Final Project: Google Calendar

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DSGN 1 Winter 2022

9:00 AM Studio

Section I: Data Collection

Brainstorming

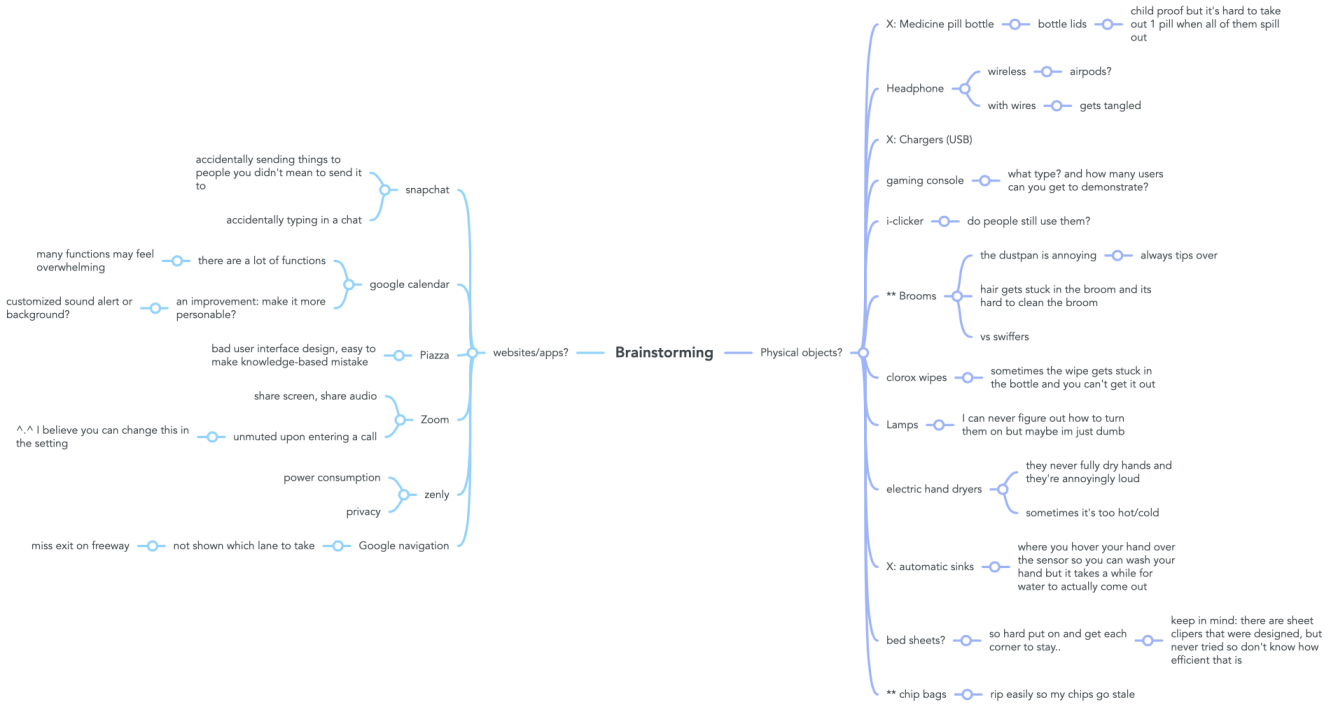


Figure 1.1: Mind Map Brainstorming Ideas for the Final Project (link)

For our brainstorming, we utilized a mind map to flush out our ideas, such as the one in Figure 1.1. We separated our ideas into categories: website/apps and physical objects. During our zoom session, we asked for the TA and IA's guidance in narrowing down our ideas through which we decided on Google Calendar Event's interface. In Figure 1.2, we categorized it into six categories: users, trade-offs, functions, redesign ideas, possible errors, and constraints. This second mind map communicates our ideas, knowledge, and presumptions about Google Calendar before conducting interviews. Brainstorming allowed us to concisely focus our interview questions in regards to creating events on the Google Calendar website interface. While we did consider other functions on Google Calendar, we ultimately decided that "events" were something many users created when using this

platform. We got that rapid data through a test run with our groupmates and our friends. To us, the interface of Google Calendar's event was something we were interested in researching and redesigning! Then, we met up virtually to come up with interview questions in correlation to the Double Diamond Model. We utilized this model when writing our questions to target finding the problems and then utilizing their response to unearth a solution.

