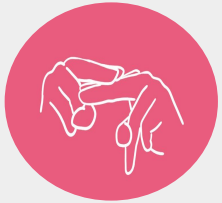
Low-fi Prototyping & Usability Testing

By: Daniel, Dria, Arjun, & Jen

Introducing...

TrainGone!



Express yourself beyond words.

Our team name is an ASL idiom akin to the English idiom, “that ship has sailed”, meaning that the conversation subject has come and gone.

This highlights the value of our product for those “one and done” environments where you didn’t quite catch the signed word.

The Problem.

ASL speakers are challenged when it comes to communicating unknown words to one another. There is no intuitive platform that directly translates sign to meaning.

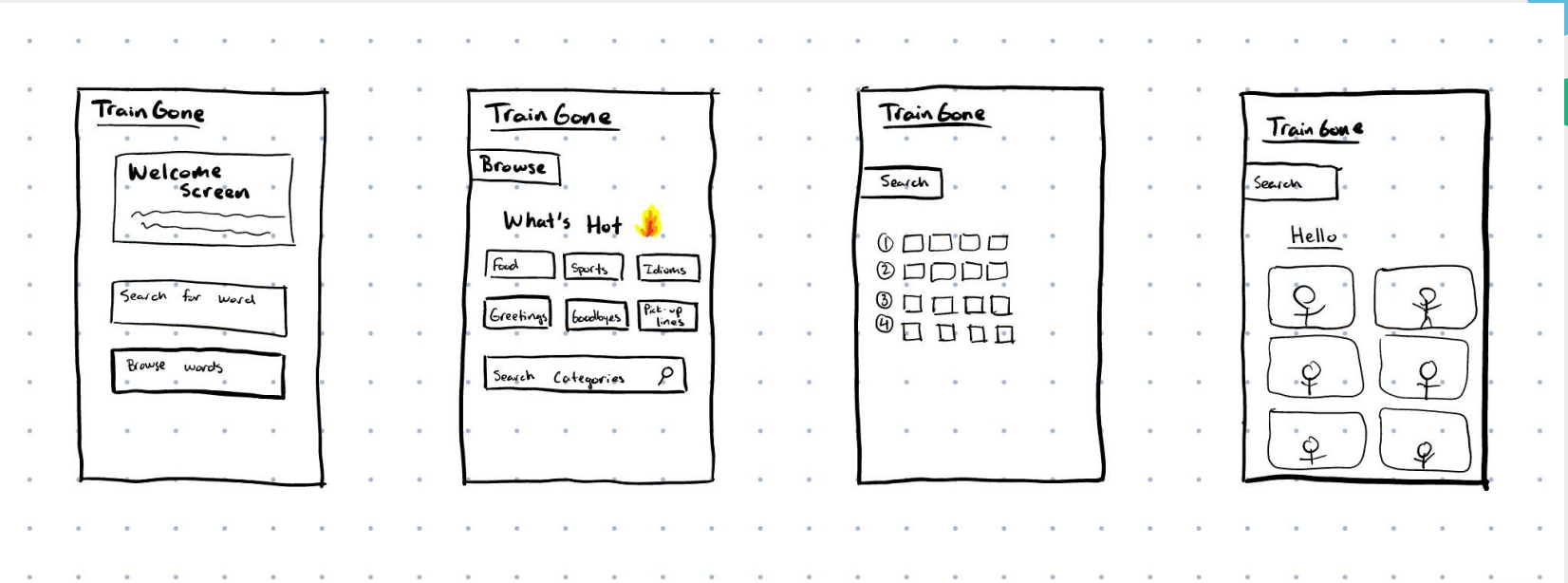
Our Solution.

Provide a social educational platform that allows deaf signers to define signs through video storytelling and for learners to solidify their understanding through additional context.

