

## **I. Product Description**

The product chosen is Discord. Discord is an instant messaging social platform. It can make audio, video calls using VoIP. Its main functions include text chatting and media sharing.. Discord is mostly used to connect with individuals and have ongoing conversations on everything from schoolwork, gaming, and health care. One of Discord's key features is the ability for users to go live, which enables players to webcast their gameplay. Discord has servers which are spaces generally created for a group of people. Users can have social interactions and private talks on both public and private servers. Discord has text and voice channels which help in organizing a server. There are currently 150 million active users on the platform.

## **II. HCI Methods**

**Heuristic Evaluation (Appendix I and II)** – Heuristic evaluation is a HCI method used to identify user interface design problems. Heuristics are a set of guidelines that are used to base the evaluation. There are 10 Nielsen Basic Heuristics. The heuristics were simple to comprehend, making it simple to assess the interface. We evaluated each principle in relation to the interface to see whether it has been followed or not. This allowed for the creation of a Usability Aspect Report, which aided in determining whether the UI for a specific use case is good or terrible. A UAR has personas and use cases defined. These personas and use cases were used to evaluate the heuristics to identify the design's strong and weak points. As each issue is ranked with a priority, it became easier for us to understand the high impact issues and concentrate on it first. It is also a cost-efficient method to evaluate an interface. Contrary to other HCI techniques, this does not incorporate user feedback. We took additional care to be sure that we are not focusing on problems that aren't important to the end user, squandering time.

**Survey (Appendix III)** – Survey methods serve as scalable techniques for collecting quantitative information about topics of interest in a population of interest. These techniques are intended to extract data from a group of individuals. There are numerous ways to conduct a survey, including over the phone, online, and in person. We decided to use online forms to conduct a survey for our project (google form). This made survey costs less and made it simple to share. As a team, we spoke about the ideas we wanted to evaluate and the target demographics. We made sure that the personas and use cases we used to examine in the first stage were consistent with our groups, which included a sizable sample of the community. We repeatedly sanity-checked our survey to ensure that we were eliciting the appropriate information from the participants and asking the relevant questions. After the poll was completed, we analyzed the data to produce statistics that helped us understand how respondents felt about discord.

**Competitive Analysis (Appendix IV)** – This HCI technique is employed to comprehend the marketplace. The analysis provides information on the advantages and disadvantages of the rivals, which in turn enables us to spot possible threats and business opportunities in the market. We began our study by looking for competitors and substitute services for the product we had selected, Discord. Then, our group examined approaches that may be used to gather information on rival companies and alternative offerings. For the data, comparisons, and other information, we largely used online content. Following analysis, we listed our findings under "Findings." The comparisons and charts are a part of the data analysis results we obtained.

**Contextual Design** – It is a customer centered design process used to understand a workflow. Culture Model, Sequential model and Affinity Diagrams are some of the methods of contextual design. We have used sequential and affinity diagramming for our project.

**Sequential Diagrams (Appendix V)** – Sequential Diagrams are built using the data from customers about how they use a feature or a product. To create our diagram, we used data from surveys and interviews. We looked at how users interacted with Discord's message, audio, and video calling services. We were able to gain insight into how users perceive and interact with the program, thanks to the sequential model.

**Interviews (Appendix VI)** – In general terms, an interview is one-one conversation between an interviewer and an interviewee where the former asks the questions, and the latter answers them. It is a process conducted to get information from the interviewee. An interview is one of the best methods to collect data. This data can be used for multiple purposes like research, academics, feedback for a product, understanding the consumer etc. In the contextual design, interviews are designed to understand the user thoughts on a product. The user feedback helps the developers and the business teams to understand what the users expect of the product and where there is a room for improvement. Also, it helps them understand what worked for them and try to improvise in the same line. We discussed about what needs to be asked. We framed questions such that we always have enough information from the user that we can use to improve or discuss on it. We sanity checked that we always asked only the relevant questions. Our team interviewed close to 30 members about our product Discord.

**Interpretation (Appendix VII)** – It is the process of extracting useful information from the interviews. It is generally performed within 24-48 hours of an interview. 'Reporter' and 'Note Taker' are the two important roles of many in the interpretation. The former reiterates the story in his point of view while the interpreter notes the important information from it. Our team assumed roles on a rolling basis and performed the task. At the end of this, 'affinity notes' was generated that contained key observations and issues related to the product. We made sure that each note contained just a single point. The note not only contained a fact but also has a component of 'why' in it.

**Affinity Diagramming (Appendix VIII)** – The process of structuring the affinity notes into individual implications is called affinity diagramming. The affinity notes generated from interpretation is converted into sticky notes. We segmented the data into multiple groups and labelled. We had discussions about where a affinity note should go to and made sure that we had a hierarchical model in our diagram. We performed multiple iterations as in each time, we were able to better segregate and group data. It is interesting to see how such large useful data is shown very crisply on the board.

**Storyboarding (Appendix IX)** – Storyboarding is a method used to get insights into user. Story telling helps the designers to understand what a user wants from the product in visual diagrams. There are roles in the storyboarding. Everyone can act as a storyteller. A facilitator helps in making sure that the story is moving in the right direction and sticks to the narrative. Facilitator encourages everyone to participate in storytelling. 'The pen' draws the story diagrams understanding storyteller. The visually developed pictures help us in understanding and connecting more than a writing.

**Prototyping (Appendix X)** – A prototype is a concrete but partial implementation of the design of a system to explore usability issues. A working model a.k.a. prototype helps in testing, evaluating, and enhancing the design with feedback from different stakeholders. Prototyping is the process of developing a prototype which is a version of the original system that is under review.

Low Fidelity Paper Prototyping, Medium Fidelity Prototyping, High Fidelity Prototyping, and Working Systems are the different methods of prototyping employed at various stages. We used Low-Fi prototyping for our project. We discussed about design recommendations and built the prototypes. At the end of prototyping, we were able to simulate the behavior of how the design is working and the proposed changes in it.

### **III. Data Collection and Analysis**

We started our process with Heuristic Evaluation. We found good and bad aspects of a design for defined personas and use cases. We used these details to construct our survey. The results of survey helped us find what the users are looking forward and the areas they felt improvement needed. This gave a direction to our project. We next analyzed all the competitors and alternatives of Discord, why they fail or success and noted key takeaways. We constructed sequential diagrams from the data we had that helped us understand the flow of user with the product. Using this knowledge, we created interview questions and conducted multiple interviews. The interviews gave us in depth details about the problems faced by the users. We derived useful data from the interviews and created our affinity notes. The affinity notes helped us in creating the affinity diagrams. Affinity diagrams showed us a bigger picture. It also helped to group together different data, mark the design, issues and holes. We then decided on the designs, key issues that needs to be modified on high priority. To verify our understanding, we created storyboards. We made sure with it that we were not deviating from the user needs. Finally, we discussed and created prototypes of the issues we selected.

### **IV. Lessons Learnt**

There are a few lessons we learnt from the users.

Users felt that UI of discord is cluttered especially that too many options were visible on the screen.

Students and instructors using Discord suggested that a separate q-and-a channel is to be created that could better track the questions and answers.

Some users didn't know about the event creation in Discord and requested that it needs to be created. So, we need to make the feature more visible.

Prominent users of Discord said when they are part of many servers, it becomes tough to remember the server from picture and felt a better model is needed there.

### **V. New Design Recommendations**

#### **D1. Show Server Names**

This design improvement helps people who are part of several discord servers and are very active on Discord. Instead of hovering on the server icon to find the server

name, we proposed a design change to show the server names beside the server icon.

**D2. Hide the unwanted**

To improve the UI, we propose a design that hides the unwanted icons. We made sure that even after hiding the icons, the user can recognize its location. A pop is added to show the icons which are currently on the screen all time.

**D3. Change location of Event Creation and enable adding people**

The problem with the current implementation of event creation is its location. Many users were not able to find the option as it was hidden in the server settings. In addition to this, there is no option to add the users or invite users during the creation of the event. This must be done after a particular event is created. To solve this, we propose that the event creation option is visible at the end of the channel list and that users are allowed to be added before the event is created. The event organizer has no clue about if the person invited is going to attend the event or not. To solve this issue, we added RSVP button to the invitee. This would enable the organizer and the attendees to see how many number of people are going to attend the event.

**D4. Add alert about the events**

Users said that there is no track of the events that they signed up for. To solve this, we propose to add event alerts to be made visible before and after an event starts. A corresponding prototype of the solution is attached.

**D5. Add Q and A channel and question capability**

To help the students and instructors using Discord for coursework, we propose to default add a new channel called q-and-a when a server is created. The channel has additional features like posting questions instead of regular chat messages. A user on the channel can post new question by using 'New Question' button at the end of the channel list when q-and-a is opened. Multiple users are capable of adding answers to single question as channel works on a question-to-question basis.

## **VI. Heuristic Evaluation for New Design (Appendix - XII)**

A detailed heuristic evaluation for the new design performed and can be found in the appendix. The UAR for the evaluations are available for all the design changes that were proposed, and they were found to be good aspects. The end results of the evaluation are:

Users were happy with the new UI which is clutter free. They felt that more improvements like the one implemented can be made.

Course Work users were happy with the q-and-a channel and liked the question-and-answer UI.

Users liked the visibility of the event creation and liked the alert feature.

Event organizers loved that they could add people into the event right at the time of creation and the idea that they would know about the number of people attending the event.

## **VII. My Role and Contributions to the team**

We worked as a team for the whole project. We divided tasks among us but always discussed and took collective decisions. I was involved in the following tasks:

I participated in the initial discussions of selecting a product for our project and our current product Discord was pitched by me.

For heuristic evaluation, I constructed a UAR report and the same can be found in the appendix section.

For survey, I was involved in preparing questions for a particular persona and 2 use cases.

With the interviews, I was responsible in preparing questions targeting students and making sure that we asked questions related to the project and got good amount of information required to back the user answers.

I took part in creating and labeling the affinity diagrams during multiple iterations.

### **VIII. Knowledge and Skills acquired**

I learned how to review a product based on personas and use cases and understood how UAR becomes the steppingstone of HCI evaluations.

I learnt that I need to always keep user perspective in mind whenever I'm designing anything.

I understood that it is essential to ask only the questions that are required and avoid asking irrelevant questions as it makes the interviewee loose interest.

The most important lesson I learnt is to ask "Why" to any of the users opinion and the importance of noting the reasoning.

I recognized that however good we prepare the questions, we need to sanity check it multiple times and try to simulate an interview within the team. This avoids any repetitive questions and gives a perspective to us.

I initially wondered what the importance of role is like Facilitator, Note taker etc. I realized that we understood what other team members inferred from the same data and hence give us a perspective to think in other directions too.

Evaluating and comparing with competitors makes sense. But to compare our product with alternative services was little odd to me at start. While prototyping I realized how much the users compare the product with alternate services and sometimes suggested that our product should match alternative service in particular features.

I noticed that instead of trying to log all the responses of an interviewee, it is better to log the jest of the conversation. That way we'll be able to concentrate on what the user is looking to tell and understand.

I was initially perplexed as to why the prototype had to be constructed from separate parts and assembled as opposed to having everything on a single piece of paper. I later understood the idea that it makes the prototype more dynamic, making it possible for the user to identify with the new design and connect with it.

One of the other skills I acquired is to work with different people together as a team. I believe this skill is going to help me not just in future work but also in my professional career.

## APPENDIX

### I. Heuristic Evaluation

#### Personas

1. Maddie is a 19-year-old girl who is currently enrolled in college. She is passionate and loves to make a lot of friends. She loves to keep track with her friends so her social apps are always flooded with notifications from friends. Because she goes to college out of state, she enjoys talking to her friends at home in her free time by texting them. When she's tired of typing words, she'll want to use voice chats or video chats. She also likes to play video games to relax and enjoys keeping up with the current happenings of her favorite games. Searching through the net about the current trending games is also something she likes to do in her free time.
  - a. Use Case 1: Maddie wants to talk to one of her friends over Discord. She selects the Direct Messages tab then selects one of her friends to direct message. She then types a message in the text box and presses the enter key.
  2. Use Case 2: Maddie wants to find out what is new in her favorite game Stardew Valley. She scrolls through the list of servers and selects the Stardew Valley Gaming server.
2. Dr. Roberts is a 35 year old computer science professor. His biggest goal in the university is to get student's attention and respect. He values helping students understand and retain the information he teaches. He is constantly searching for fun activities for his class to create a fulfilling class experience. In his free time, he will request and review research reports to make sure he always teaches his students with the newest knowledge. Because of the urge to be attached with his students, he decides to use Discord to give his students a way to ask questions and get help from the whole class and teaching staff.
  1. Use Case 3: Dr. Roberts wants to hold office hours over Discord. He selects the CSC481 server and then selects the office-hours voice channel. Students can see his account in the voice channel and decide to join.
  2. Use Case 4: Dr. Roberts decides to release some course materials on Discord. He entered the CSC481 server and posted it in a general chat room. So students can get notified instantly and get the materials whenever they want or even search through the past messages.

#### Use Cases

1. The user selects a server and enters the voice channel.
2. The user selects a server then uses the text channel.
3. The user sees a voice channel that has users active and joins. They then turn on their camera to video call with the others.
4. The user selects a server and can see who is online at that time.
5. The user scrolls through the past messages to find information.

### II. Usability Aspect Report (UAR)

<b>Product Name:</b> Discord
<b>Date of Study:</b> 9/8/22
<b>Experimenters' Names:</b> Arun Gaonkar, Aswin Itha, Brooke Raschke, Kan-No Lee, Vasu Agrawal, Sairam Sakhamuri

No. HE1 (done by Brooke Raschke)	<b>Problem/Good Aspect</b>  Good Aspect
<b>Name:</b>  Joining a voice channel	
<b>Evidence:</b>  Heuristic: Consistency and standards  <div> <p>The image shows a vertical list of channels in a dark-themed application. The first four items are text channels, each preceded by a '#' icon: 'gaming' (with a game controller icon), 'music' (with a guitar icon), 'tech' (with a document icon), and 'watching' (with a popcorn icon). Below these is a section header 'VOICE' with a downward arrow. The following five items are voice channels, each preceded by a speaker icon: 'voice-chat' (with a speech bubble icon), 'General (384 kbps)' (with a megaphone icon), 'Watch (384 kbps)' (with a clapperboard icon), 'Games (384 kbps)' (with a dice icon), and 'Inactive' (with a sad face icon). The consistent use of icons and layout demonstrates the heuristic of consistency and standards.</p> </div> <p>On the left column of the application the server's text and voice channels are displayed. A user might be a part of multiple different servers, but this side bar will always appear in the same style. All text channels always have the # icon and all voice channels always have the speaker icon.</p>	
<b>Explanation:</b>  I believe that this is a good application of consistency. Servers can have wildly different topics, for example school classes or games, and allow the participants to customize many aspects of the	

server. However, users are not allowed to change the icons and appearance of the text and voice channels. This is good because it gives the whole app a consistent look instead of appearing messy. It also allows users to know where to go for text and voice in each channel. Overall it makes navigation easier. The only issue with the consistency is that users might get confused as to which server they are on.

