Khoi L, David M, Stefan S
Team 4 - Section 12:30
CS147
Prof. James Landay
CA Andrew McCabe
October 27, 2017

Stefan Swaans
B.S CS 2018

David Mora
B.S CS 2018

Khoi Le
B.S SymSys 2020

Introduction

Mission Statement / Value Proposition

Learn music one step at a time.

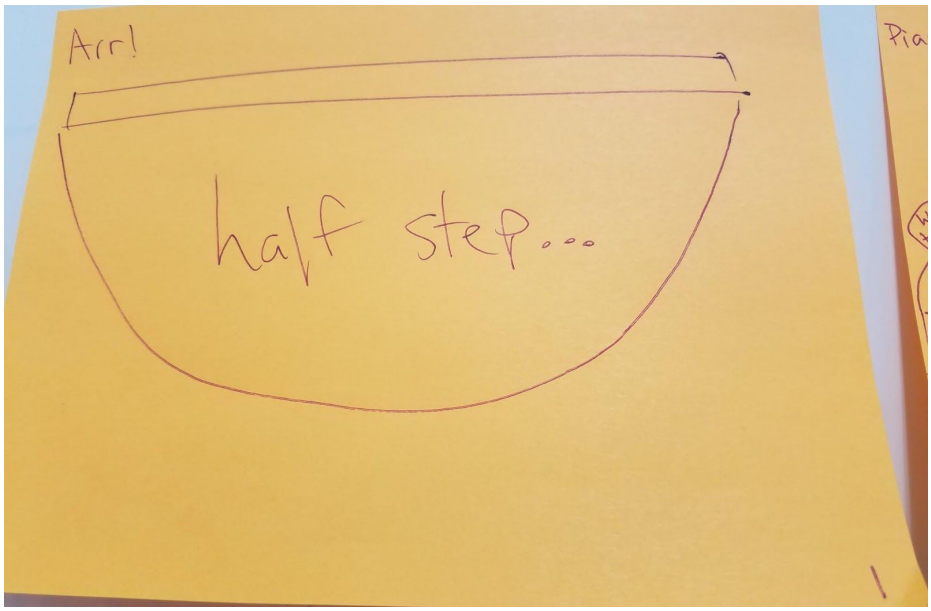
Problem / Solution Overview

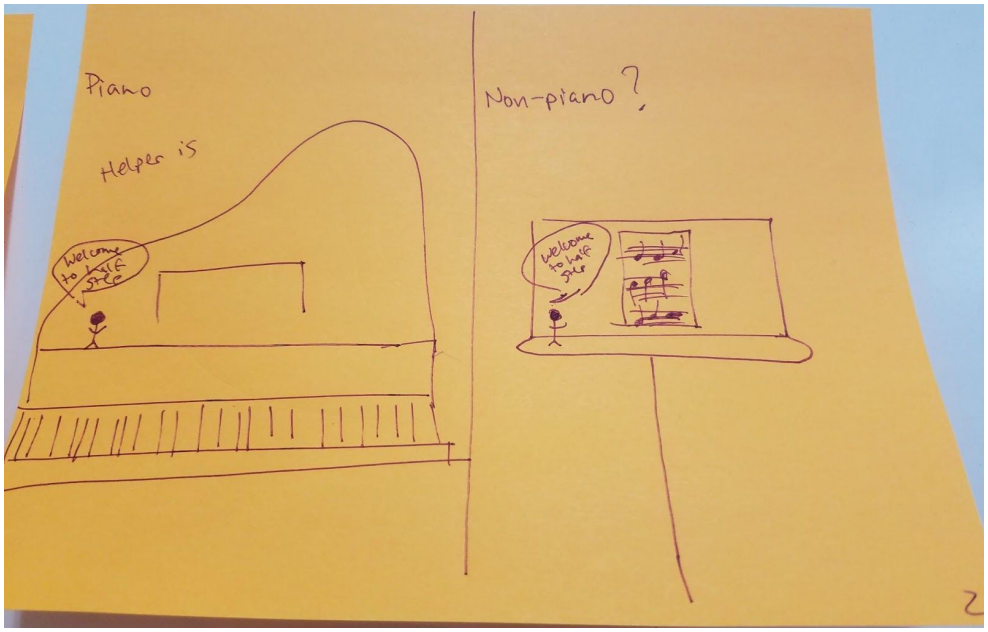
Music practice can be unfocused, filled with self-doubt, lonely, and disconnected from your goals and dreams.