Presentation Outline

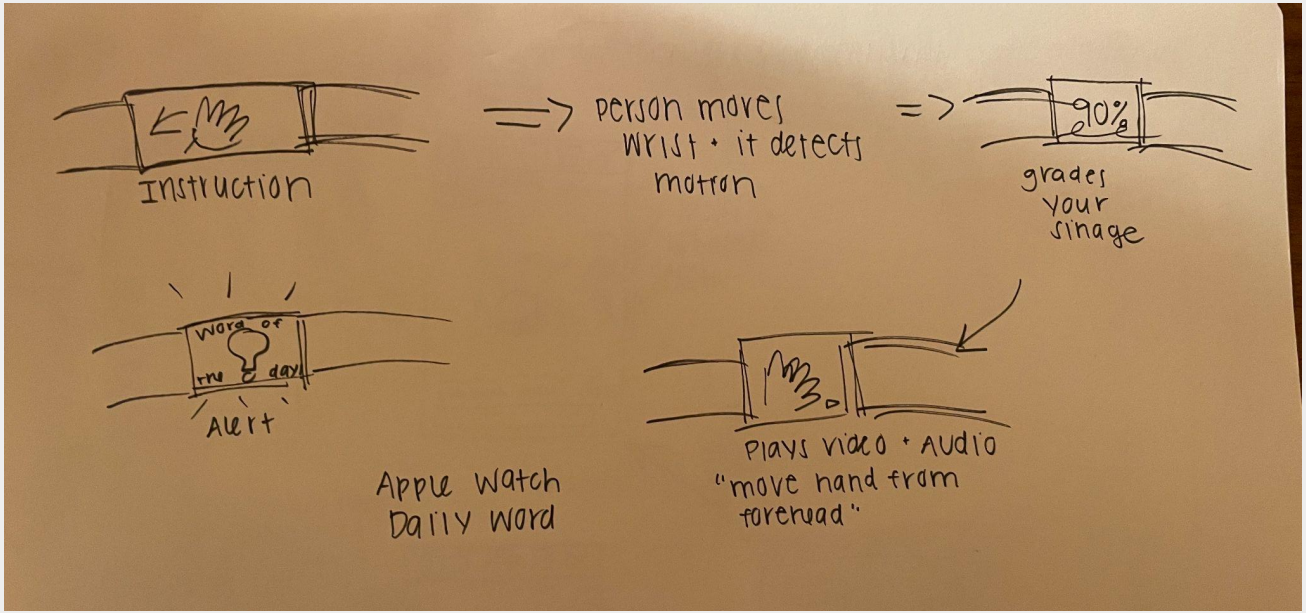
- Different design sketches
- Selected Interface Design / Rationale
- Low-fi prototype
- Testing methodology
- Prototype testing results & discussion