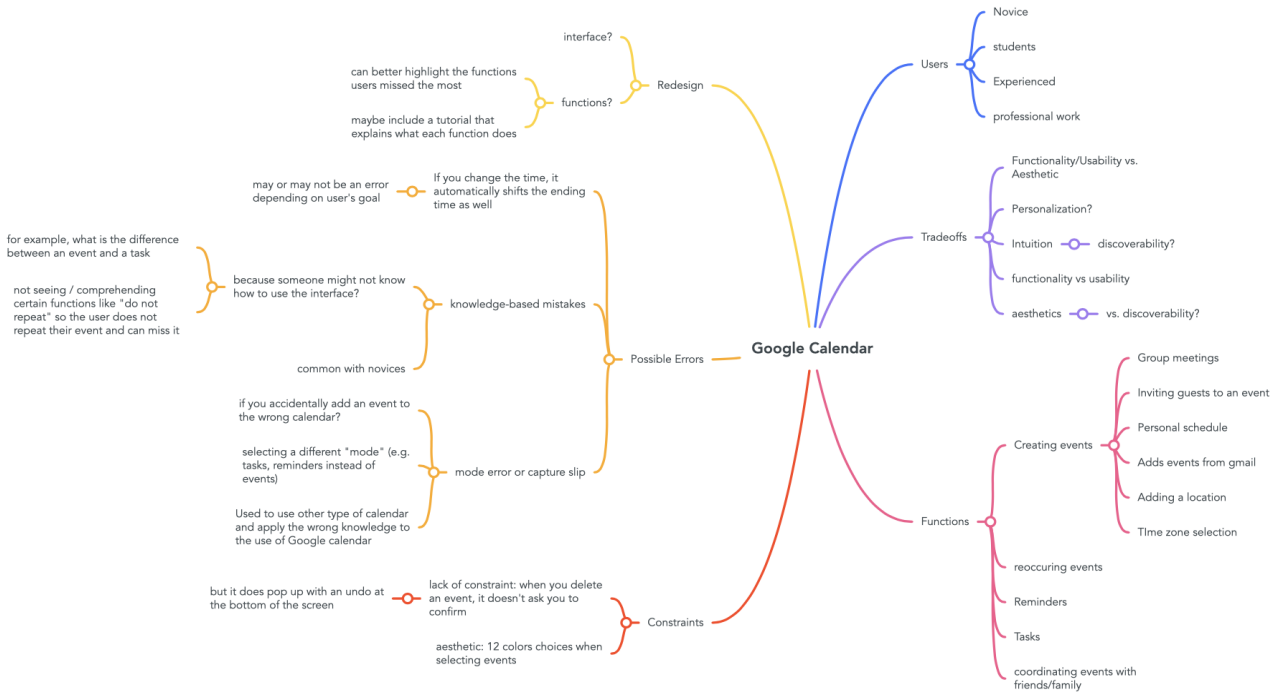


Figure 1.2: Mind Mapping Google Calendar link

Methodology

We created the interview questions and tasks together, coming up with questions somewhat based on our brainstorming about what we thought could be improved in Google Calendar (Figure 1.2). Everyone conducted their own interviews either on Zoom or in person. This way we were able to see the interviewee's screens and take notes on their actions. For all of the questions we asked, we either transcribed or summarized the interviewee's answers onto a Google Form. This made it easier to organize and analyze our data in a Google Sheets spreadsheet.

During our interviews, we utilized the master-apprentice model. Even though some of our users had never used Google Calendar before, we still had them take lead and try to work through each of the tasks by themselves, so we could observe any errors they made or difficulties they had. We also asked a variety of questions, some ranking and some more open ended, in order to get both quantitative and qualitative data.

Interview Questions

Pre-task

Are you familiar with Google Calendar? If so, how often do you use it in a week?

- We selected this question first because it connects to the user's knowledge in the head as it can reveal their experience and memory using this platform. Additionally, it provides an idea of how familiar the user is with Google Calendar (skill level), as beginners are likely to make more errors than casual or experienced users.

How would you rate your level of skill/knowledge in Google Calendar? *(1= beginner, 5 = expert)*

- *(If respondent is familiar with Google Calendar)* What kind of events do you usually create? For a group of people or individual use?
  - This question helps us narrow down specific features on Google Calendar that users utilize most on this platform. This also gives us an idea of what to expect for their completion of the tasks. That can help with thinking about the signifiers, affordances, trade-offs, and possible redesigns.

- *(If respondent is not familiar with Google Calendar)* Do you use any other online calendars? What functions would you want/expect Google Calendar to have for creating calendar events?
  - Through the users' responses, we are able to think about comparable calendars for the design space. We also get insight on what users want and expect out of online calendars/planning platforms that we can consider for redesigning and possible trade-offs.

- What do you think about Google Calendar?/ What are your general thoughts about Google Calendar?
  - We asked this question in the pre-task so that the users can freely speak about their opinions regarding Google Calendar without bias and prompting from us. It tells us their initial thoughts and opinions, which could reveal important aspects of Google Calendar that should be improved or kept. Additionally, the users' response reveals a general idea of what the knowledge in the head looks like and their mental model.

- What do you think about the overall layout of the event creating screen? (Fig. #2)
  - This question targets the users' opinion on the aesthetics of the "create an event" interface. It can reveal possible affordances, signifiers, and/or aesthetic-related outlooks.

And that can provide us insight into how intuitive the interface is so we can consider it in our redesign.

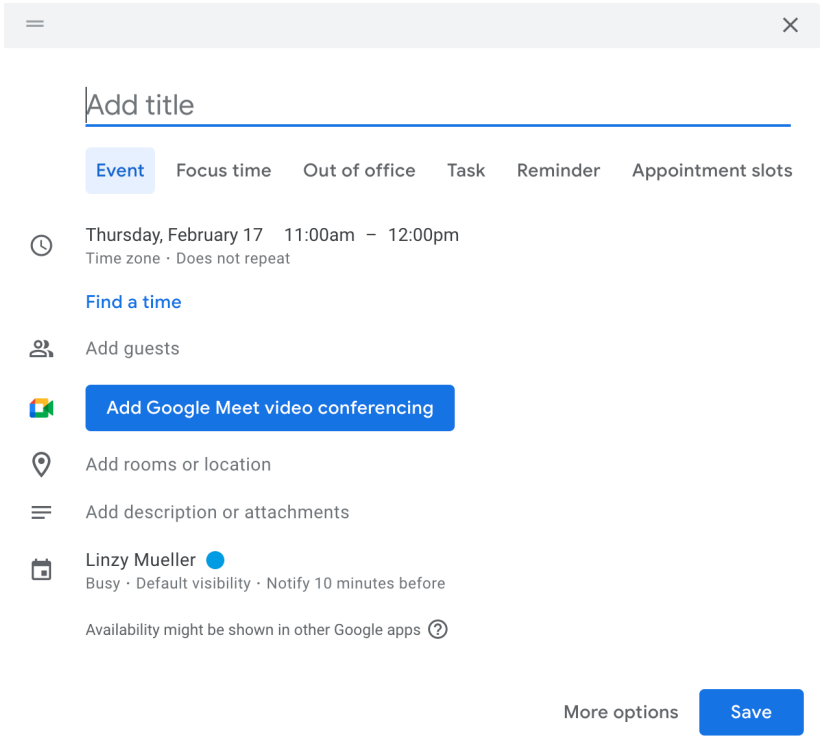


Figure 2: Google Calendar "create event" interface

Tasks

- Ask the interviewee to create an event for a lecture that occurs every Monday from 5 pm to 6 pm EST at York Hall in the color green. Also, add a description of the Room # and set a notification for this event to occur every 10 minutes.

    - We are asking the user to demonstrate how to do the prompt above because it proffers understanding of the knowledge in the user's head and mental model (which relates to the gulf of execution and evaluation). We can see if the designer's conceptual model effectively connects to the user's mental model. In addition, it provides insight on the signifiers that work well and those that don't and errors that could have potentially occurred. We can potentially see how well the features' discoverability are on the interface.

