1. Team name (optional) & Members Names (First Name & Last Initial of each)
Team DASL: Dan Y., Alexander W., Simon K., Lena H.

2. Problem domain (in addition to the studio theme)
Our studio theme is learning/education. Our original focus was children's education, but our needfinding process has led us towards tutoring and one-on-one education.

3. Initial POV you had going into this assignment from the last studio
We met Adrienne, Linda, and Edric, all players in the field of children's education.
We were amazed to realize that children are stifled by formal education.
It would be game changing if we could maintain the presence of initiative and creativity in education.

4. Additional needfinding results
Sherman Leung is a Stanford senior who interned at Khan Academy last summer.

He maintains that every student should fully understand what they learn. However, in education everything is structured around time and schedules, not students' understanding. SThe teacher could better act as a guide to help students get "unstuck", but this is only possible when students are comfortable expressing when they are experiencing difficulties.

Sherman's ideals fall in line with Adrienne's and Linda's, our previous interviewees, who both believe that learning should nurture exploration. Sherman also echoed Adrienne's statement that children are able to stay attentive if they are able to choose what they are working on.

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Donghyuk is a seventeen year old Korean high school student with three private tutors.

Donghyuk has two chances each week to unload the questions he has accumulated onto his tutors. Often Donghyuk will not have an appointment until after the homework is due, so he ends up just asking his sister. As a result, Donghyuk is very frustrated and feels he is getting a good value for the price of private tutoring.

Donghyuk says that overall tutoring through Skype is a worse experience than in person tutoring. Donghyuk enjoys the experience of taking notes on paper by far. Online, he must scan and send the notes over so that the tutor and view and collaborate.

<p align="center">***</p>

Professor Michael Frank is an Associate Professor of Psychology at Stanford University.

When asked about his opinion on educational structures stifling students' creativity, he called it an "attractive notion, but not completely realistic". According to him, creativity is a result of children not knowing everything about the world, and how to use the tools around them. Hence, "sometime's the school's objective is to kill creativity". For example, you may need to be creative in order to first figure out how to use a can opener, but not after you figure it out.

<p style="text-align:center">***</p>

Courtney Urbancsik is a Stanford sophomore who tutors high school students around Palo Alto through the Cardinal Scholars program.

Courtney has discovered that teaching allows her to better understand the material she teaches. Professor Frank, interestingly, also raised the point that "cognitive science suggests teaching can help you learn too". Courtney enjoys tutoring for the personal connections that she is able to build with her students, and the impact she can make on them starting from a young age.

Revised POV(s)

Linda believes that strict educational structures stifle her son's creativity. Adrienne and Sherman believe that students must be given choice in what they learn and how they learn it. Sherman says that students must express when they are experiencing trouble.

Donghyuk seeks tutoring when he encounters difficulty. Perhaps students are perfectly willing to take initiative in choosing when and what to learn, and broadcast when they are having troubles, but have no platform to do this through:

We met Donghyuk, a student of 3 private tutors.
We were amazed to realize that students don't know what to do with their initiative.
It would be game changing if students could look for and receive education on their own terms
- HMW make tutors available 24 hours a day?
- HMW give students distress signals?
- HMW answer questions before they're even asked?
- HMW have students plan their own tutoring sessions?
- HMW make communication between students and teachers more like an ongoing conversation?
- HMW have students answer each other's questions?

The large majority of our interviewees believe in creativity. Dr Frank brought up that stifling creativity may even be a good thing. We don't believe this is an outright contradiction. When using specific tools which require the strict following of instructions, creativity is more likely to hinder than to help. In other contexts though, creativity is a much welcomed attribute:

We met Dr Michael Frank, a professor of psychology.
We were amazed to realize that the stifling of creativity is a practical necessity.
It would be game changing if we could maintain the presence of creativity and initiative only in the appropriate contexts.

- HMW we remove students' ability to feel shame?
- HMW we make talking to tutors feel like catching up with an old friend?
- HMW make being creative more like riding a roller coaster?
- HMW flip a "creative switch" in people's minds?
- HMW make students compete to be creative?
- HMW make certain activities like running a "creative sprint"?

Present the selected 3 best HMW statements with the POVs they stem from
"It would be game changing if students could look for and receive education on their own terms"

- HMW give students a distress signal?
- HMW make tutors more like on call butlers?

"It would be game changing if we could maintain the presence of creativity and initiative only in the appropriate contexts."

- HMW we make talking to tutors feel like catching up with an old friend?

