1 User Investigation

1.1 Introduction

In our project, we chose students as the target user group and conducted a survey through Ed and tutorial classes to gain a deeper understanding of their needs and preferences. The students who participated in the survey were mainly from computer science-related departments.

Through the survey, we found that students primarily use WeChat (55.1%) and Instagram (24.5%) to communicate with friends (61.2%) and classmates (28.6%). They like the user-friendly interface of these chat applications (71.4%) and prefer the option to set multilingual support (54.5%). Students hope that chat rooms will allow only the group owner to invite friends (63.3%). Opinions were divided on whether new users should be able to see chat room history (55% in favor, 45% against). Based on these findings and lecture slides [1], we conducted a PACT analysis for this group of computer science students and constructed relevant personas. The statistics for each question and the complete survey data are provided in the appendix (5.1).

1.2 PACT Analysis

People: (98%) of respondents are students at the University of Sydney, with only one staff member participating. Students primarily use the platform for academic-related activities, such as discussions and posting questions. They also want to communicate with friends. Among the respondents, 55.1% are currently using WeChat, and 24.5% are using Instagram, indicating that a design similar to these apps would be more familiar to them. Most respondents are computer science majors, with a few students from other majors.

Activities: The platform's primary use cases include participating in discussions, sharing academic experiences, and asking questions. Additionally, the platform should support students in communicating with friends. In terms of functionality, 61.2% of users primarily engage in group chats or private chats with friends, and 28.6% chat with schoolmates. Users prefer that only group owners can invite friends to join group chats (63.3%) and wish to retain chat history. Both staff and students can post articles and comment on them, with staff having the authority to manage posts and comments. Compared to other features, users highly prefer a friendly interface (71.4%). Regarding additional features, 54.5% of users want support for multiple languages.

Contexts: Considering the study and life of university students, they might use the platform both on and off-campus, including at home or during commutes. They can access the site anytime, with peak usage times during the day and evening. Teachers and staff need to be able to access the site at any time to manage student posts, requiring the platform to function reliably across different times and locations, providing a consistent user experience.

Technologies: Considering the usage patterns of university students, the platform must work on various devices, including laptops and phones. Given the diverse usage environments, the platform needs strong adaptive design to ensure a consistent and smooth user experience across all devices.

1.3 Persona

Name: Emma Li
Age: 20
Major: Computer Science
Background: Emma is a second-year computer science student at the University of Sydney. She is proficient in using various technologies and spends a significant amount of time on her laptop and smartphone. She uses chat applications like WeChat and Instagram daily to keep in touch with her friends and classmates.
Motivations:

- Share experiences and ask questions.
- Communicate with friends and classmates for both academic and personal purposes.
- Use a platform with a user-friendly interface and multilingual support.

Frustrations:

- Difficulty in finding a platform that combines academic and personal communication.
- Lack of multilingual support in many existing chat applications.
- Confusion caused by complicated interfaces in some chat platforms.

Preferred Features:

- User-friendly interface similar to WeChat and Instagram.
- Multilingual support.
- Ability for group owners to invite friends to join group chats.
- Retaining chat history for reference and context.

2 Navigation design

We used Optimal Workshop [2] for card sorting. A total of 11 participants completed the card sorting. The image is shown as figure 1. We categorized the multilingual functionality, which we learned about from the previous survey, under the "User settings/profile" card, as this special feature pertains to the entire user interface settings. The similarity matrix of the results is shown in the figure 2.