- Take notes on the following:
    - Notes on creating the event (generally / did they know where to start?)
    - Notes on setting the date, time, and timezone

- Notes on setting the event to repeat every week
- Notes on setting a location for the event
- Notes on changing the color of the event
- Notes on creating the description of the event
- Notes on setting notification for every 10 mins

Post-Task

- Rate the difficulty level of creating an event overall *(1= easy, 5 = difficult)*
- Rate the difficulty level of setting the date and time *(1 = easy, 5 =difficult)*
- Rate the difficulty level of setting the event to repeat every week *(1= easy, 5 = difficult)*
- Rate the difficulty level of changing the color of the event *(1= easy, 5 = difficult)*
- Rate the difficulty level of creating a description for the event *(1= easy, 5 = difficult)*
- Rate the difficulty level of setting a location for the event *(1= easy, 5 = difficult)*
- Rate the difficulty level of setting a notification for the event *(1= easy, 5 = difficult)*
    - We asked these series of rating questions because it can help us figure out our design space variables (e.g. ease of use variable) and how intuitive the interface would be (for new users). Additionally, it allows us to see if there were any errors or problems that occurred if they rated the task difficult. And if so, the ratings help us reduce a need for redesigning the whole "event" interface but rather mitigate inconveniences and problems at a specific aspect of the interface. In doing this, because it is quantitative, we can easily see trends for what is currently good and what needs improvement within Google Calendar.

- How long did it take you to create the event (completing all the tasks in the first bullet point)?
    - This question provides us insight for the gulf of execution and evaluation. We are able to get an idea if the signifiers and affordances (intended by the designers) worked and provided feedback for users in an efficient way.

- Rate the aesthetics of the interface of Google Calendar *(1 = not visually pleasing, 5 = very visually pleasing)*
    - This question helps us with thinking about possible design space variables. It also provides us with quantitative data which we can utilize when thinking about aspects of our redesign.

- If you could change anything about the layout/interface of Google Calendar, what would you change?

- This question aims to get insight into the user's mental model of the interface. It prompts the users to think about constraints, problems, inconsistencies, or confusion they experienced; that can help with thinking about trade-offs and potential things to consider for the redesign.

➢ Rate the customizability of Google Calendar (i.e. color choices, personalization, etc.)
(1 = not very customizable, 5 = very customizable)

- This question allows us to see how pleased the users are with the customization of Google Calendar. That can help when we are thinking about our redesign, trade-offs, and comparable designs.

➢ If you could change anything about the functionality of Google Calendar, what would you change?

- This question aims to get insight into the user's opinion about the features offered on this platform. It prompts the users to think about constraints and/or things they liked about this virtual calendar. With their response, we can think about trade-off variables and potential features to consider for the redesign.

➢ How does Google Calendar compare in difficulty to other calendars that you have used or currently use (be sure to mention the specific calendars)?

- By asking this question, we are getting ideas for comparable designs to use in our design spaces. We are also able to think about solutions to errors that users committed when using Google Calendar and how to improve it in our redesign.

➢ From those other calendars, which specific features do you like? Why do you like them? (be sure to mention names/types of the calendar)

- This question closes our interview and provides insight into the users' preferences in features when using a virtual calendar. Through their response, we are able to gain an understanding of what we need to factor in for a redesign.

➢ (If respondent is a novice) Would you use this again? Why or why not?

- This question helps us identify if new users would continue using Google Calendar, which tells us how user friendly and easy to use the interface is. We also get their reasoning for why they would or would not use it again, which informs our redesign and potential tradeoffs.

Proof of Data

Our group conducted a total of 23 interviews either via zoom or in-person. Responses were transcribed onto the Interview Google Form, then generated into a Responses spreadsheet. Utilizing Google sheets, we created graphs to represent the quantitative data we received (shown in Figure 3.1, 3.2, 3.3).

