Time Frame: Feb 2022 - Mar 2022

## **Course Introduction and Prefaces**

This project was the fourth and final undertaking of the course DSGN 1: Design of Everyday Things, taught by Professor Michael Meyers at the University of California, San Diego. Centered around UCSD’s own Design Lab Director Don Norman’s *The Design of Everyday Things*, the course sought to challenge its students through applying cognitive science principles to the design of both simple and complex technology. Students were introduced to foundational concepts such as affordances, constraints, mappings, and conceptual models, and asked to apply their understanding of these concepts, along with their observational and design skills, through a sequence of four group projects that reimagined everything from sparkwheel lighters to gear shifts to video chat interfaces.

### Prompt

The prompt for this project read:

“The final project should exploit the techniques covered in the first three projects. The choice of topic is yours. In addition to observing, interviewing, and providing a data-driven design you will create a short video presenting your design.”

Techniques covered in the mentioned first three projects included: “gain additional experience seeing as a designer by identifying problems with the design of a common everyday object, apply the ideas of conceptual models and gulfs of execution and evaluation in your analysis of the object, and start to develop experience with feeding the ideation process” (Projects 1 and 2), and designing for error by “reducing the opportunities to make errors”, “accepting that people will make errors and providing ways to mitigate their impact and recover from them” (Project 3).

Essentially, we were tasked to make improvements to an existing digital or physical interface that we saw fit.

### Collaboration

I had a really great time working with Janzen Molina, Rajvir Logani, Shihan Gong, Sunay Bargotra, and Johnathan Tinajero on this project, and our original write-up submission can be found [here](https://docs.google.com/document/d/1cF1ULnYHJgvkF7I8z9CAepS1awFnxYDaHfZWUiF4yhU/edit?usp=sharing). Although I will be going into greater detail on my role and contributions within this project, this case study will draw upon group findings and could not have been possible without them!

## **Brainstorming**

Our method of brainstorming involved making a collaborative mind map of our collective ideas, categorized as either digital or physical. Considering we had a little more time for this project in comparison to our past projects, we leaned towards our digital options as a change from our experience with physical redesigns (take a look at our previous physical redesigns here!)

\*Insert images and figure numbers (Miro Mind Map)

### Landing on a Design Issue and Preliminary User Research

We landed on two options that were both familiar to us as students and offered a narrow enough scope such that we could really hone in on individual features: Zoom, a widely used video communication platform, and the Pronto App, the mobile application for the San Diego Metropolitan Transit System.

\*Insert images and figure numbers (Miro Post-Its)

We took a closer look at aspects of Zoom and Pronto that we could focus on, and

ultimately decided on Zoom for its accessibility to all of us as student designers. While Pronto’s design raises really great design conversations on intermediates of physical and digital designs, i.e. the interaction between the physical scanners on the bus and Pronto’s digital ticket interface design, the time constraints of the project deadline weren’t feasible for a project done virtually by us. Zoom’s accessibility to us is also an indicator of accessibility to the greater student and workforce population, meaning our user research down the road spanned a greater audience.

We initially conducted an interview that questioned all of the communication features within Zoom: video, microphone, chat, and reactions. However, we recognized that covering all of these features would likely be too overwhelming and lack proper detail and quality to each feature, so we ultimately decided to focus on the chat, as our data had shown multiple concerns in that particular area. Mentioned problems included issues with messaging the wrong person or having trouble distinguishing between breakout room and main chat.

## **\*User Research**

### Methodology

As mentioned, we had to conduct two stages of interviews, as our initial scope ended up being too broad. I’ll mainly be explaining the questions from Stage 2 because those were the finalized ones used for data collection on the chat, but Stage 1 Questions can be found here. We included General Questions, Task-Based Questions, and Post-Task Questions. While the interviewee was on call, we asked them to show us their screen and actions using another device, and we recorded their answers on a Google Form, following a master-apprentice model.

### Audience

Our interviewees were mostly students from UCSD, but also included siblings, parents, and friends that spanned different age ranges and occupations. We understood that our user research was influenced by its majority in participants under 23 years old, and technological skill may vary across ages, but we still feel it is a relatively accurate representation of Zoom’s target audience of students, teachers, and workers, as its primary function is video telephony communication for school or work.