Concept Sketches Overview



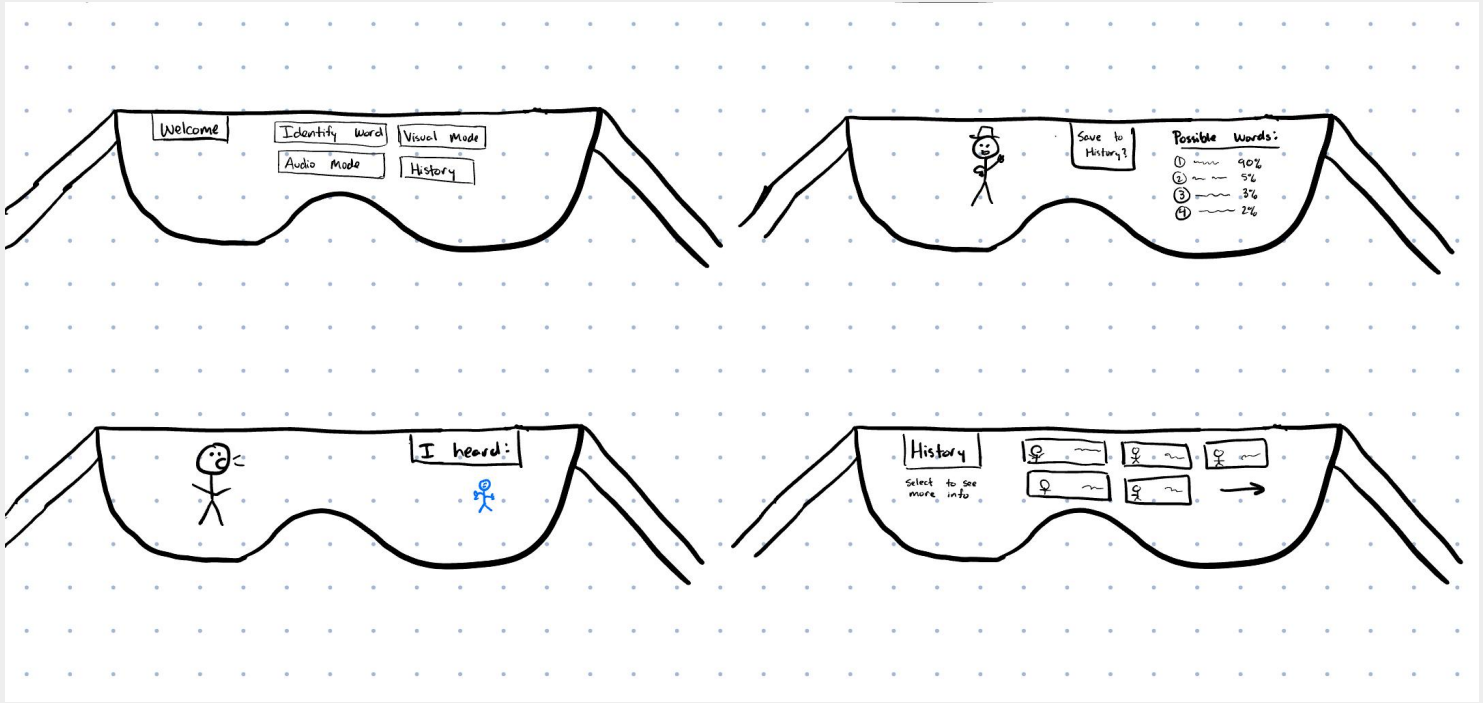
1. **ASL to English reverse dictionary x video mobile app**

Concept Sketches Overview



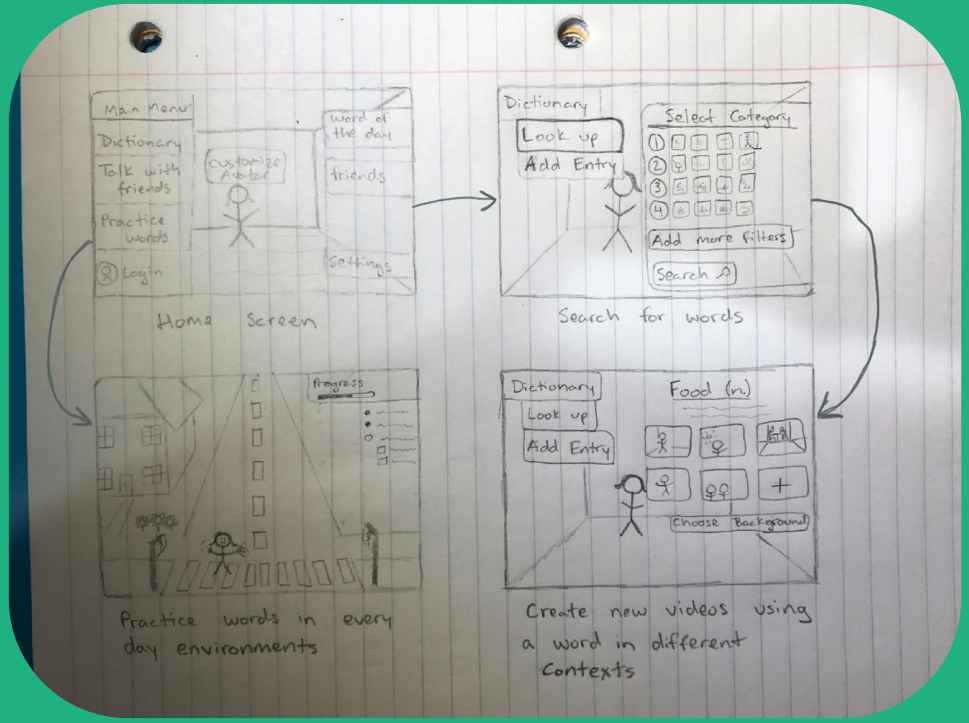
2. Apple Watch daily language practice

Concept Sketches Overview



3. Smart Glasses to help translate ASL

1 Mixed Reality Realization



description:

- VR application
- Users can look up ASL signs in an intuitive method
- Option to add entries in which they make the sign of a word and their avatar copies them
- Virtual Reality of everyday environments to practice words in a casual and fun setting

1 Mixed – Reality: Pros and Cons

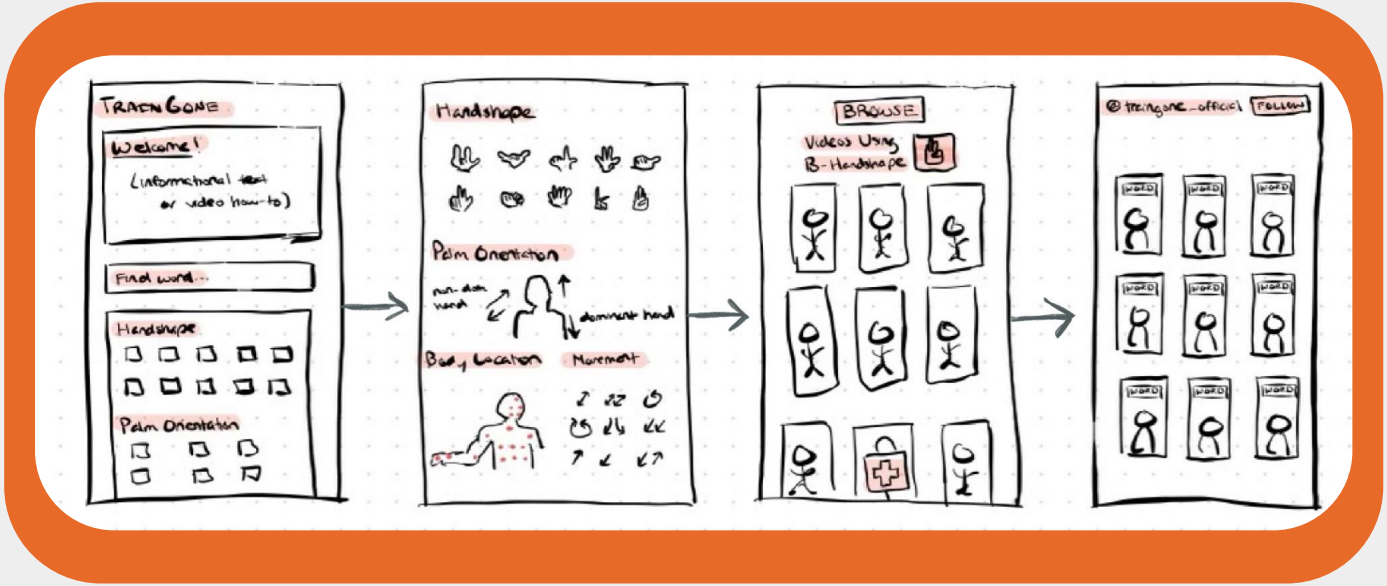
PROS

- Simple UI
- Accessible regardless of level of ASL education
- Multiple contexts used for every word
- Users can post their own videos

CONS

- User-created videos require moderation to maintain accuracy and appropriateness
- Limited categories for English -> ASL portion of dictionary
- Not universally accessible – VR setups can be expensive
- Lack of portability
  - Quick searches are not possible

2 Mobile Application Realization



Description: a visual, Deaf-friendly crowdsourced reverse-ASL dictionary that allows users to find the English word for a sign by its tagged parameters (handshape, body location, palm orientation, and movement) and view/upload videos of them telling a story about the sign in ASL.