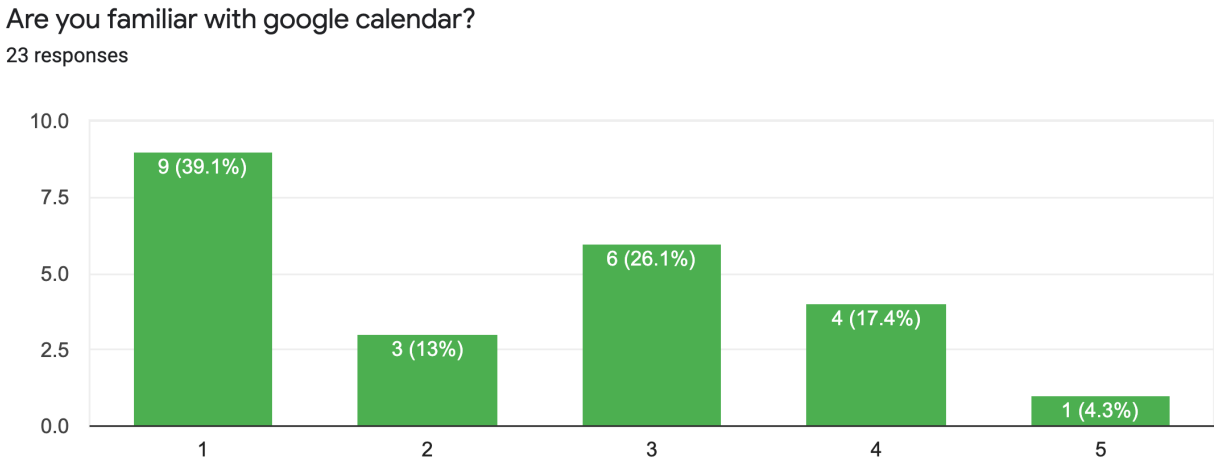


Figure 3.1: Familiarity with Google Calendar

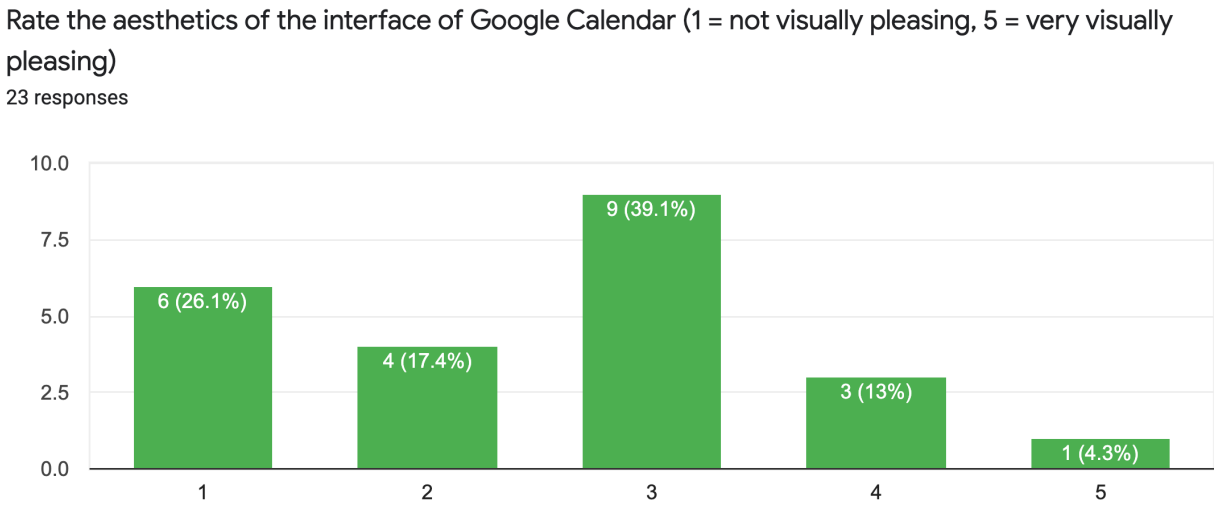


Figure 3.2: Aesthetics ratings of Google Calendar

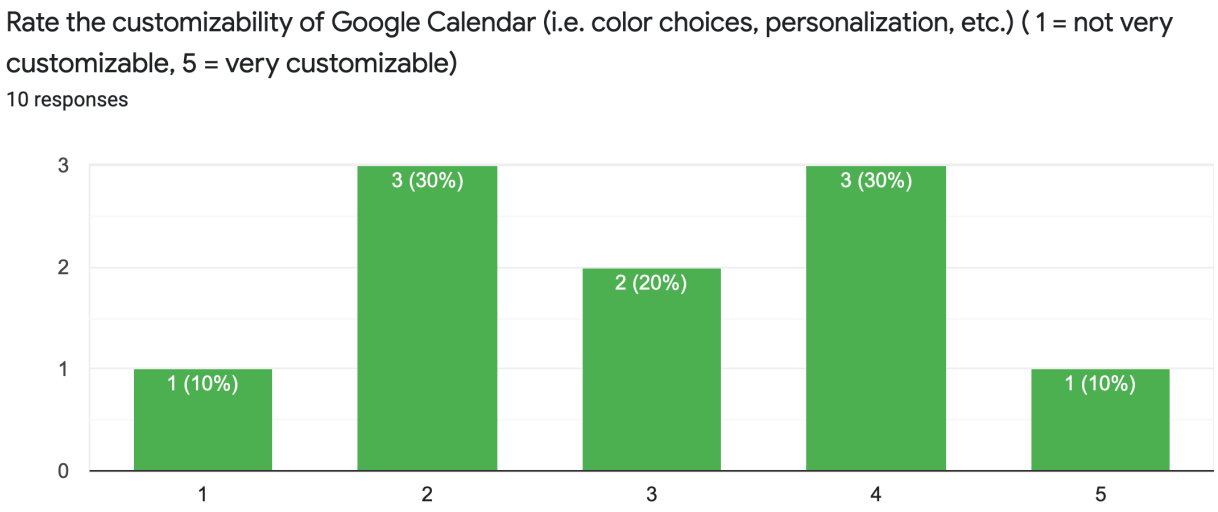


Figure 3.3: Customizability ratings of Google Calendar

Contributions

All six members spent time and effort conducting interviews and taking notes, and we conducted 23 interviews in total. Zhirui conducted interviews 1, 2, 7, and 14; Linzy conducted interviews 4, 19, and 21; Shuchang conducted interviews 4, 15, 16, and 18; Karina conducted interviews 5, 10, 11, 12, and 20; Kristy conducted interviews 6, 9, 13, and 17; Aastha conducted interviews 8, 22, and 23. Everyone contributed their ideas about the project and explored a lot about the Google Calendar. The group communicated through Discord, and every member participated actively during or after classes. The group made the presentation together; Shuchang and Linzy shot the video, and other members helped with editing and critiquing. Karina worked throughout the paper, but mainly on problems and trends. Zhirui mainly worked on design spaces. Linzy took the main role of data gathering. Shuchang took the main part in errors finding, and did several illustrations and storyboarding for the redesign. Aastha worked on the "Redesign" section and helped in other sections as well. Karina, Aastha, and Kristy contributed to all parts of the project. Kristy did several excellent figma for the redesign.

Section II: Problems & Trends

Problems & Trends

Some trends we noticed in our responses so far are that most users that are familiar with Google Calendar use it for individual use, while those who are not, use a variety of other calendars. Overall, 9 out of 23 responses rated their familiarity with Google Calendar as low, indicated by a 1 on a scale of 1-5 (Figure 3.1). Users are split when it comes to general opinions – some say it is clean, simple, and easy to use, but others say it is complicated and cluttered. As for aesthetics (Figure 3.2), 10 out of 23 people rated Google Calendar as not very visually pleasing, and 9 people rated it as a 3 on a scale of 1-5. This split in opinions is likely due to the subjectiveness of what is pleasing to the eye, so it might not be possible to change the visual design much to accommodate every single user's preferences. However, 8 users, when asked if they could change anything about the layout/interface, said they wanted more color options for customizability. This would allow users to dictate at least part of how their calendar looks, and they can customize it according to what they think looks more aesthetic.

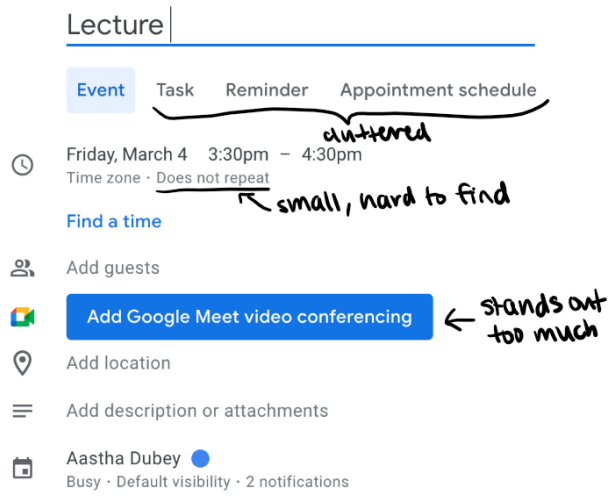


Figure 3.4: Trends with errors made in interviews

Additionally, half the users said they would use Google Calendar again, while the other half said they would not. Most users were able to create an event fairly easily, but common difficulties or complaints surrounded the timezone, setting a location, setting notifications, and adding guests, mostly having to do with not being able to find a button or the inconvenience of the function. This relates to the discoverability of the function (Figure 3.4). Most users (16 out of 23) rated each task as easy (either a 1 or 2 on a 1-5 scale from easy to difficult) and all but one were able to complete the tasks in 5 minutes or less, but still had aspects they wanted to change or add in Google Calendar to make it more customizable and equipped with more useful features. Also, we noticed that many of the interviewees do not want to use Google calendar simply because there are too many features that they do not need. One user mentioned that "the Google Meet video conferencing [button] stands out too

much which makes it annoying because it's harder to find other features", and two other users also mentioned their dislike of the Google Meet button as it is not a function that they use, but is very prominent on the screen (Figure 3.4). The natural mapping outlook of Google Calendar led users to feel overwhelmed and they refused to use such a type of calendar.