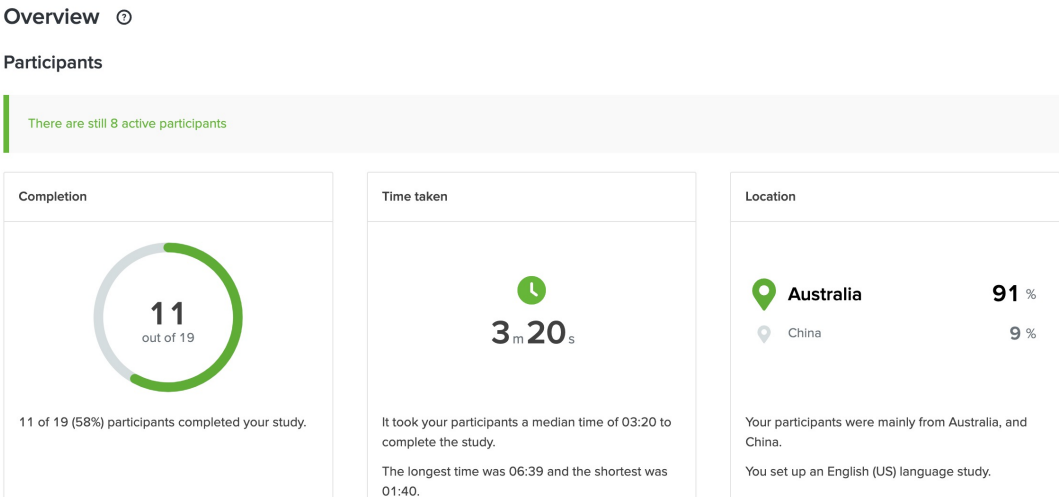


Figure 1: Card Sorting Overview

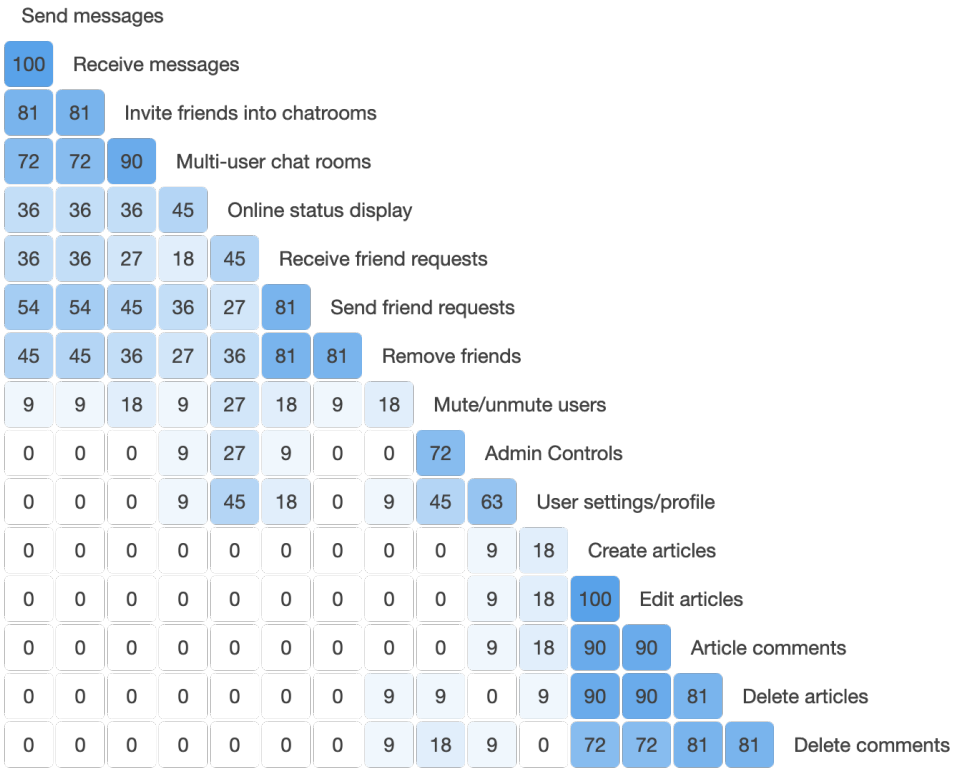


Figure 2: Similarity Matrix

Based on the similarity matrix, we have categorized as follows:

Page: Messages App

- Multi-user chat room
- Send message
- Receive message
- Invite friend into Chatroom
- Online status display
- Receive friend requests
- Send friend request
- Remove friend

Page: Knowledge Repo

- Create articles
- Delete articles
- Edit articles
- Article Comments
- Delete Articles
- Delete Comments