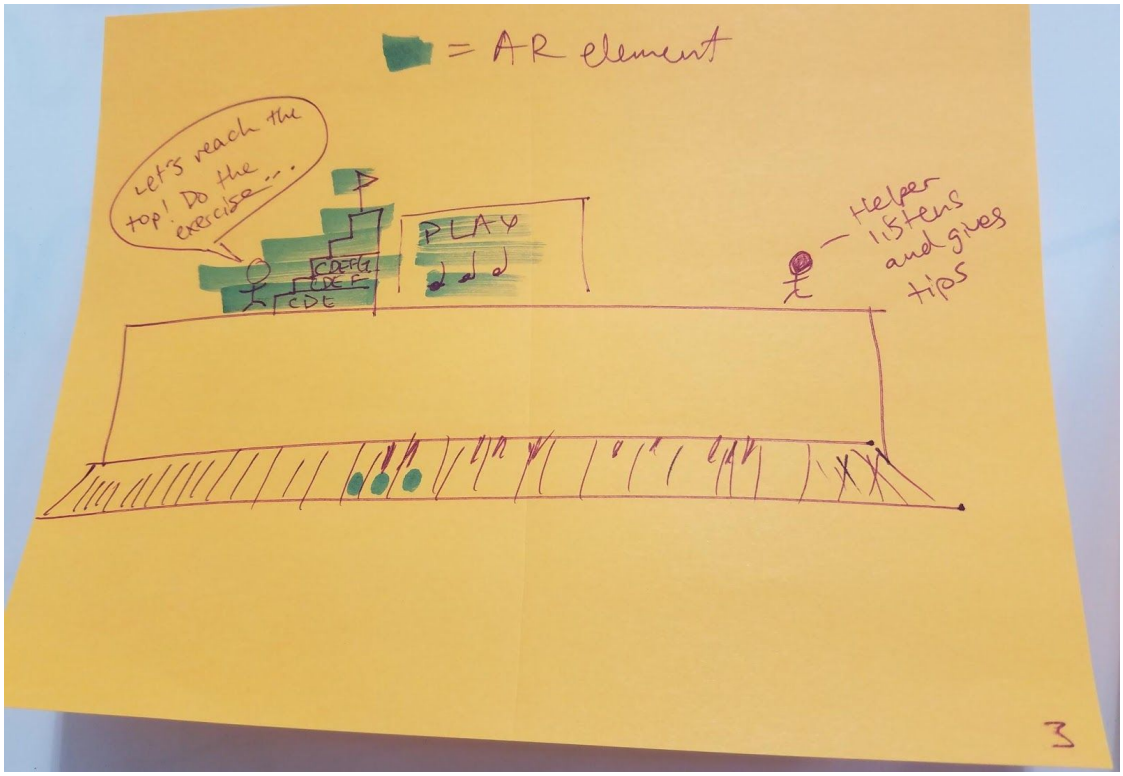
half step helps you climb higher by providing bite-sized tasks, near-peer support, and progress tracking.