Errors

Errors that occurred in users who weren't familiar or never used Google Calendar were mainly knowledge-based mistakes. They had difficulty in setting the event to repeat every week and setting notifications in increments of 10 minutes. Their mistakes were apparent in the form of hesitation and confusion as they could not locate the "does not repeat" or "notification" buttons. Another mistake we noticed was rule-based. Users, both novice and experienced, found it troubling to set notifications in increments of 10 minutes. The situation was mistakenly interpreted as some users just set one notification for 10 minutes before the event which resulted in the inappropriate rule to be followed. Another error users made were capture slips, specifically when trying to set the timezone. Although they knew where to look, because there were many options listed, users would occasionally select the incorrect option while scrolling.

Analysis

Based on the most common problems we identified, the aspect of Google Calendar that causes the bulk of these problems is its structure, which includes its lack of effective signifiers and confusing or unnecessary affordances, which affects the discoverability of functions and makes it more difficult to customize certain settings. Without having effective signifiers, users will have a difficult time bridging the gulf of execution, as they won't be able to find the functions that they want to use, and this will discourage new users from continuing to use this calendar. Some of the affordances were confusing in that the way to use a certain feature was not intuitive. For example, setting notifications in increments was unnecessarily complicated, because there was no option for this, forcing users to set each increment individually. It is also difficult to evaluate whether or not one's setting of notifications was successful, as there is no feedback provided to bridge the gulf of evaluation. Unnecessary affordances for the majority of the users we interviewed was the Google Meet feature. A lot of users were confused as to its purpose and/or it distracted them from finding another function. However, it is likely that there are users who do use this feature, but because the casual user doesn't seem to use it, it could be placed in a different location to mitigate errors caused by it.

Section III: Design Space & Redesign

Design Spaces

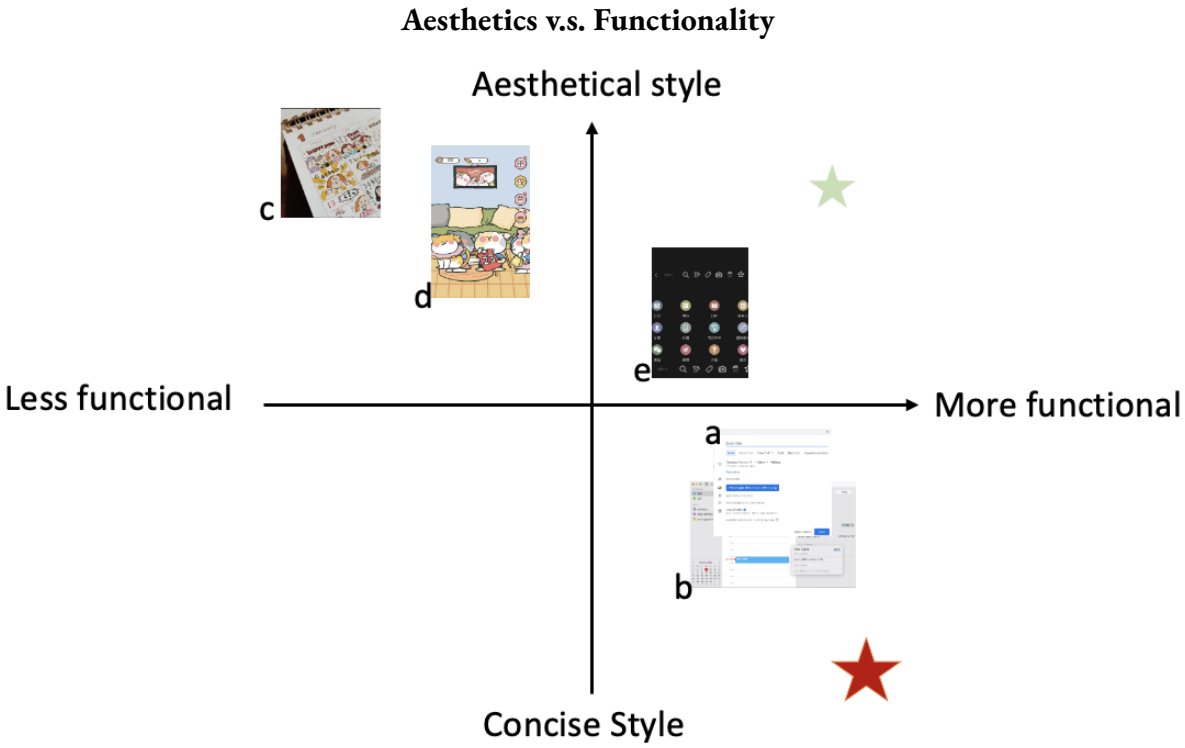


Figure 4.1: Design Space between Aesthetic and Functionality

Calendar	**Aesthetics** (1 = concise, 5 = stylized)	**Functionality** (1 = less functional, 5 = more functional)
A. Google Calendar	2	4
B. Apple Calendar	2	3
C. Handwritten Calendar	5	1
D. Miaomiao Calendar	4	2
E. Pendo	3	3
★ Hypothetical Ideal	5	5
★ Redesign	1	5

Table 1.1 : Aesthetics vs. Functionality

The design space pictured in Figure 4.1 and Table 1.1 shows the relationship between aesthetics and functionality. The aesthetics axis ranges from a very concise, simple style, to a more colorful, stylized style. Google Calendar can be defined as concisely stylized with higher functionality (shown on the lower right corner in Figure 4.1). From the interview responses, we found that hand-written calendars and the Apple calendar are the two main calendars that people use in their daily lives aside from the Google calendar. The Apple calendar's feature set is similar to Google calendar, which has a concise style with more function; a hand-written calendar is variable in its aesthetical style since a person can stylize it however they please. However it is less technologically functional (shown on the upper left corner in Figure 4.1). With other calendars we find in daily lives, there are two possible ideal design models for calendars: Aesthetically stylized style with functionality and concise style with functionality. Different users have their own preferences for the calendars, some pursue artistic tastes, while some pursue working efficiency. Therefore, we will make different modes of calendars for users to choose with their preferences or under different situations in the redesign part.