**Severity or Benefit:**

**Rating:** 0

**Justification (Frequency, Impact, Persistence, Weights):** N/A

The main benefit from this is that users always know how to use the text and voice chats from server to server. Since these are the core functions of discord, it is important that this feature is easy to use. While some servers might have more complicated features, text and voice will always be consistent.

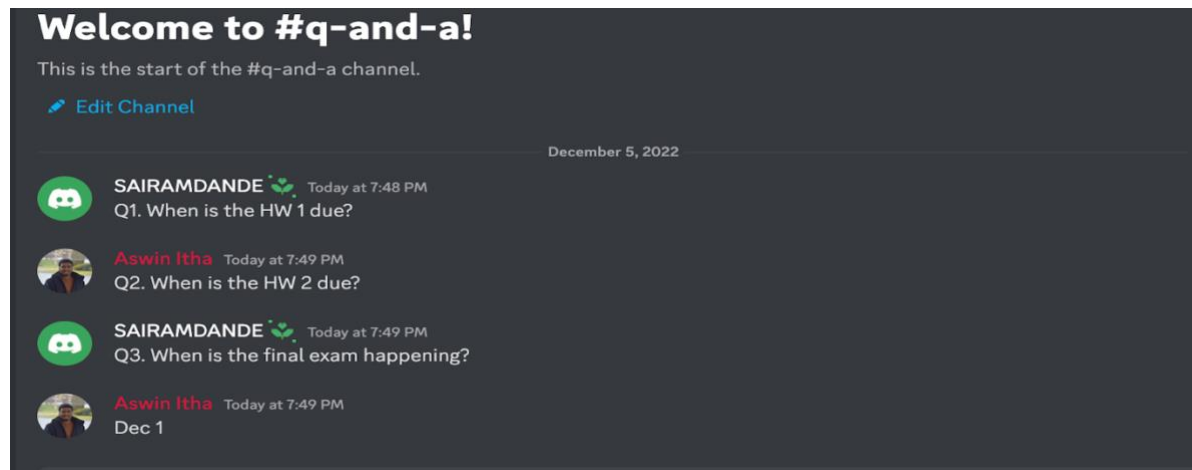
**Possible solution and/or Trade-offs:**

One tradeoff of having a similar look of the voice and text channels is that users aren't able to easily identify which server they are in at a glance. However, unique channel names could solve this issue.

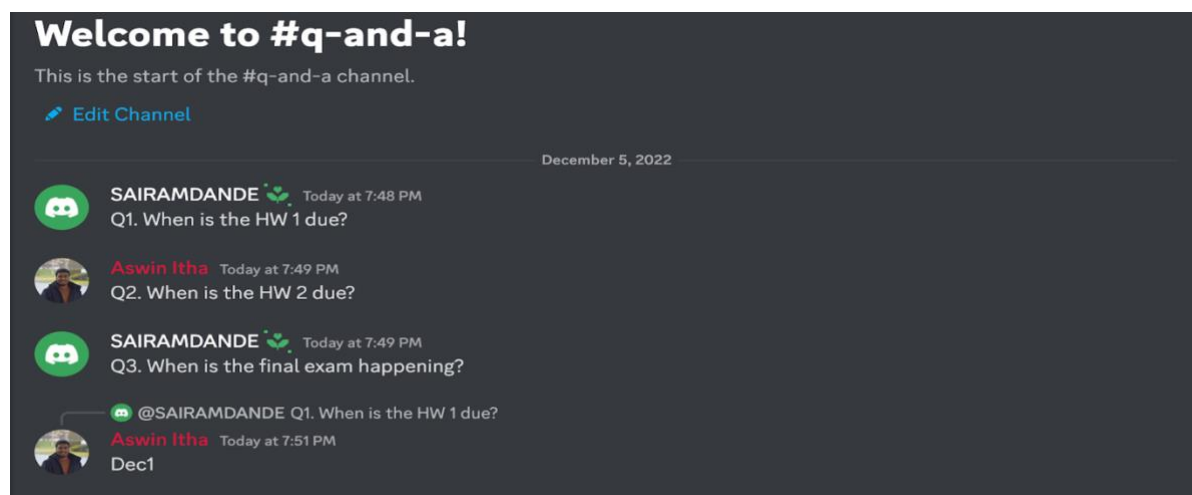
<b>No.</b> (Done by Aswin Itha) HE2	<b>Problem/Good Aspect</b> Problem
<b>Name:</b> Students trying to use a channel for Question and Answers.	
<b>Evidence:</b>  1. Error Prevention  2. User Control and Freedom  3. Recognition rather than Recall  4. Aesthetic and Minimalistic Design	
<b>Explanation:</b>	



Errors Prevention - This heuristic is failing in this use case. Consider a scenario where a student tries to answer a question posted on this channel. Even if the answer is relevant, if the student miss mentioning the question number, other students would have hard time in relating and appreciating this answer. This leads to misconception and errors.



User Control and Freedom - A user can add his answer as a reply. This definitely is a great feature. However, in this use case, the answer to a question would not be available right below a question. A student has to manually scroll to see if a question is answered or not. The student should have the freedom to give his answer right below each question asked irrespective of how old the question is.



Recognition rather than Recall - As previously mentioned, if the question posted by the user is automatically numbered, it would be visually and practically easier for students to identify it.

Aesthetic and Minimalist Design - Discord in general has a very simple and minimalistic Design. Following the same template and aesthetics to the question-and-answer channel would be great. I believe no changes need to be made in this regard.

**Severity or Benefit:**

**Rating:** 2 - Minor Problem

**Justification:**

**Frequency:** The problem is specific to students and teachers using Discord. It is not affecting other types of users.

**Impact:** Impact is highly felt by the type of users mentioned above. Temporarily they can introduce this feature by developing a bot and adding it to the channel.

**Persistence:** This is a persistent problem.

**How I weighed the factors:** This problem is given a severity rating of 2. This is because only a group of users are affected by it and not all. However, the impact is high in the users affected.

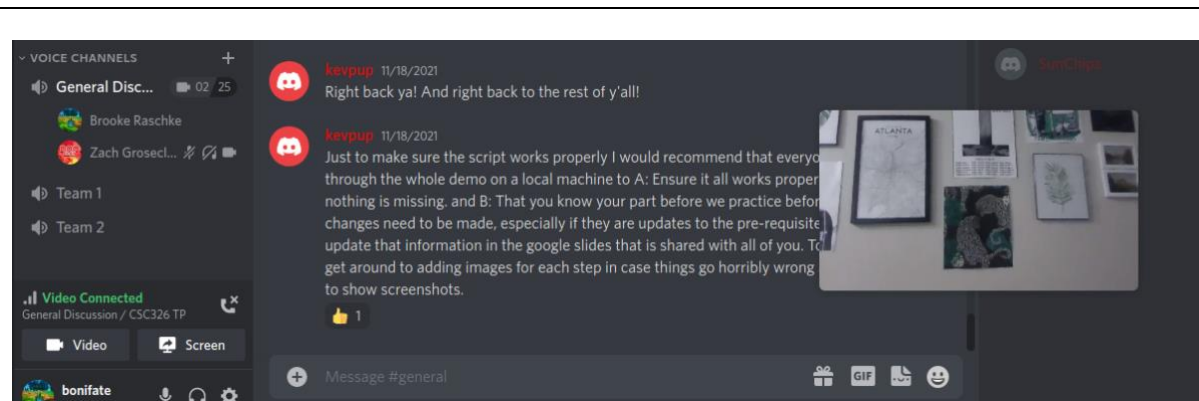
**Possible solution and/or trade-offs:**

A stable solution is to be given by the Discord Developers. A discord server when created should take input from the admin if it is used for educational purposes and suggest them use their question-and-answer channel in it.

**Relationships:**

This UAR is purely related to the educational users of Discord. It does not impact gamers or any other type of users.

No. HE3	Problem/Good Aspect  Problem
<b>Name:</b>  Joining a video call from a voice channel	
<b>Evidence:</b>  Heuristic: Flexibility and efficiency	



To join an active video call you must first join the voice channel. Users that are in the channel are listed below the name. A video camera icon will appear beside users who are on the video call as well. Then you need to click the popup that appears on the screen to join the video chat. There is no way to immediately join the video chat.

### Explanation:

I think that the heuristic is violated because when the user wants to voice chat, they are immediately expecting to join with video. Instead, they must perform some manual actions to achieve their goal. In addition, experienced users don't have a shortcut to easily video chat. Again, they must manually click through the steps.

### Severity or Benefit:

**Rating: 2**

### Justification (Frequency, Impact, Persistence, Weights):

**Frequency:** All users will experience this problem if they use the video chat feature. If you are a student and simply discussing answers, then this might not affect you. However, if you are frequently using the app to communicate with friends, you will find this annoying.

**Impact:** This issue is very easy to overcome. The sequence of steps to video chat is short and repeatable across all servers.

**Persistence:** Users might be repeatedly bothered by this issue. It will occur each time they video chat.

How I weighed the factors: I believe this is a minor issue because of how many users it affects both old and new. There is also no way to overcome the error as there is no shortcut or way around it. However, the video feature still works so it isn't a large usability problem.

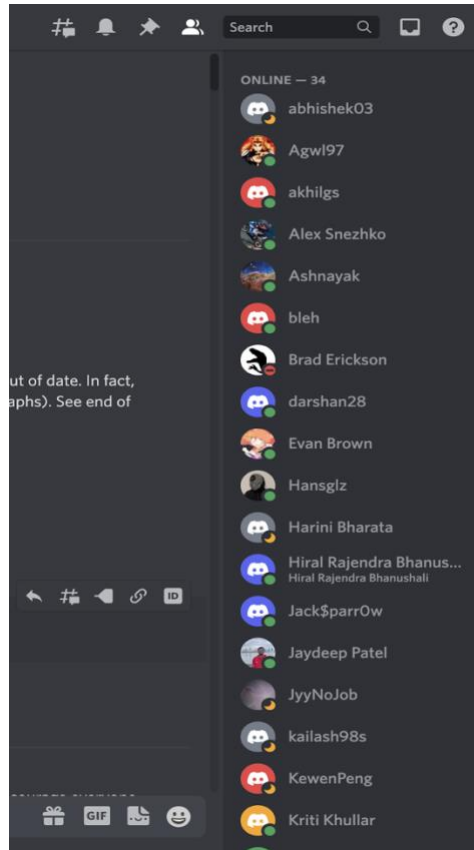
**Possible solution and/or Trade-offs:**

One solution could be automatically pulling up video when you join a voice channel if someone in the channel is already on video. This would eliminate any need for the user to take action to achieve their desired goal. A tradeoff for this is that some users might not want to immediately be on camera when clicking on the voice channel.

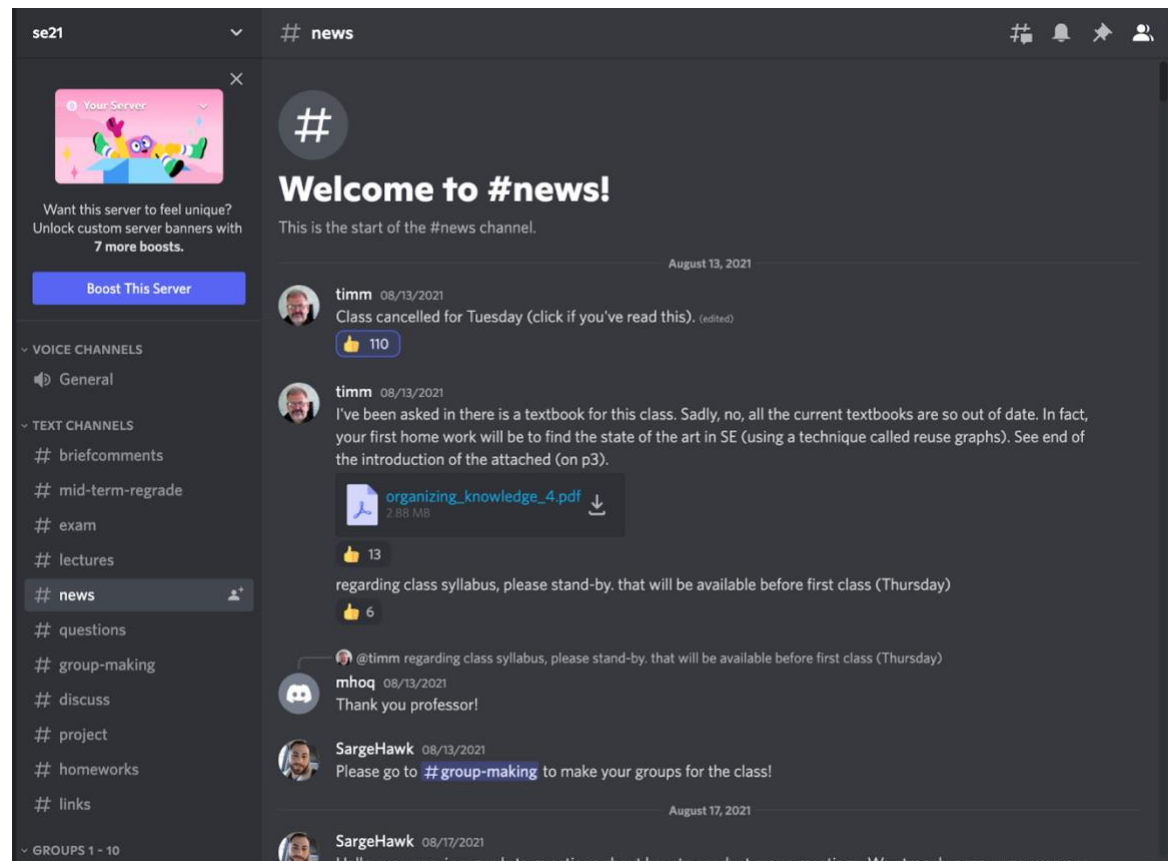
**Relationships:**

This is related to HE2 as it is a part of the voice channels and is consistent across all servers.

No. HE4 (Vasu Agrawal)	Good Aspect
<b>Name:</b>	
User trying to broadcast a message across channels	
<b>Evidence:</b>	
1.Visibility of the Status	
2. User Control and Freedom	
3. Recognition rather than recall	
<b>Explanation:</b>	
The app provides all the information necessary for the user to find out the status of everyone else in the server. It would also let the current user know their own status (away, do not disturb, active).	