### Stage 2

Interview Questions:

[**Interview #2**](https://forms.gle/JarkfWKFWhNktcrn7)

General questions:

1. Name, age range
   1. Organized demographics
2. Are you familiar with Zoom? (How long have you been using it? How often do you use Zoom? How long do you use Zoom every time?
   1. Previous knowledge may impact performance on user task, asked to get an idea of participant’s experience with the platform
   2. Interviewing users with a wide range of experiences allowed identification of wider range of problems, i.e. problems new users have may be different than experienced users
3. What device do you primarily use Zoom on? (What device do you prefer more and why?)
   1. Narrow scope of which interface to analyze
4. What are some reasons/purposes that you use Zoom? (Work, school, meet with friends, etc.)
   1. Qualitative data that allows understanding of demand
5. If you meet with friends, why do you prefer to use Zoom over apps like Skype, Facetime, Whatsapp messenger, etc.? OR, why do you prefer these apps over Zoom?
   1. Gauges competitors and refines current platform for what it should focus on, i.e. Facetime is better for casual conversation
6. What are the main features that stand out to you about Zoom? (Which do you use the most often and can you name them all?)
   1. Pinpoints most used features

Tasks

General Task

* Please join the Zoom meeting from the link that I’ve sent.
* What let you know that you successfully connected to the Zoom meeting?

Task mimics common actions users may undertake in opening Zoom meetings, telling us about the success of the conceptual model

Chat Task #1: Please open the chat

* + INTERVIEWER OBSERVATION: Did they perform the task correctly? Did they get it wrong? Did they change their mind?

Catch potential slips of users when using the chat button around other buttons

* + How did you know how to complete this task?

Looking for clear signifiers

* + Where does the chat open on your screen and how do you feel about its placement?

Sees how mapping of chat affects video meeting accessibility

* + - FOLLOW UP IF HAD OPINION ON CHAT PLACEMENT Do you have a preferred placement for the chat window?

Chat Task #2: Please send your name in the chat

* + INTERVIEWER OBSERVATION: Did they perform the task correctly? Did they get it wrong? Did they change their mind?

Catch potential slips of users with send buttons

* + How did you know how to complete this task?

Looking for clear signifiers

* + On a scale of 1-5, rate how easy this task was for you
    - Why did you rate it this way?

Chat Task #3: Please send the word “hello” as a direct message to me in the chat

* + INTERVIEWER OBSERVATION: Did they perform the task correctly? Did they get it wrong? Did they change their mind?

Catch potential slips of users when switching between the ‘Everyone’ chat and direct messages

* + How did you know how to complete this task?

Looking for clear signifiers of the direct message function

* + On a scale of 1-5, rate how easy this task was for you
    - Why did you rate it this way?
  + On a scale of 1-5, rate how clear the function of the button is based on what you see before clicking the button
    - Why did you rate it this way?
* INTERVIEWER TASK: At this point, send the interviewee a response to both their general chat and their direct message
  + What tells you the sender of a chat message in each of these tasks?

Looking for clear signifiers

* + What tells you who received a chat message in each of these tasks?

Looking for clear signifiers

Chat Task #4: Please send an attachment to the chat

* + INTERVIEWER OBSERVATION: Did they perform the task correctly? Did they get it wrong? Did they change their mind?

Catch potential slips of users with regards to attachment processes (i.e. signifiers and on Mac, opening Finder)

* + How did you know how to complete this task?

Looking for clear signifiers of the attachment function

* + On a scale of 1-5, rate how easy this task was for you
    - Why did you rate it this way?

Chat Task #5: Please send an emoji to the chat

* + INTERVIEWER OBSERVATION: Did they perform the task correctly? Did they get it wrong? Did they change their mind?

Catch potential slips of users with regards to sending emojis

* + How did you know how to complete this task?

Looking for clear signifiers of the emoji function

* + On a scale of 1-5, rate how easy this task was for you
    - Why did you rate it this way?

Task created to focus on emoji feature of chat.

Chat Task #6: Please save a transcript of the chat and send it back to the chat.

* + INTERVIEWER OBSERVATION: Did they perform the task correctly? Did they get it wrong? Did they change their mind?

Catch potential slips of users with regards to saving the transcript and relocating where it was saved

* + How did you know how to complete this task?

Looking for clear signifiers of the save transcript function

* + On a scale of 1-5, rate how easy this task was for you
    - Why did you rate it this way?

Chat Post-Task Questions

1. How often do you use the chat?
2. Who do you usually try to reach in the chat? (the entire class, the professor, etc.)
3. Do you have any experiences with the chat that stood out as good or bad?
4. What is your experience navigating the chat with various meeting sizes?
5. What is your experience having direct message conversations with various meeting sizes?
6. What is your experience navigating the chat with breakout rooms?
7. What are some features you like about the chat function? What are some features you’d like to change about the chat function?

