



COCODE

LEARN. SOLVE. EMPOWER



The CoCode Team



Trisha K.



Daniel R.



Juliette W.

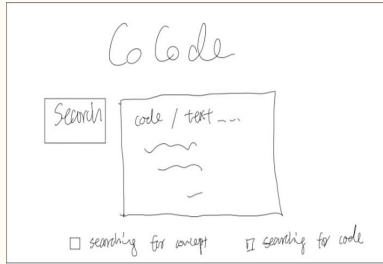


Angela C.

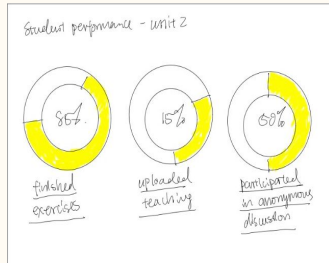


Mission Statement: Cocode exists to provide a welcoming and collaborative space that empowers students in postsecondary CS classes to learn and share their knowledge with their peers.

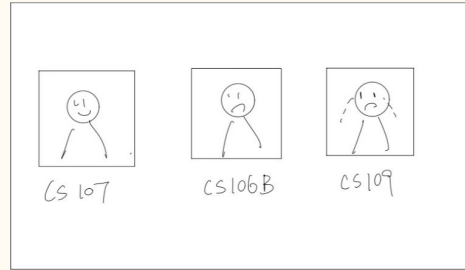
Concepts



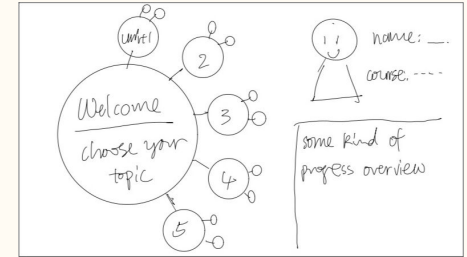
Search Based



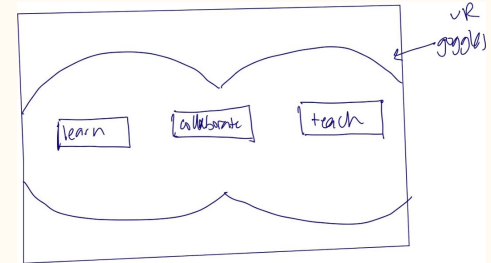
Educators' Tablet App



Netflix Design



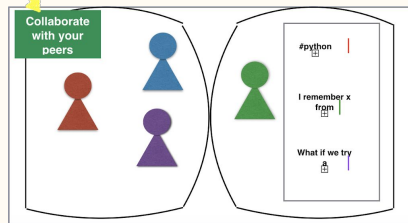
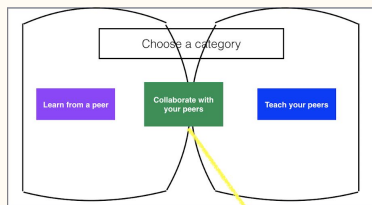
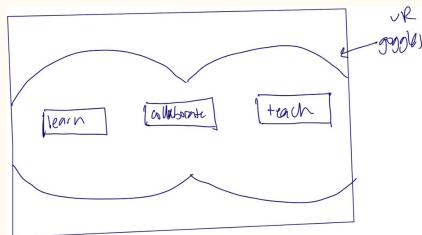
Prezi Study Space



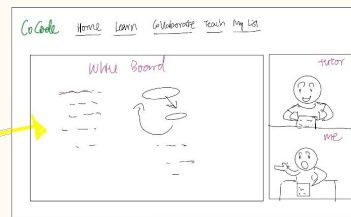
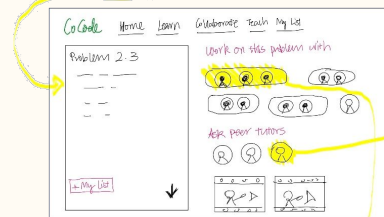
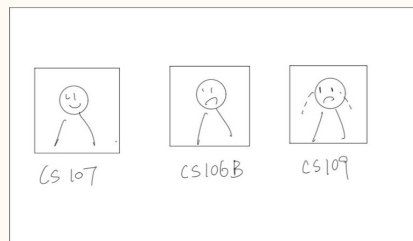
VR Design