Page: Settings

- Admin control
- Mute/Unmute User
- User settings/profile

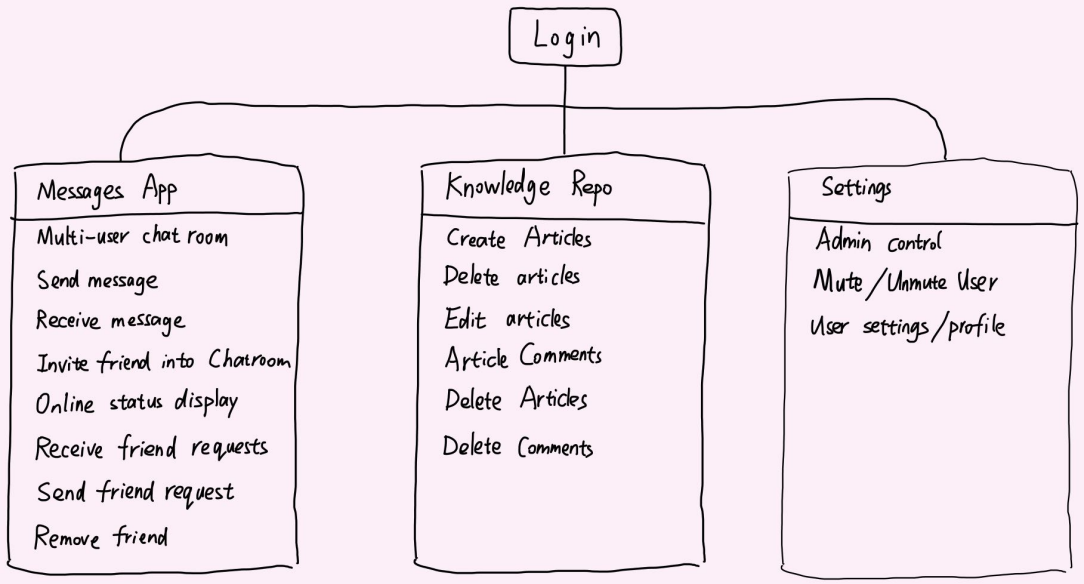


Figure 3: Sitemap

3 Design-Evaluate 1

3.1 Priority List

Based on user personas, PACT analysis, and the results of card sorting, we have summarized the following prioritized list of features. Based on the specifications and

user needs, we have identified Multi-Person Chat Rooms, Post Publishing, Multi-Language Support, and Enhanced User Interface as primary objectives. These form the core functionalities of the website, with the rest being enhancements built upon these foundational features. The second tier of importance includes supplementary enhancements to the previous functionalities, such as comments under posts and account management capabilities, where staff can manage posts and have the ability to mute and unmute users. Consideration is given to less critical search/filtering functionalities.

1. **High Priority: Core Features**
    - Staff and students can create and delete articles
    - Staff can delete articles or modify articles made by others
    - Friends should display whether they are online or not in the friends list
    - Chatrooms can contain more than 2 users
    - Users can receive messages from friends even when the recipient is not currently in a chatroom. These messages will be stored in the message history database and loaded when the other user connects to the chatroom
    - Friends should be able to be removed
    - Multilingual support - `User specific function`
    - User-friendly interface - `User specific function`
2. **Medium Priority: Enhanced User Interaction**
    - Students and staff can comment on articles
    - Staff can delete comments
    - Different types of staff accounts: academics, administrative staff, and admin users
    - The role should be displayed in the user's profile and on any posts they make, viewable to all
    - Staff can mute/unmute users to prevent them from posting or joining a chatroom
3. **Low Priority: Additional Features**
    - Advanced search and filtering functionalities

3.2 Low-fidelity Prototype

Based on the prioritization of features from the previous steps, including card sorting and the website's information architecture, we have designed a low-fidelity prototype consisting of 3 pages, prioritizing the implementation of core functionalities and medium-priority features, as shown in the figures 4, 5, 6.