2 Mobile Application: Pros and Cons

PROS

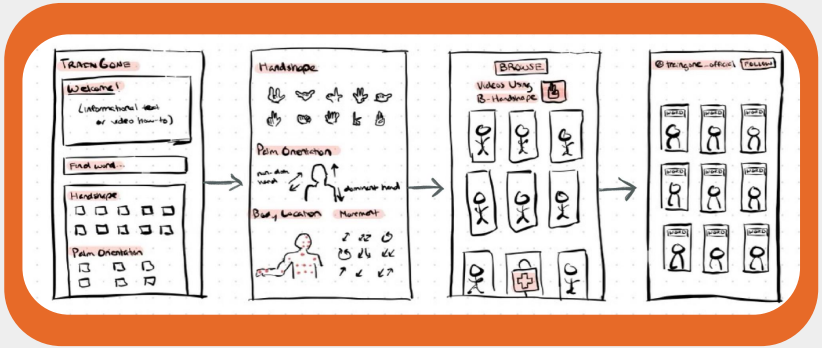
- Simple UI
- Intuitive searching process for reverse dictionary
- Very Accessible – quick and easy to look up entries
- Interactive: users can create their own entries or videos for existing entries

CONS

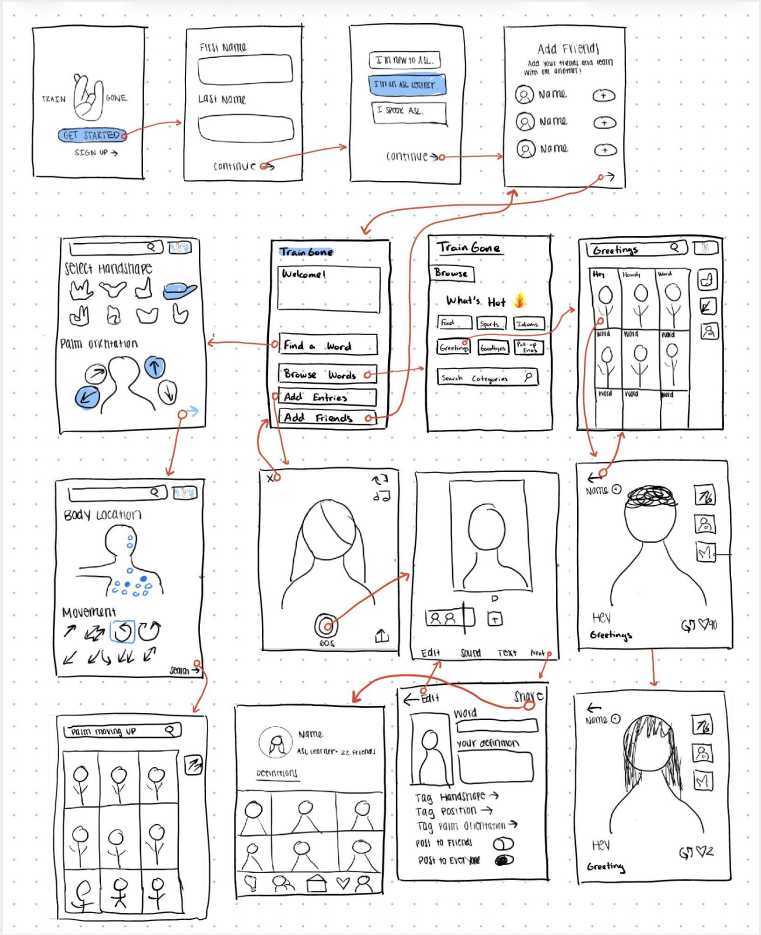
- Accuracy/Appropriateness must be monitored
- Limited categories for English to ASL dictionary
- Less immersive than the AR/VR realization

Selected Layout...

Mobile Application!!



Low-fi Prototype Construction



Revisiting our Prototype Task Flows!