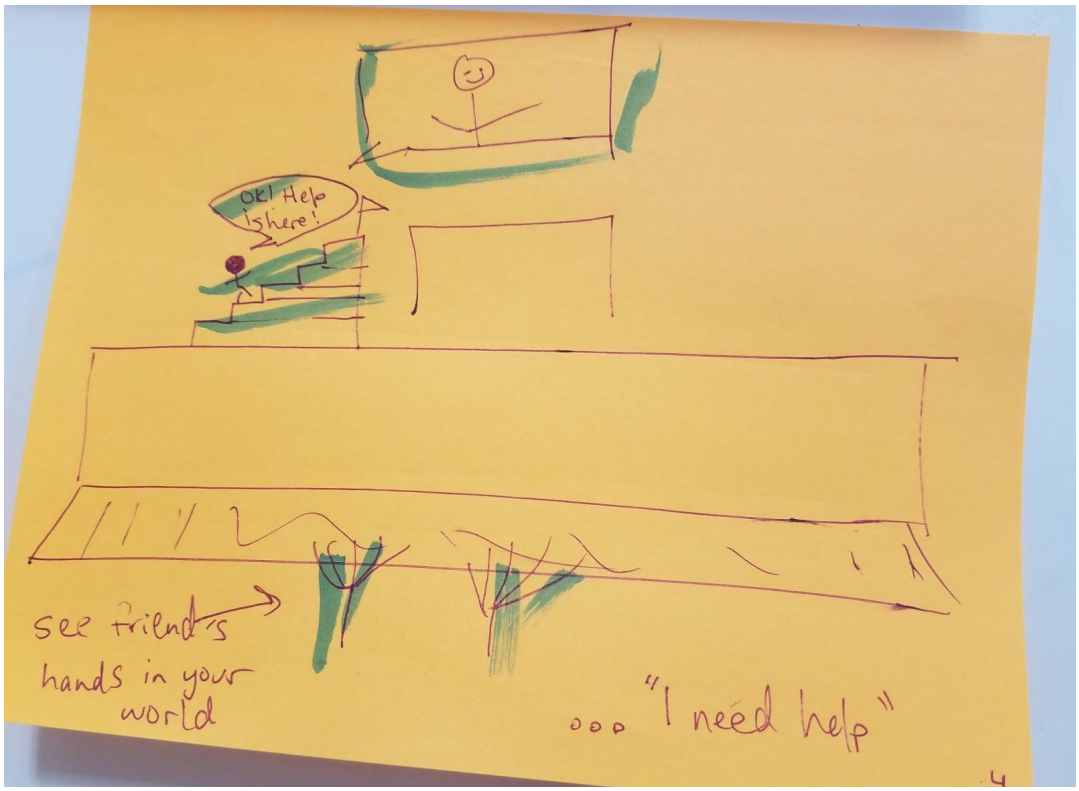
Sketches

Augmented Reality

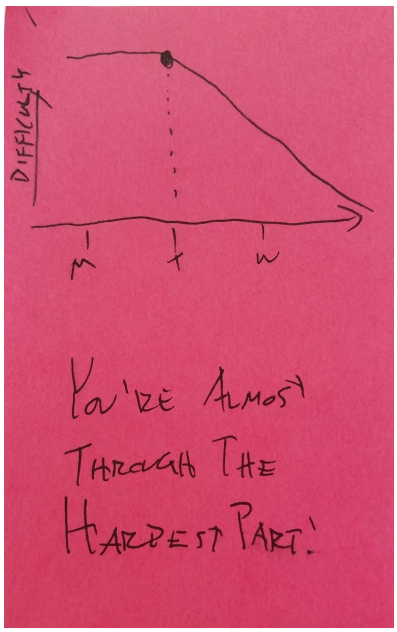


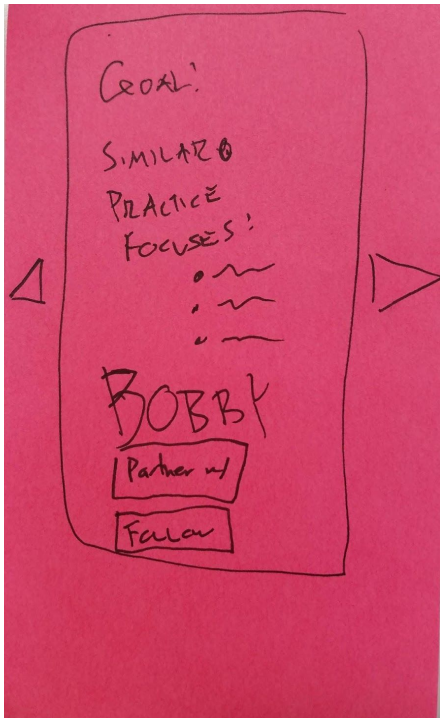


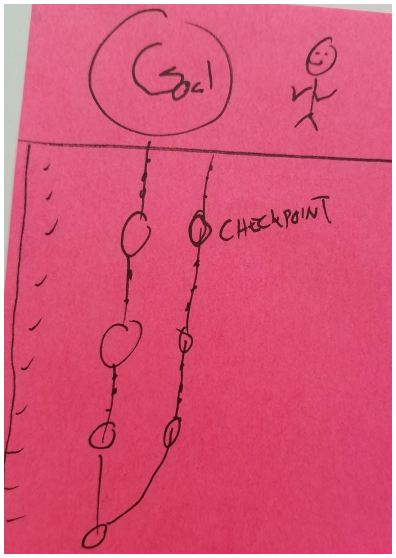

= AR element
Let's reach the top! Do the exercise...
CDEFG
CDE
PLAY
Helper listens and gives tips
3