Concepts Selected for UI Sketches

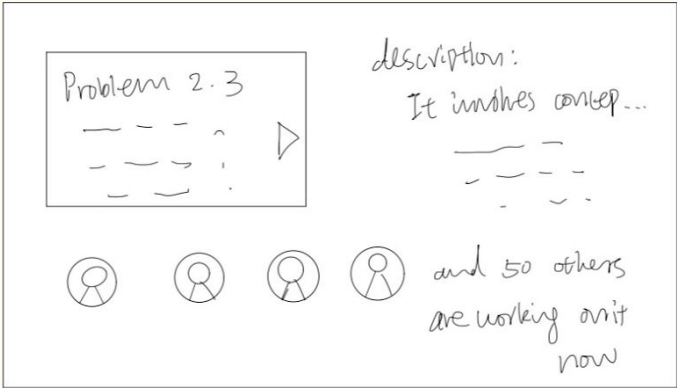
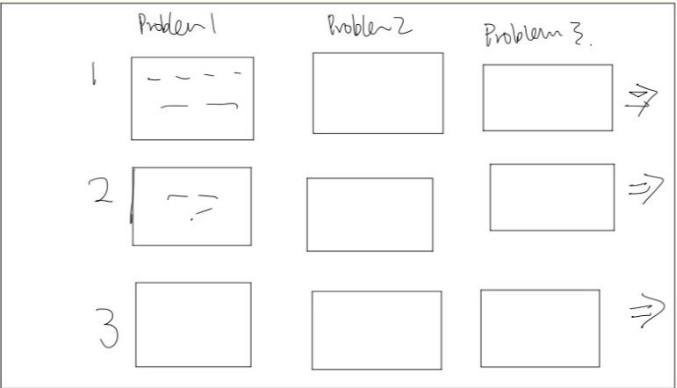
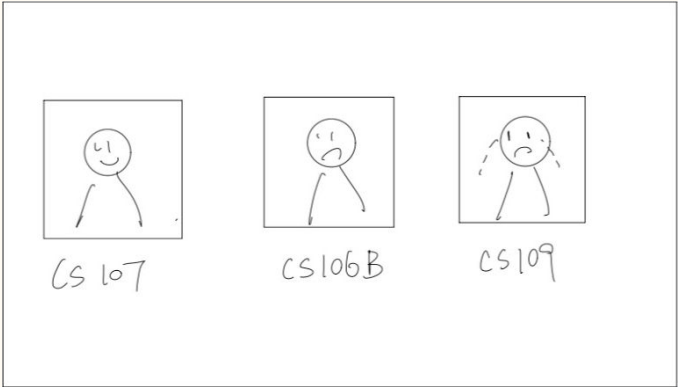
VR Design



Netflix Design

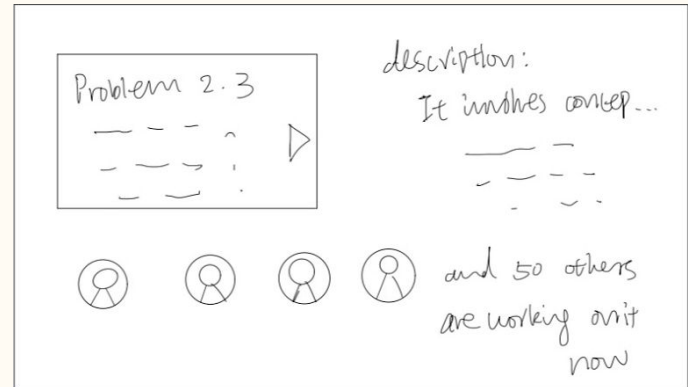
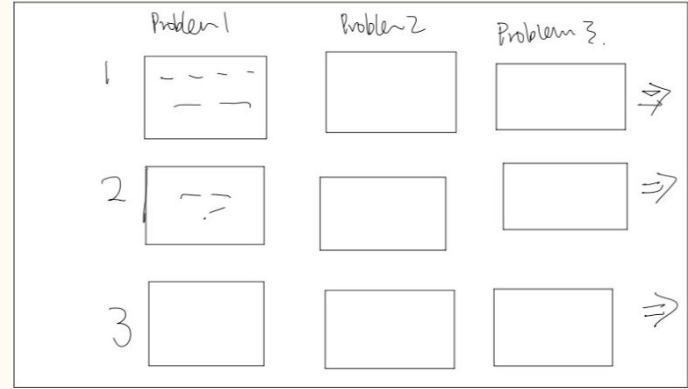