Simple

User can describe ASL signs to find English words

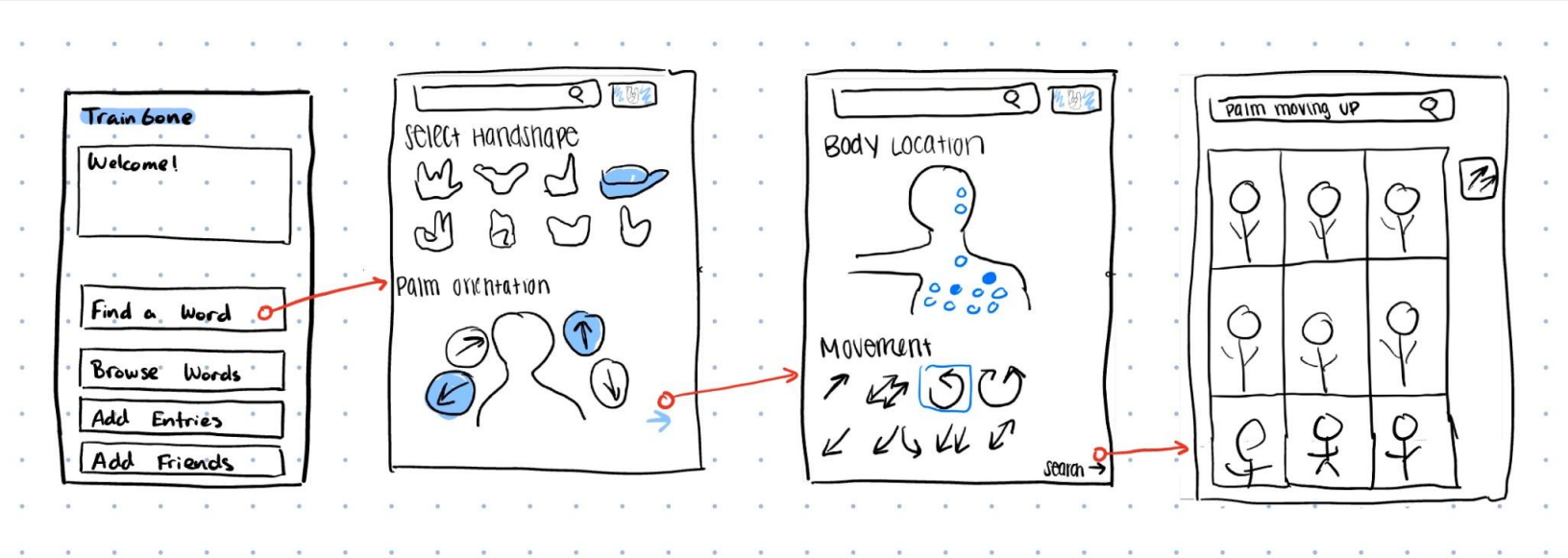
Moderate

User can see an ASL word in multiple contexts

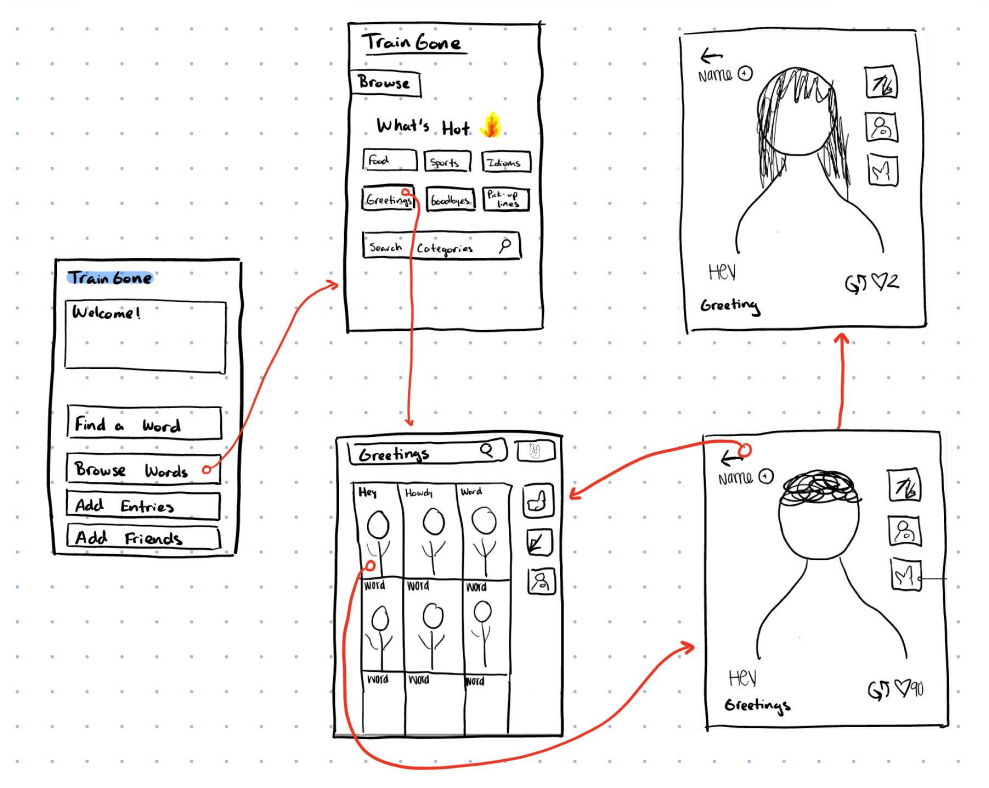
Complex

Users can add new dictionary entries