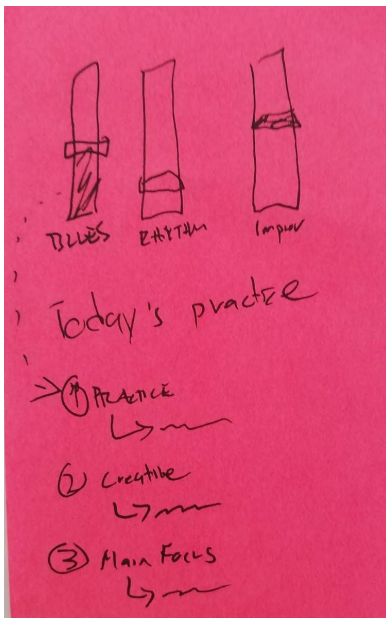

OK! Help is here!
See friend's hands in your world
... "I need help"
4

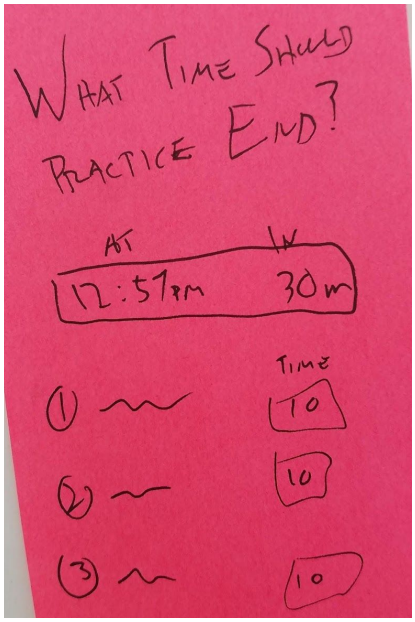
Mobile

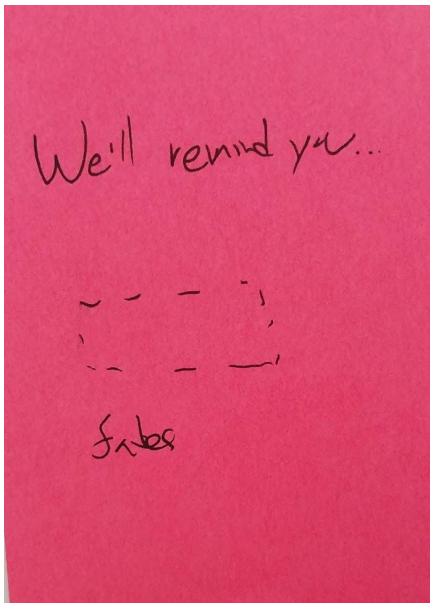

DIFFICULTY
M
T
W
You're Almost Through The Hardest Part!

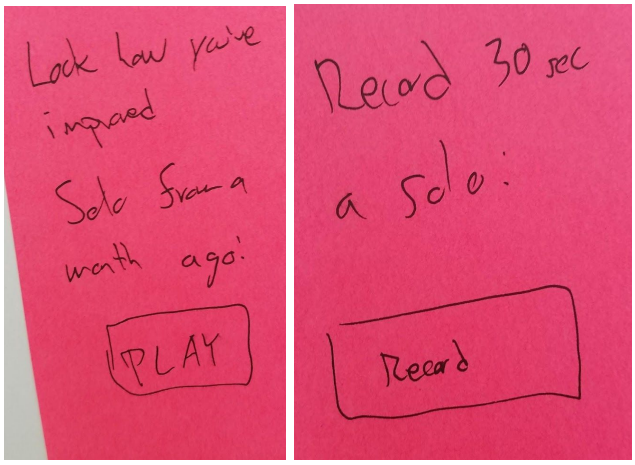

Goal:
Similar
Practice
Focuses:
BOBBY
Partner w/
Follow


Goal
CHECKPOINT

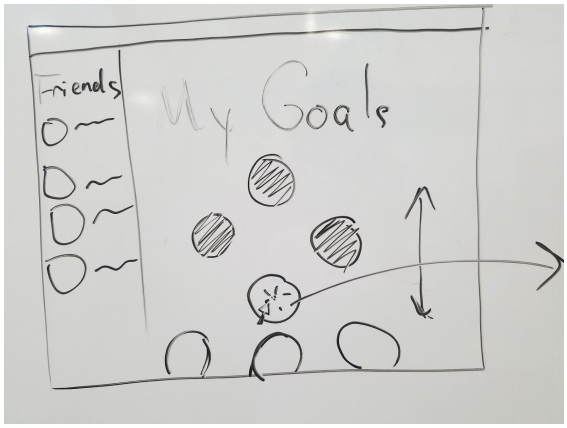

Today's practice
1 Practice
2 Creative
3 Main Focus

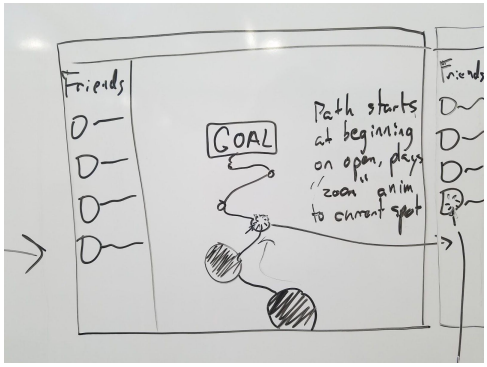

What Time Should Practice End?
AT
12:57pm
IN
30m
TIME
1
10
2
10
3
10

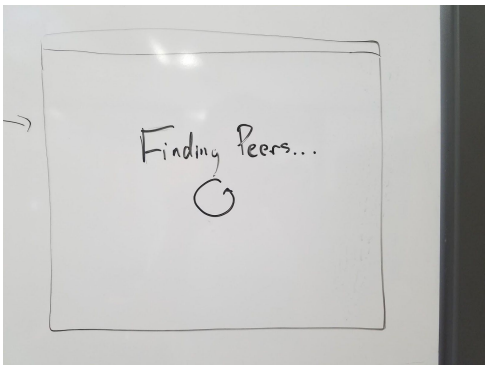

We'll remind you...