Selected Interface

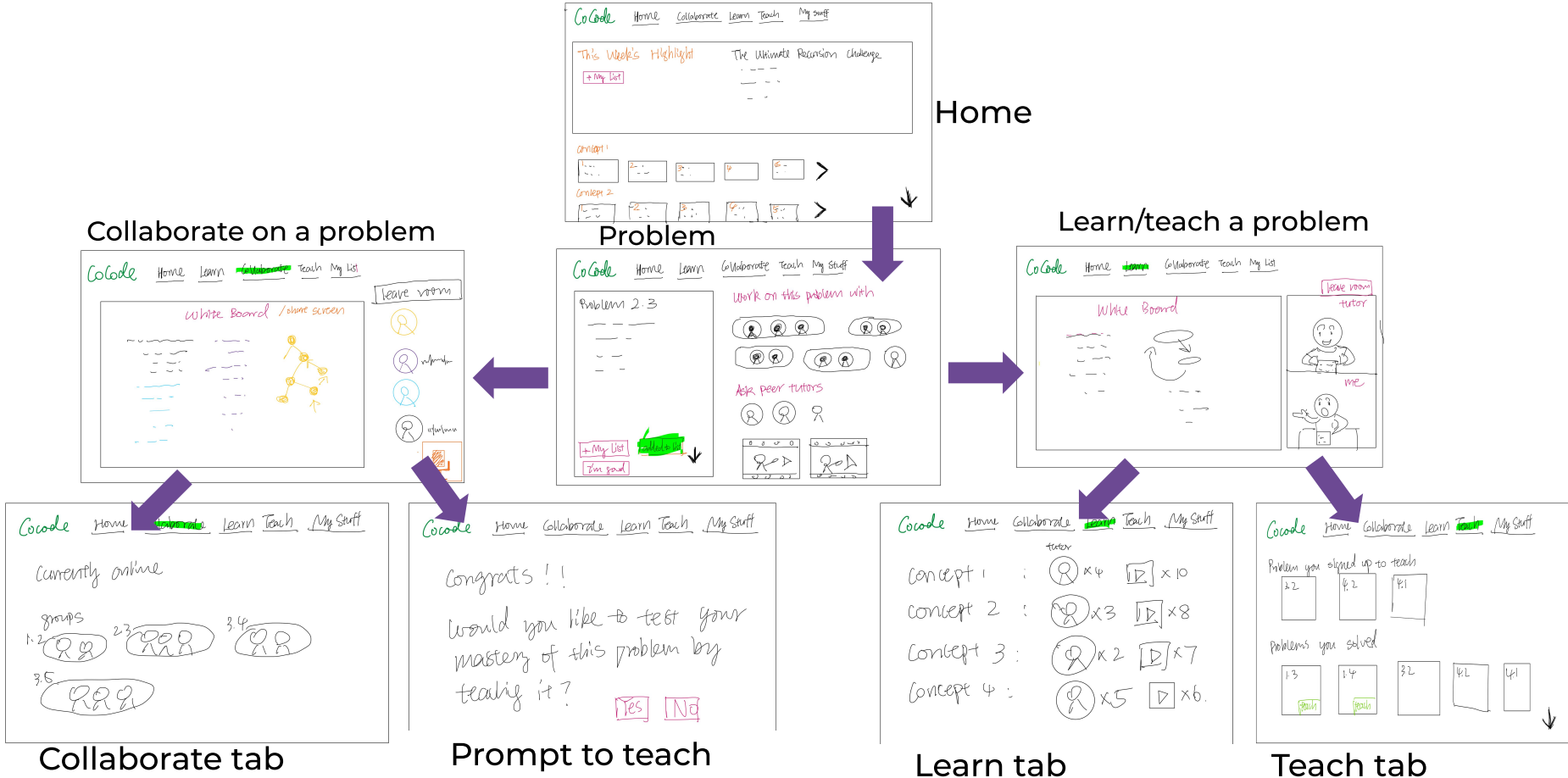


Selected Interface Rationale

- Computer for ease of use (e.g., typing, share screen, etc)
- Problem focused navigation-organized and logical
- Make exploring CS problems fun (like Netflix)
- Tap into familiarity to lower tool-uptake time