or add new contexts for existing entries

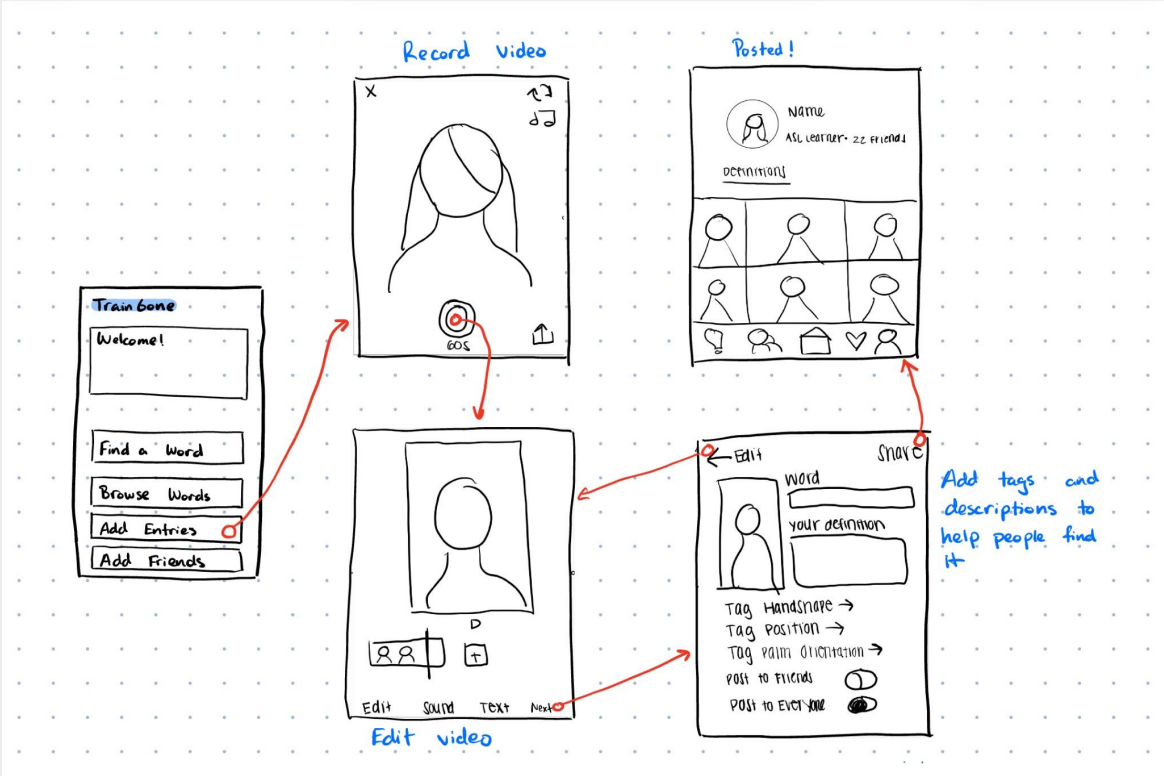
Simple Task


Train bone
Welcome!
Find a Word
Browse Words
Add Entries
Add Friends
Select Handshape
Palm orientation
Body Location
Movement
search
Palm moving UP

