

Section III: Design Space and Redesign

Competitors

Zoom

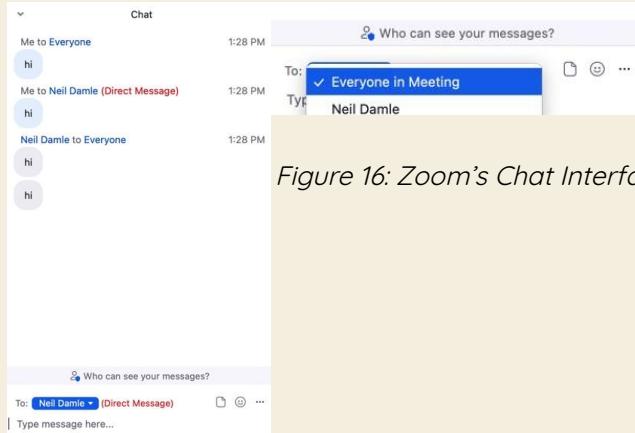


Figure 16: Zoom's Chat Interface

Google Meet

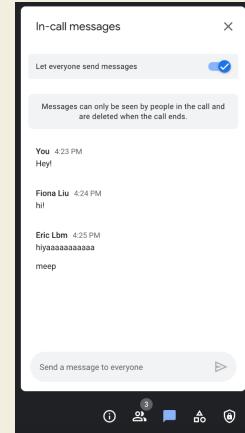


Figure 17:
Google Meet's
Chat Interface

Skype

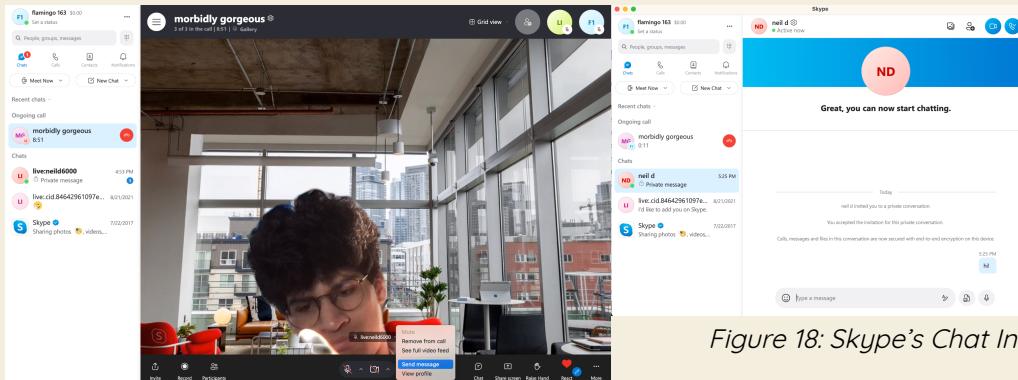


Figure 18: Skype's Chat Interface

Microsoft Teams



Figure 19: Microsoft Teams' Chat Interface

BlueJeans

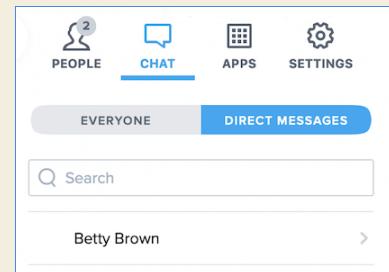


Figure 20: BlueJeans' Chat Interface

Redesign

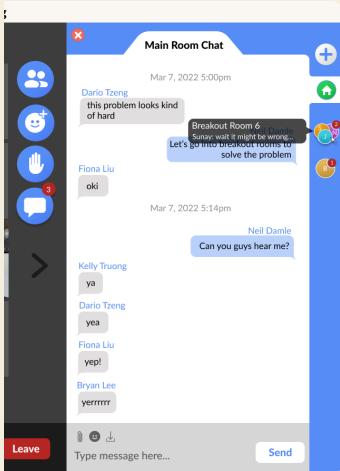


Figure 21: Redesign's Chat Interface

Design Space

Compactness vs. Interchangeability

Compactness is how condensed the chat feature is, and how much space it leaves for the video interface. Interchangeability is how easy it is to navigate between different conversations.

Zoom: Zoom is very compact as it displays everything you need on one screen. The chat, participants, direct messages, and class chat, are all viewable at once. However, Zoom is not very interchangeable as there is no differentiation between different functions. For example, the main chat and direct messages have no distinctions to separate them, and the messages can be lost very easily in a big class setting.