Prototype Structure

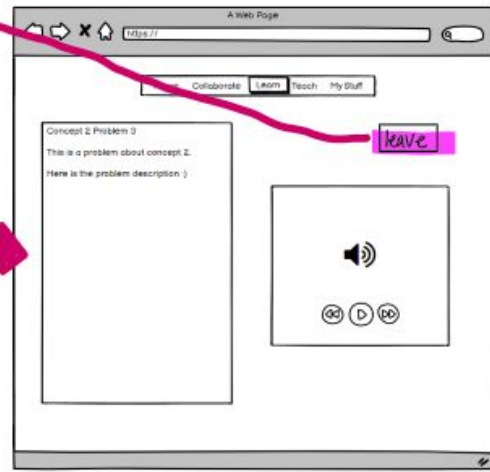
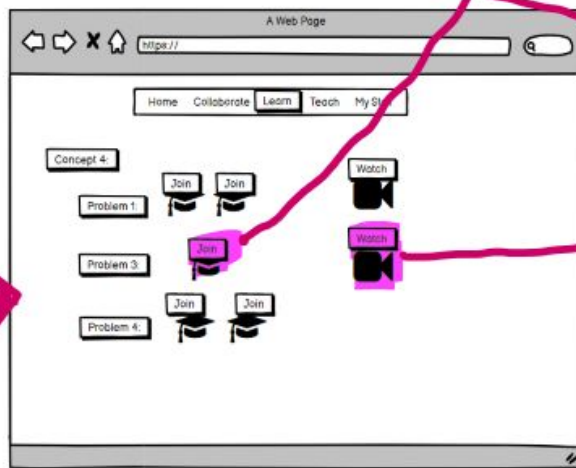
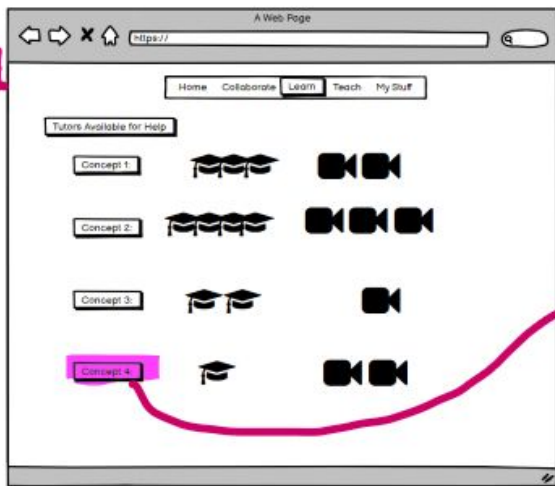
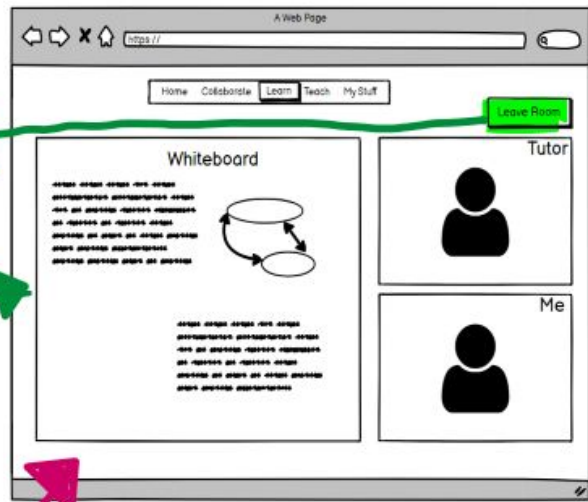
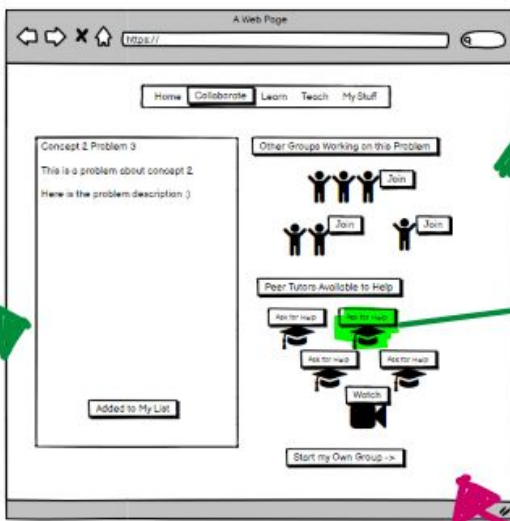
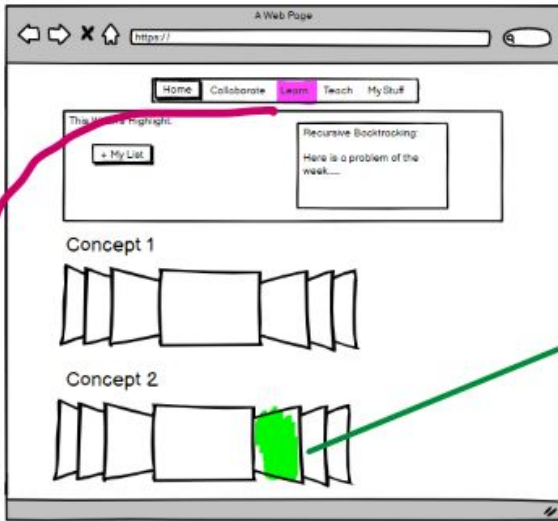


Task 1

Learn from a Peer

“You are taking an introductory computer science class on data structures. It is later in the evening, and you weren’t able to make it to lecture or office hours earlier in the day, which has resulted in you **being very stuck getting started on problem four**. You go onto this platform **seeking a conceptual explanation** on breath for search algorithms. Where do you go?”





Task 2

Collaborate with Others

“You are preparing for a final exam worth a big portion of your grade, and you go onto our platform **seeking discussion and practice** with concepts. There are a few clarifications you want to receive about a data structure used in problem four, but you also feel like you **have some understanding to share**. Where do you go?”



A Web Page

Home Collaborate Learn Teach My Stuff

This Week's Highlights

Recursive Backtracking
Here is a problem of the week...