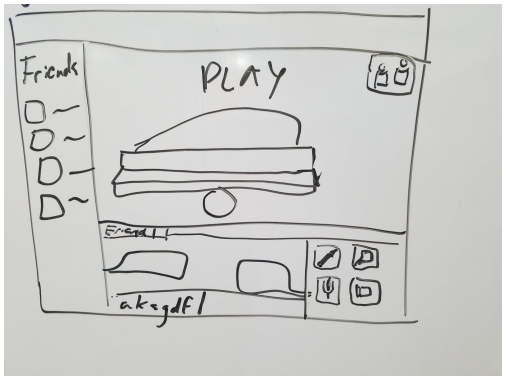

Lock low valve
impaired
Solo from a
month ago.
PLAY
Record 30 sec
a solo.
Record

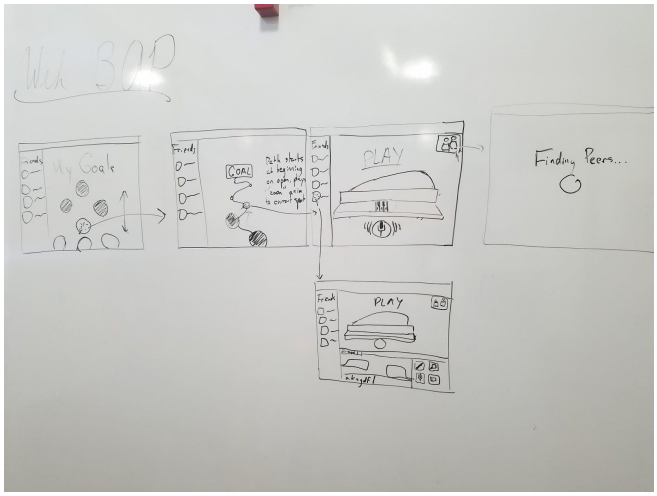
Web Application











Selected Interface Design

We selected the **mobile interface** as the best design. However, we ultimately incorporated elements from the other two designs into our final working prototype. Listed below are the pros and cons of each interface as we discussed them:

Mobile

- Pros
  - most portable device, easy to manage with an instrument
  - UI simple, easy to navigate
  - people more likely to regularly use since they have their phone on them
- Cons
  - Smaller screen real estate may limit complexity of lesson material
  - Notifications from phone can be distracting

Web App

- Pros
  - Much larger screen size allows for more material, more thorough navigation
  - Easier to implement peer interactions
- Cons
  - People less likely to use a web app regularly
  - Less interactive than other options

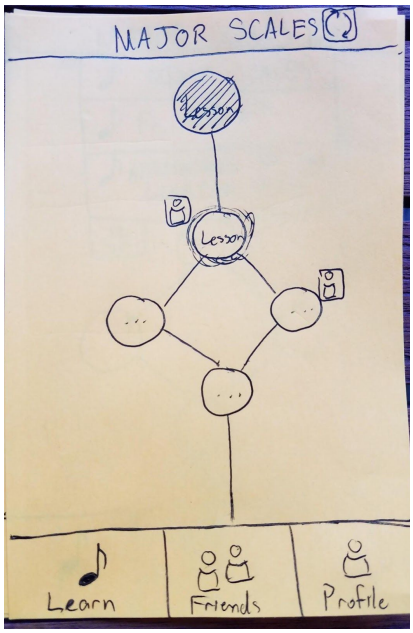
Augmented Reality

- Pros
  - Immersive and engaging
  - Learning more intuitive due to information overlaid in real world
- Cons
  - Smaller audience than other options
  - Less established UI paradigms make any given UI harder to intuit

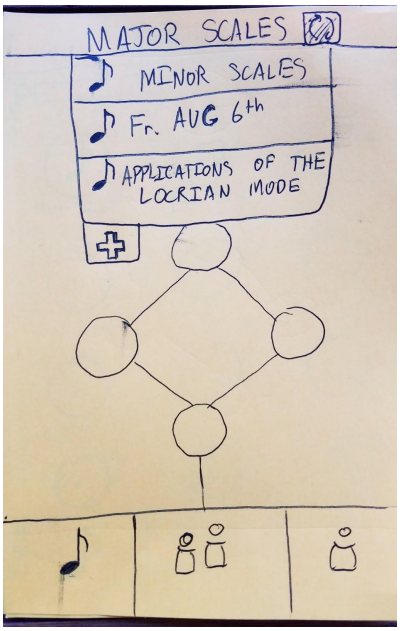
Prototype description

We built our lo-fi prototype with post-it notes that were about the size of a phone.