Google Meet: Google Meet is less interchangeable than Zoom because there is no way to direct message participants in the meeting. This is why it is rated the lowest for interchangeability. Google Meet is very compact, however, because the main chat is viewable at the same time as the video calls.

Microsoft Teams: Similar to Google Meet, Microsoft Teams does not have a function for direct messaging participants while in a meeting. Similar to Zoom and Google Meet, the main chat is displayed alongside the videos. This is why it ranks amongst the highest for compactness.

Skype: Skype ranks in the middle of both compactness and interchangeability. It saves the private chats with participants in the meeting but cannot view them simultaneously. This makes it rank as high as the previous programs in terms of compactness.

Bluejeans: Bluejeans is not as compact as other programs such as Zoom and Google Meet as the chat takes up about 33% of the interface. However, it is very interchangeable as it has different windows for each direct message you send.

Redesign: Our redesign is very interchangeable as it clarifies the differences between the different chats. Each chat, direct messages, class chat, or breakout room chat have their own tab within the chat where the messages are saved. However, to show this bar takes more space the programs such as Zoom, Google Meet, or Microsoft Teams. Although, unlike Skype, you can still see the chat and video call simultaneously.

Ideal Design: The ideal design would provide interchangeability similar to our redesign, but still a lot of space like Zoom or Google Meet.

	Compactness	Interchangeability
Zoom	5	2
Google Meet	5	1
Microsoft Teams	5	1
Skype	3	3
Bluejeans	3	4
Redesign	4	5
Ideal Design	5	5

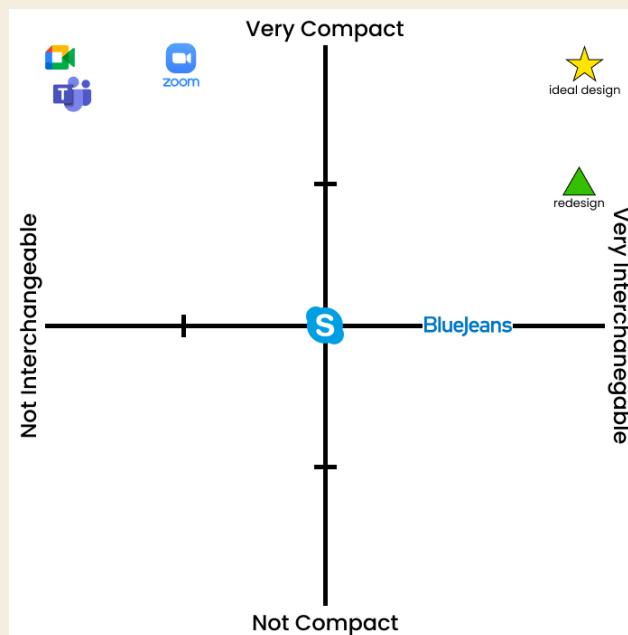


Figure 22: design space of compactness vs. interchangeability

Clarity vs. Aesthetic

Clarity is how straightforward the program is to use and if it has good signifiers. Aesthetic is how appealing the design of the interface is. It also accounts for how customizable the application is.

Zoom: Zoom ranks fairly clear because the chat icon is apparent upon loading into the meeting. However, the icon is lost amongst the other ten buttons that show up. On top of this, the direct message function's **signifier** is very small therefore a lot of people are unaware of the ability to direct message. The aesthetic of zoom is also ranked very low because of the lack of customizability, as one interviewee noted the chat seemed "bare bones.". Nothing about the interface design stands out as it is very simplistic.

Google Meet: Google Meet ranked amongst the lowest for clarity. This is because the chat button is tucked into the corner. It is not a part of the main buttons located in the center of the screen. There are also no **signifiers** to indicate to the user that the program cannot **afford** direct messages. When it comes to aesthetics Google Meet is very barebones. It does not allow for customization. It also shows no profile pictures which would be expected since google allows for icons in Gmail.

Microsoft Teams: Microsoft Teams displays the chat function grayed out. This time the button is located on the top right corner which may go against a lot of people's **mental models**. However, Microsoft Teams allows for a lot of customization. This includes different styles and themes that the user has a lot of control over. This type of customization makes it rank so well as the user can make the interface their own.