Concept 1

Concept 2

A Web Page

Home Collaborate Learn Teach My Stuff

Concept 2 Problem 3
This is a problem about concept 2.
Here is the problem description 3

Added to My List

Other Groups Working on this Problem

Peer Tutors Available to Help

Start my Own Group

A Web Page

Home Collaborate Learn Teach My Stuff

Whiteboard/Share screen

Log out

A Web Page

Home Collaborate Learn Teach My Stuff

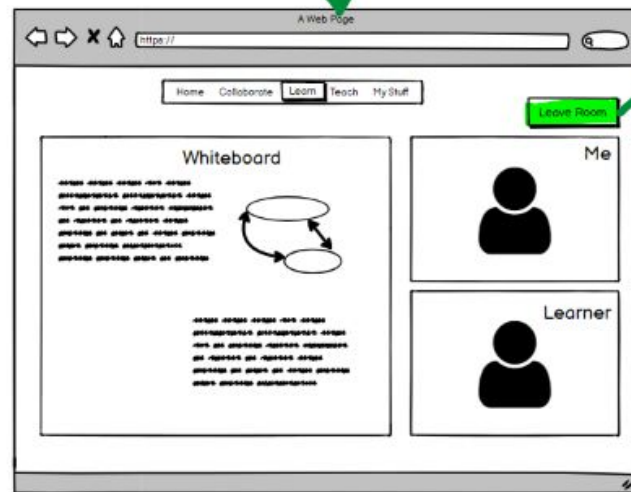
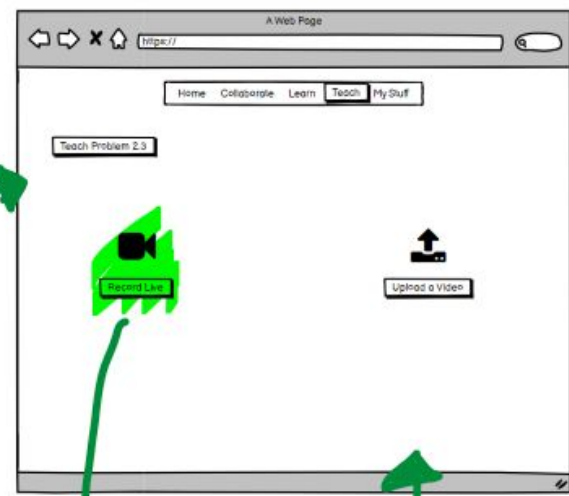
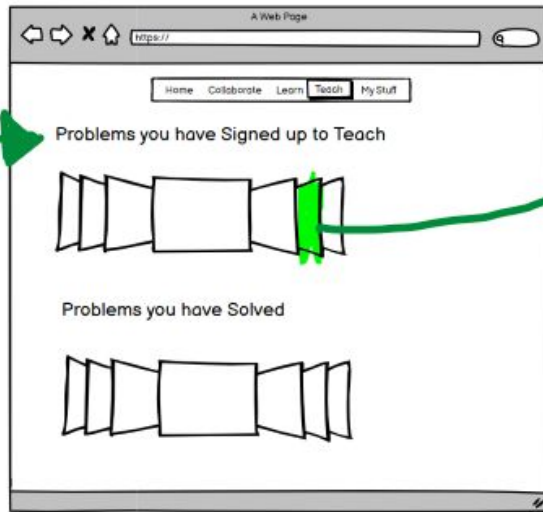
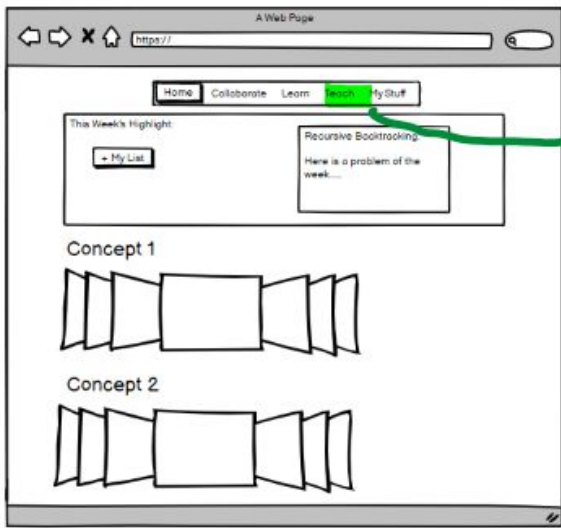
People Currently Collaborating

Task 3

Teach a Problem

“After studying for your exam for many hours and **succeeding** in practicing problem 4 on our platform, you feel much stronger about your understanding of a tough concept. You decide you want to **test your mastery and share how you came to think about the problem** with others. What do you do?”





Experimental Method

Participants:



R

College junior
humanities major at a
Midwestern SLAC



V

Recent college
graduate and works as
a software engineer.