Moderate Task



Complex Task



Testing Methodology

INTERVIEWEES

1. Sam, a Stanford student interested in learning ASL
2. Melanie, an ASL learner of 4 years
3. James, a software engineer with no experience in ASL
4.

ENVIRONMENT

We conducted our testing both in person and over zoom. Each person interacted with the Figma prototype while we observed (shared screen or in person).

TASKS

1. Simple: User can describe ASL signs to find words
2. Moderate: User can see ASL word in different contexts
3. Complex: User can add their own dictionary entries based on their own context

PROCEDURE

1. Introduced ourselves and explained content of project
2. Emphasized speaking aloud and allowed them to explore the prototype
3. After completing the 3 tasks, we asked for feedback

Blank Consent Form

Consent Form

TrainGone's prototype is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in the experimental evaluation of this prototype provide data that is used to evaluate and modify the interface of TrainGone. Data may be collected by interview, observation, and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers (Daniel, Jen, Arjun, Dria) or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay at stanford dot edu

Participant anonymity will be maintained by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the research and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the TrainGone's research. I understand that I may withdraw my permission at any time.

I give consent to be video recorded during this study:
___Yes ___No
I give consent to be audio recorded during this study:
___Yes ___No
I give consent for video or audio recordings from this study to be shown to people not directly involved with this research during/in class, seminars, reports, or scientific presentations:
___Yes ___No

Name _____

Participant Number _____

Date _____

Signature_____

Testing Methodology

USABILITY GOALS:

INTUITIVE & EXCITING

TEAM MEMBER ROLES:

Due to limited time constraints, we had to individually interview participants. As a result, we each took on multiple roles throughout the testing process.

TEST MEASURES:

Successes:

1. **User instinctively understand the interface with minimal misclicks.**
2. **Users are engaged the whole flow.**

Errors:

1. **Users lose engagement and find the interface too frustrating to use.**
2. **Users get lost completing the task and are confused by the transitions.**

Testing Results

Observations

Participants were positively engaged and excited throughout the whole flow.

- All participants found the design intuitive and aesthetically pleasing
- Two participants (one ASL speaker and one non-) positively received the idea of a reverse-ASL dictionary
- Two participants noted the lack of a back button hindering UI functionality

Discussion

Our findings proved to us that our idea is engaging and exciting, regardless of a person's familiarity with ASL.

All participants found our design intuitive and engaging, and so we achieved the usability goals that we had set out. For our next designs, we will make sure to make the UI more consistent with back buttons and shortcuts to make the flow easier to follow.

Appendix

Full list of pros and cons for selected interface rationale
Our prototype: Figma Link
Script: Google Docs Link

Participant 1: Sam

Didn’t know how to return back to the home screen	2
Didn’t understand the meaning of the icons	3
Didn’t understand hand sign search	3
Didn’t understand process of defining your own word	0
Actively engaged	1
Confused by video feed with no signs shown	0

Participant 2: Melanie

Didn’t know how to return back to the home screen	1
Didn’t understand the meaning of the icons	2
Didn’t understand hand sign search	0
Didn’t understand process of defining your own word	0
Actively engaged	0
Confused by video feed with no signs shown	0

Participant 3: James

Didn’t know how to return back to the home screen	3
Didn’t understand the meaning of the icons	4
Didn’t understand hand sign search	2
Didn’t understand process of defining your own word	0
Actively engaged	0
Confused by video feed with no signs shown	2

Thank You