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Studio Theme: Learning/Education
Problem Domain: How do we improve STEM education in college?

Assignment 2: POVs and Experience Prototypes

Initial POVs:

We met Lourdes Andrade. **We were amazed to realize** people are more likely to be invested in a community they WANT to be in, and this investment in living space improves learning. **It would be game-changing if** students could find their community based on factors that would make them want to live there.

We met Keith, Stanford CS alum and current Lecturer. **We were amazed to realize** that students create nightmare scenarios for themselves - it is usually not as bad as they feel. **It would be game-changing** if students could de-couple their academic performance from their personal identity.

We met Aaron, a Section Leader Coordinator at Stanford. **We were amazed to realize** that the reason paired programming started is due to an attempt to lessen the workload of TAs. **It would be game-changing if** we could increase the productive output of TAs without changing the number of TAs.

Additional Needfinding Results:

Based on the feedback from our Needfinding last week, we have proceeded with further interviews focusing on individuals who are more diverse in their background and not just on campus.

We interviewed Mariana, a 3rd year student at Chabot College in Hayward. She is Mexican and came to the U.S. two years ago. She finds it difficult to maintain a high GPA for her nursing school aspirations due to being a full time student while holding a full time Caretaker job at a senior home. She usually studies alone after work until 1am. However, she finds it difficult to get help during that time. The best help is through physical interactions with her small group of friends. This added new insight into the barriers in forming teams.

We also interviewed Cialina, a 3rd year student at Skyline Community College with Associates in Letters and Sciences, with future aspirations for nursing school. She engages in a full time job to pay for her own schooling. She prefers studying alone, but she would be interested in trying more group studying, in particular with strangers over friends. She also mentions the negative connotations with being at a community college and how some peers struggle with the stigma and tries to "get out" of the college as soon as possible. From Cialina's interview, we see a clear need for study groups and the importance of a community outside of classes as well.

Two more perspectives came from a couple of Berkeley students. Jennifer Kim is a sophomore who's undeclared but looking to major in CS major minor in Music. She enjoys collaboration with others, especially in programming and discrete math. She has difficulty starting work and needs motivation from others to keep going. Outside of school, she stresses over internships and would love to have more interview practice.

Carrie Lin is also a sophomore CS major and an education minor. She mentions the cut-throat-like environment in Berkeley for the CS major because of their lack of resources and TAs. Only 10% of the students who apply get in the major. For her working experience, she studied in groups during her freshmen year which was social but highly distracting. Now, she has her own apartment and invites just a couple friends to study and "this does great." Again, she is stressed out with internships and sees career fairs as intimidating. She wish she could see other people's non-internship summer plans as well and not just focus on internships as the only way to learn during the summer. From Jennifer's and Carrie's experiences, we see common themes in group studying and summer internship concerns.

Three Revised POVs & How Might We (HMW):

After synthesizing out interviews, we developed the revised three POVs with the following HMW statements that the group brainstormed. We focused the first POV towards more the study group and the third POV while affirming the two other POVs with minor changes coming from the support of the latest interviewees:

1. We met Eric, an applied math major at SJSU, Mariana, a senior caretaker, Jennifer and Carrie, sophomores at Berkeley. We were amazed to realize that they consistently study alone, even though they have a desire to work with others. It would be game-changing if we could remove the barriers that are preventing them from working in a team.

   How might we…...
   a. HMW incorporate teamwork into existing assignments?
   b. HMW incentivize teamwork by marketing it as a social opportunity?
   c. HMW make team spaces more welcoming and productive?
   d. HMW give class assignments instead of individual assignments?
   e. HMW provide teams and discussion for people remotely connected?
   f. HMW we make group work easier to coordinate?
   g. HMW combat slacking off and unequal burden of work?
   h. HMW make teams that can work asynchronously?
   i. **HMW find good study groups?**
   j. HMW make teams that put people of different skill levels to efficient use?
   k. HMW create teams and social experiences without a guide or teacher?
   l. HMW guide groups without a professor?
   m. HMW ensure everyone on a team has a role they like?
   n. HMW help people find compatible local study groups?
   o. HMW make remote connection more engaging?