Justifications:

a. Google Calendar: Google Calendar has a concise style and many functions. We gave it these rankings because the layout of the calendar looks very structured and professional, rather than being personalized. However, it has many functions and features compared to competing calendars which gives it its high functionality score.
b. Apple Calendar: Apple Calendar is very similar to Google Calendar, which is why it is ranked the same.
c. handwritten calendar: Those calendars cannot take into account calendar apps, but they are the most aesthetic one, which people can decorate whatever they like on them. A lot of people enjoy making their own calendar notebooks.
d. Miaomiao calendar: This is a calendar designed for a small group of users who love the cute style. This calendar has more than fifty categories for the events, such as shopping and education; each category is represented by different cartoon cat characters, which can help summarize all events.
e. Pendo Calendar: Pendo calendar has more functions than the Google calendar, including memos and modes. In addition, it is useful in the study because it has a list function, which people can tick an assignment after completing it.

★ Hypothetical Ideal Design: There are two kinds of optimal calendar designs. One is an aesthetic style with more functionality, and the other is a concise style with more functionality.

★ Redesign: We learned that users wanted a simpler calendar with only the necessary functions visible, that would also be more aesthetically pleasing to them. Because aesthetics are subjective to the user, there are multiple possible ideal designs. However, generally, users like greater

functionality with limited practical features. So our redesign would be making the Google Calendar more functional and concise.

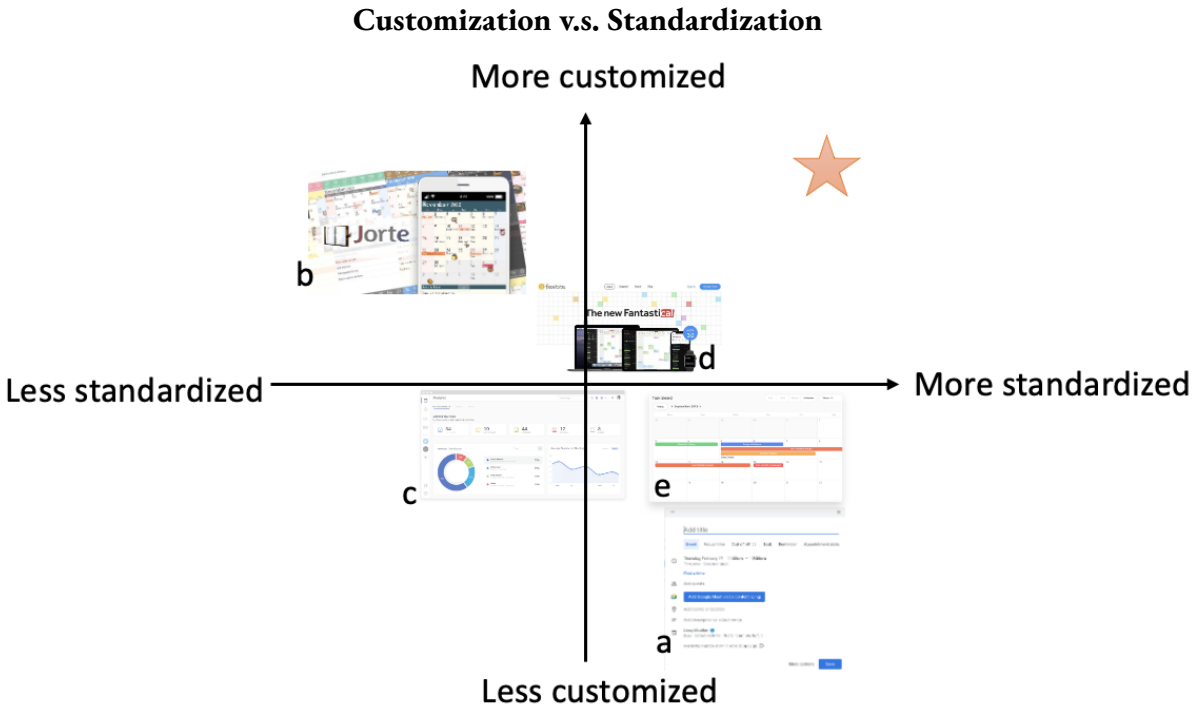


Figure 4.2: The design space between Customization and Standardization

Calendar	**Standardization** (1 = Less Standardized, 5 = More Standardized	**Customization** (1 = Less Customized, 5 = More Customized
A. Google & Apple Calendars	4	1.5
B. Jorte	2	4
C. nTask	2.5	3
D. Fantastical	4	4
E. Notion	4	3
★ Hypothetical Ideal & Redesign	5	5

Table 1.2 : Customization vs Standardization

The design space in figure 4.2 and table 1.2 show the relationship between customization and standardization. As seen by the graph, there is somewhat of a linear relationship between the two variables, implying that the more standardized calendars are usually less customized and the less standardized calendars are more customized. We can find people's preferences for between these two variables from the interviews: The interview responses show that some users wanted more color options and/or a dark mode and different font options, which could be concluded as more customized. Standardization refers to both uniform style within a calendar and a calendar's ability to be consistent across various platforms. The Google calendar is highly standardized as it has a similar design to other Google products, which makes it easier to use as users can apply knowledge of previous products to the current design. To refine the Google Calendar, adding more choices for people to customize by themselves would be the ideal model for the redesign.

Justifications:

a. Google Calendar & Apple Calendar: These two calendars are representatives of standardized calendars. The Google calendar can be used through the Google series, and the Apple calendar is commonly used among Apple systems. Therefore, they have a lot of standardizations to follow, in order to make them universal. However, they are not very customizable, as every user will have very similar interfaces.
b. Jorte: It is more like a computer version of a hand-written calendar, which allows people to choose a variety of fonts, colors, and so on. Jorte can be synced with Google Calendar, but it is ultimately still ranked low on standardization because it will look different for each user.
c. nTask: nTask is designed for all-sized teams and industries, which has more functions than Google calendar, which is aimed at allowing anyone who wants a free calendar solution for scheduling. But for the calendar function within nTask, there are too many seldom used functions and steps for individual users.
d. Fantastical: Fantastical is a calendar and tasks app that integrates information across your iOS device to give you a centralized platform for all your events, meetings, and reminders. It contains customizable templates, collaboration tools, and some other customizable functions.
e. Notion: The calendar feature of Notion is extremely customizable, which makes the style more aesthetic to the user, as they can personalize it however they want it to look. It has a fair amount of working functions within the calendar, but not as much as Google Calendar, because it is not just a calendar app, the calendar is only part of the app. The Notion app as a whole contains more functions than the calendar function.