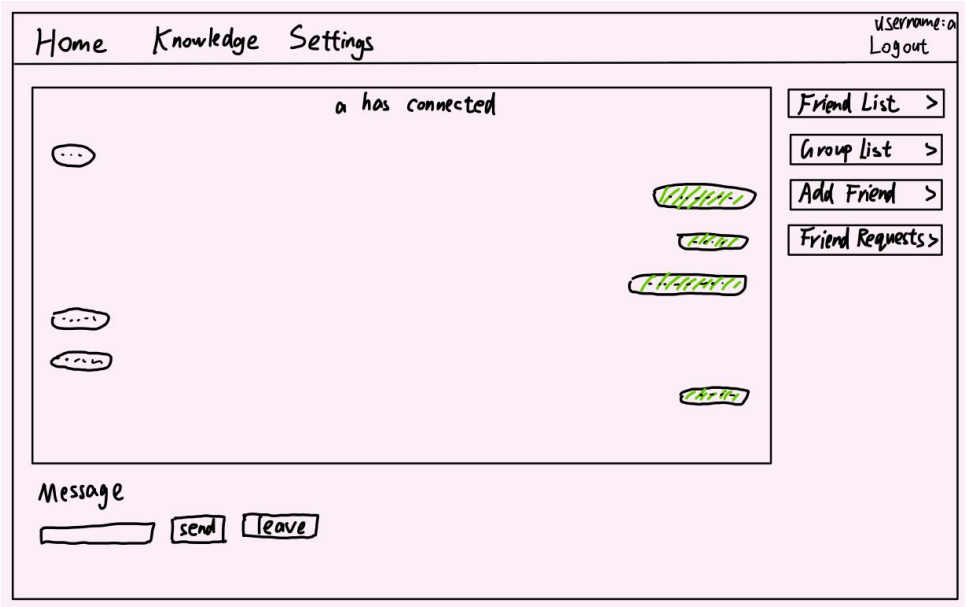


Figure 4: Message Page

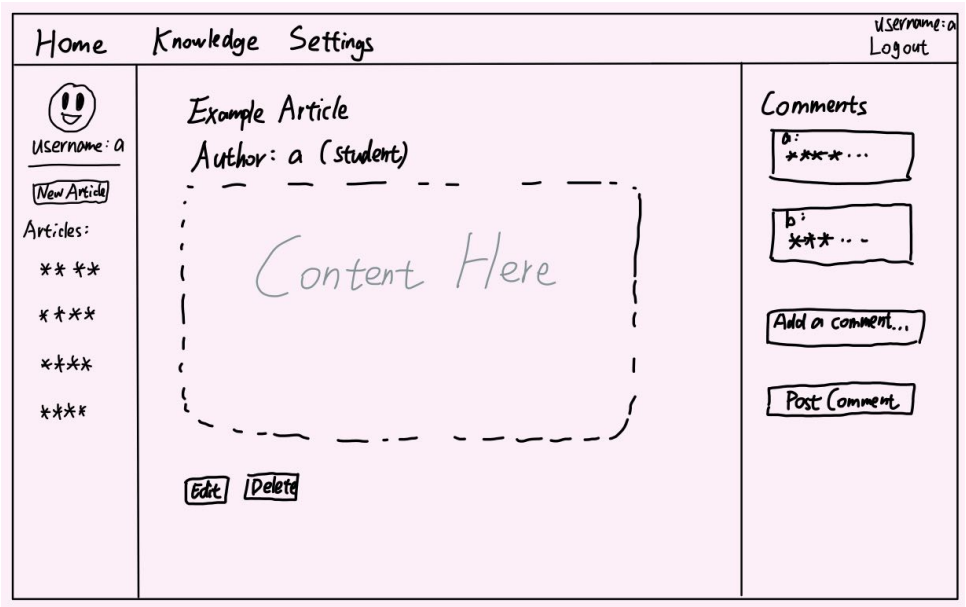


Figure 5: Knowledge Page

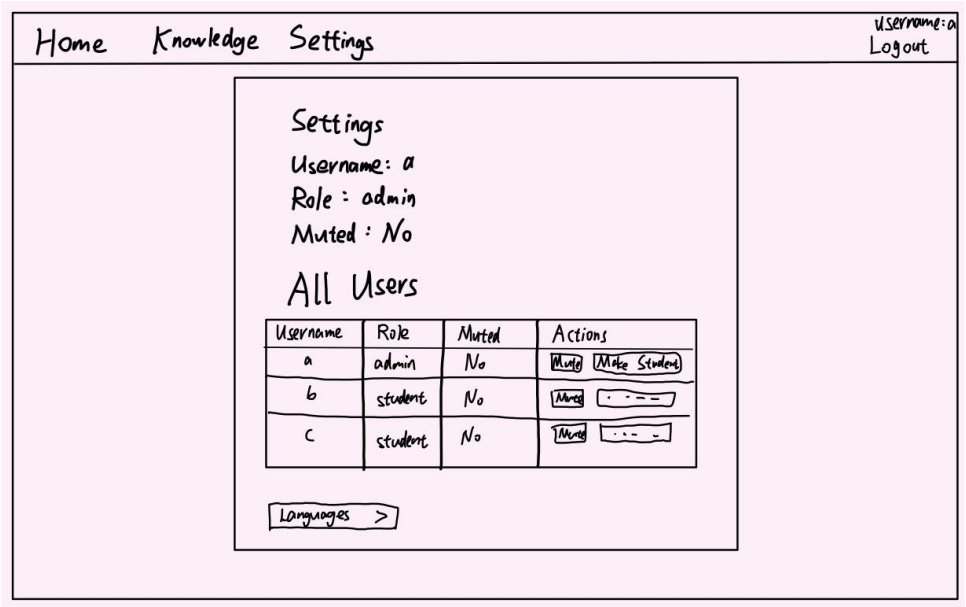


Figure 6: Setting Page

3.3 Guerrilla Testing Report

Purpose

The purpose of this testing is to evaluate the usability and user experience of the low-fidelity prototype, collect user feedback to improve the design, and identify necessary improvements in functionality and interface elements.

Method

- **Location**: Student accommodation Regiment 3090
- **Participants**:5 university students (mainly from the Computer Science major)
- **Tasks**
  1. Send a message to a friend on the messaging page.
  2. Send a message to another friend.
  3. Change the language preference in personal settings on the settings page.
  4. Create and publish a new article on the knowledge repository page.
  5. Comment on an article.
- **Tools** : Low-fidelity prototype (images)

Testing Procedure

- **Steps**
  1. Briefly introduce the purpose and process of the test.
  2. Have participants complete the tasks one by one while observing and recording their actions.

3. Ask for participant feedback after each task.

- **Time**: Approximately 7 minutes per participant.

Raw Results

- **Xu Jie | Computational Data Science**:
  The 'delete comment' button is way too small and hard to click. It would be much better if it were bigger. Also, the article list on the left is confusing. It should clearly show which articles are published by the user and which are not, maybe by adding some labels or filters.

- **James Zhao | Computer Science**:
  The different functions on the messaging page need clear dividers or background colors to make them stand out. The message box style should be more consistent for a smoother experience. And the action buttons should have prompts or descriptions so users know exactly what each one does.