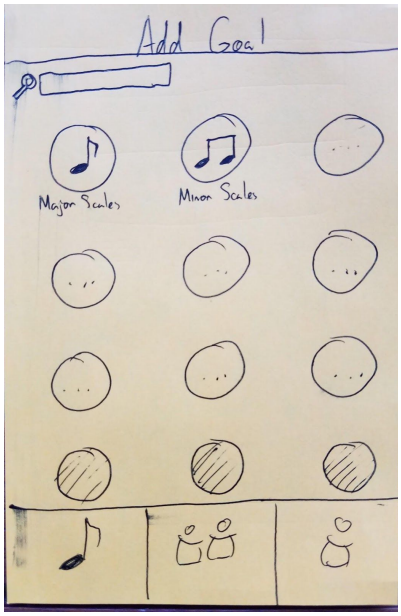
SLIDE1



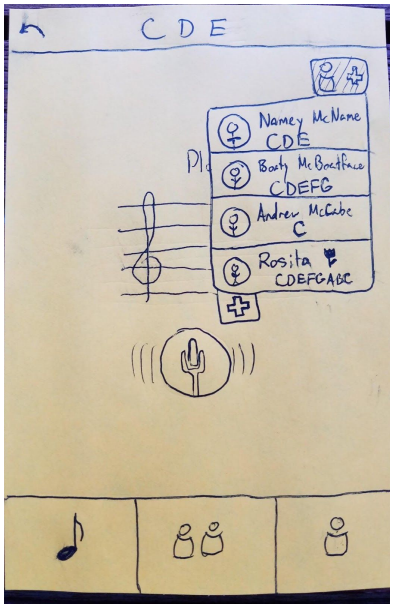
SLIDE2



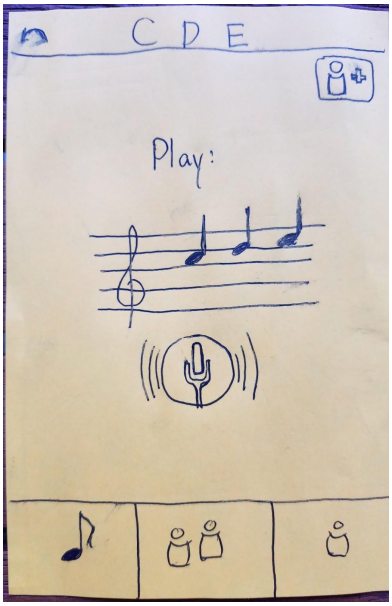
SLIDE3



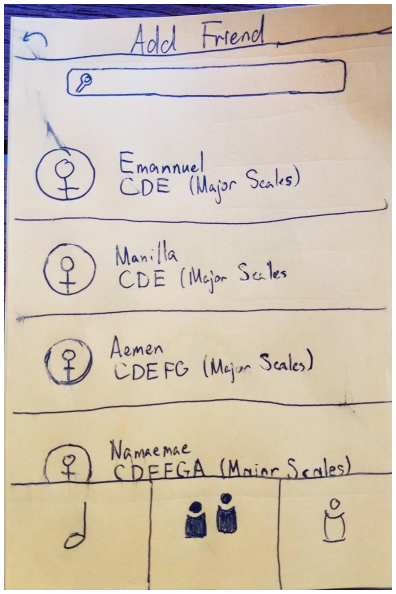
SLIDE4



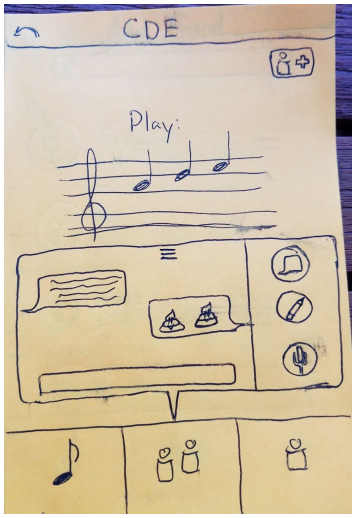
SLIDE5



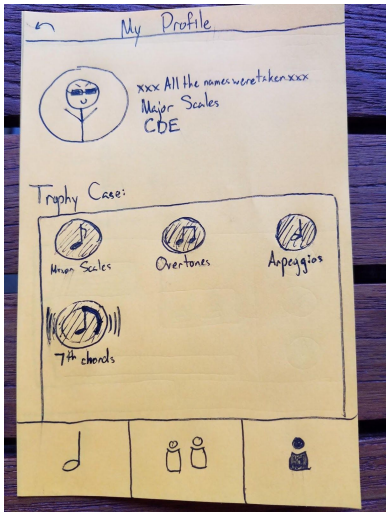
SLIDE6

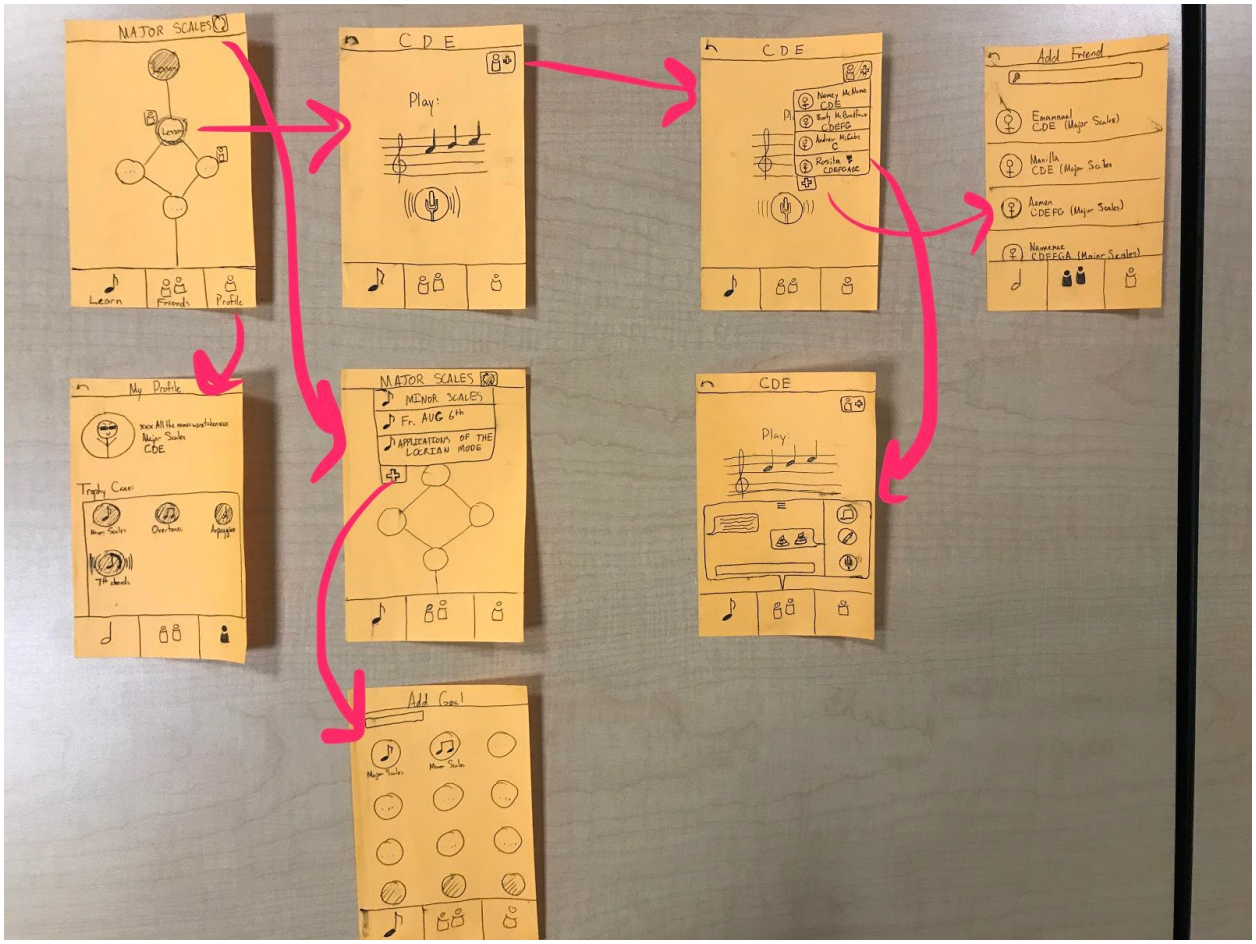


SLIDE7



SLIDE8





Method

a. Participants: demographics, how recruited/compensated

(Names changed for security)

Georgina - Stanford Student - Engineering - Experienced musician

Nysterio - Stanford Student - Mathematics - Never played music

Marsdena - Design Consultant - Serious jazz vocalist

Bartholomew - Digital Marketing Specialist - Former vocalist

b. Environment

Georgina tried our prototype in her dormroom.

Nysterio tried our prototype in his dorm room.

Marsdena tried our prototype in her room

Bartholomew tried our prototype in his apartment.

c. Tasks

Complete current lesson.

Add a new music learning goal.

Add a friend to work with on current lesson.

See progress.

d. Procedure

[Give them iPad to sign consent form.]

[Sit them down at an empty table.]

SCRIPT:

My name is _____, and I'm currently in a class called Human Computer Interaction design. We are working on a concept for an application to help new musicians begin their musical journey by outlining steps and goals. You'll be helping us test our new user interface prototype. This is the type of "screen" you will interact with in our activity. _____ is going to demonstrate how this is going to work. He simply touches the "buttons" and based on what he touches, I will show him a new screen. Do you have any questions?

