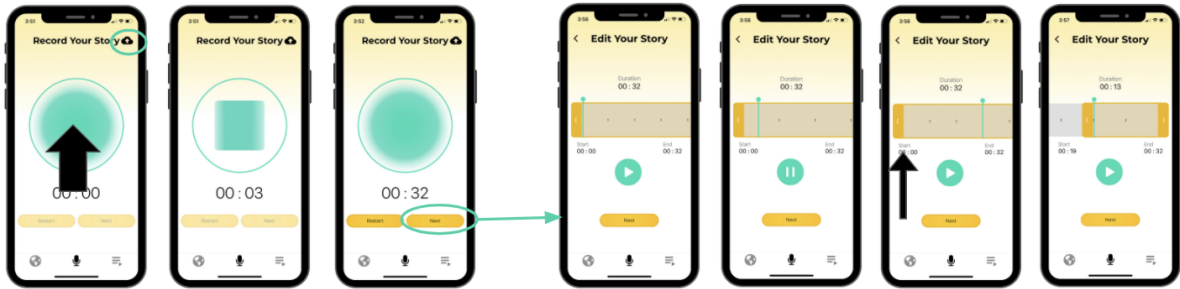
Figure 18: A user can record their story in-app. After they are done recording, the user can trim and edit their story.

Once the user has recorded their story, they will also want to add their story information. These details will allow other listeners to learn more about their story before deciding whether or not to listen to it. A user can add information about their story by adding a title, tags, and a photo:
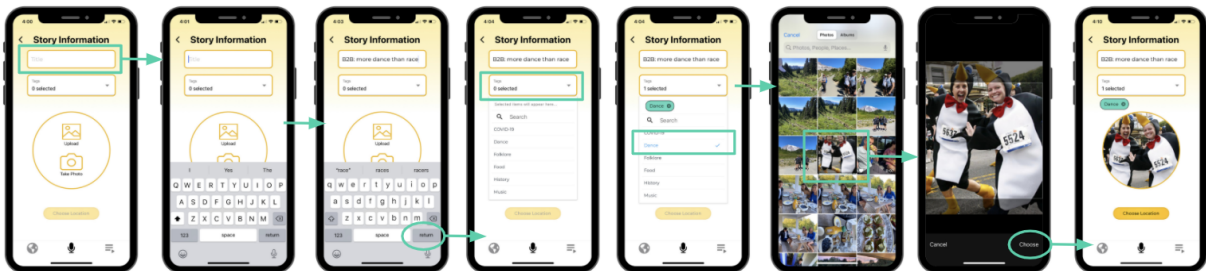
Figure 19: Adding a title, tags, and a photo to a story helps other users identify a story and know what it's about.

After adding the information about a story, the user needs to choose the location at which to post the story. The user can do this as follows:
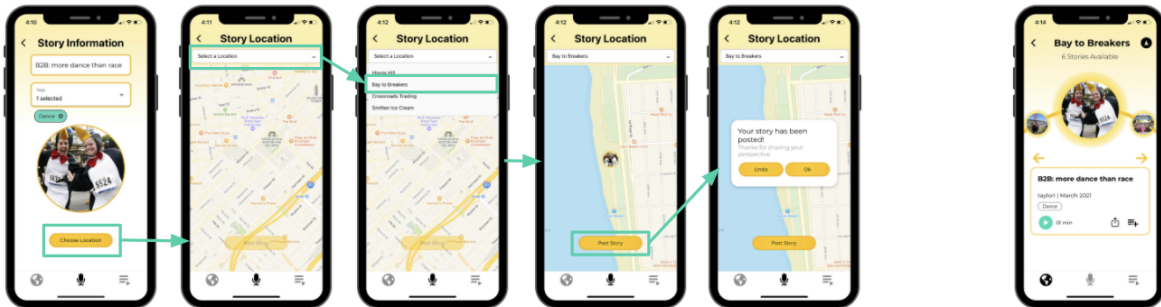

Figure 20: Attaching your story to a location via the dropdown list (ideally a search bar). The user can then finally post their story and view it in the story lists on the explore pages.

There are several other features that we implemented in our final prototype in order to improve the user experience. The first is an onboarding and sign up process that allows uses to create accounts and log into existing accounts:
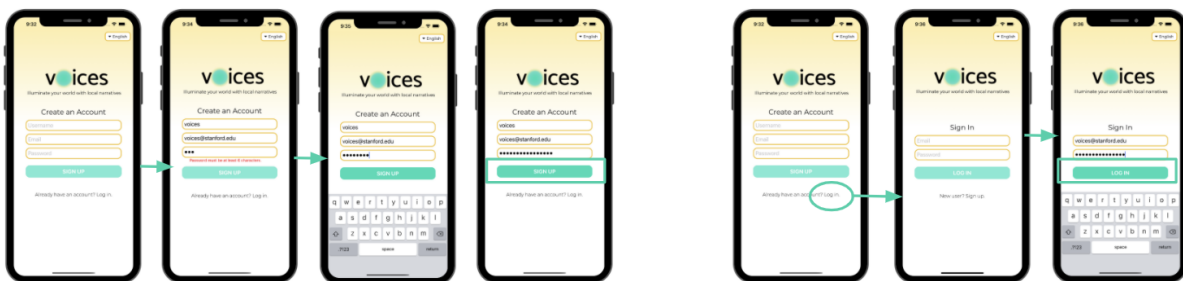

Figure 21: Onboarding screens that use Firebase Authentication. The user has the option to sign up (left) or log in (right). The console displays a warning if the requirements for a password or email are not met.