### Raw Data

[Group draft interview questions](https://docs.google.com/document/u/0/d/1XVyHNlaM3Ch_P4R673wQ5aS7F3wxXeXZWS2khktq9n8/edit)

Our start-up draft questions before we create the actual interview form

[Final Project Interview #1 Google Form](https://docs.google.com/forms/d/1W5P9MV5qUTBcgzj8CJAh0VudrA9tQA9nnOpX_64_4DQ/edit)

[Final Project Interview #2 Google Form](https://docs.google.com/forms/d/1-YwPMA-ktqzwHWH73IkXdsQi3DkNP-l6VeeT1nPFysA/edit)

Fixed interview questions used for interviews

[Zoom User Research Responses](https://docs.google.com/spreadsheets/d/1-P6zRMImYbeLLXHDc5Iy9mViqoBeSDhEjuM6D0eBHhE/edit?usp=sharing)

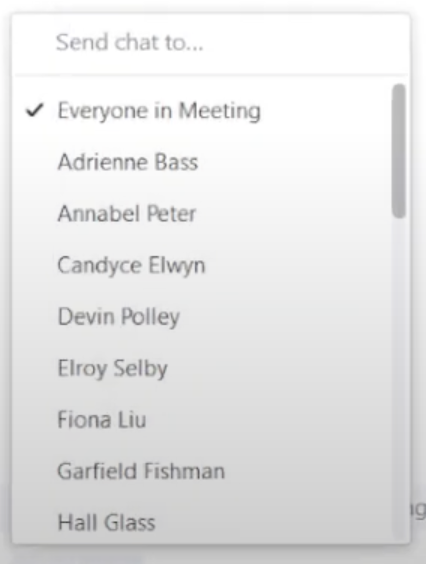
Final Google Sheet collected from interviews and used to complete analysis

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## **Problems and Trends**

### Hidden Affordances within Chat Navigation

The chat recipient navigation lacked clear signifiers. ⅓ of our participants pointed out frustration over scrolling through the list of people to message, especially in larger meetings, and one expressed the need for a search bar to mitigate this; however, we found that there is a search bar, but its faintness in color, absence of an icon signifier and placement as flush with the rest of the participant names can make it seem almost like a subtitle, and not a clickable function.



### Culturally Inconsistent Signifiers

Zoom allows you to save a .txt file of all the recorded messages in the chat to your computer, but there is no singular icon that indicates that. It can be found in the ellipses, which is typically understood as an opportunity for “additional information,” but “Save transcript” is the only available option. This complicates what could’ve been a one step process by a singular button, into a two step process that hides the available function, and ½ of our participants had to guess where the button to save the transcript was.

\*Insert images and figure numbers (Save transcript)

### Transcript Ambiguity

Task #6 asked users to save a transcript of the Zoom chat on their computer and send the file back into the Zoom chat. Although all other tasks merited some 5s, not a single participant rated this task’s ease to be a 5. This is most likely because once the chat is saved, all the feedback a user receives is “Chat saved”. Although there is a Show in Finder button, it doesn’t lead to a known file, but rather a Zoom generated folder, and the button itself wouldn’t be accessible to users after a certain amount of time. Participants also tended to accidentally send recently opened files instead of the specific transcript, so the ambiguity of transcript storage is the main issue.

\*Insert images and figure numbers (Resend transcript .txt)

### Switching Between Direct vs. Group Message

One of the most common errors brought up by participants was accidentally sending a message intended as a direct message to the chat with everyone, and vice versa of sending a chat intended for everyone to a direct message chat. A participant provided a prime example of the error, recalling that their “teacher once meant to send a student a direct message and the whole class found out [their] friend was failing” the class. These mistakes are likely occurring from the indistinguishability within the dropdown of who the recipient is. Although there are differences in signifiers such as “Everyone” being grey and with black text and direct message being blue with white text and “(Direct Message)” in red. Because errors are still being made in spite of these signifiers, we know users require a more drastic of a model to feel secure in their shift.

\*Insert images and figure numbers

### Locating Messages in Direct vs. Group Message

Because direct messages, messages sent by everyone, and breakout room messages are all in the same chat stream, it’s not only difficult to keep track and switch between recipients, but to find particular past messages. Participants noted that it was difficult to manage direct messages that were integrated within the main chat with everyone because the direct message moves up with every message sent to the main chat.

### Breakout Room Confusion

The singular chat stream raises specific concerns with breakout room chats because participants noted that it was unclear whether messages sent to the breakout room would only be seen by others in the breakout room, or by everyone in the meeting. The reason for this confusion is likely because in the breakout room, message recipients will say “to everyone”, yet everyone means everyone in the breakout room, not in the meeting.

### Chat Window Positioning

Zoom has three different chat window positions, one that’s docked to the side, one that’s a separate window, and one in the corner of the Zoom; users can manually shift between the three, but the automatic setting seems to be arbitrary. Participants preferred to have their chat windows docked to the right side of the Zoom, specifically noting that it was culturally consistent with the structure of other common platforms such as Twitch. For the pop-up window, users seemed to like that it took up a small amount of space, but this did limit chat space, and the pop-up window itself would often cover the Zoom meeting.

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