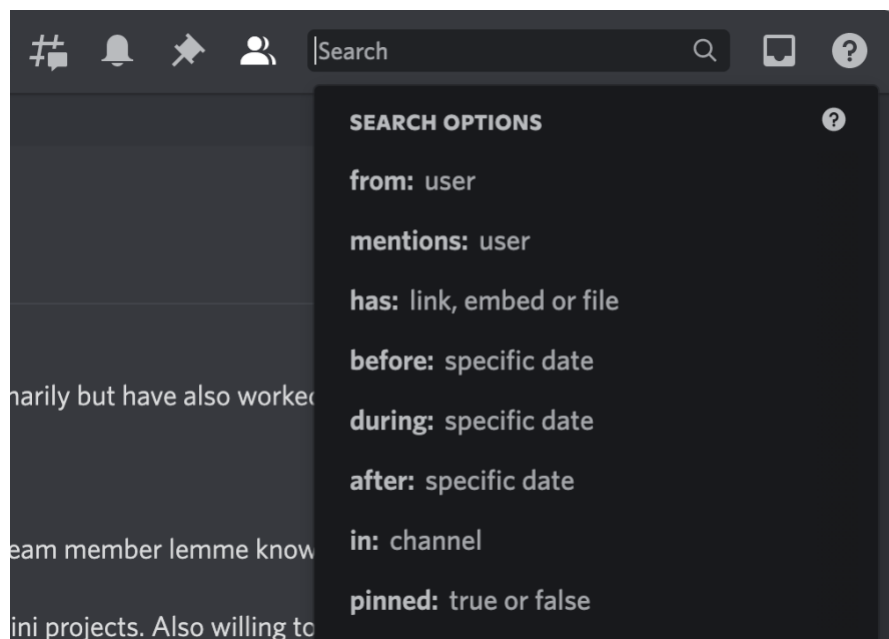


In discord, the user has all the freedom to access various channels present within a particular server he/she is part of. Users further have access to make changes in their profiles (database changes) without asking for permissions. Of course users won't have access to other user's profiles in this case.



Various channels present on the left.

The app works really well in terms of this Heuristic. It provides well formatted and easy to find options under it's search menu. It also provides the option of pinning messages so as to avoid retyping.



### Severity or Benefit:

**Rating:** 0 Not a problem: I don't agree that this is a usability problem at all

### Relationships:

This UAR relates to the one where a gamer wants to invite over his fans or fellow players for an online match and sends a message across his discord server channels. It would be useful for them to see who is already online before sending.

## III. Survey



### Goal of Survey

The goal of our survey is to find out how satisfied users are with the current implementation of Discord. If they aren't satisfied, we would like to discover the features that the users would like to change.

### Discord Experience Survey

Thank you for your interest in participating in this survey.

With this survey we are getting the feedback from Discord User and their preferences about using it.

 bmrashk@ncsu.edu (not shared) [Switch account](#) 

\* Required

How did you learn about Discord? \*

☒ Social Media

☐ Friends

☐ Study Circle


☐ Advertisement

☐ Other: \_\_\_\_\_

How often do you use Discord? \*

1 2 3 4 5

Infrequent ☐ ☐ ☐ ☐ ☐ Frequent

[Next](#)  Page 1 of 4 [Clear form](#)

### Knowing little more about the User:

It would be a great help, if you can help us to know little more about the user.

We are not going to store any of your information.

Under which age category do you belong to? \*

☒ 10 - 25

☐ 26 - 50

☐ 51 - 80

☐ 81 - 100

☐ Prefer not to answer.

What type of user you are? \*


☐ Gamer, Streamer

☐ Student, Teacher

☐ Casual Users

☐ Business

☐ Other: \_\_\_\_\_

 This is a required question

### Getting Users preferences about Discord

In this part of the survey, you can enter what do you like and what don't you like about using discord.  
Users information are not stored.

What features do you like using the most? (select multiple)

- ☐ Text channels
- ☐ Voice channels
- ☐ Video chat
- ☐ Streaming/Screenshare
- ☐ Direct messaging
- ☐ Messaging features (emojis, GIFs, reactions, etc)
- ☐ Roles and permissions
- ☐ Bots
- ☐ Other: \_\_\_\_\_

Is it easy for you to find the feature you're looking for when in Discord home page? \*

- ☐ Super easy
- ☐ Easy
- ☐ A little hard
- ☐ Hard

I enjoy using Discord to communicate with others. \*

1 2 3 4 5  
Having a bad time ○ ○ ○ ○ ○ Works like a charm

The streaming quality on video calls is great. \*

1 2 3 4 5  
Strongly disagree ○ ○ ○ ○ ○ Strongly agree

It is easy to direct message another user. \*

1 2 3 4 5  
It's very difficult ○ ○ ○ ○ ○ It's super easy

What compels you to join a Server?

Your answer \_\_\_\_\_

How many servers are you currently enrolled in? \*

- ☐ Less than 5
- ☐ 5 - 10
- ☐ 10 - 20
- ☐ More than 20

What is your greatest frustration when using Discord?

Your answer \_\_\_\_\_

Have you used any other similar apps like Discord? \*

- ☐ Slack
- ☐ Steam Chat
- ☐ Chanty
- ☐ Other

Any other thoughts or feedback for Discord

Your answer \_\_\_\_\_

[Back](#)

[Next](#)

Page 3 of 4

[Clear form](#)

## Discord Experience Survey

 bmrashk@ncsu.edu (not shared) [Switch account](#)



### Final Feedback

Thanks you have reached end.  
This is your section. You can write whatever you want to let us know.

OPTIONAL: If you're open to us reaching out for follow-up questions, please provide your email

Your answer \_\_\_\_\_

[Back](#)

[Submit](#)

Page 4 of 4

[Clear form](#)



#### IV. Competitive Analysis

Personas – The personas used as same as the Heuristic Evaluation.

##### Competitors

###### Slack

- Slack is a messaging software designed for use in the office. You can create channels which are organized spaces designed for teams to send messages and pictures. Slack also offers voice communication by allowing users to get in a “huddle.” Other work apps can be connected to your channel to create a more seamless experience.

###### Skype

- Skype is a video conferencing application that allows users to talk to each other over video. It offers messaging, file transfers, and direct calls to other users. While the video calls are free, users must pay for phone calls and SMS messages.

###### Microsoft Teams

- Microsoft Teams is group chatting and conferencing app which is typically used in corporate settings. It offers features such as file transfers, message broadcasting, video conferencing, etc. The application is free to download via the microsoft website but has several locked features that could be accessed provided you purchase the microsoft 360 package.

##### Alternative Services

###### Text messaging

- Text Messaging is an electronic messaging service using which alphabet letters, numbers, special characters and emojis can be sent instantly using a wireless carrier.

###### Zoom

- Zoom is also a good alternative for group conferencing and discussion groups. The drawback with using it is, it doesn't provide the feature of forming groups and sharing text messages or files amongst others on its platform.

###### WhatsApp

- WhatsApp is yet another good alternative when it comes to group chatting and conferencing applications. However, one drawback with WhatsApp is that it doesn't allow the feature of mass conferencing on it's application. We can only extend the number of users until a specific limit.

###### Phone Call

- The transmission of speech over a distance either by electric signals propagated along conductors or by radio signals.

###### FaceTime

- It is a video telephony product developed by Apple and is exclusively available for their devices.

###### Email

- A message sent from one computer to another over the internet using a set webmail server address. An electronic equivalent of a letter, but with advantages in timeliness and flexibility.

##### Methods for Data Collection

The main method of data collection used was the company website for each of the services. This provided information about features that each service offered as well as pricing. We have also used our personal experiences with each service, as many people on the team have used them before.

Findings

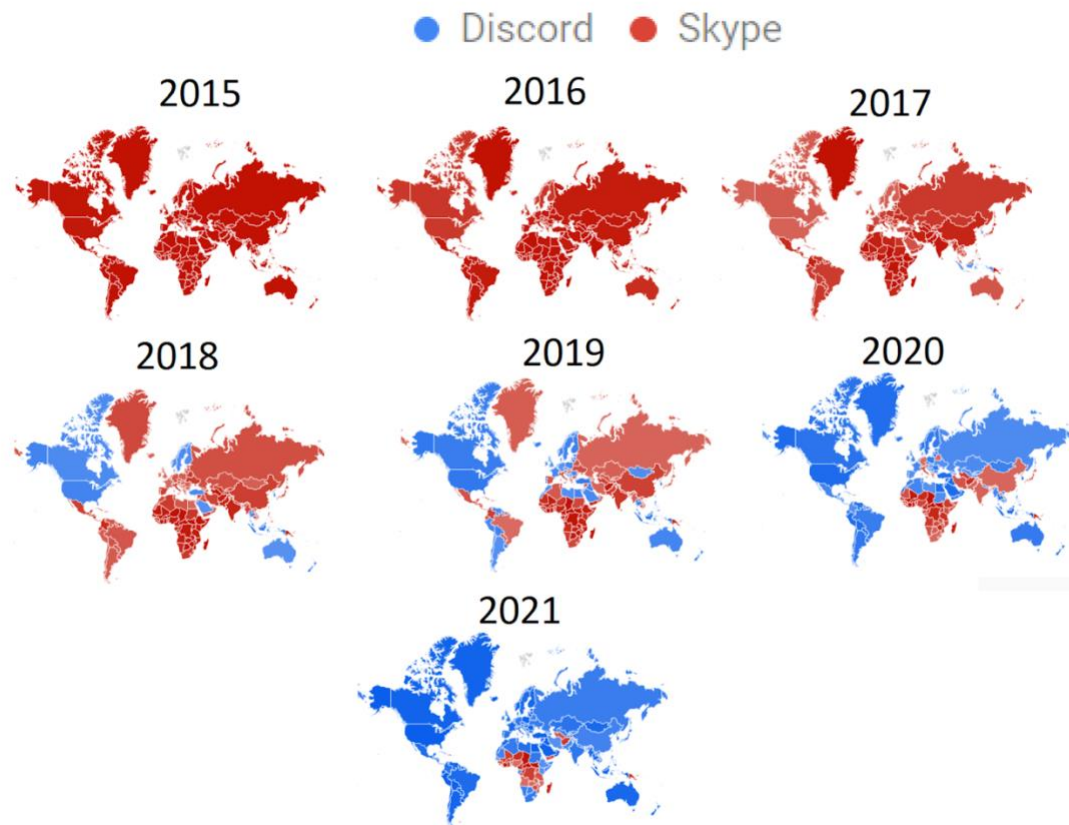
	# of users (As of today)	Text Messaging	Voice Calls	Integration with other Apps	Security	Plans / Costs	Streaming	Net Worth USD
Discord	140 Million	In a server, users can create text channels for group messaging. Direct messaging is also available.	Users can go into a voice channel on a server to talk to other users. They can also call their friends directly.	3000+ apps can be integrated using 3rd party services. Has Bots which can be added to channels for user-defined purposes.	Standard security available. It offers both DDoS and IP address protection.	Free, Nitro (\$100 per year), Classic (\$50 per year)	Streaming is offered. Start by pressing the "Go Live" button.	\$15 Billion
Slack	12 Million	Channels are used for messaging. Private channels can also be created and direct messaging is available.	Can start a voice call in any channel or DM. Supports 2-50 people on one call.	Integrates easily with pre-existing applications such as Workday. User made bots can be added.	Offers enterprise-grade data protection. Has device management, data protection, and information governance.	Free, Standard (\$80 per year), Plus (\$150 per year)	If a huddle is started, users can share their screen or turn on their cameras.	\$27.7 Billion
Skype	1.33 Million	Can create groups of users to message or message users directly.	Users can start a call with anyone from their contacts. People are added to	No app integration	All messages, calls, and file transfers are encrypted using TLS	Free. Phone calls and SMS message are at an additional cost.	Screen sharing is available and video can be turned	\$8.5 Billion

			the call manually if desired. Only supports 1-4 people in calls.		for messages and AES for Skype clients.		on from a voice call.	
Microsoft Teams	270 Million	Text channels are used for group messaging in a specific Team. Users can directly message anyone in their organization.	Users can start a voice call from a direct message with anyone in their organization.	700+ in store Microsoft apps readily available. Can add apps using 3rd party extensions.	Extremely Secure. Enforces 2-factor authentication.	Plans as high as \$12.50/month available for Business use. Individual users can use it for free with limited capabilities.	Can create meetings with others or in direct messages to stream content. Also has integration with Teams Live Events	N/A

From the table above, we gathered that each competitor offers mainly the same services. Each offers text messaging, voice calls, video chat, and some form of streaming. Where they differ is how each is implemented. For example, Discord and Slack are very similar in that they both group texts into channels to better organize topics. Skype doesn't offer this at all and only allows direct messaging. This means it is dependent on what the user is looking for to determine which service is the best. Cost is another factor that each differs on. All have a free option but the optional upgrades vary in price depending on the application and services offered. Microsoft's highest plan is \$12.50 a month while Discord's highest plan is about \$8.33 a month.

#### Discord vs Skype Comparison:

From the figure below we can see that skype was dominating the entire world in 2015. But later on the number of Skype users decreased and discord started to emerge. As of now, discord is dominating. Several aspects Discord provides out run Skype that led to this result. Security, Screen sharing, Call recording, Supported platform. For security, Discord offers its users both DDoS and IP address protection, offering full client-to-server security. However Skype seems to lack some protection and has been rated poorly for it's security. For screen sharing, Discord offers more customization options, while Skype offers simple features, therefore we would say that Discord edges out Skype. Discord provides native call recording for its user while Skype has to use third party apps to get the same feature. For supported platforms, Discord allows users to sync with Facebook, Skype, Twitter, Steam, Spotify, and many other apps. In contrast, Skype is considerably limited as it only syncs with Facebook. That's why Discord is taking over.