Z

1st year MS student in
EALC at Stanford
Taking CS106A this quarter

Experimental Method

Participants:



Rob



Vineet



Zoey

Roles:



Trisha



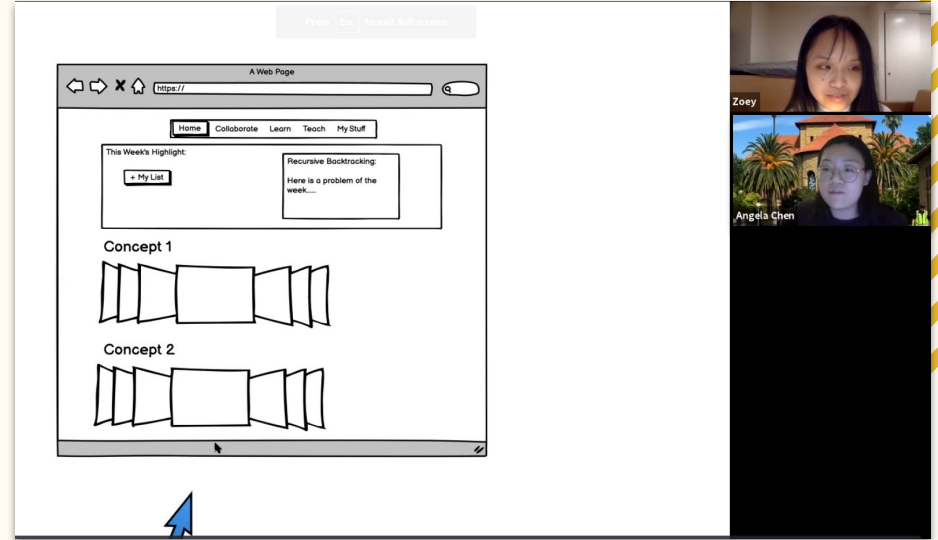
Angela



Daniel



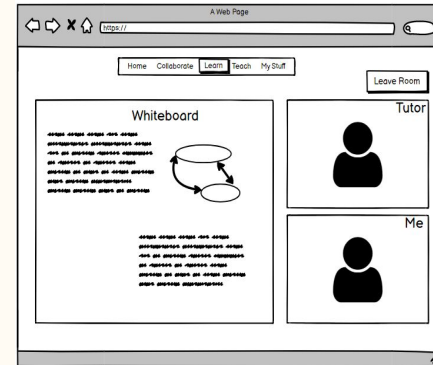
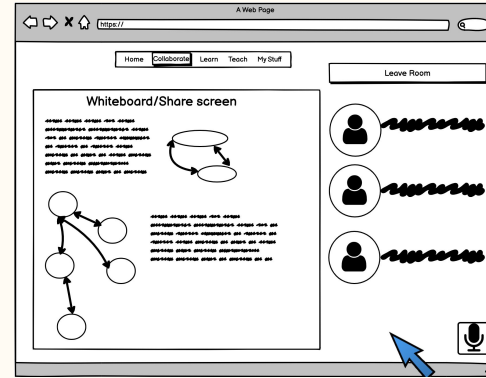
Juliette



Experimental Results

Finding: The difference between collaborating and learning from a peer tutor was confusing.

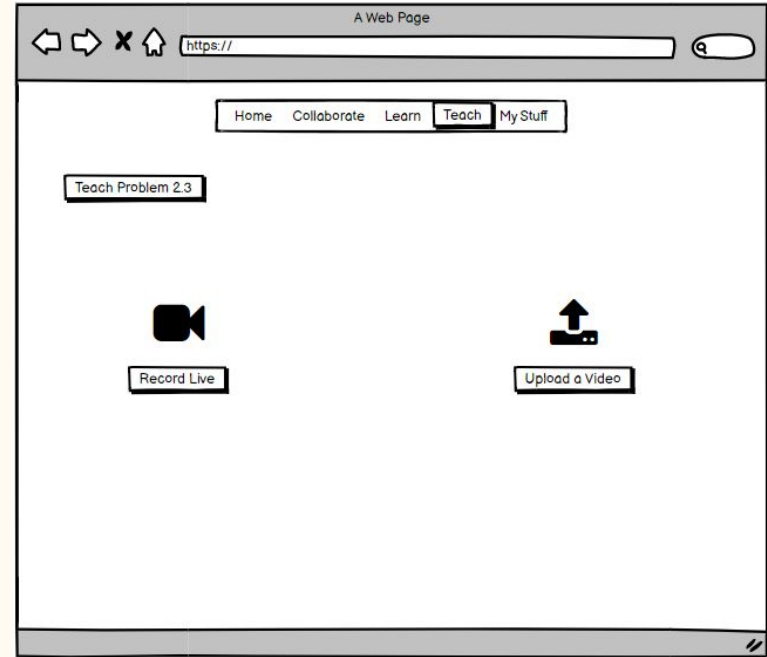
We Learned: There needs to be clear tasks that are different for collaborating and learning from a peer



Experimental Results

Finding: All interviewees said they would rather teach another student face to face than record a video for them to watch