The next supplementary feature we implemented was author profiles, allowing users to get to know who the stories are coming from and potentially exploring more of their stories. The user also has their own profile that they can customize with a bio and profile image. This is where they can also see their own stories, a huge accomplishment as they increase the number of perspectives on culture provided.
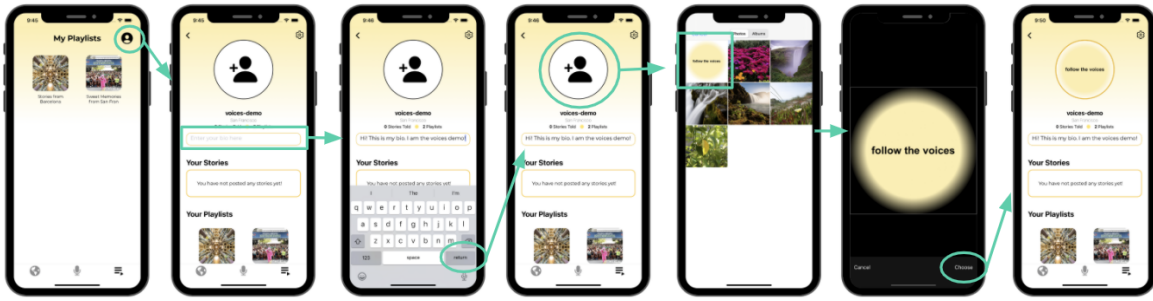
Figure 22: Profiles allow users to learn about various authors and find their other stories easily. The user has their own profile which they can customize with a bio and picture.

To view another user's profile, the user can click on the name of an author on any story to view their profile. Let's take a look at shinnyshin's profile! Here it is:
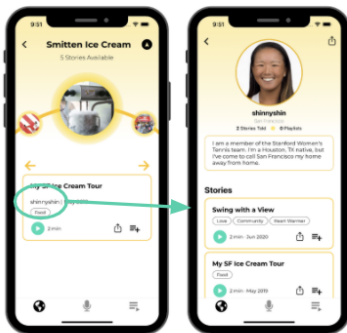
Figure 23: Profiles allow users to view the stories of a specific author.

Finally, if a user likes a particular story, they can share it with their friends and family like so:
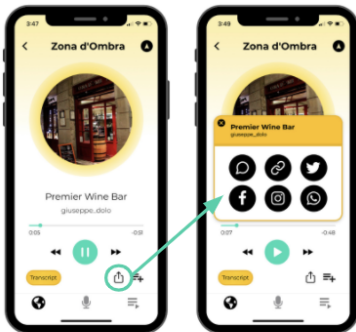

Figure 24: Sharing a story

FINAL PROTOTYPE IMPLEMENTATION

Our Toolbox

To make our final prototype, we had to get our hands dirty with React Native and bring voices to life. With the exception of one of us, the team was new to coding in React Native and the app development process such that there was a significant period of trial and error. As a team, we agreed upon a plan of implementation that would allow us to focus on equal parts design and equal parts functionality as we developed the app.
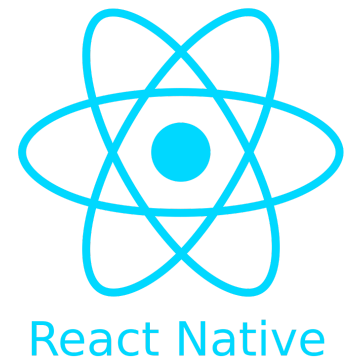
We decided to start with implementing the "record a story" functionality because it consisted of a number of different discrete screens so that we could each work on a separate screen without interfering with the work of others. Implementing this first feature served as a great framework for learning how the various tools interacted and how to best use the available tools and resources to our advantage.

From the very beginning we learned that GitHub was both our best friend and our worst enemy. Code integration can be challenging and we needed to learn how to build an app together without getting in the way of one another. Given that we were all excited to contribute to the development of the app, we wanted to find a way that the four of us could code together. We eventually developed a systematic approach to working on the app so that we could build a final product we were proud of.

For development itself, we relied on React Native and its available packages. We enjoyed working with React Native because of the many available packages that we could import and rely on. We found it to be

generally intuitive. The only issue we would occasionally run into is that for those of us who had experience with web development, we would often use features from React that were not available with React *Native*. Overall, we enjoyed coding in React Native and are glad we choose to use that platform.