## Discord vs. Microsoft Teams vs. Skype vs. Slack Comparison Chart

Discord	Microsoft Teams	Skype	Slack
★★★★★	★★★★★	★★★★★	★★★★★
<a href="#">Learn More</a>	<a href="#">Learn More</a>	<a href="#">Learn More</a>	<a href="#">Learn More</a>
<a href="#">Update Features</a>	<a href="#">Update Features</a>	<a href="#">Update Features</a>	<a href="#">Update Features</a>
<b>Platforms Supported</b>	<b>Platforms Supported</b>	<b>Platforms Supported</b>	<b>Platforms Supported</b>
Windows ✓	Windows ✓	Windows ✓	Windows ✓
Mac ✓	Mac ✓	Mac ✓	Mac ✓
Linux ✓	Linux ✓	Linux ✓	Linux ✓
SaaS ✓	SaaS ✓	SaaS ✓	SaaS ✓
On-Premise ✓	On-Premise ✓	On-Premise ✓	On-Premise ✓
iPhone ✓	iPhone ✓	iPhone ✓	iPhone ✓
iPad ✓	iPad ✓	iPad ✓	iPad ✓
Android ✓	Android ✓	Android ✓	Android ✓
Chromebook ✓	Chromebook ✓	Chromebook ✓	Chromebook ✓

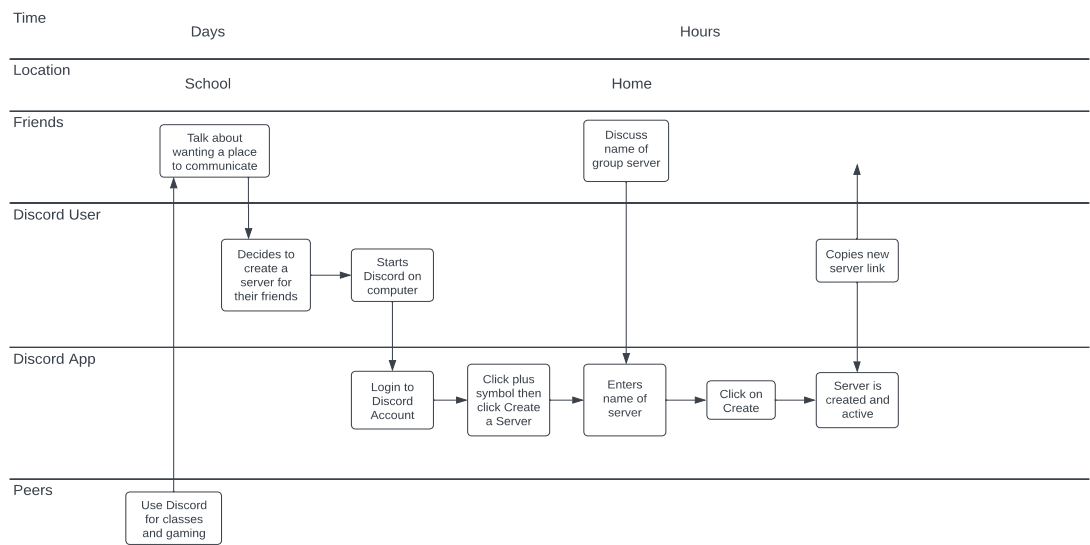
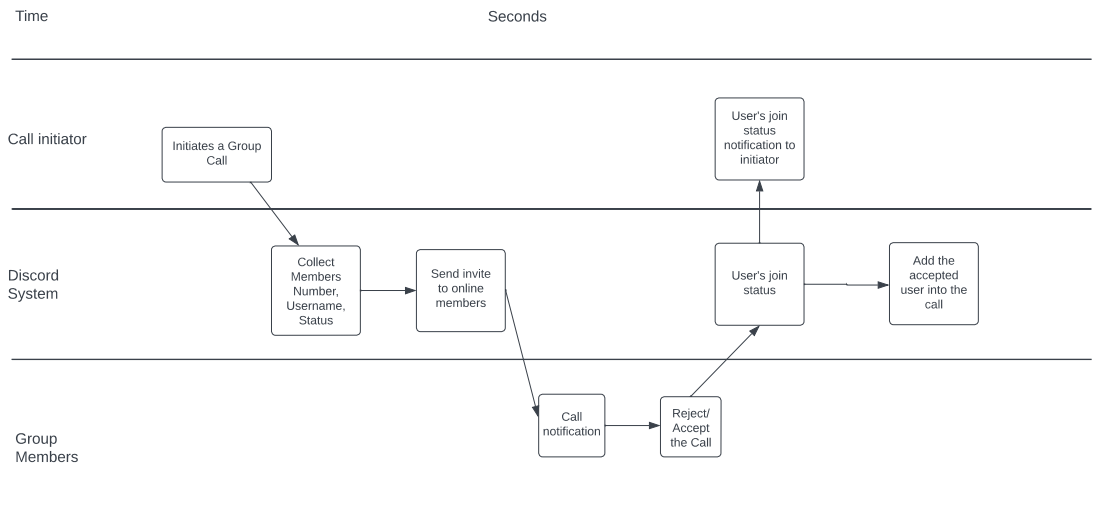
The following comparison is a small screenshot of the entire comparison table that we referred to in order to collect data. The website compares the applications on a variety of aspects such as pricing, usability, available categories, etc. From the comparison we can see that the Discord, Microsoft Teams and Slack have the most supported platforms. These three are also the ones that are currently popular in the market. Only Microsoft Teams has all day live support. For offering APIs, only Microsoft Teams and Slack offer API. When it comes to the pricing part, Discord is completely free. In conclusion, customers prefer

applications that support as many platforms as possible today in order to eliminate the worry that they won't be able to use them on every platform.

	 Discord	 Slack	 Microsoft Teams	 Skype
Founding Date	2012	2009	2017	2003
Type	Private	Subsidiary	Subsidiary	Subsidiary
Tags	Technology app development consumer software games messaging telecommunications	Technology cloud enterprise software messaging	Technology cloud services(SaaS) enterprise software platform	Technology application software messaging mobile app video conference
Locations	San Francisco, US HQ	San Francisco, US HQ Carlton, AU Vancouver, CA Pune, IN Dublin, IE Tokyo, JP Denver, US	Redmond, US HQ	Lëtzebuerg, LU HQ Redmond, US
Employees	2,337 <sup>↑</sup> 6% increase	4,228	N/A	1,059
Twitter followers	4.3 m	466 k	328.2 k	4.9 m
Number of tweets (last 30 days)	832	697	402	1
Average likes per tweet (last 30 days)	476.8	3.2	37.5	2
Percentage of tweets with engagement (last 30 days)	28.85%	39.17%	44.03%	100%
Alexa Website Rank	75	199	N/A	407
Employee Rating	★ 4.1	★ 4.6	N/A	★ 3.6
Financial				
Revenue (est.)	N/A	\$902.6m (FY, 2021)	N/A	\$2b (Y, 2013)
Operating 				
Daily Active Users	14 m (Aug, 2018)	12.5 m (Mar, 2020)	N/A	N/A
Monthly Active Users	140 m (Dec, 2020)	N/A	N/A	300 m (Mar, 2016)
Funding				
Total funding raised	\$ 479.3m	\$ 1.3b	N/A	\$ 26.8m

Above data is collected from [craft.co](https://craft.co). From this comparison table we can analyze each competitor based on the different factors like users, funding revenue etc. Unfortunately, all the data regarding all the factors cannot be obtained as some of these companies are private.

# V. Sequential Diagrams



## VI. Interviews

### Interview Questions:

- Q1. Have you used Discord?
- Q2. How long have you been using discord?
- Q3. Some students have used discord for coursework, what's your experience?
- Q4. Would you recommend discord for coursework? If not, what other applications would you recommend?
- Q5. What do you like in 'this' application and why?
- Q6. What do you think about creating an event in discord?
- Q7. If you have to create an 'online meeting' in discord, what would you look for?
- Q8. If you have an upcoming event, what would you like to see?
- Q9. What do you think about channels in discord?
- Q10. What do you think of chatting in discord?
- Q11. We have been talking about usage of discord. Now I want to ask you about your experience with the user interface of discord?
- Q12. What is your opinion of using discord for gaming servers?

### Sample Responses:

#### Interviewee - 1

- Q1. Have you used Discord?  
**Ans:** Yes
- Q2. Have you ever used discord for coursework?  
**Ans:** Yes
- Q3. How did you use discord for coursework?  
**Ans:** We had a shared discord channel associated with our coursework wherein the professor would add important updates and the students could ask any doubts they had related to the course.
- Q4. Would you recommend discord for coursework?  
**Ans:** No
- Q5. Which course-related application would you recommend?  
**Ans:** I have been using Piazza since the beginning of my undergrad and I have loved it. I would definitely recommend Piazza over any other application.
- Q6. Why do you prefer this application over discord?  
**Ans:** Because of its simplistic and easy-to-use UI. All the features that I want for my coursework are present in plain sight. We have questions and answers separated nicely and could be ordered based on preferences. Also, the professor has the option to pinpoint some questions which are important.
- Q7. What do you think about creating an event in discord?  
**Ans:** It is an interesting feature, but this is already available for server owners.
- Q8. If you have to create an 'online meeting' in discord, what would you look for?  
**Ans:** I have been creating events in the past, but creating an event is a hassle. Series of clicks and navigation is difficult. I would like to see an easy way of creating the event much like in google calendar.
- Q9. If you have an upcoming event, what would you like to see?  
**Ans:** I want to keep a tab to see my upcoming events.
- Q10. Do you find it easy to navigate between the different channels within discord?  
**Ans:** Yes
- Q11. Do you need more options to be available while you message others?  
**Ans:** No

Q12. What is your opinion on the options (Gifs, Attachments etc) provided by discord while messaging?

**Ans:** I feel these options are overwhelming and confusing without a proper explanation of each available option.

Q13. How often do you use discord for creating group meetings?

**Ans:** Very few times.

Q14. What are the reasons for you to choose other applications over discord for group meetings?

**Ans:** Creating the meeting is easy and they can be easily accessed.

#### **Interviewee - 2:**

Q1. Have you used Discord?

**Ans:** Yes

Q2. Have you ever used discord for coursework?

**Ans:** Yes

Q3. How did you use discord for coursework?

**Ans:** I used it for my Software Engineering course. It was recommended by our professor and was used as the main means of communication.

Q4. Would you recommend discord for coursework?

**Ans:** Yes

Q5. What's your opinion about using discord for coursework?

**Ans:** The application is great.

Q6. Are there any particular features that make you think so?

**Ans:** The audio and video features on the application are great for short and sync-up calls with teammates. Further, I also liked the functionality where we could have separate channels for students

Q7. What do you think about creating an event in discord?

**Ans:** I felt this feature is not very usable, because it is difficult to create a new event.

Q8. If you have to create an 'online meeting' in discord, what would you look for?

**Ans:** I want to get responses from attendees whether they are joining the event.

Q9. If you have an upcoming event, what would you like to see?

**Ans:** I would like to see the attendance list, because I could not see in zoom.

Q10. Do you find it easy to navigate between the different channels within discord?

**Ans:** No, there is no proper labeling to the channel names.

Q11. Do you need more options to be available while you message others?

**Ans:** No

Q12. What is your opinion on the options (Gifs, Attachments etc) provided by discord while messaging?

**Ans:** I feel these options can be clubbed into a single ping as in whatsapp instead of showing all the options which is confusing.

Q13. How often do you use discord for creating group meetings?

**Ans:** Used quite often.

Q14. What are the reasons for you to choose other applications over discord for group meetings?

**Ans:** I find it easy to create meetings in other apps. While in discord it is difficult to navigate and create meetings.

#### **Interviewee - 3:**

Q1. Have you used Discord?



- Ans:** Yes
- Q2. Have you ever used discord for coursework?
- Ans:** Yes
- Q3. How did you use discord for coursework?
- Ans:** I used it for my DevOps course to keep in touch with my teammates.
- Q4. Would you recommend discord for coursework?
- Ans:** Yes
- Q5. What's your opinion about using discord for coursework?
- Ans:** It's a good application but a few things improved would make it great.
- Q6. Why do you think so?
- Ans:** When so many students are using a channel and if someone shares something important, like a document, it becomes difficult to find the document again in so many messages. Only the owner of the server has the privilege to pin a message and it would be great if even the students are able to do the same privately.
- Q7. What do you think about creating an event in discord?
- Ans:** The UI of creating an event is cluttered. Creating new events is hidden, and it is a pain to search every time.
- Q8. If you have to create an 'online meeting' in discord, what would you look for?
- Ans:** I would like to monitor my upcoming events somehow in the discord itself.
- Q9. If you have an upcoming event, what would you like to see?
- Ans:** I should be able to set a notification timer and get notifications/ pop-ups according to that.
- Q10. Do you find it easy to navigate between the different channels within discord?
- Ans:** Channel names sometimes confuse me especially when two different channels use the same icon.
- Q11. Do you need more options to be available while you message others?
- Ans:** Yes, maybe you can include video call and audio call icons.
- Q12. What is your opinion on the options (Gifs, Attachments etc) provided by discord while messaging?
- Ans:** The icons used for these options are confusing. They can be put under one icon so it simplifies the UI.
- Q13. How often do you use discord for creating group meetings?
- Ans:** Very often.
- Q14. What are the reasons for you to choose other applications over discord for group meetings?
- Ans:** Meetings in other apps are easy as they just have a single form to fill date and time and create instant meetings as well.

#### **Interviewee - 4:**

- Q1. Have you used Discord?
- Ans:** Yes
- Q2. Have you ever used discord for coursework?
- Ans:** No
- Q3. What other course-based applications have you used?
- Ans:** I have used gradescope and piazza for my courses since now. Haven't even heard that discord could be used for coursework. I did have one course wherein the professor used slack for discussion and important updates but I didn't like it that much. I usually missed important updates that professor shared because there wasn't any email triggered after the adding the update and if I didn't check my slack, I won't get notified.
- Q4. What do you think about creating an event in discord?
- Ans:** I have not used this feature before.

- Q5. If you have to create an 'online meeting' in discord, what would you look for?  
**Ans:** Google calendar provides the best way to create a meeting, I would like a similar approach.
- Q6. If you have an upcoming event, what would you like to see?  
**Ans:** I want to join the event easily. I would like to keep the audio and video option available.
- Q7. Do you find it easy to navigate between the different channels within discord?  
**Ans:** Few channels are hard to navigate when they use default icons.
- Q8. Do you need more options to be available while you message others?  
**Ans:** No
- Q9. What is your opinion on the options (Gifs, Attachments etc) provided by discord while messaging?  
**Ans:** Not all options are used frequently. So, the options that are not of much importance can be put under a single icon.
- Q10. How often do you use discord for creating group meetings?  
**Ans:** I didn't use it.
- Q11. What are the reasons for you to choose other applications over discord for group meetings?  
**Ans:** In discord I wasn't aware of the group meeting feature. I haven't used it. Maybe it can be placed where it can be easily found.

## VII. Interpretation

Some of the examples of affinity notes are given below

Participant 1:

Unique Number	Reporter - <u>Kan-No Lee</u> Note Taker - <u>Brooke Raschke</u> Rat Hole Watcher - Sairam Sakhamuri
P2 - 1	Uses Discord for gaming, specifically when playing League of Legends with friends.
P2 - 2	When streaming a game, the audio quality can go down when using Bluetooth devices.
P2 - 3	User liked discord for features like:- Voice calling while gaming, Live Streaming, Channel Maintenance and Role creation feature.
P2 - 4	Usually use discord for coursework.
P2 - 5	User felt that discord does provide all the feature necessary for a social media platform doesn't find any updates necessary.
P2 - 6	User liked WhatsApp over Discord for social media purpose since he felt a lot more users know and use WhatsApp over Discord.
P2 - 7	User liked discord because of its gamer friendly features and Channel privacy.