Skype: Skype does a good job of making the interface clear as each of the buttons is fairly large. Skype also does a good job of incorporating colors into their interface as the buttons are the company's staple blue.

Bluejeans: Bluejeans has a very clear interface as each of the buttons are laid out in a way that makes it easy to find. There are also different colors for when the button is active. Bluejeans is not very aesthetically pleasing as it offers no customization to the user.

Redesign: Our redesign makes it very clear to the user by having large buttons. We also included profile pictures and colors to make the aesthetic of the program very appealing.

Ideal Design: The ideal design would be something that makes it very clear to the user what the interface does at first glance. It would also allow the user to completely customize the chat to their liking, offering a multitude of themes for the user to get started.

	Clarity	Aesthetic
Zoom	3	2
Google Meet	2	2
Microsoft Teams	2	5
Skype	3	3
Bluejeans	5	3
Redesign	5	4.5
Ideal Design	5	5

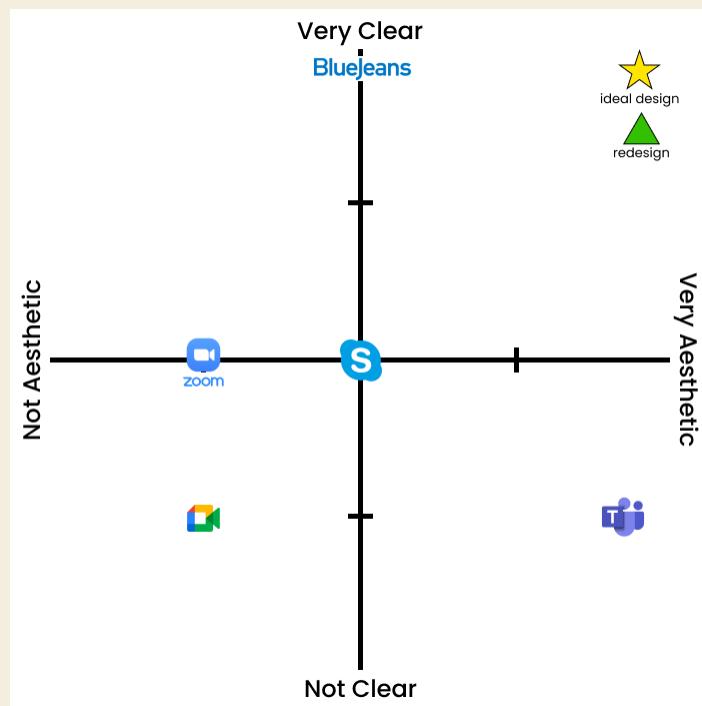


Figure 23: design space of clarity vs. aesthetics

Redesign



Figure 24: Zoom Chat Redesign

*See Redesign Prototype Section for more in-depth prototyping.

We made all of the buttons more defined in general, but our redesign mainly features more defined chat vessels, with one for the main meeting, additional breakout rooms that the user was added into, as well as any user-created direct message chats or group chats. To preview the chat, one simply hovers over that chat's icon.

Additional changes were made to message typing as well, such as replacing the “Attach File” and “Download Transcript” buttons and also adding a formal “Send” button.

Justification

Chat Placement

To combat the issue of poor **mapping** causing disruption by the pop-up chat window, we decided that no matter if the user was maximized in full screen or in a normal window, the chat would expand to the side by default. However, users will also have the option to dock the chat off into a separate window if that's their preference by hovering over the split between the meeting and the chat.

Messaging Interchangeability

The original chat had low **discoverability** in where to alternate between sending a message to “Everyone” versus sending a “Direct Message,” which led to **description-similarity** and **mode-error slips** and **memory-lapse mistakes**, as users a) couldn't find where to send a direct message, b) forgot to change it back to “Everyone” after direct messaging, and c) had trouble discerning which messages were direct messages, as they often got lost in the chat stream. We determined that it was best to break up the chat stream into individual chats instead of a single continuous one. This could be considered a **constraint**, as the elimination of the option to send a direct message in the same place as the main chat prohibits the user from even mixing it up that way.

Although we considered separating sections into email-style inboxes, our interviewees did like the original chat's simplicity, so we compromised by incorporating different chats, but the ability to preview the chat by hovering over the chat icons, inspired by Discord.