2. We met Keith, Stanford CS alum and current Lecturer. We were amazed to realize that students create nightmare scenarios for themselves - it is usually not as bad as they feel. It would be game-changing if students could de-couple their academic performance from their personal identity (this connects to Lourdes, who thinks that living situation is key to solving a problem like this).

How might we......
   a. HMW help students fail sooner and faster?
   b. HMW prevent students from creating nightmare scenarios?
   c. HMW apply gamification to help realize their performance is not that bad?
   d. HMW show students mistakes their peers are making?
   e. HMW introduce grading supplement to recognize other achievements?
   f. HMW help students structure their time?
   g. HMW help students not stress about finding themselves?
   h. HMW connect students to mentors in less "mainstream" fields?
   i. HMW help students recognize aspects of identity not related to performance?
   j. HMW explore education in a non-performance context?
   k. HMW explore non-graded alternatives?
   l. **HMW help students see common mistakes / lessons their peers have learnt?**
   m. HMW prevent comparisons between students?
   n. HMW increase students' transparency in background?
   o. HMW help students recognize their potential?
      need to delete one.

3. We met Aaron, Stanford Section Leader Coordinator, Jennifer, Undeclared Sophomore at Berkeley, and Carrie, CS Sophomore at Berkeley. We were amazed to realize that lack of TA's is a consistent struggle across multiple colleges. It would be game-changing if we could increase the productive output of TAs.

How might we......

   a. **HMW reduce time TAs spend on grading?**
   b. HMW provide digital interaction between students and TAs?
   c. HMW utilize VR for interaction with TAs?
   d. HMW hide the number of students in the section?
   e. HMW provide faster P2P endorsement with TA endorsement?
   f. HMW serve more students without having more TAs?
   g. HMW train more TAs?
   h. HMW reimburse TAs not with money?
   i. HMW streamline TA/professor collaboration and consistency?
   j. HMW give more automated feedback to students?
   k. HMW outsource grading?
   l. HMW train "unskilled TAs" for more mundane grading tasks?
   m. HMW get more students to use Piazza?

The Selected Three Best HMWs & Solutions:

We selected the following three HMWs and their corresponding POV. The list of solutions we brainstormed immediately follow the questions shown below:

POV#1:

How might we find good study groups?
Please note, some of our solutions turn an existing study group into a "good" study group. We considered this a "find."

1. By creating a system where each time your group reaches a milestone your instructors set, you get free food / delivery credits.
2. By connecting friends of friends together.
3. Via a video call where the person whose camera is on is determined randomly (increase transparency).
4. Taking a picture of your notes on your phone transcribes and transfers your notes in text form to your study group.
5. **By matching people with optimal study partners.**
6. Virtually, by allowing video discussion where members see their study spaces and not themselves.
7. By enabling students to request on-demand study groups over a meal.
8. By giving motivational pressure to study
9. Q&A forum with incentives / reward factor for high user engagement
10. Group checkpoints

POV#2:

How might we help students see common mistakes / lessons their peers have learnt?

1. By creating Mistakes Academy (dub on Khan Academy), correcting mistakes.
2. By creating a library of common mistakes (languages, natural and coding).
3. **By creating a board for yearly / summer experiences with honest reviews.**
4. Fail center for students to post disappointments and empathy. **(what does this mean?)**
5. By grouping people that made different mistakes together.
6. By having a system where better work-groups are made.
7. Sharing stories of how students / alums discovered and decided to declare their major. **(what does this mean?)**
8. By encouraging a connection with experienced upperclassmen in dorm.
9. By creating a tool that tells you how many other people made same error while coding.
10. Create educational videos solely on errors

POV#3:

How might we reduce the time that TAs spend on grading?