★ Hypothetical Ideal Design: The ideal design is likely to be a calendar both highly customizable and standardized. A good design should be human-centered, so customization is significantly important, and standardization is one important factor in making the calendar efficient and

compatible with other apps. Therefore, a combination of two variables would lead to an optimal design.

- ★ Redesign: Google Calendar has a more standard layout than most other comparable calendars, but many users expressed a desire for more customization abilities. This is why the ideal design and our redesign are both highly customizable and very standardized.

Redesign

One aspect of our redesign addresses issues surrounding discoverability. Based on our findings, features such as setting the timezone, notifications and others were either too complicated to use or so difficult to find that users don't even know they are there. We believe that this is due in part to the lack of effective signifiers that depict where these features are. To combat this problem, we added or changed specific functions in the event creating screen, as well as simplified the interface to create a better user experience and streamline the process of creating an event. Simplifying the interface makes Google Calendar easier to use while simultaneously addressing the problems regarding aesthetics. This also allows us to mitigate common errors users made in our interviews, by replacing the time zone drop down menu with a colorized map, where users can just choose the region and get the corresponding time zone. Capture slips would likely be less common with this change. Similarly, we added a time to leave function, which streamlines setting notifications, as well as allowing it to compete with Apple Calendar, which already has this feature.

Another facet of our redesign involves increasing the customizability of Google Calendar. Our post-task questions revealed that half of our interviewees believe that Google Calendar is not very customizable. Similarly, when asked what they would like to change about its interface, 13/23 interviewees mentioned that they would want more colors or would like to have the option to customize the interface to their personal liking. These findings led to the addition of more customization options in our redesign. We specifically added a tab labeled "Customization" where users can find different ways to personalize their calendar. We incorporated much of the feedback we received from our interviewees such as a dark mode, more color options, and included additional features such as hex codes, and importing themes. This is why, in our redesign, we added the customizations of adding a color wheel and adding a dark mode or theme.

Finally, our redesign aims to make the interface of creating an event concise and simple. When asked to describe the overall layout, users often used words like "busy," "overwhelming," and "complicated." Three users pointed towards certain features like the "Google Meet Video Conferencing" button that grabbed their attention but felt it was unnecessary and not something that they would use. Others pointed out the numerous tabs on the top such as "Focus Time," "Out of Office", "Task," "Reminder," and "Appointment Slots" that they did not understand. Based on these

responses, we included an additional feature that allows the user to remove features from their event interface that they do not want to use. The user can press on the + button to keep any of the tabs they would like, and choose to remove any of the tabs they do not want. Similarly, within the interface, we added the option of hiding or reordering the layout so that the user can choose to only keep the functions that they will use on their event creating interface.

While Google Calendar is a great tool that many people use, the interface and functionality of the design don't take into account that different people have different needs. Our redesign targets these issues by granting users the ability to add their own personalized touch to their calendars based on their preferences. Google Calendar is already a very well known and widely used tool, but based on our interview responses, there can be many small tweaks and adjustments made to give users a better experience using it. Therefore, our redesign is better because it keeps the existing functionality of Google Calendar, but improves the way users can interact with the interface and adds additional customizable features. It will reduce the errors made, as our redesign improves signifiers on the interface and attempts to mitigate the possibility of capture slips by eliminating drop down menus. The storyboard sketches show our initial thoughts for each aspect of the redesign, and the Figma figures are our final redesigns. Our redesign prototypes along with justifications and sketches are shown below.

Redesign Prototypes

Reordering and Hiding of Features

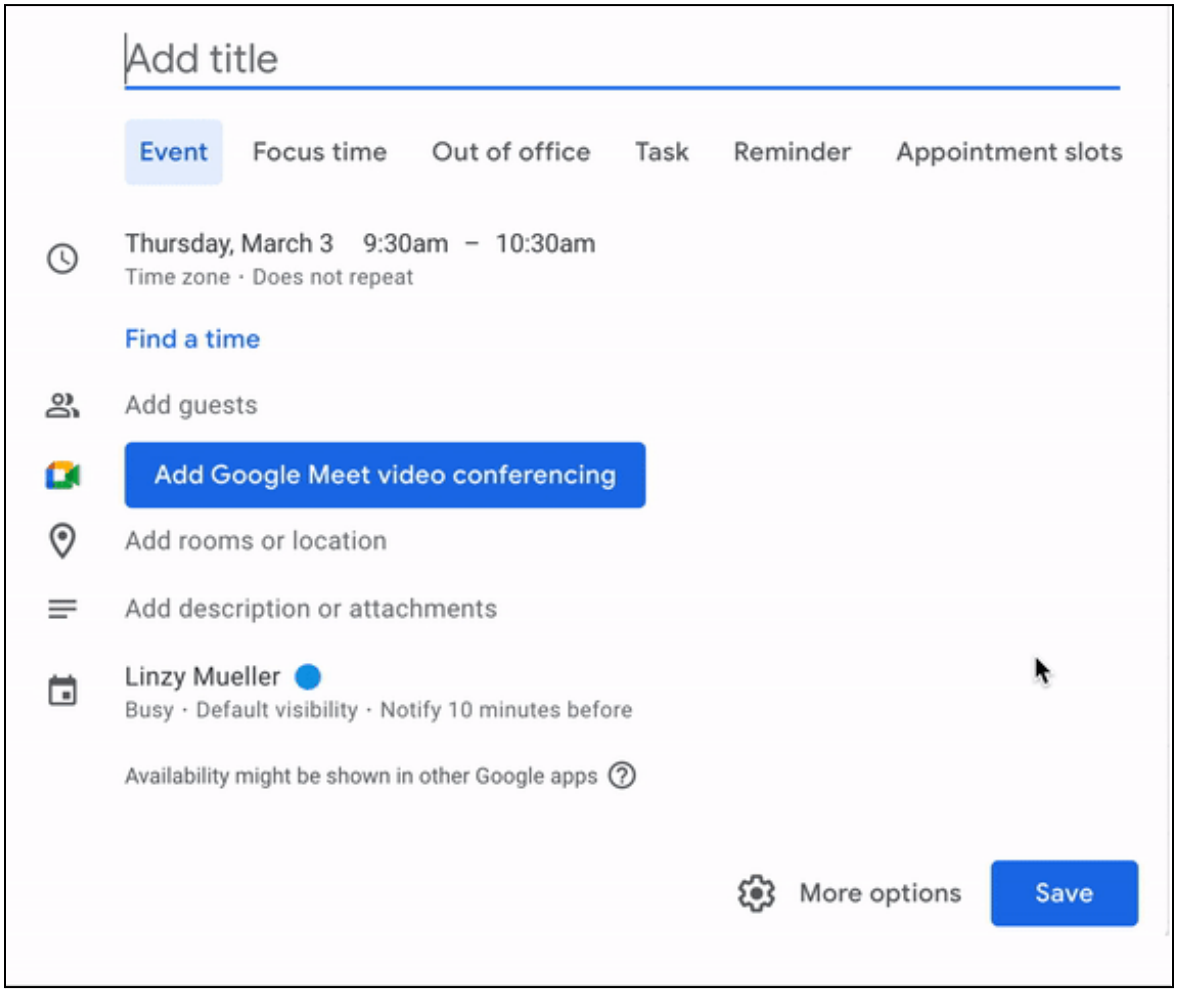
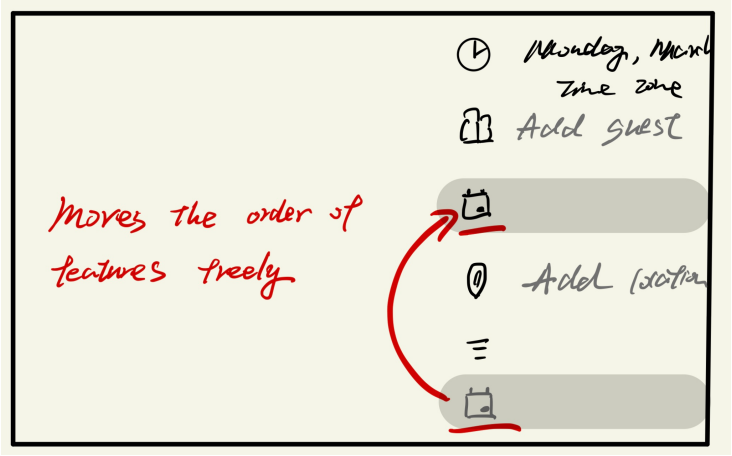