Searching for Participants

The original chat interface included a search function; however, it was unclear and blended into the usual “Send a chat to...” title. We clarified this, so users know who they’re sending messages to.

Breakout Rooms

It was mentioned by an interviewee that in a Breakout Room, it was difficult to distinguish if the send “To: Everyone” was to everyone in the meeting or everyone in the breakout room, which indicated the lack of clarity in signifiers, as well as a preface to more **mode-error slips** as that function is used identically to control recipients in the main chat room as well. Because of this, we generated a new chat for each breakout room, allowing users to feel secure in who they’re sending the messages to from the large title of “Breakout Room _”, as well as allowing users to revisit breakout room chats to talk to their group members in the event of any miscommunication.

Unclear Functions

The three buttons for sending a message were a piece of paper, an emoji, and an ellipses who’s only drop down was to “Save Transcript.” This wasn’t really clear to our users, particularly because of the lack of **cultural constancy**, so we swapped the **signifiers** out for a paperclip for “Attach File”, and a download for “Save Transcript”. The addition of the “Send” button came with a user who’s enter key was malfunctioning, which the original chat interface lacked alternatives for.

Trade-offs

Many of the programs **trade-off** clear **signifiers** for more space. They prioritize the ability to have a lot on the screen by making the buttons smaller. However, this can lead to a bigger gap between the **gulf of execution** and **gulf of evaluation**. Having a lot of space for viewing meetings is beneficial; however, many of our participants have stated **errors** because of misclicks or due to the lack of clear **feedback**. For example, the Zoom direct message only states in small text “(Direct Message).” This leads users to double and triple check if they are messaging someone, fearful of making a **slip**. This led to our redesign to include bigger buttons and separate panels for different chats. This may have used more space; however, it allows users to see everything happening clearly. We implemented a minimize button for users who do not care about seeing the chat and instead wish to see the lecture in full screen.

Section IV: Redesign Prototype

Prototype

Sample Run-Through



Figure 25: GIF of Zoom Chat Redesign Run-Through

Individual Frames



Figure 26: General Meeting Interface

Overall larger and colored buttons for more definition and clarity

Introduction of a Side Chat Bar



Figure 27: Side Chat Bar

Side Chat Bar for users' main room chat, breakout room chat, and any additional created direct-messaging or group chats; To preview the chat, can hover over icon (Discord-inspired)

Breakout Room Chats Revisitable



Figure 28: Instance of user revisiting Breakout Room Chat

The introduction of separated chat streams means users can now revisit Breakout Room Chats after the Breakout Room has ended; In the shown instance, it was helpful for members to reconsider their answers, promoting communication

Signifier Change

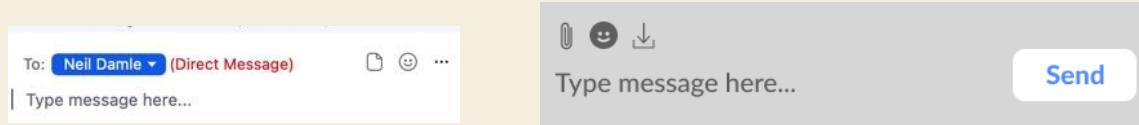


Figure 29 & 30: Signifiers of Functions Changed

Changed the signifiers of message functions to be more culturally constant; Paperclip for Attaching Files, Download for Save Transcript, and the addition of a Send button