- **Wenda Li | Computer Science**:
  The language settings button is kind of hard to spot. If there are a lot of users to manage on the admin page, scrolling all the way to the bottom to set the language is a hassle. For articles, maybe you can add an option to sort comments by time, like newest to oldest or vice versa?

- **Alex Zhou (Group Member)| Computer Science**:
  The interface makes it easy to tell what each function does.But in group chats, it's hard to kown who sent each message. Maybe we should label the sender on each message?

- **Mingyuan Ba (Group Member)| Computer Science**:
  The page for articles looks clean, and the create/delete operations seem convenient. However, for an admin, it can be a trouble to browse through the entire list to find a user. It would be better to have a filter or search function.

Analysis

1. **Messaging Page**
   - The boundaries between the four functional modules (e.g., sending messages, receiving messages, friend invitations, online status) are unclear and not obvious.
   - Group chat messages should display who sent the message
   - The style of the buttons should be more consistent.
2. **Knowledge Repository Page**
   - The article list on the left does not distinguish between all articles and those published by the user.
   - The "delete comment" button is too small and hard to click.
3. **Settings Page**

- The behavior of actions is unclear, and users do not know how to perform specific operations.
- Placing the language setting in a more prominent location would be preferable; placing it at the bottom of the settings page is not a good choice.