1. By outsource work to ANYONE that is qualified.
2. By automating style grading, at least.
3. By reducing number of students that are in a class and/or need help.
4. By reducing number of assignments in a class.
5. By increasing the number of TAs.
6. **By outsourcing grading to alums of the class.**
7. By dividing and conquering grading between humans (and autograders).
8. Automated autograder generator **(lol plz)**
9. By creating a debugger for simple, common, issues (in terms of coding).
10. Give specialized assignments **(not sure we can use this)**
11. Comment generator **(not sure we can use this)**

The Selected Three Best Solutions & Experience Prototypes:

The following are three solutions that we have narrowed down from our brainstorming session:

1. **Matching people with optimal study groups (TinderStudy)**: the idea is to allow for easier formation of study groups, but with a filter so that people with similar preferences will make a match.

   The assumptions that we have made is that people are likely to study with people that they specifically choose. If you "match" with a study partner, you're more likely to actually study with them.

   The prototype is created with sketches and manipulating experience based on layers and questions. The subject looked, answered questions, and pointed at her choices, and described the reasoning behind her choices.

Stranger

face pic
any pic
any pic

Robert Baratheon (20)
I start my PSETS a week early, while simultaneously hunting bears. CS107, CS142.

STUDY BREADOWN
Study mostly

MON TUE WED THR FRI SAT SUN
Prefers mornings, this evening, this night.

Avg. Wake time   Avg. Sleep time
08:00 AM   12:05 AM

FAVORITE STUDY SPOTS

[MAP]

Ⓐ Lathrop Learning Hub
Ⓑ Green Library
Ⓒ Wilbur Dining

Ⓧ ✓

Friend of Friend

face pic
any pic
any pic

Jennifer Ngo
I study only after a game of cricket. CS103, CS109.

STUDY BREADOWN
Study mostly

MON TUE WED THR FRI SAT SUN
prefers evening, late night. Studies.

Avg. Wake time   Avg. Sleep time
11:00 AM   02:05 AM

FAVORITE STUDY SPOTS

[MAP]

Ⓐ My room
Ⓑ Tressider
Ⓒ d.school

Ⓧ ✓

Friend of Friend

face pic
any pic
any pic

Angus Torgue (19)
I express myself through dark means. HUM110. EDUC23. VRD200.

STUDY BREADOWN
Study mostly

MON TUE WED THR FRI SAT SUN
prefers morning, early morning Studies.

Avg. Wake time   Avg. Sleep time
07:00 AM   11:45 PM

FAVORITE STUDY SPOTS

[MAP]

Ⓐ Crothers basement
Ⓑ Starbucks

THIS PERSON PICKED YOU!
"I like you because of your study habits & sense of humor. I think we'll work well together."

Ⓧ ✓

You MATCHED WITH Joe!

☺ ➤

CHAT   Form Study Group

Hey, I saw that we're both working on CS103 & would love to work together, what do you think?

Sure!

➤

PRESS & HOLD

Ⓧ
1) Diff. Study Hours
2) Diff. Sleep Sched.

ONLY SHOWS IF USER LEFT REASON FOR ACCEPTING...
Press & Hold

✓
Enter reason—

ACCEPT

Your Matches!

☑ Joe Brant   ☺
☐ Angelica Ogg   ☺
☑ Brandon Mart   ☺

FORM STUDY GROUP WITH SELECTED STUDENTS

STUDY GROUP (change name?)
Joe B.
Brandon Mart.

RECOMMENDED STUDY PATTERNS
Study from   to
08:00 PM   ➤   12:00 AM
MON TUE WED THR FRI SAT SUN
Ⓧ hide

Let's meet today?

——— Brandon Mart has joined ———
——— Elise Park has declined ———
(too busy for this)

Sure!

We asked a Chemical Engineering student to work with the prototype. The prototype correctly led the user to believe that she was finding a study partner or someone to help her maintain study habits. Subject, however, felt that she could not actually form study groups. I learned that there needed to be a way to let users create groups based on matches with more than one person. The prototype successfully helped the subject LIKE whoever she was matching with. However, the subject still felt nervous about initiating contact. Need to make it easier to initiate contact.