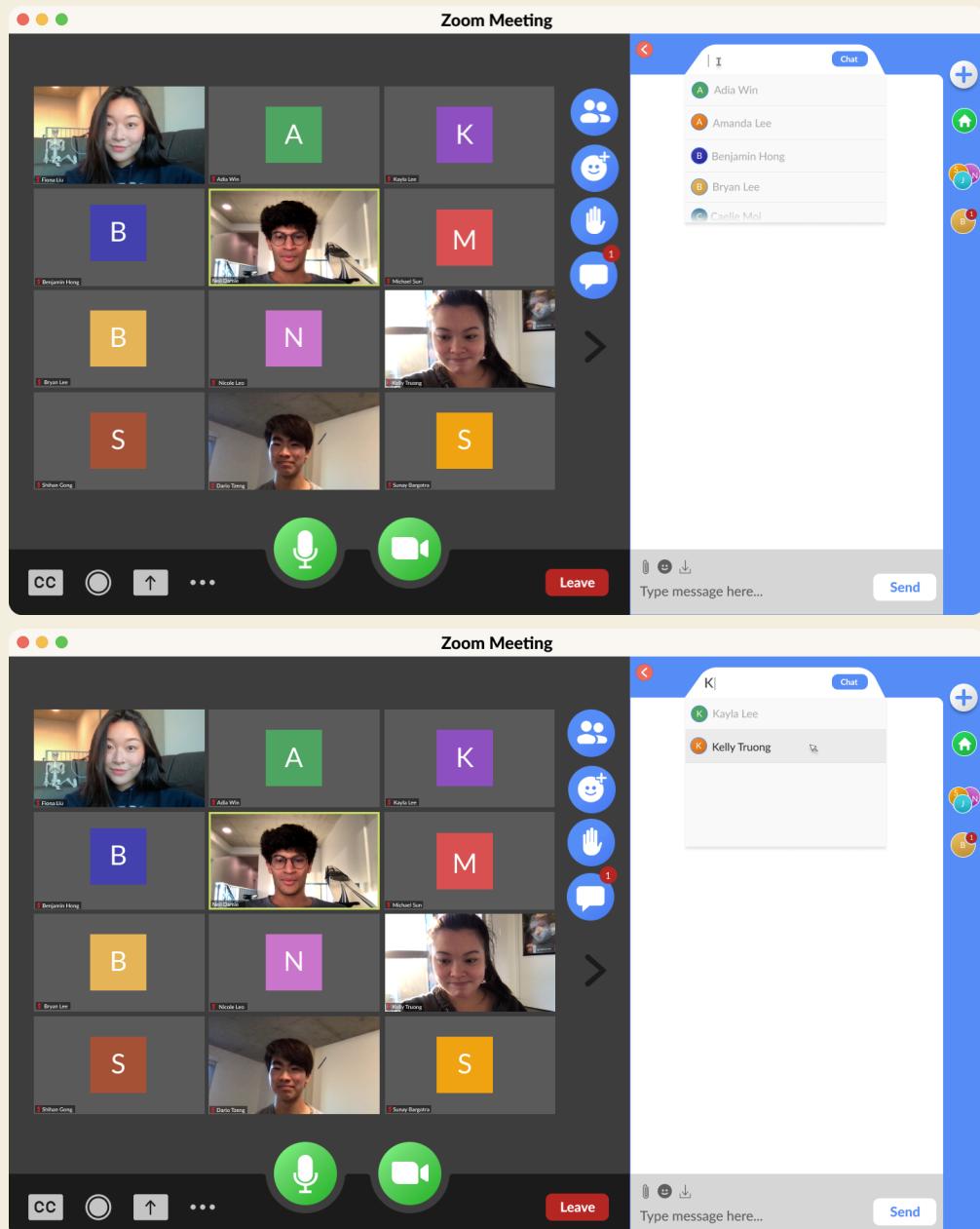
Starting New Chats



Figure 31: Starting a New Chat

To start a new chat, the user simply has to click the “+” button, and a blank chat will appear; The “Start a new chat with...” and magnifying glass will signify users to select a recipient