Conclusion

1. **Main Findings**
   Overall interface design is good, but the messaging and settings pages need improvement, especially in the clarity of operations and interface. Multilingual settings are hard to find and need to be placed in a more prominent location.

2. **Next Steps**
   Modify the layout of the messaging and settings pages based on the feedback, increase interface clarity and operation prompts, and prepare for the next round of testing.

4 Design-Evaluate Incremental Development Plan

We divided the development process into two iterations, each lasting two weeks.

1. **First Iteration (Week 9-10)**
   - **Planned Features:**
     - Basic chat functionalities such as multi-user chat rooms and group chat.
     - User online status.
     - Friend removal.
     - Group invitation.
   - **Completed Features:**
     - We successfully completed these basic features. After conducting guerrilla testing with five participants focusing on the implemented features, the feedback revealed that while the basic chat functions were well-received, the placement of the language settings in the settings page was not intuitive.
     - More users preferred to directly access the language settings from the navigation bar instead of going through the settings page.
     - The survey also showed that more people prefer a user-friendly interface and, for group chats, prefer that only the group owner can add or remove members.
2. **Second Iteration (Week 11-12)**
   - **Implemented Improvements:**
     - Based on the first iteration and guerrilla testing, we moved the language settings from the settings page to the navigation bar. Now, users can change the language settings at any time by clicking the language option on the right side of the navigation bar. Once changed, the language preference remains consistent throughout the session and does not revert upon refreshing the page.
     - Additionally, we updated and optimized the user interface, enhancing the group chat experience. We designated the group creator as the group owner, giving them the sole authority to invite and remove group members, aligning with the preferences expressed by the majority in our survey.
   - **Technical Details:**
     - When moving the language bar to the navigation bar, we found that if we created the language bar in different Jinja files, the language settings might change each time we switched to a different page. Therefore, we improved `base.jinja` by placing the entire navigation bar's code there and then using the `extend` statement to call it in `home.jinja`, `knowledge.jinja`, and `setting.jinja`.

  - Initially, we planned to also call it in `index.jinja`, `login.jinja`, and `signup.jinja`, but we realized that the home, knowledge, and settings options on the navigation bar should not appear before the user logs in. Hence, for these files, we chose to create separate navigation bars and did not call `base.jinja`.
  - For language selection, we set up three languages: English, Chinese, and Spanish. We used `data-i18n` to mark the places needing translation and then used the translations library to call the corresponding language tags.
  - For the user interface, we optimized every button on the page. For example, we added shadows, hover, and click effects to the buttons.
  - Additionally, for the language option and the home page's friend list, group list, add friend, and friend request, we added labels to hide them, so they only appear when clicked, which enhances the page's cleanliness.
  - We also added a small arrow to the right of each label. When the label is collapsed, the arrow points to the right, indicating that the label is not yet expanded. When the label is expanded, the arrow points downwards, indicating the page is open.
  - We also optimized the chat interface by adding chat bubbles. Messages sent by the user appear in green bubbles on the right side of the chat interface, while messages from other users appear in white bubbles on the left side. Through these details, we aim to enhance the user's experience.

3. **Future Planned Features:**

   - Based on the survey report, we found that many users like stickers and emojis. In the future, we plan to implement the feature of sending stickers and custom avatars for users.
   - Additionally, we plan to implement article search functionality in the knowledge repository and a user search feature in the settings for different user roles.

5 Appendix

5.1 User Investigation Survey Evidence

Overview:

Survey

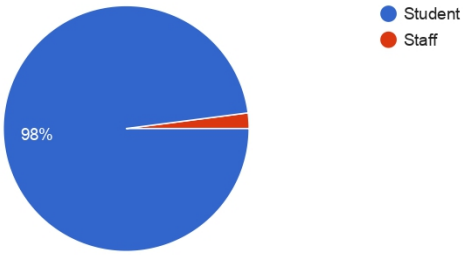
49 responses

Publish analytics

What is your role?