Participant 2:

Unique Number	Reporter - <u>Arun Gaonkar</u>
---------------	--------------------------------

	Note Taker - <u>Aswin Itha</u> Rat Hole Watcher - <u>Vasu Agrawal</u>
P4 - 1	Uses Discord for gaming
P4 - 2	Likes voice, group chats, easy navigation, and music features
P4 - 3	Feels there is need to fix bandwidth problems to enhance Video
P4 - 4	Doesnt recommend for peers as status of Instructor is missing
P4 - 5	Prefers using Instagram for personal uses but uses Discord just for gaming

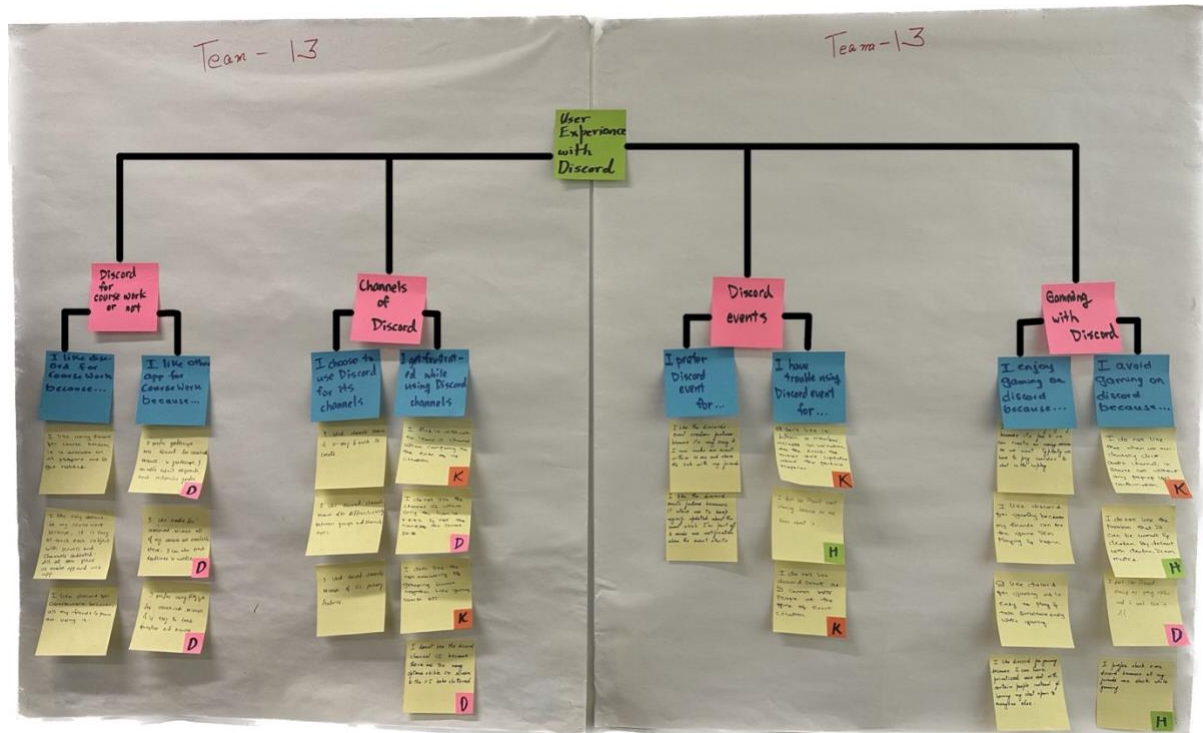
Participant 3:

Unique Number	Reporter - Sairam Sakhamuri Note Taker - <u>Vasu Agrawal</u> Rat Hole Watcher - <u>Aswin Itha</u>
P7 - 1	User typically used discord for messaging and academic purposes.
P7 - 2	User liked discord for: Messaging, Calling and a their huge database of sticker
P7 - 3	User didn't find any issues with regards to the video chat feature of discord
P7 - 4	Usually use discord for coursework.
P7 - 5	User felt that the meeting alert feature of discord could be improved.
P7 - 6	User liked Intagram over Discord for social media purpose since he felt it to be more user friendly
P7 - 7	User liked discord because of its privacy features and their channel security.

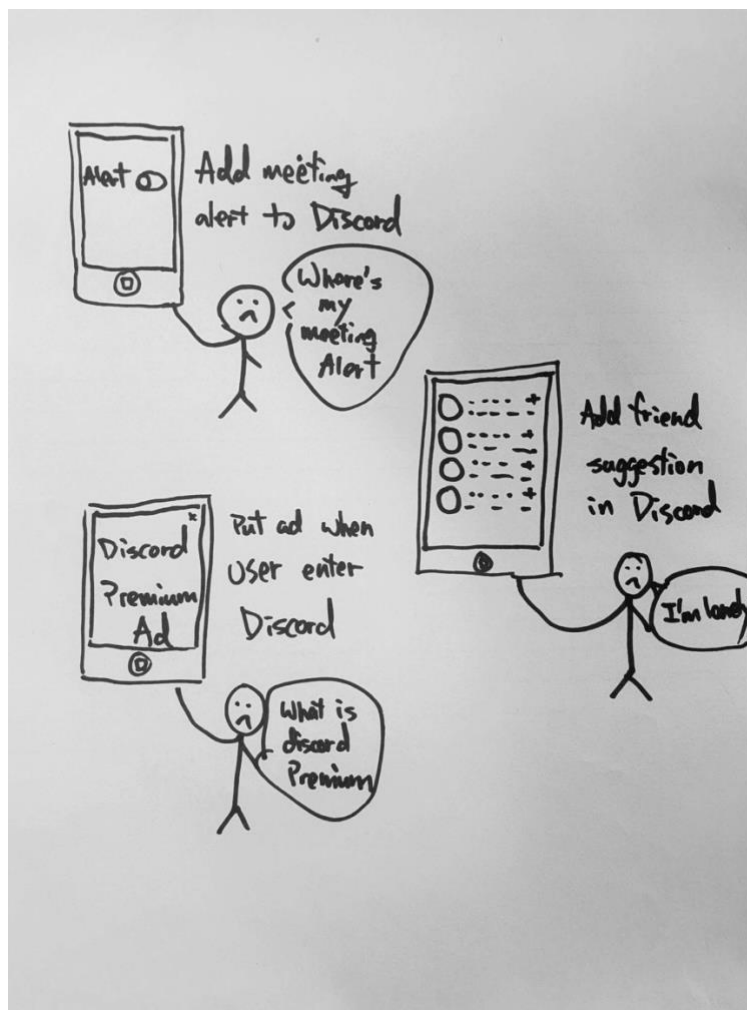
Participant 4:

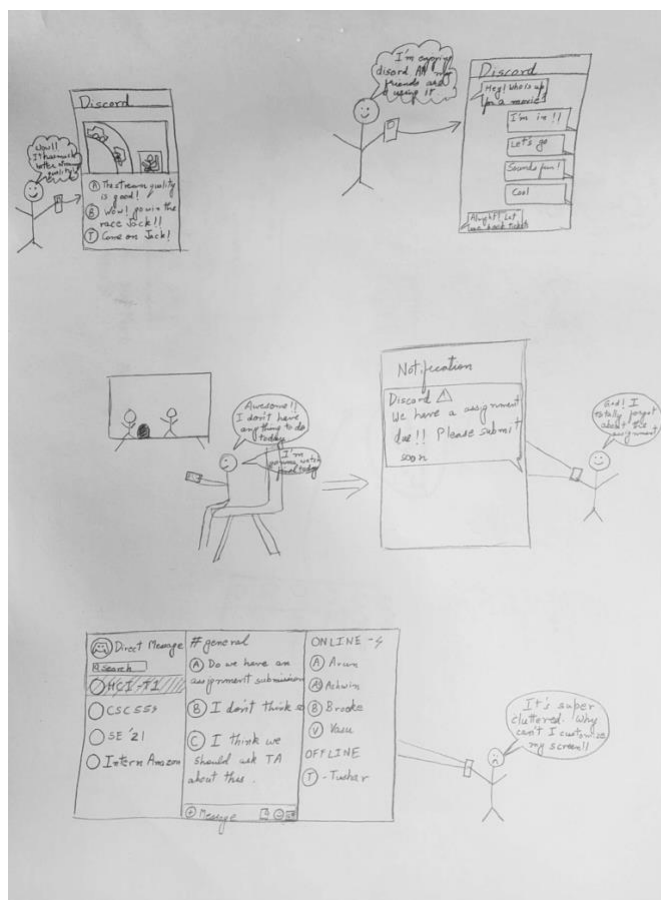
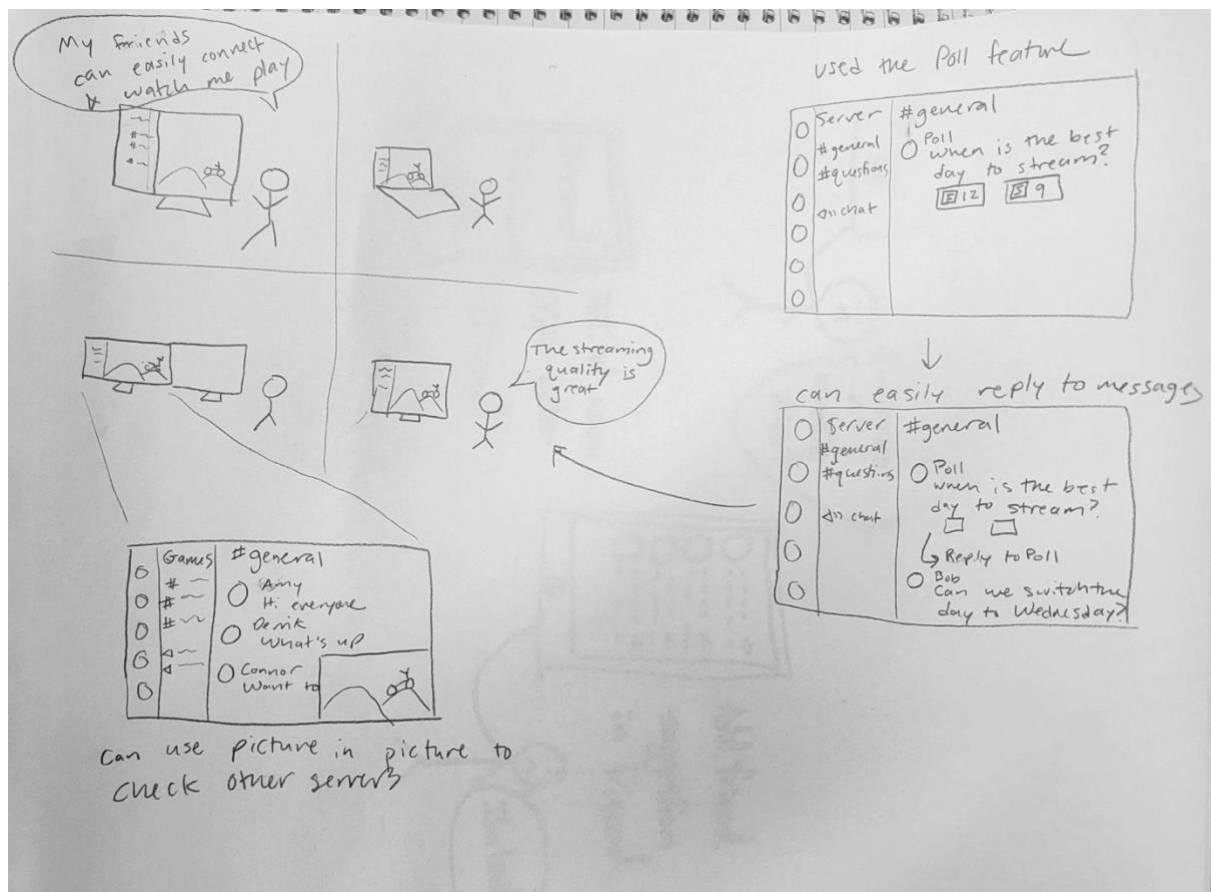
Unique Number	Reporter - Sairam Sakhamuri Note Taker - <u>Vasu Agrawal</u> Rat Hole Watcher - <u>Aswin Itha</u>
P8 - 1	User typically used discord for job discussion, coursework and gaming,
P8 - 2	User liked discord for: Audio chat feature and gamer friendly functionalities
P8 - 3	User didn't find any issues with regards to the video chat feature of discord
P8 - 4	Usually use discord for coursework.
P8 - 5	User felt that the notification and announcement features could be an improvement in discord.