A revised version of our assumption is as follows: if you match with one person, you are more likely to match with the people that that person matched with. We can create study groups based on this. Our assumption was valid. The subject DID want to study with people they choose. In our case, subject felt she would have been picky and rarely checked anyone. This enforces the idea that for the few people that she would've checked, she would've been more likely to study with them.

2. **Creating a board yearly/ summer experiences with honest reviews (YelpSummer)**: our goal is for students to share stories of their own about their summer experiences. This, we believe, can help students see different perspectives of students in feel inspired to share their own stories and benefit from other people's experiences.

Our assumption is students are willing to rate their summer experiences write reviews and interested enough in summer opportunities to want to read.

The prototype are sketches of interfaces and going through the process of sharing such an experience. Subject will traverse through the interface and
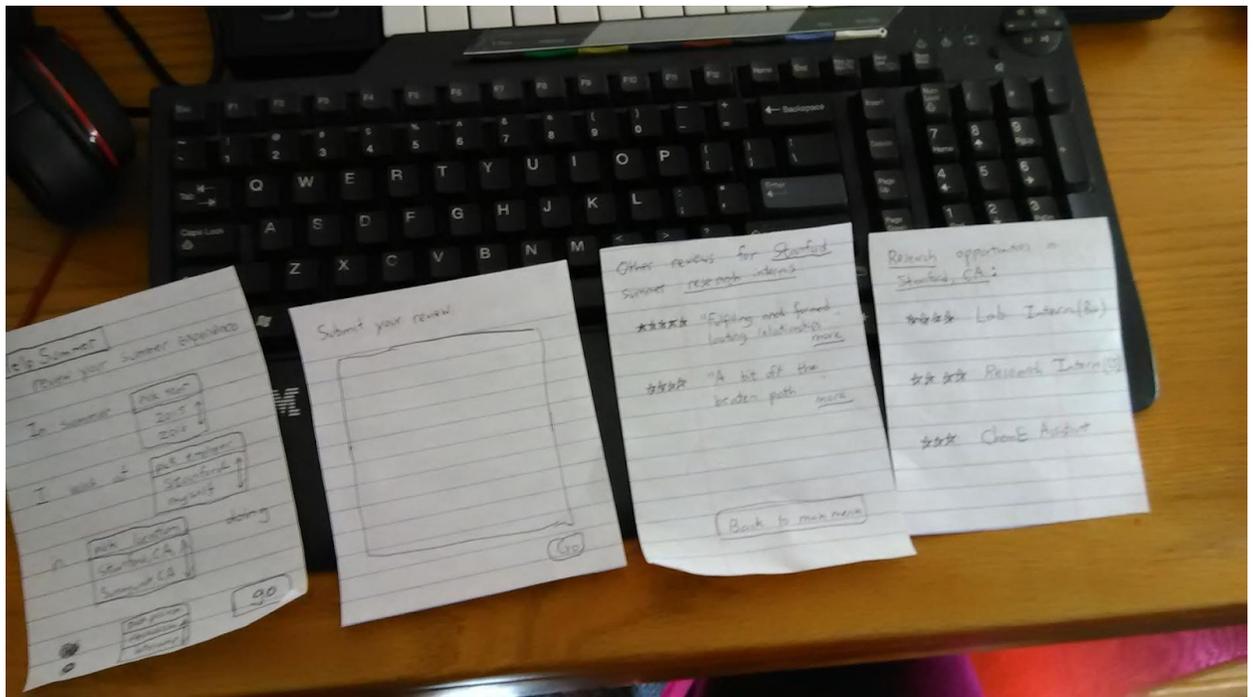
We prototyped on a student studying CS. UX flow was natural. He did not need any interference to move the slides in the right order. However, he showed his concern

for notifications on the site. (This was not our intent.) We should make it clearer that giving a review does not mean you are tied to the site. Also, he is not keen on giving away personal information if he's going to put honest reviews of his summer experiences. We learned that the market might be smaller for this one

Assumption is valid, but may not be true for everybody. The incentives need to be more clear cut and easy to understand for the user.