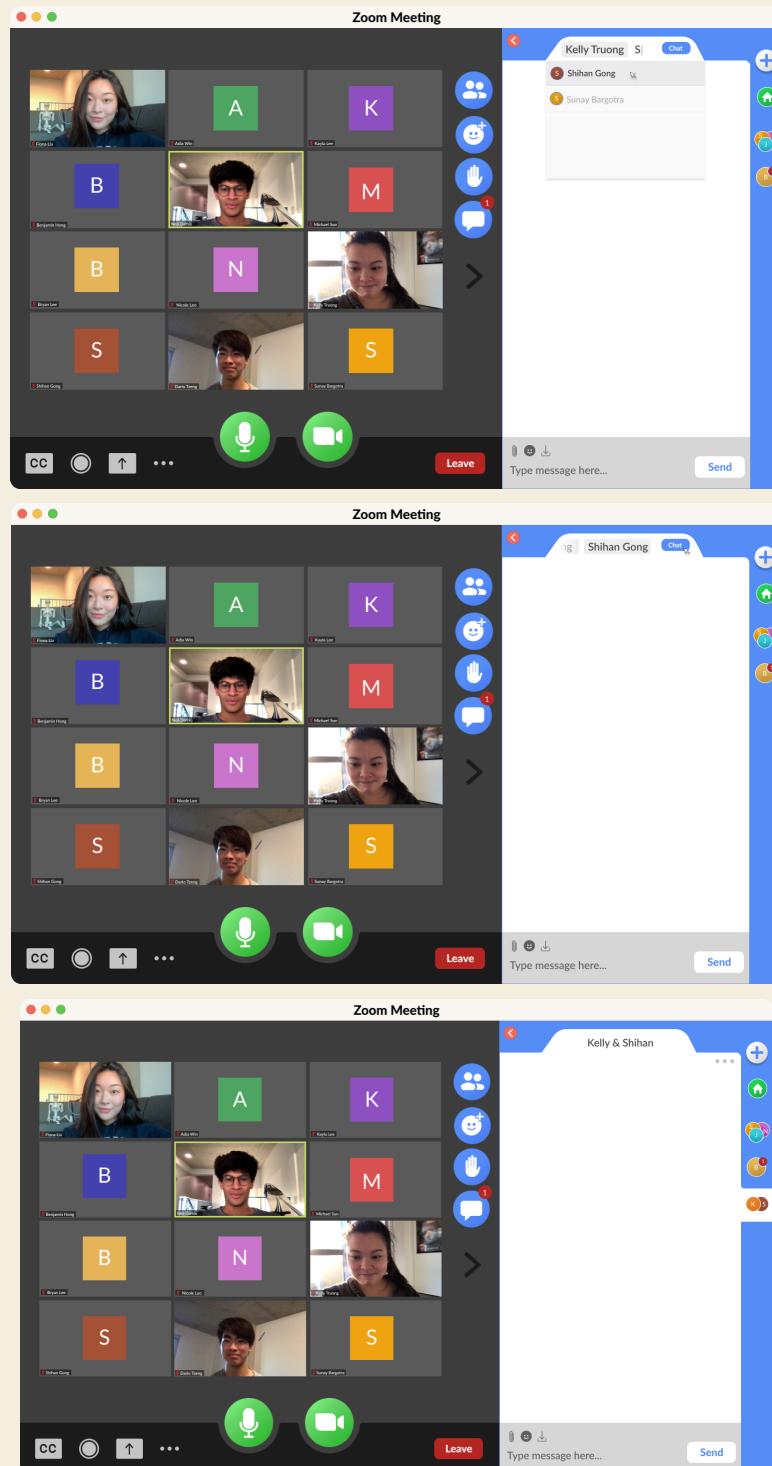
Searching for Recipients



Figures 32 & 33: Searching for a new recipient

Once the user clicks on the search bar, a drop down menu will appear, where they can scroll through, or begin typing, where all participants whose names begin with that letter will appear

Creating Group Chats



Figures 34, 35 & 36: Creation of Group Chats

One of the new features we added was the ability to create group chats, after seeing how difficult it was to direct message every single person a user wanted to; Once the chat was made, the icon appears on the side

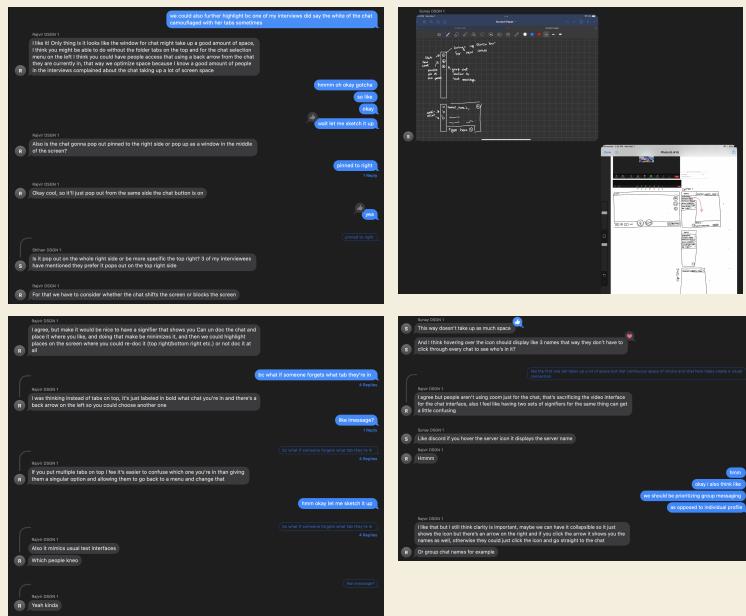
Iteration

According to Don Norman, there are two phases of the Double Diamond of Design: finding the right problem (discovering-divergent and defining-convergent) and finding the right solution (developing-divergent and delivering-convergent). In order to do this, designers follow a cycle for human-centered design consisting of 1) observation, 2) idea generation (ideation), 3) prototyping, and 4) testing.