Great, let's get started. This is the main page of the application that will appear when you open the app (post-first-time-setup) [SLIDE1]. I'm just going to ask you to complete some tasks.

[Task: Complete Lesson]

Why don't you do your current lesson? [user clicks lesson button, show SLIDE5].

Great, can you complete the lesson? [user clicks record and plays, show SLIDE1].

[Task: Change goals/Add goal]

Cool, do you know what your current goal is?

What if you wanted to work towards something different? [user clicks change button, show SLIDE2].
What if your goal wasn't listed? [user clicks +, show SLIDE3].
Can you pick a new one? [user selects goal, show SLIDE1].
[Task: Add friend on current lesson]
Let's go back to the lesson. [user clicks lesson button, show SLIDE5].
What if you're having a hard time, or are confused? [user clicks +friend, show SLIDE4].
What if you're looking for someone who isn't on that list? [user clicks +, show SLIDE6].
Please choose someone. [user clicks a friend, show SLIDE7].
Now that you've selected a friend, can you talk to them?
What if you're confused about the music or the notes on the screen?
What if you want feedback on your playing?

[Task: See progress]
Great work so far, we just have one more task.
You've been doing very well in your lessons and achieved a lot of your goals! How would you see your progress? [user clicks profile button, show SLIDE8]
Is there anything you'd do with your goals? [user clicks a goal, hum something]
That was a recording of you doing that goal from a long time ago!
That's all of the tasks for today. Thanks so much. Do you have anything you want to tell us?

[Ask follow up debrief interview surrounding music practice.]

e. Test Measures

How many times they were confused.