3. **Outsource grading to alums of the class (UberHelp)**: our goal is to lessen the workload of TAs and provide other sources to grading, which is the most time consuming part as a TA, especially CS.

Our assumption is that there is a market for grading classes you've taken in exchange for payment.

The interface is similarly a paper sketch as it mimics the user interface. We go through the process of picking the work that they would like to grade and hear about their reason for their choices.
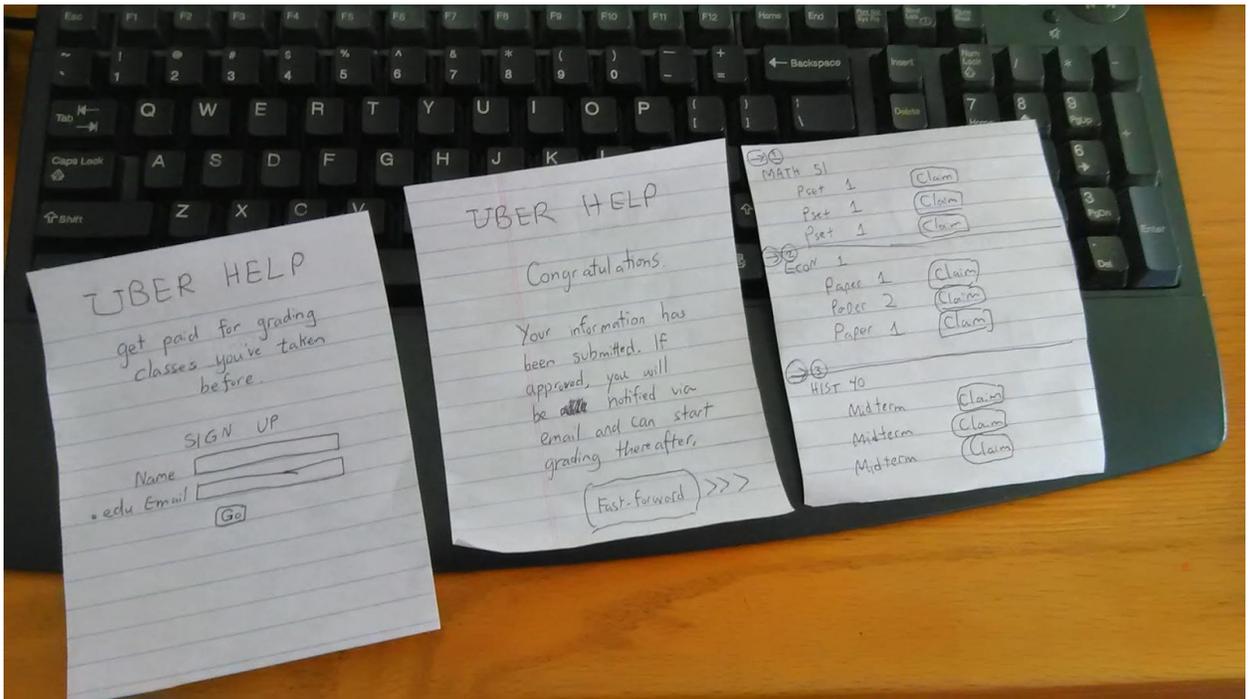
We asked a student majoring in Mechanical Engineering to play with the prototype. Intuitive buttons and test subject was able to move the slides by herself without interference, meaning the UX flow was solid. However, subject was confused about what "Claim" button means and about why they are all labeled "pset 1" or "Paper 1". Initially confused about incentive, but she realized you get paid for grading after reading opening screen more carefully. We learned to make the PAYMENT incentive clearer.

Assumption was valid so far as test subject was willing to exchange grading labor for payment, but new assumption is that they KNOW they are getting payment.

Conclusion: Most Successful Prototype

The TinderStudy turns out to be the most successful prototype, as it came as the most straightforward. The user understands the intentions and the processes of using the product and we have received good feedback in the usefulness of the app. It allows for an organic way to search for study groups that will match the user's need without making it overly complex. Therefore, we believe that we should pursuit with our first prototype.