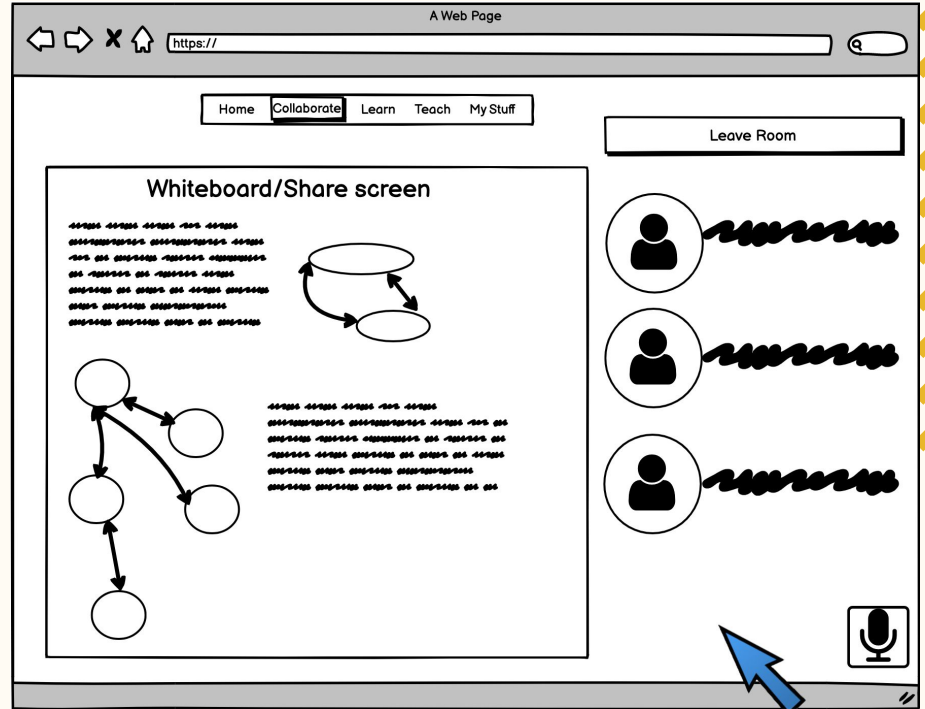
We Learned: Students may be more comfortable teaching in real time than recording a head of time



Experimental Results

Finding: All interviewees were confused about what would be on the screen-share when collaborating

We Learned: A collaborative document that they can contribute to might be more helpful/collaborative than one student sharing their screen.



Suggested UI Changes

- **Specify and add features to whiteboard** space: chat, coding environment, personal work space, etc.
- Provide **resources from lectures** or textbooks for students to browse before they seek help
- Make **signing up to teach** a problem more intuitive
- **Collaboration vs. teaching** functions: how do they overlap and differentiated
- **Reorder the tabs** on the top of each page
- **save/upload the progress** on the whiteboard
- **Show the progress** of each discussion room



Summary



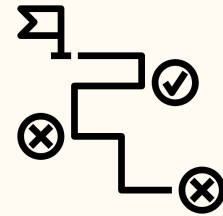
We chose the concept/problem-specific layout



Task flows and UI are in general intuitive



Improve the detailed functionalities and flows between tasks



Further consideration: logistics - how to make real-time/asynchronous activities feasible



What questions do you have?



Appendix





Experimental Results



- Our Findings:

- -most interviewees wanted to review course material before jumping in to a problem and assumed it would be possible from our side but there wasn't really a way to do that.
- - $\frac{2}{3}$ interviewees wanted options for anonymous and non-anonymous
- -confused at how the screen-sharing would work
- -preferred video or had no preference (other people have other preferences)
- -interviewees would watch pre-recorded videos first when they are learning but when they are teaching, would prefer to teach live
- -found it showing the most recent course material. Didn't intuitively know this would be mostly for review of earlier topics rather than practicing the new ones
- -one interviewee wanted to see people's names to decide which groups to join
- -confused about how to sign up to teach a problem
- -distinction between collaboration and learning is group vs. one-on-one
- -would like the option to continue working on problems with this group
- -all want a chat feature like on Zoom



Experimental Results



- What We Learned?
 - -if they are going to peer teach, they want to teach other students in real time
 - -students want a way to review course material directly from the site
 - -students will benefit from a collaborative document rather than one person screen sharing



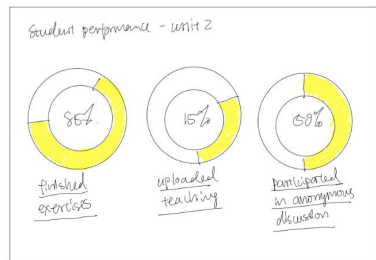
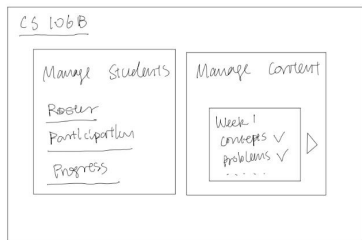
Experimental Results