For testing throughout the development process, we relied on Expo—a tool for development and testing of native apps. Expo worked well in that it allowed us to see real-time changes, making it easy to debug and design our implementation. We also appreciated being able to develop for one, standard device so as to avoid any of the challenges introduced by us each having a different mobile device. The only limitation we faced was that occasionally Expo would stop working for one of us for a reason we could not identify. When this happened, we would rely heavily on Zoom meetings where the idea of "pair programming" took on a whole new meaning.

"You're Not in Kansas Anymore": Wizard of Oz Techniques

Another aspect that shaped our final prototype implementation was the technical constraints and time limitations. Given that we were working within a time constraint, we knew there were some features that we wouldn't be able to fully implement. Specifically, we knew that it would be hard to incorporate user interactions with the app into our backend database in a way that was reliable and showed real-time updates. In order to address this challenge, we used a Wizard of Oz technique of having local asynchronous storage so that the user would be able to see their changes even if these changes did not persist on the backend. We decided it was most important for the user's changes to be reflected to the user in real time, as opposed to ensuring that all users who demoed the app would see all of the other changes from all users. We employed this technique when a user posts their own story so that the story will appear on their version of the map, even if it doesn't appear across all maps.

Hard-Coded Data

There are so many stories and voices waiting to be heard! As such, we, unfortunately, couldn't include them all in our final prototype. Instead, we needed to hard-code data of the stories that were available to users so that users could get an idea of what voices was all about while still ensuring that the amount of data we had to manage was within the scope of our technical abilities.

In addition to hardcoding the stories available at a given location, we hard-coded some other data in our app. In an ideal world, a user would be able to explore voices anywhere in the world. They would be able to use the map's search bar to explore whatever place they want. However, for our final prototype, we decided to limit the locations that are available for exploration. We hardcoded two locations: San Francisco and Barcelona as the available locations. Similarly, we also hardcoded the locations at which a story could be posted, limiting the options to the pre-selected sites in San Francisco and Barcelona.

Finally, we had to hardcode the actual stories at each location to give a user a preselected sample of what stories at a given location might look like. However, due to GitHub and Expo's file size limitations, we had to keep audio files very small such that most stories are under 5 minutes long.

SUMMARY AND NEXT STEPS

We've reached the end of our CS147 journey. This moment is bittersweet, to say the least. Our team met as four strangers with little web development, app development, or design experience. After ten weeks working together as a team, we have not only grown close to one another as friends but we have also built a product together. Over the course of the project, we learned each other's quirks and habits—with such great variation in sleep schedules and timezones that ensured we could always count on having a team member

awake at any hour of the day—so that we could work with each other to build an app that gives us a sense of pride and accomplishment.

If we're being perfectly honest, each week felt like its own rollercoaster, with interviews, slides, presentations, websites, and deadlines forcing us to work around the clock to get it all done. However, looking back, we can all unanimously agree that each step was worth it. Each week, no matter how grueling, moved us closer to building a final product that we are excited to share with the world.

In addition to our personal growth as a team, we also learned **a lot** about how to effectively design solutions to the problems around us. It's easy to identify problems in your own day-to-day life, but it is far harder to listen to other people and understand their needs in addition to your own. The center of change is the people who can tell you about the problem in the first place. Perhaps the biggest lesson we learned from this project was the importance of listening to the people you are trying to serve.

A second pivotal insight for us was to embrace the weird and unconventional ideas. Time and again, we noticed that during our brainstorm sessions it was the truly outrageous ideas that shined. We learned that the most promising response you can get to an idea is "wait, say what? But how? Tell me more!" Sure, we could have made a social media app that connects users to a feed of stories from their friends. But we thought, "why not make buildings talk?" When asked why we thought this was ever a good idea, we're not entirely sure. However, what we are sure of is that embracing ideas that seem unachievable in the moment is an approach that we will all carry forward with us in our future projects and endeavors.

Finally from our project, we learned the importance of being patient through an iterative design process. We learned the importance of embracing mistakes early on, as those mistakes allow you to evolve your design into a product that is better suited for your users. As a team, we have

learned the value of hyping each other up when morale is at its lowest. Most importantly, we learned that successful design projects are the ones that have the users in mind during each step. By keeping our interviewees in mind at every step of the way, we could always turn to each other and instead of saying "do we like this?", we could say "what would Participant 1 think of this?"

If this was a year long class (which it should be), then we would continue our iterative design process by improving functionality for users. We would want to ensure that users could search for stories anywhere in the world rather than just in Barcelona and San Francisco. We would incorporate a database that would allow users to listen to stories shared by users across the world within seconds. Additionally, we would incorporate some of our desired functionality that we could not implement given to time constraints. A navigation system would allow users to easily navigate to a story if they are close by. In addition, we would include the ability for non-English speakers to use the app by expanding the language options. Throughout, we would make sure to stay true to our mission of enabling cultural immersion through personal stories, empowering voices around the world.