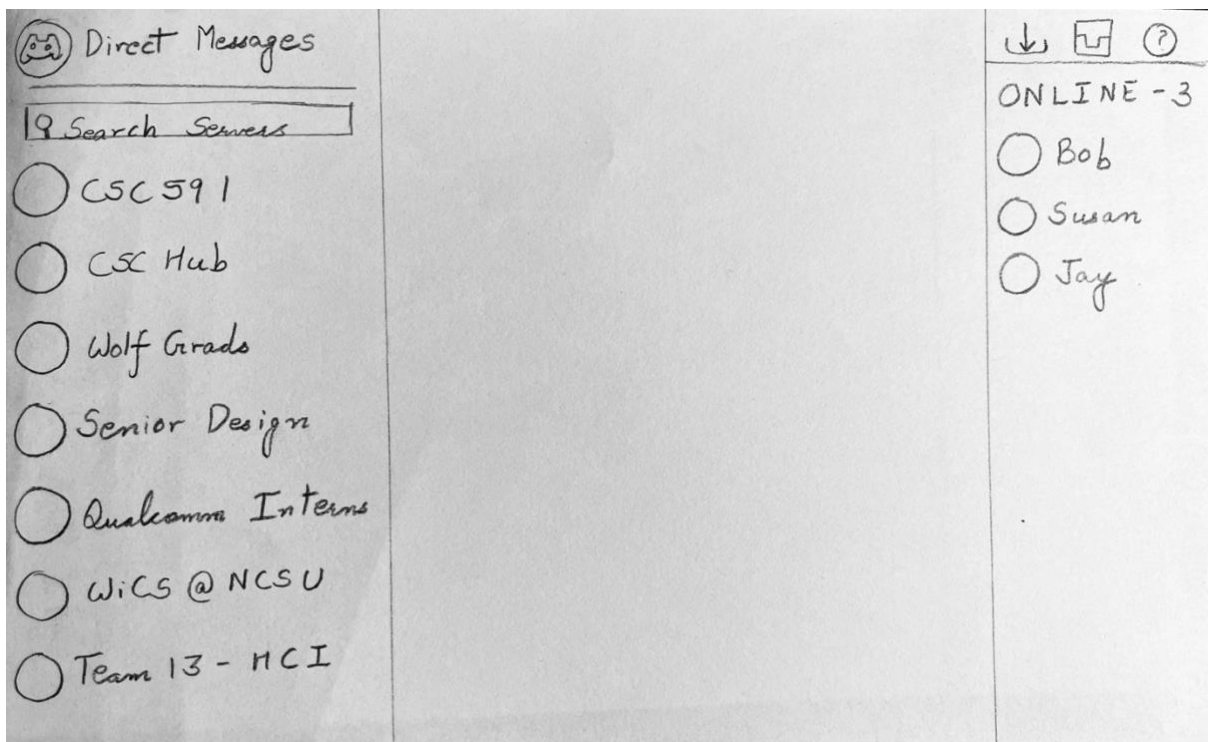
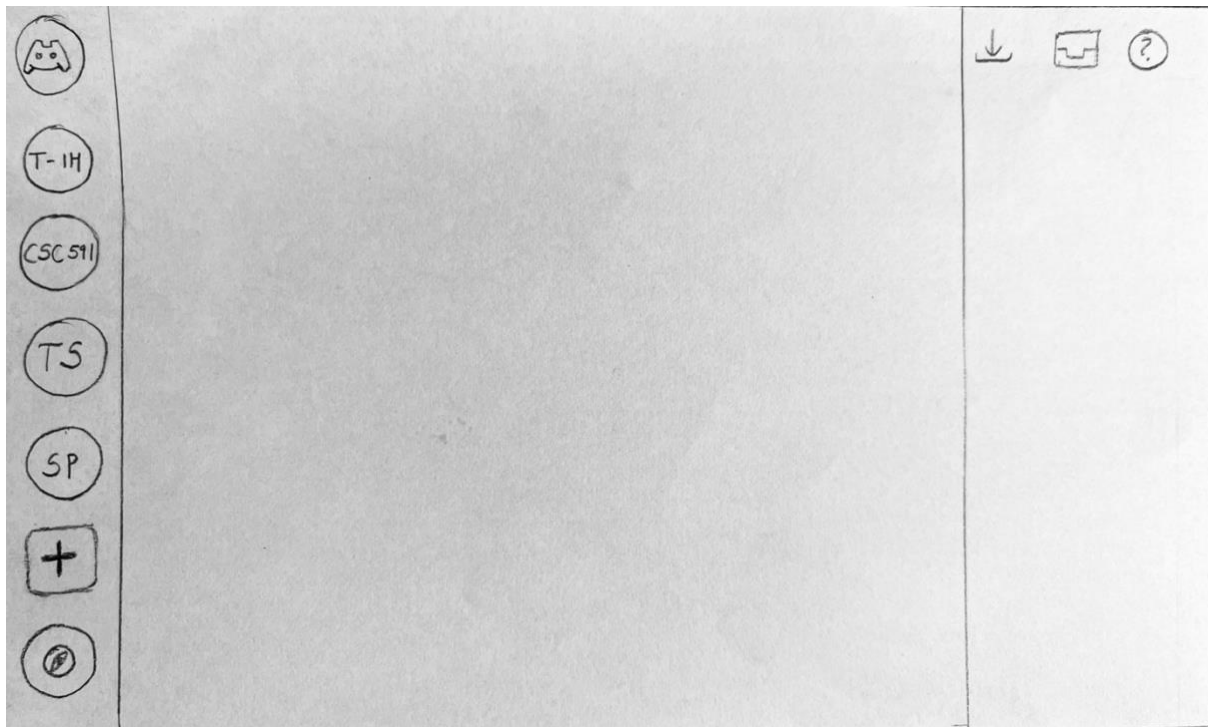
## IX. Storyboarding

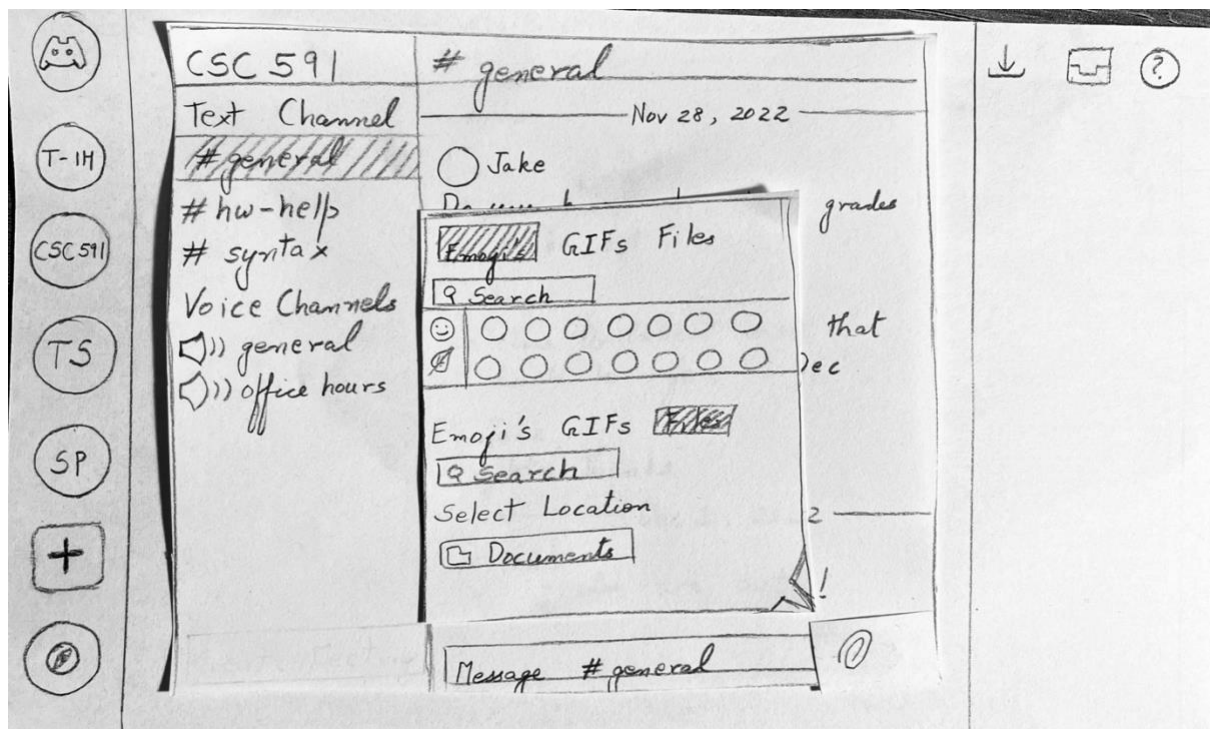
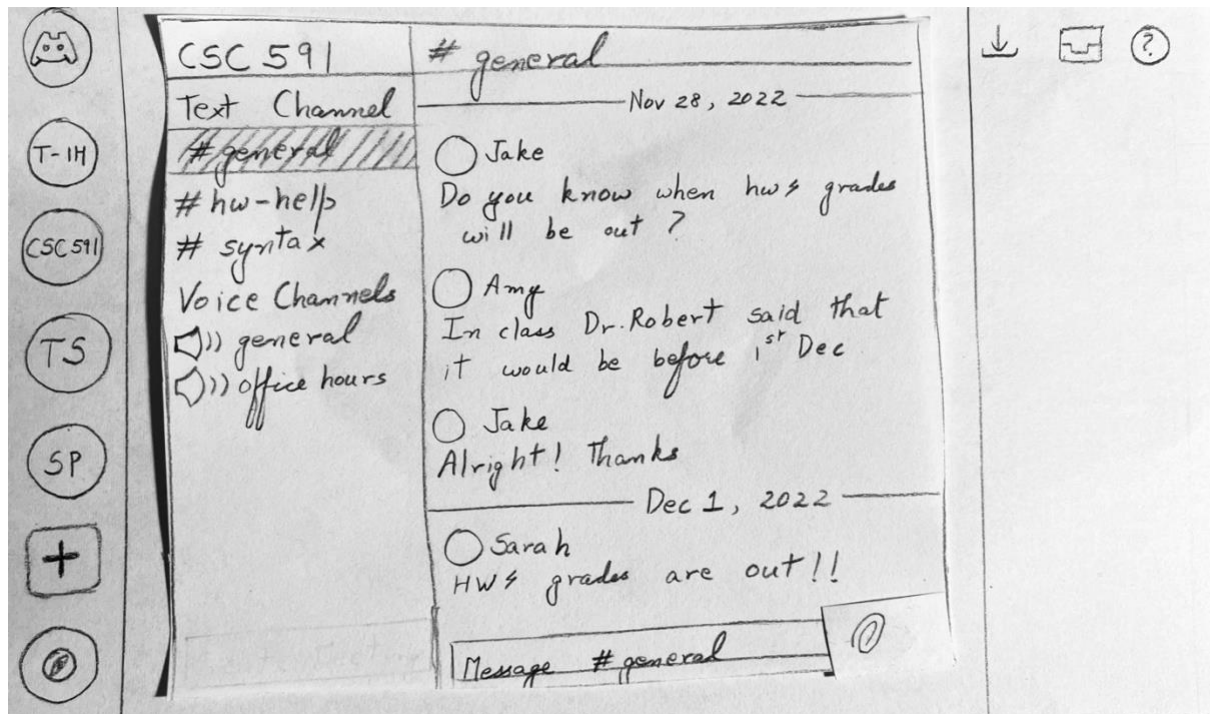






## X. Prototyping

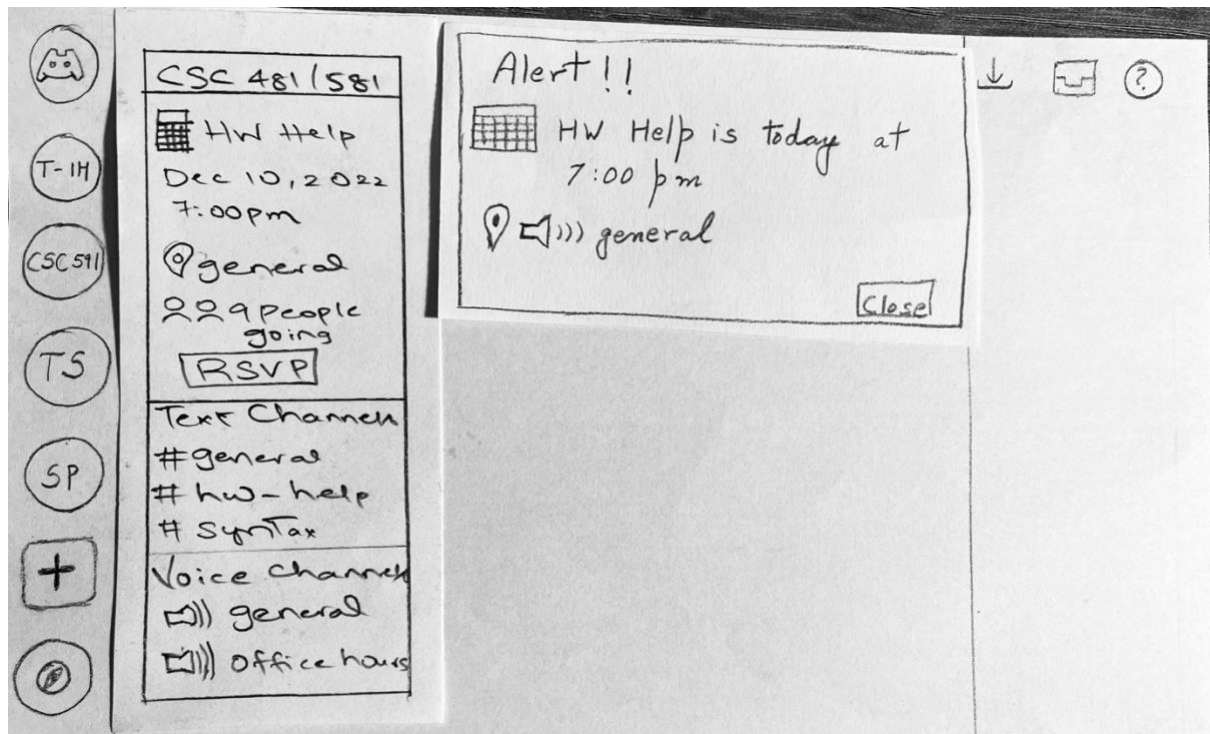












## XI. Heuristic Evaluation for new design recommendations

### Personas

1. Maddie is a 19 year old girl who is currently enrolled in college. Because she goes to college out of state, she enjoys talking to her friends at home in her free time by texting them and by video calls. She also likes to play video games to relax and enjoys keeping up with the current happenings of her favorite games.

Use Case 1: Maddie wants to talk to one of her friends over Discord. She selects the Direct Messages tab then selects one of her friends to direct message. She then types a message in the text box, attaches an emoji, and presses the enter key.

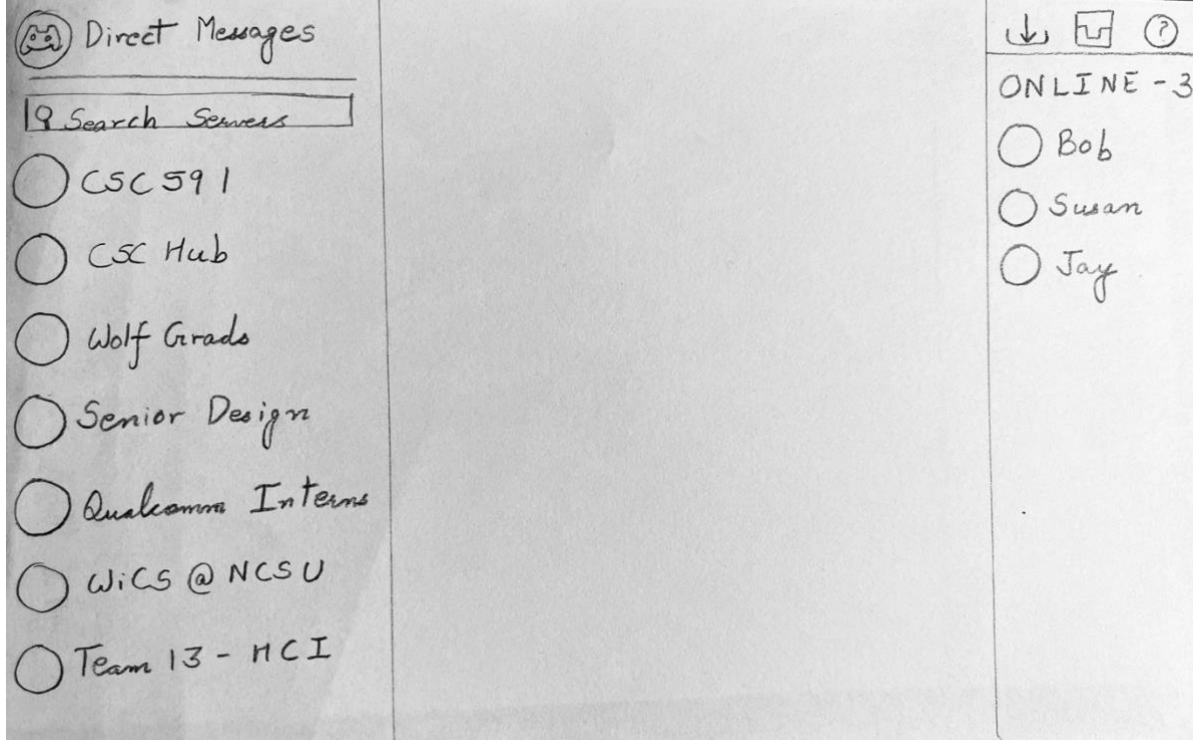
Use Case 2: Maddie wants to find out what is new in her favorite game Stardew Valley. She scrolls through the list of servers and selects the Stardew Valley Gaming server.