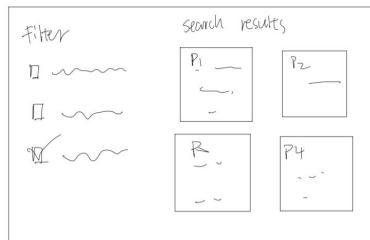
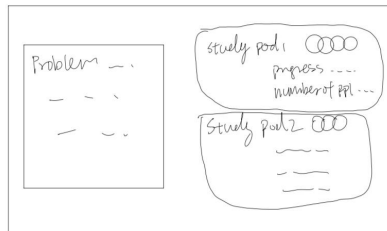
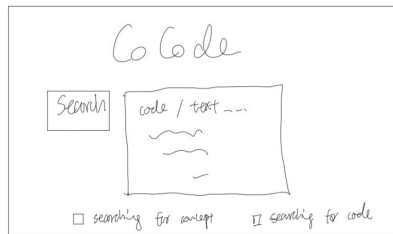
- What are we going to change?
 - -some sort of collaborative writing that isn't sharing screen
 - -whiteboard that has syntax highlighting / latex if relevant
 - -change the order of collaborate, learn, and teach to be learn, collaborate, teach
 - -provide different options for video on/off and names/anonymous
 - -some way to continue working on problems with the same group if you mesh well
 - -have links to course content (lecture recordings, slides, homework, section problems etc) easily accessible for a given concept/problem
 - -some sort of chat feature that is less of a commitment than video chat ?

Concept Sketches

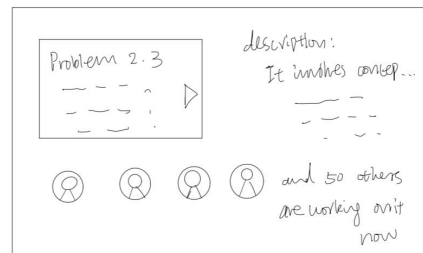
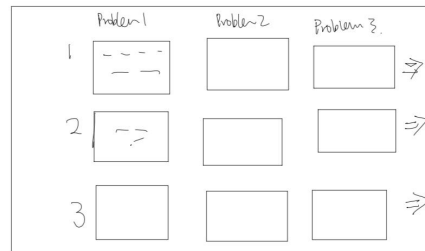
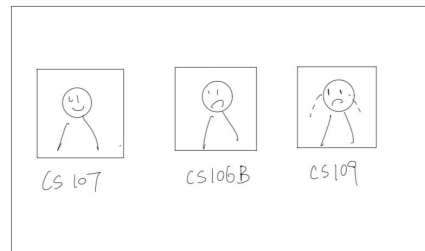
Tablet App for educators



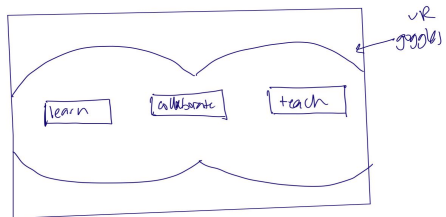
Search based



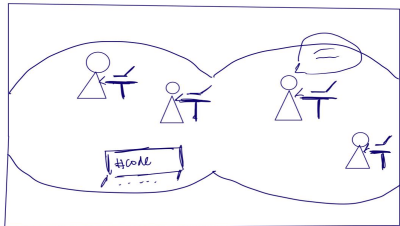
Netflix design



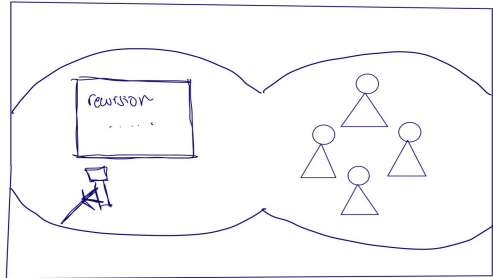
VR Design : concept sketches



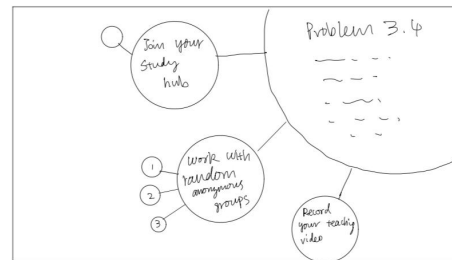
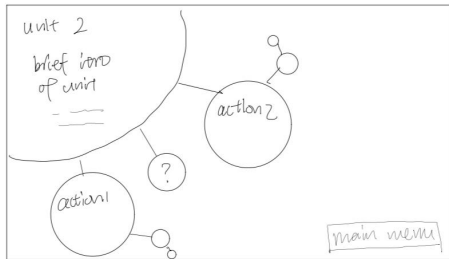
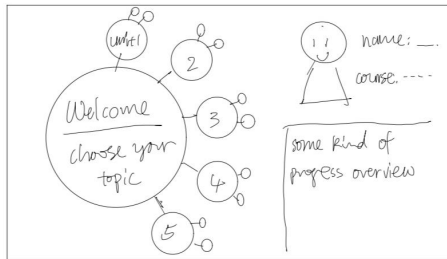
Collaborate



teach



Prezi study space



UI Sketches