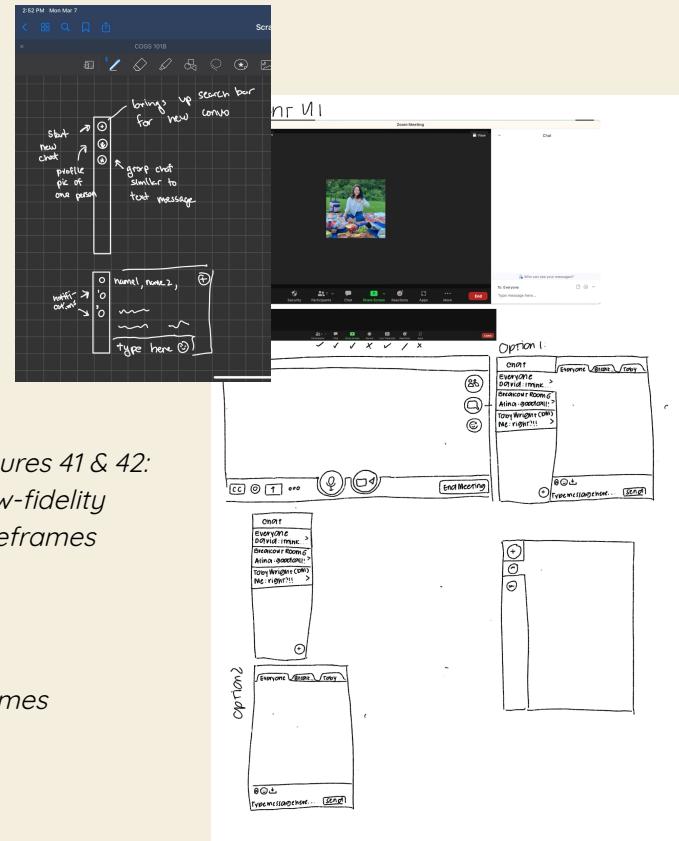
During the **divergent stage of finding the problem**, we **discovered** the issue through **observation**. We employed the **master-apprentice model** of interviewees demonstrating their use of Zoom communication features such as the microphone, video, chat, and reactions to see the **applied ethnography** of the natural occurrences they encounter. As opposed to **marketing research** that intends to conduct large-scale observation in pursuit of mass buying, our **design research** focused on the niche of population that used Zoom, which was a target audience of students ranging from elementary level to college level, as well as industry professionals who use Zoom for meetings.

Our **convergent stage of definition and ideation** began by identifying our interview data from the first form, where we found some accidents regarding microphone and video inconsistency, an indifference for reactions, and the outline of some issues with chat, like the lack of **discoverability** of direct messaging. From there, we actually revisited the **divergent stage** and **observed** using a new form, this time highlighting chat features. Only then did we land on our final problem, which was chat confusion, and thus a consequent need for separation between messages.

After that, we began a **divergent stage of developing**, and began **prototyping**. There were a few components that we were keeping in mind: a) clarifying recipients and chats to minimize errors and b) though the chat is pretty well-used, Zoom's primary function is a video telephony communication method, meaning that we wanted to preserve written communication while saving space. We made some low-fidelity wireframes (Figures 34 & 35), which involved a lot of back and forth critique that helped us identify unseen problems. We played around with **alternate designs** centered around tabs and email-style inboxes, but ultimately integrated all of our critiques for an interchangeable yet compact chat into a final design of a Discord-style interchangeability system (see Redesign Prototype Section).



Figures 37, 38, 39, & 40: Critiques for our low-fidelity wireframes



Figures 41 & 42:
Low-fidelity
wireframes

Since this was a class project with a limited project deadline, we didn't have a great chance to complete the final **convergent stage of delivering** by **testing**, but we would hypothetically disseminate a working prototype to our initial interview group to identify any improvements or continued dissatisfactions.