2. Dr. Roberts is a 35 year old computer science professor. He values helping students understand and retain the information he teaches. He uses Discord to give his students a way to ask questions and get help from the whole class and teaching staff.

Use Case 3: Dr. Roberts wants to hold office hours over Discord. He selects the Create Meeting button and enters in information about the meeting so that students will know when it is.

Use Case 4: Dr. Roberts has a question about how his students felt about the most recent homework assignment. He navigates to the Q&A channel, clicks the New Question button, and enters in his question. Students are then able to click on and respond to his question.

## XII. Usability Aspect Report (UAR)

<b>No.</b> HE10	<b>Problem/Good Aspect</b>  Good Aspect
<b>Name:</b> Finding a Discord Server	
<b>Evidence:</b>  Heuristic:  <ol style="list-style-type: none"><li>1. Visibility of system status</li><li>2. Recognition rather than recall</li><li>3. Flexibility and efficiency of use</li><li>4. Help and documentation</li></ol> Interface aspect:  	
<p>In Discord, all of the servers the user is in are listed in a column on the left hand side of the page. The design now includes all of the server's names beside the server's picture. There is also a search bar at the top of the list which can be used to search for a specific server. The current server selected is denoted by the black bar to the left of the picture. At the top right of the screen there are two buttons. One is a question mark which will take the user to Discord's documentation pages. On the pages there are categories and a search bar on all of Discord's features.</p>	

**Explanation:**

1. Visibility of system status- This design shows the user what server they are currently on by using the black bar to the left of the server's picture and name. This gives the user feedback about what page they are on without being distracting.
2. Recognition rather than recall- In the previous design, the server names were left off of the list. Adding the names provides for better recognition for users. Instead of having to guess which picture matches the server they want, the user is able to easily read the server's name and pick the correct one. They no longer need to use recall to remember each server's picture and no longer have to hover over the picture to see the server's name.
3. Flexibility and efficiency of use- The new search bar provides a shortcut for users who know which server they are looking for. It can also populate the search bar with previously searched for servers, similar to how the Google search bar works.
4. Help and Documentation- In the upper right hand corner of the page there is a button shaped like a question mark. When clicked, it brings the user to the Discord help webpage. It is easily accessible so users can find it in a panic and provides information about all of Discord's features.

**Severity or Benefit:**

**Rating:** 0

**Benefits:**

One benefit of this design is that it allows the user to more easily use the system. Having all the server names visible makes it easy to switch between them without getting confused which picture belongs to which server. It also saves the user time by removing the thinking time they incur when trying to remember which server has which picture. Another benefit is that if users are in a lot of servers, they no longer need to scroll all the way through their list to reach it. They can instead use the search bar for quicker access.

**Possible solution and/or trade-offs:**

One tradeoff of this design is that it introduces more text on the screen. This could cause some users to believe that the UI is busy and cluttered. However, I believe that by using the same font as the rest of the page, it will not look much different than anything else on the page. The benefit of ease of use should outweigh this tradeoff.

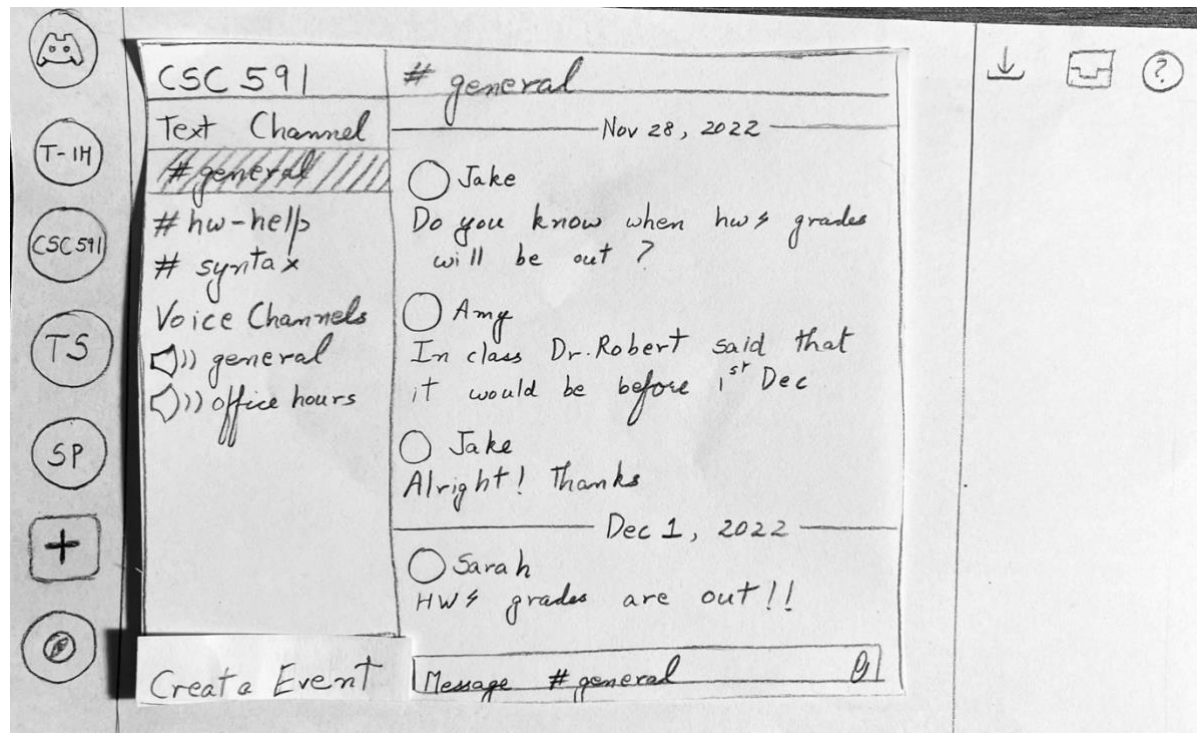
<b>No.</b> HE11	<b>Problem/Good Aspect</b>  Good Aspect
<b>Name:</b> Create a Event	

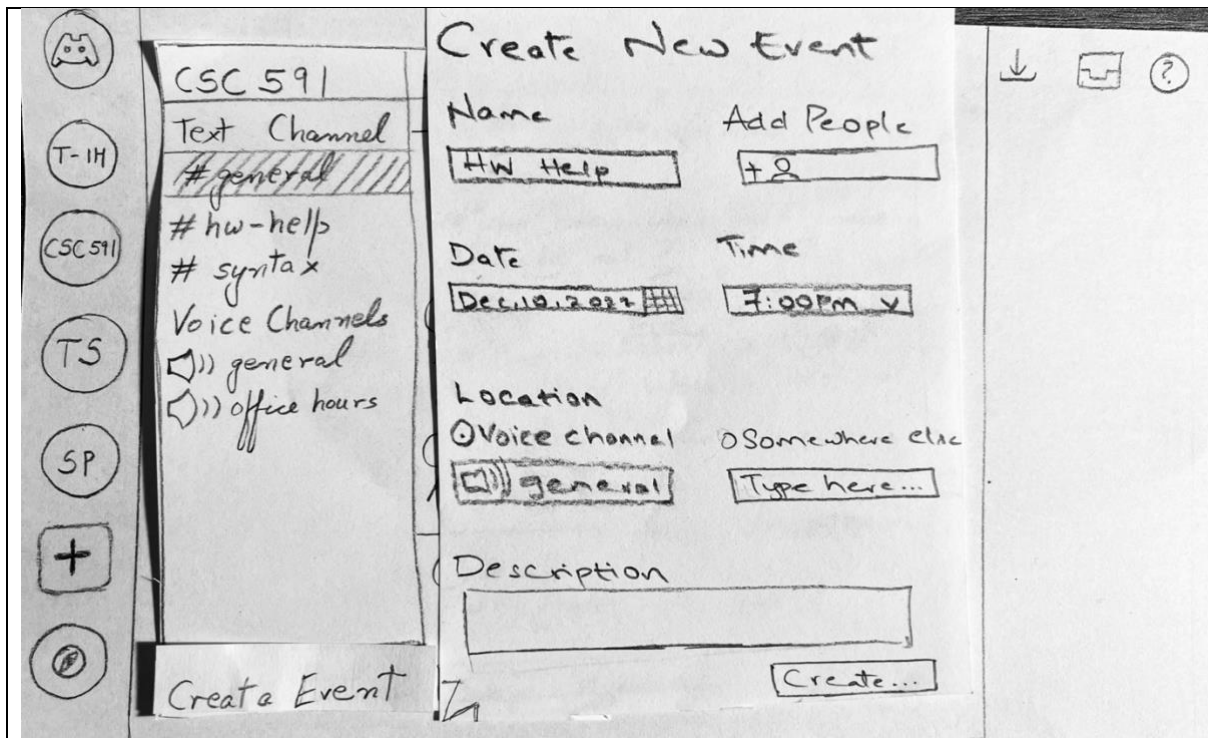
### Evidence:

#### Heuristic:

1. User control and freedom
2. Flexibility and efficiency

#### Interface aspect:





The first picture is of a text channel in a server. In the bottom left corner, there is a button that is used to create a new meeting. Once clicked it will bring the user to the second picture. It shows a form that will collect necessary information about the user's event. Once finished, the user can click the create button to post the event to the channel and notify all users.

#### Explanation:

1. User control and freedom- In the previous Discord implementation, the user had to go through a wizard like form in order to create a meeting. This removes the steps and puts all the information in front of the user at one time by using a form. This way the user can choose which aspects of the meeting they would like to fill in. They also know all the information required once they click the "Create Meeting" button instead of not knowing what is coming next.
2. Flexibility and efficiency- The button provides a shortcut to create meetings. It is a prominent button on the channel list which makes it easy for users to access it. If users are frequently creating meetings then this will simplify the process for them. Having a form implementation increases efficiency because it also simplifies the meeting making process.

#### Severity or Benefit:

**Rating:** 0

#### Benefits:

A benefit of creating a meeting like this is that it is similar to a Google Form, which users are likely to be familiar with. This is because many Discord users are in school and use the Google Suite in their everyday lives. Because they are familiar with how to fill out a form, it will make it easier for them to create an event. Another benefit is that it now only takes two button clicks to create a



meeting. Previously, the button was hidden in a dropdown menu under the server's name and took many steps to actually create the meeting.

**Possible solution and/or trade-offs:**

One tradeoff is for users who don't usually create meetings. They might never use a button which is so prominent on their page. This might be annoying for them but one way to fix this is to include a setting which determines if the button is to be displayed or not.

No. HE12

Problem/Good Aspect

Good Aspect

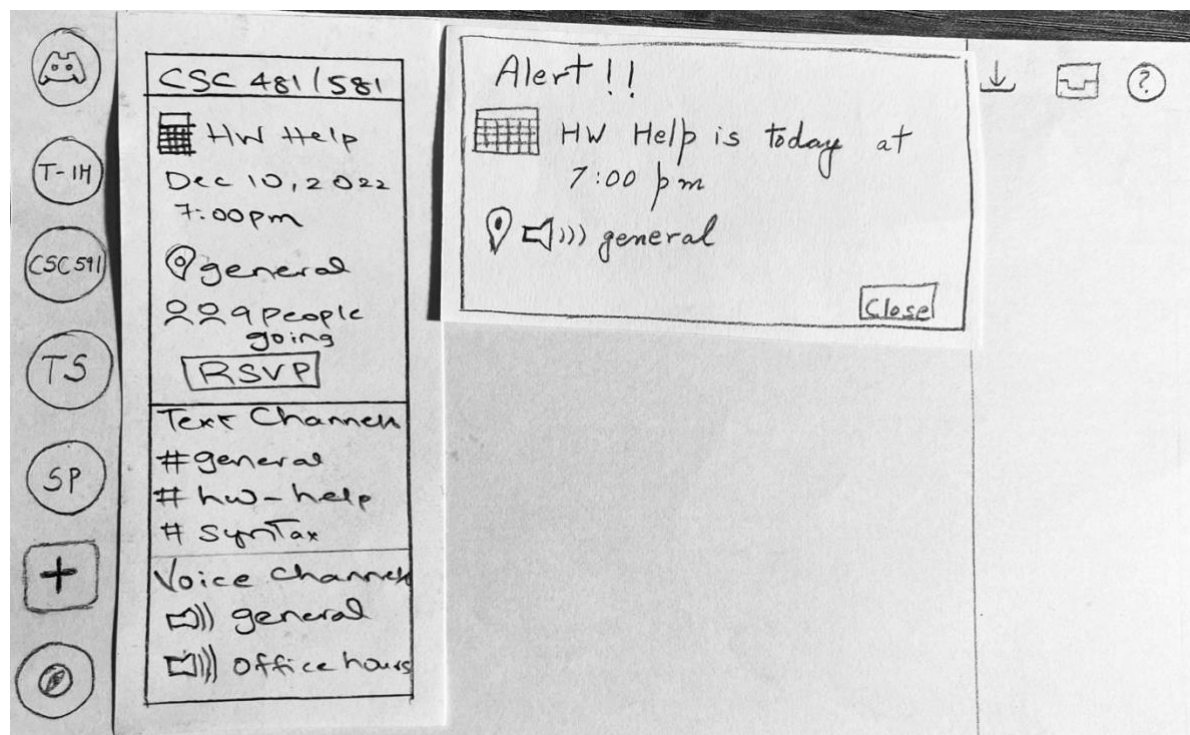
**Name:** Meeting Alerts and Information Display

**Evidence:**

Heuristic:

1. Visibility of system status
2. Match between system and real world
3. Consistency and standards

Interface aspect:





The first picture shows the left sidebar of a server. It shows the list of channels in that server. At the top of the bar, there is information about a meeting that has been previously created as well as an RSVP button. If the user clicks the button, they will be added to the number of people going and will receive an alert for the meeting on the day it is occurring. The second picture shows the alert which contains the information about the meeting. The only way to close this popup is to click the "Close" button.

**Explanation:**

1. Visibility of system status- The sidebar shows information about a created meeting which helps the user to know the current status of the meeting. They know how many users are going, when, and where the meeting is. It helps them to keep track of the state of the meeting at a single glance.
2. Match between system and real world- The popup uses language that is centered around the user. It tells them that their meeting is today and makes the user feel like a friend is reminding them about the meeting rather than a computer. The icons used in the sidebar and the popup also replicate the real world. For the date, a calendar is used so at a glance the user knows where to find the date of the meeting. A waypoint pin is also used to represent the location which matches with a real world GPS.
3. Consistency and standards- From creating a meeting, to viewing it on the server, to viewing the popup, all icons and information remain the same. The same calendar and waypoint pin icons are used so that it is easy for the user to know what type of information they are viewing while still having a clean aesthetic.