Any places that they took an incorrect action toward accomplishing a task:

f. Team Member Roles

We rotated and took turns observing, facilitating, and recording.

Results

We gained several key insights from our prototype trials. On a user interface level, our participants commonly found the **friends interface, particularly adding a friend, to be unintuitive**. Many participants were unsure whether to use the "add friend" button in the lesson interface or the "friends" tab for operations concerning friends. One of our participants also asserted that he rarely uses search bars, and requested other options for navigating efficiently through options. We had several minor UI complaints, including unclear or misleading icons surrounding more advanced actions.

On a higher level, we uncovered several surprising pieces of feedback. Specifically, we found that some of the more experienced musicians we tested on were **uncomfortable with their practice habits and progress being made public**. However, these same participants **liked the idea of being able to see *others'* practice habits and progress**.

On a related note, from more than one participant, we received feedback that the social aspect of music practice did not appeal to them. When asked when she would open the friends tab, one participant said "never." Both of these participants were experienced musicians, and both felt that **practice is a very focused, almost sacred space of vulnerability and self-challenge**.

Additionally, one of our participants **disliked the "trophy case"** detailing musical achievements. She believed that most musical concepts could never truly be mastered, and that a good musician would never give themselves a "trophy" for most musical concepts.

Times they were confused:

Participant	**Times confused**	**Confusing elements**	**Incorrect actions taken**
Bartholomew	2	Friends tab vs. button, adding goal	Clicked friends tab instead of adding button
Georgina	1	Which way lessons progress	
Nysterio	1	Which way lessons progress	Tapped dialog box instead of dragging up to expand
Marsdena	1	Friends tab, change goal button	Hesitant about friends tab vs. friends button

Discussion

There was some confusion surrounding certain tasks. We want to make sure there is no confusion about any tasks for any of our users. Hopefully, we will be able to iterate on certain elements surrounding confusing tasks to remove the ambiguity that participants experienced.

For example, the concept of friends was understood, but the interface was ambiguous because it had multiple buttons related to friends in very different places. We can either merge button functionality or move buttons very close to each other and make their specific functions more clear so that users can mentally group them together and know what they do.

Another issue we ran into was the use of search bars. One of our participants said he never used search bars and preferred the alphabetical scroller. We will consider implementing this on top of the search bar functionality.

Some of the icons were ambiguous, such as the changing goal icon and searching for a friend icon. We will iterate on these until they make more sense.

Our most interesting findings revolved around our experienced musicians' feedback. Both mentioned that the social aspect of music was not appealing. Practice is a time of vulnerability, self-challenge and growth, and focus. They did not feel like they wanted to expose themselves during that time. They didn't feel like sharing their progress was necessary, in fact, one participant implied that she would feel ashamed if people knew she was working on her scales because it would show lack of mastery. However, the same participant was really excited about seeing other people's practice habits. We noticed this tension immediately and paralleled it to the culture of many other online platforms where you want to see other people's lives but remain anonymous. We are wondering how to create a culture where working on something isn't looked down upon, but praised.

Finally, we received from one participant the feedback that our framing of progress was "cheap." She said it trivialized musical concepts that could never be fully mastered, and always required improvement and practice. We hope to reframe our idea of progress and achievement so that we can still celebrate milestones without cheapening the journey.

What our testing couldn't reveal:

- how a culture around sharing practice and unpolished skill might develop (or not) over time
- the kinds of interactions that'd happen between people on similar goals
- whether people would actually use the app in practice
- how viewing progress and gaining streaks might motivate behaviour
- the proper amount to decompose goals

Appendix

Consent Form

The **half step** application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of **half step**. Data will 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 Khoi Le, Stefan Swaans, David Mora or with Professor James Landay, the instructor of CS 147:

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

Participant anonymity will be provided 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 experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the **half step** experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name ANDREW GROSSMAN

Participant Number 4-B

Date 10/26/17

Signature AG

Witness name Stefan Swaans

Witness signature SS

Consent Form

The **half step** application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of **half step**. Data will 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 Khoi Le, Stefan Swaans, David Mora or with Professor James Landay, the instructor of CS 147:

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

Participant anonymity will be provided 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 experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the **half step** experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name CAITLIN HOGAN

Participant Number 1-G

Date 10/26/17

Signature 

Witness name Khoi Le

Witness signature 

Consent Form

The **half step** application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of **half step**. Data will 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 Khoi Le, Stefan Swaans, David Mora or with Professor James Landay, the instructor of CS 147:

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

Participant anonymity will be provided 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 experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the **half step** experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name Michelle Jin

Participant Number 3-M

Date 10/26/17

Signature Michelle Jin

Witness name David Mora

Witness signature

Consent Form

The **half step** application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of **half step**. Data will 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 Khoi Le, Stefan Swaans, David Mora or with Professor James Landay, the instructor of CS 147:

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

Participant anonymity will be provided 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 experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the **half step** experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name Patrick Revilla

Participant Number 2-N

Date 10/26/17

Signature PRR

Witness name KHOI LE

Witness signature KL