Three Experience Prototypes:

Our first prototype is called "Bat Signals", a web platform that allows students to broadcast a distress signal whenever they encounter trouble. This opens a chat room, which tutors can enter to guide the student through their troubles, using video chat and collaborative modules such as a coding environment or a drawing board.

We used Skype to simulate the video chat, and a piece of paper for the collaborative modules. We separated the tutor from the tutee using a window, and press the drawing board up to it. The goal was to inhibit natural collaborative actions that you could do in person.

We had assumed that whenever a student requires assistance in their studies, an online face-to-face interaction with these additional resources are necessary, and worth the setup.

The test subjects enjoyed being able to hear and see the tutor, as it allowed them to feel more connected. They suggested that the app allow you to have repeat sessions with tutors you enjoyed working with. The collaborative modules also did away with needing to switch between using paper and the computer when taking notes, allowing them to stay focused on one device.

One test subject said that a lot of his questions are very quick and specific, and so setting up a video call would be unnecessary. Hence, our assumption that this was the learning environment that was suitable for our users' needs was not completely correct. New emerging assumptions are that users are looking for quick, hassle free setup, or even variable levels of environment complexity to match the complexity of their question.

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Our next prototype is "Tutors Next Door". Our assumption is that tutees need help with their studies outside their appointed times, and would like the ability to receive tutoring at any moment.

In our prototype, a mobile app, we enter the subject, our current location, and the system will match the tutee with tutors around the location. In order to have enough tutors to meet demands, we allow all students to be tutors, too.

Users can choose whether to be a tutor or a tutee. If users choose to be tutees, they will be connected with the available tutors around their locations. If they choose to be tutors, they will select what subject they want to tutor, and wait for the available tutees around their location to be connected.

We made this prototype on paper, where we drew all the possible screens the user may be met with. We tested this with Peter Moon, a Stanford undergraduate Junior, and asked him to imagine himself first as a tutor using the app, then as a tutee.
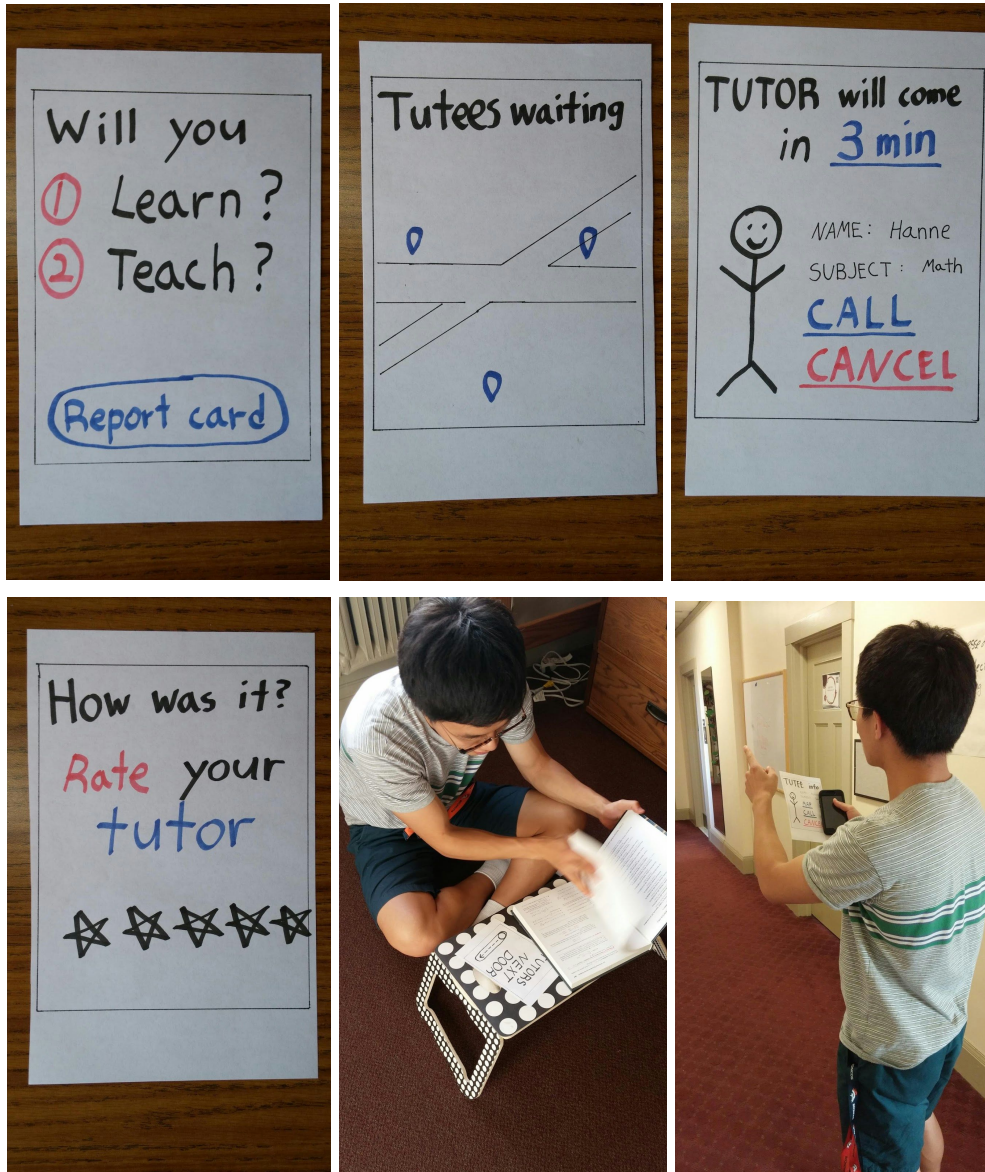
Peter really liked the idea of getting immediate help from the tutors. Unlike other online tutoring systems, Tutors Next Door provides immediate in-person tutoring, which is often more adequate than tutoring through online platforms for some subjects. However, he pointed out that some may exploit the system, and we should have a method of validation or authentication when fully implemented.