**Severity or Benefit:**

**Rating:** 0

**Benefits:**

A large benefit of this design is that it displays a lot of information to the user without being cluttered. This is due to the use of consistent and familiar icons to the user. They are able to easily see relevant information about a meeting at a glance. The RSVP button also helps users who are interested in being notified about the event. It makes sure they are aware of when the event is happening on the day it is occurring.

**Possible solution and/or trade-offs:**

I don't see any negative tradeoffs from this design.

**Relationships:**

This relates to HE11 as it creates all the information displayed in this scenario. It also remains consistent to the designs presented in these pictures.

No. HE13	<b>Problem/Good Aspect</b>  Good Aspect
----------	---

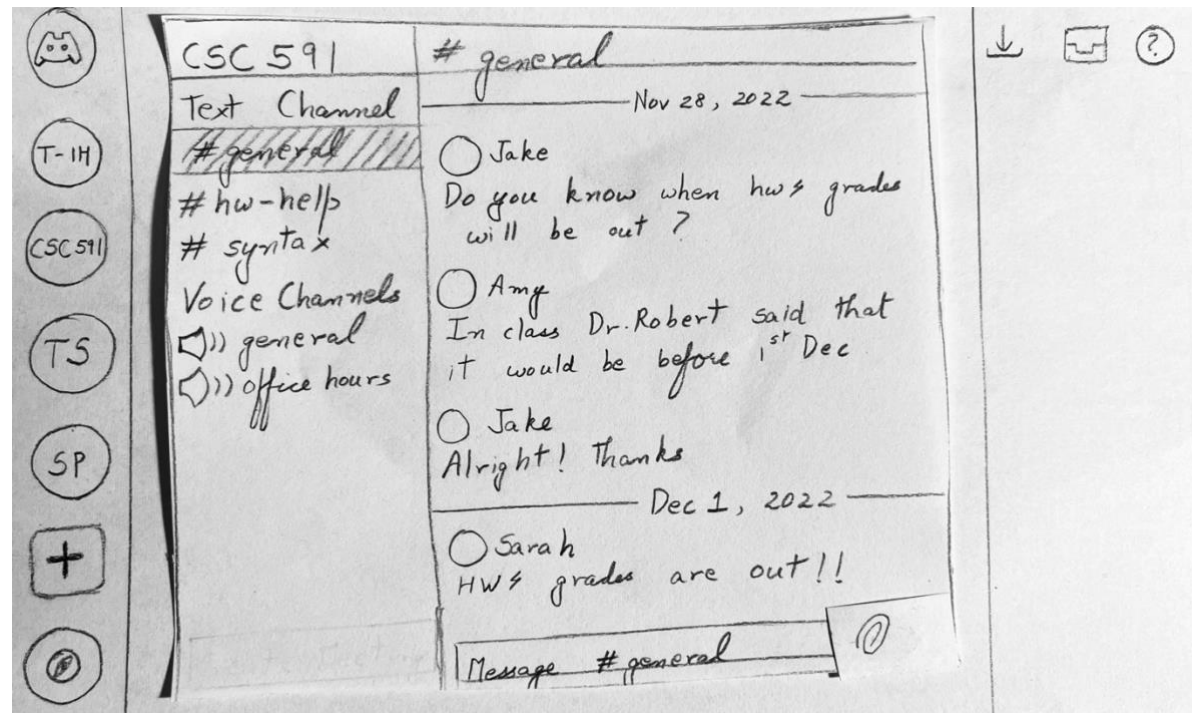
**Name:** Attaching Something to a Message

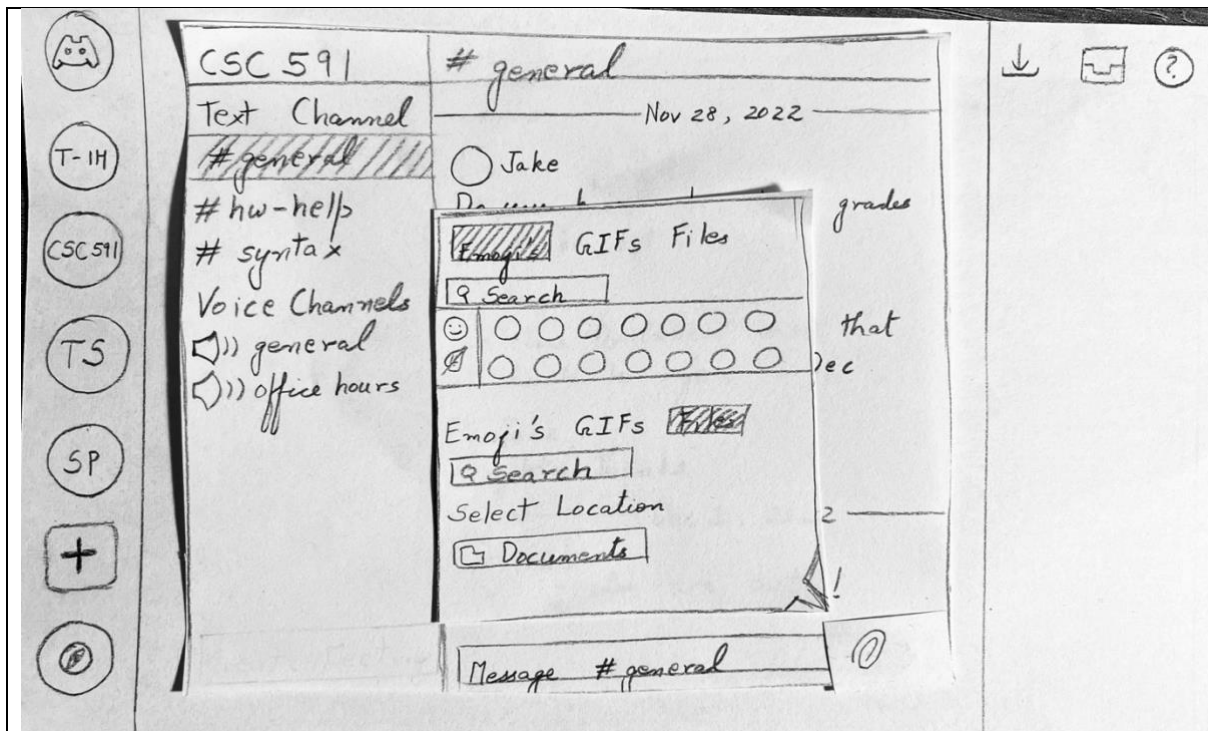
**Evidence:**

Heuristic:

1. User control and freedom
2. Aesthetic and minimalist design

Interface aspect:





The first image shows a view of a text channel on a server. At the bottom on the screen there is a text bar where users can type and send messages to the channel. On the right of the message bar, there is a paper clip icon which will allow the user to attach something to their message. The second image shows two examples of what will pop up when the paper clip is clicked.

#### Explanation:

1. User control and freedom- This principle is met because it allows the user to choose where they want to go and what type of media they want to attach to a message. They can navigate to the tabs at the top of the popup to select the media they want. After this they can scroll through a list of emojis, a list of GIFs, or select a file from a location on their computer.
2. Aesthetic and minimalist design- In this design extraneous information is left off of the message bar. In the previous design, there were lots of buttons that gave the user too many choices. In this design, the user still has the choice to upload different types of files, but there is only one button for them to choose. Then from there, they can navigate the different types of files they can upload. This just makes the chat screen more minimalistic.

#### Severity or Benefit:

**Rating:** 0

#### Benefits:

The main benefit of this design is that the user is relieved from the burden of choice. They can simply click one button to attach a picture, emoji, or GIF. Users are already familiar with this design from their experience with other text messaging apps. They are also familiar with the

paperclip image which signifies an attachment to the original text message. It simplifies the user's interaction with the app as they no longer have to think about which button means what and can go to one place for their attachment needs.

**Possible solution and/or trade-offs:**

The only tradeoff is that if there is a new user, he may not know what to be expected in the pop-up and hence there is a chance that the new user may assume a feature to be not available at all.

<b>No. HE14</b>	<b>Problem/Good Aspect</b>  <b>Good Aspect</b>
<b>Name:</b>  Creating a New Question	
<b>Evidence:</b>  Heuristic:  <ol style="list-style-type: none"><li>1. User control and freedom</li><li>2. Consistency and standards</li></ol>  Interface aspect:	

**CSC 591**

**Text Channel**

- # general
- # hw-help
- # syntax
- Q & A
- ? hw 1
- ? hw 2
- ? hw 3

**Voice Channel**

- general
- office hours

**Ask a New Question**

**Title**

Question about final exam

**Description**

Provide a detailed description here....

**Attach File**

☐ Documents

**Show name as**

☒ Sarah ☐ Anonymous

**Post**

**New Question**

Once the user clicks the “New Question” button, this screen will appear in place of the view of the Q&A channel.

#### Explanation:

1. User control and freedom- This implements more of a form rather than a wizard. Users can see all the information needed at one time rather than having to click through a bunch of steps as you would in a wizard. This allows the user to make choices about what information they would like to include in their question.
2. Consistency and standards- This screen is consistent with the Create New Event page that was shown previously. The information that the user enters in in the same location and has the same look and function. In addition, the file attachment is the same design as when a user attaches a file to a message. The Post button is in the same location as the Create Event button so it is consistent across screens.

#### Benefits:

The main benefit of this design is that it makes it easy and quick for users to ask a question. They should already be familiar with this design from the Create Meeting screen or from filling out any form. The form is also flexible enough to let users include any amount of information they want and can even choose to ask anonymously. The form is simple but consistent with the overall design of the application and with other form screens. This benefits the user as they don't have to have a cluttered and confusing design.

#### Possible solution and/or trade-offs:

There are no tradeoffs to this new screen.

### Relationships:

This is related to HE11 because even though they accomplish different tasks, they remain consistent with one another. It will be easy for users to use both forms as the function between the two is the same.

No. HE15

Problem/Good Aspect

Good Aspect

Name:

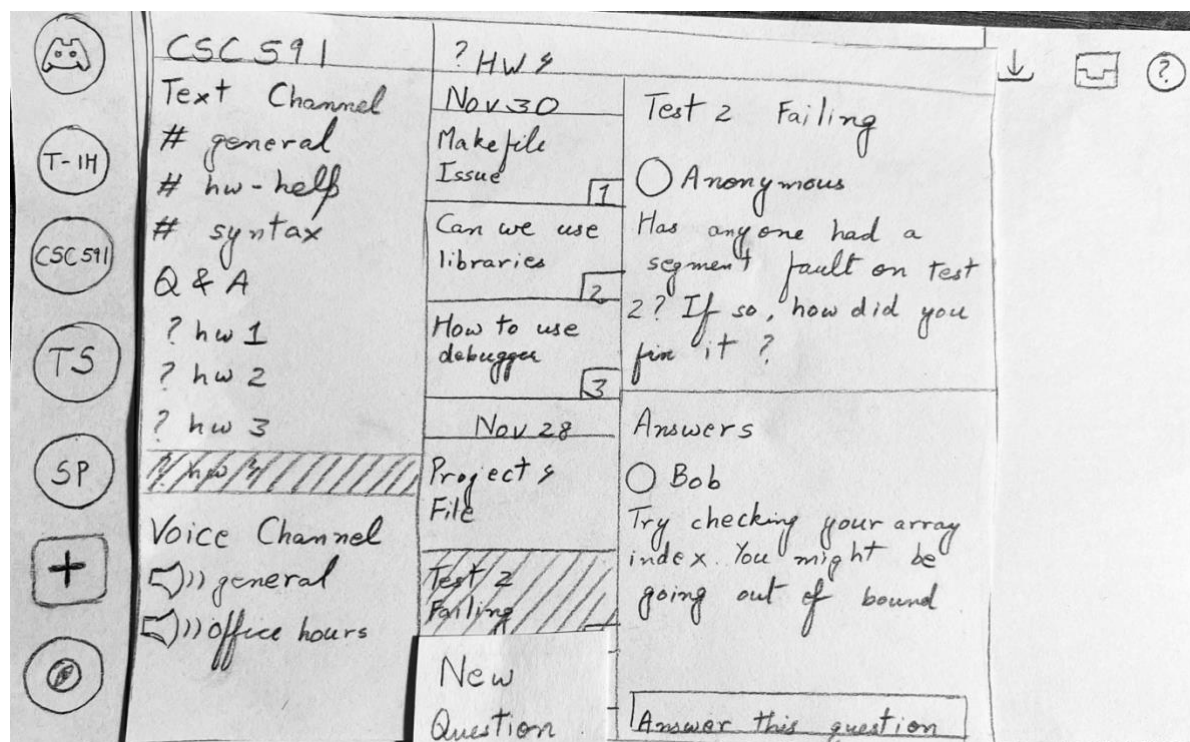
Viewing a Question

Evidence:

Heuristic:

1. Consistency and standards
2. Flexibility and efficiency of use

Interface aspect:



This shows a view of a Discord server that has text channels, voice channels, and a new feature: Q&A channels. The selected channel is highlighted on the leftmost sidebar and all questions in this channel are displayed in the center. All questions are organized chronologically by day in a

list on the left sidebar. The small box shows how many replies the question has received. When a user clicks a question, a black bar appears next to the selected question and it will appear in the center of the screen. From there the user can view the whole question, including attachments, and can provide an answer using the text box at the bottom.

**Explanation:**

1. Consistency and standards- This new channel follows all of the design and functionality of the other types of channels in Discord. The Q&A channel is listed with all the others, it has its own unique icon, and has a chat text box just like a text channel does. It follows the conceptual model of a text channel that a user already has.
2. Flexibility and efficiency of use- The Q&A channel provides the user with efficiency by displaying the most recently asked questions, as those will probably be the most relevant to the user. The button on the bottom that says "New Question" also promotes efficiency. It is on the main page and allows the user to quickly ask a new question when they need help.

**Benefits:**

When introducing a new type of channel the main goal is making sure the users can intuitively use the new feature. By following the standards of other channels, it makes it easier for users to use the Q&A channel. It looks very similar to a text channel, so users will know how to answer questions without being told. Following the design of the other channels also gives the whole platform a clean and consistent look. In addition, it also follows the look and feel of a popular Q&A platform Piazza. Most CSC students will be familiar with this platform and should be able to easily use this new channel if they have prior knowledge of Piazza. Another benefit is how easy it is to ask a new question because there is only one button on the channel.

**Possible solution and/or trade-offs:**

There is no negative tradeoff to this design.

**Relationships:**

This is related to HE14 because the user must click the "New Question" button to create a new question. The heuristics described in each HE apply for both as they are closely related in function.