Copy

49 responses



What is your major?

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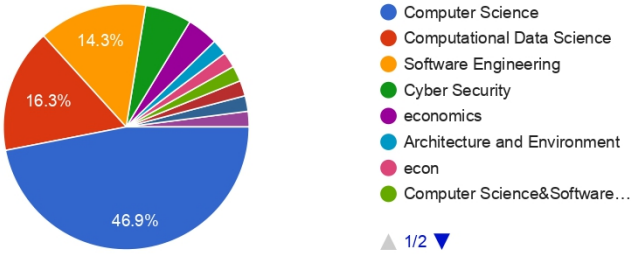
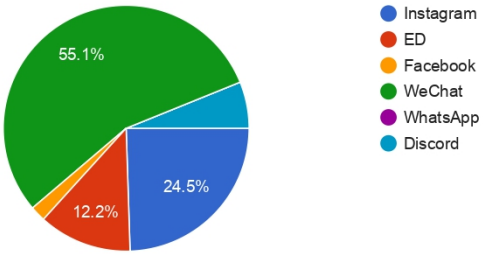
49 responses



What chatting app are you using right now?*

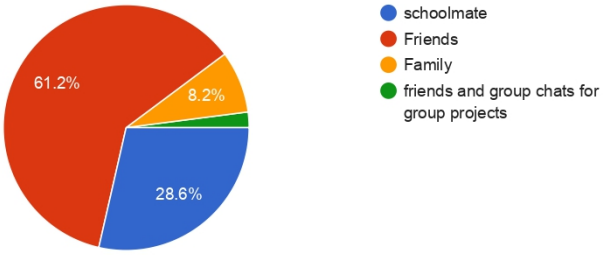
Copy

49 responses



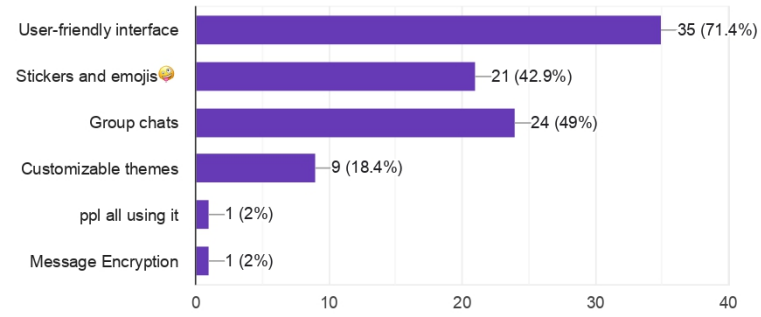
Who are you mainly using chat software to communicate with? Copy

49 responses



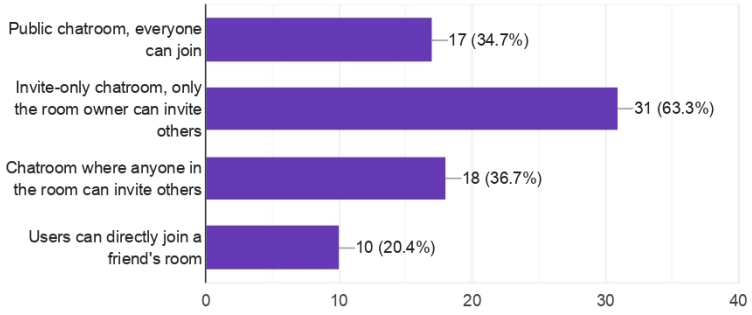
What are the features you like the most in the chat app selected above? (Choose all that apply) Copy