The assumption, in conclusion, is still valid. Tutees value immediate, in person help.

<center>***</center>

Our last prototype, called "Connect For", connect students to teachers similarly to how followers connect to people on Twitter and Instagram. If a student reaches out for help, teachers will get a notification and an news feed item.

We assumed that the idea itself of a social learning network environment would appeal to the users as a fun and easier way to reach out to tutors, as well as solve the issue of limited access and time constraints.

We made the prototype of this by layering post-its on top of the instagram interface. For the tutoring session, we used the Facetime camera to demonstrate a remote tutoring experience.

Our test user enjoyed the immediate availability of tutors and the product's simplicity. However, she raised the concerns that the product currently has no way of filtering what help request tutors see, which may be necessary as not all help posts of all subjects will be relevant to any one teacher. Furthermore, certain tutors will get significantly more followers based on reputation, leading to an inefficient distribution of resources.

Our assumptions about the appeal of immediate availability were correct, but it seems that the fun social element was not a factor in our users minds.
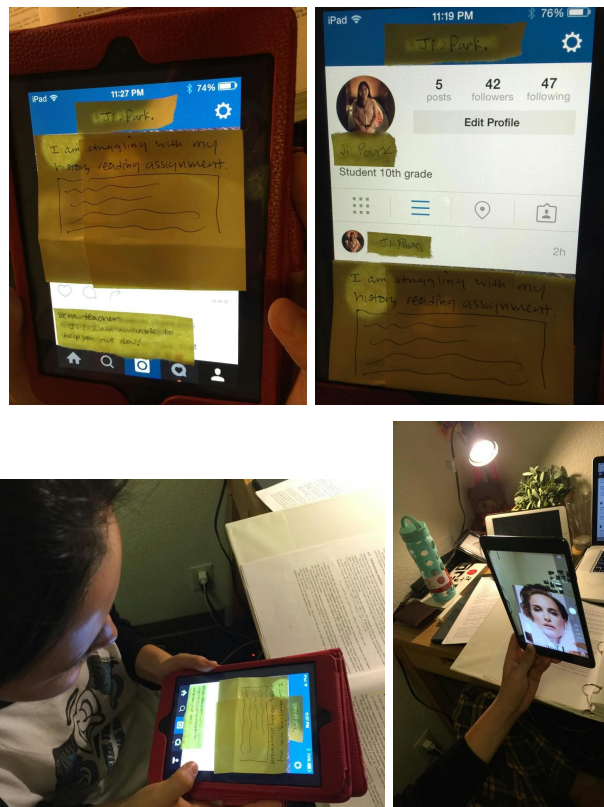
Explain which prototype you found was the most successful in achieving a desired solution.

We found the "Bat Signal" to be the most successful solution. It provided the most immediate access among the three solutions, while also having potential for personal and sustained relationships between students and tutors.

"Tutors Next Door" is limited by physical barriers, and "Social Learning Network" adds a social network layer that may overcomplicate the process of getting immediate help.

Most importantly, as the POV states, "Bat Signal" places the control in the student's hands, allowing them to choose exactly what they want to learn, and for how long.