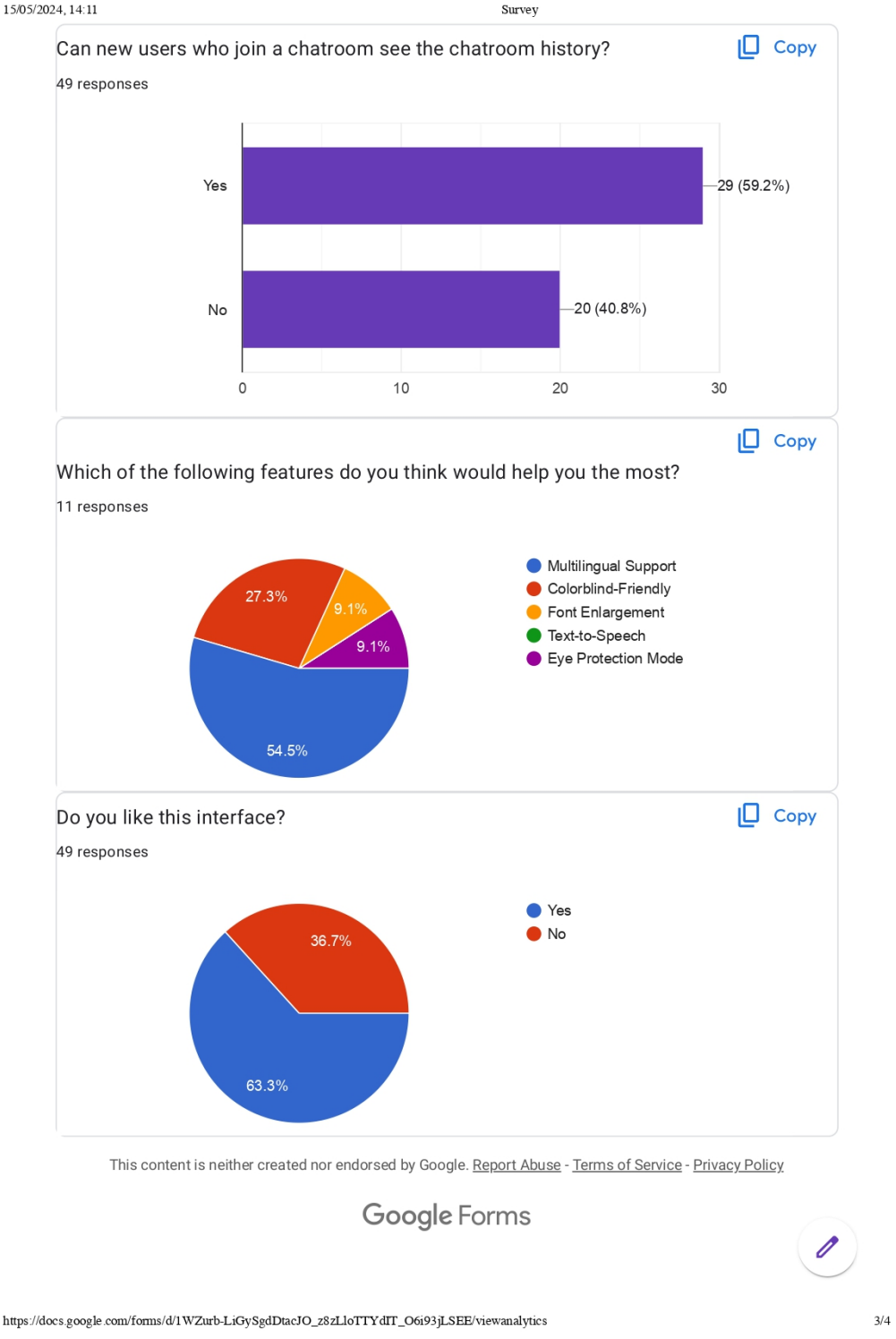
49 responses



What type of chatroom do you prefer? (multiple choice) Copy

49 responses





All Results: INFO2222-Scaffold-main/Survey-all.pdf

6 Contribution

Mingyuan Ba

- User account permissions system

- Knowledge repository
- User investigation – PACT analysis
- Navigation design – Card sorting exercise

Zirui Zhou

- Messaging and friends list enhancements
- One specific user function(language)
- Low-fidelity prototype
- Incremental development plan and outline of evaluations conducted

References

[1] 7.users-designs.pptx. Canvas.

[2] OptimalWork. Optimalwork. https://optimalwork.com/. Accessed: 2024-05-17.