Figure 5.1 Demonstration of the redesign's collapsing/hiding features



WHY?

Provides users the ability to reorder the layout of functions and hide any unused features, which creates an interface tailored to their personal preferences. This can mitigate possible errors as the interface will be simpler and convenient as they are able to select features they only need/use.

Figure 5.2 Storying boarding of redesign

Color Wheel Customization

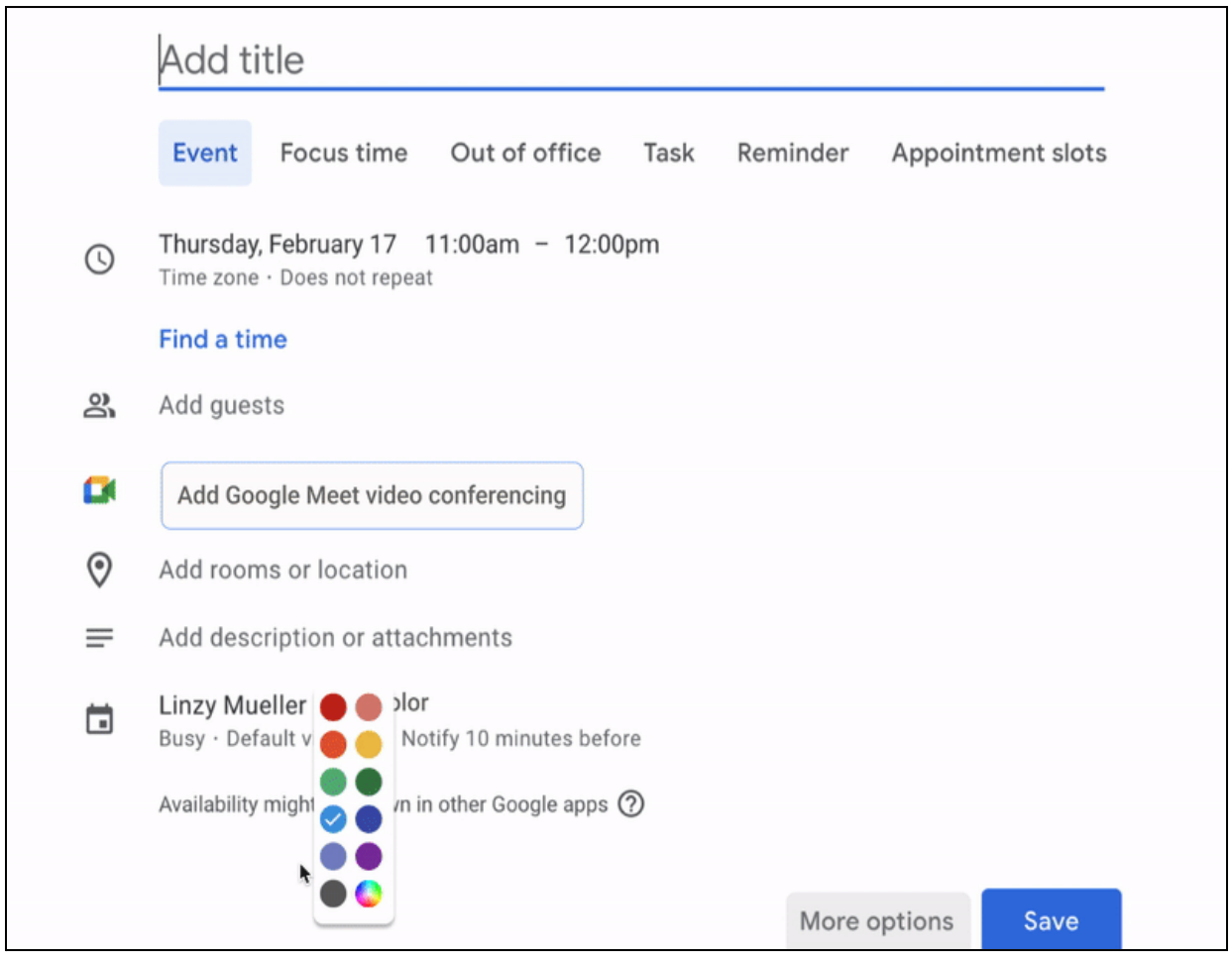
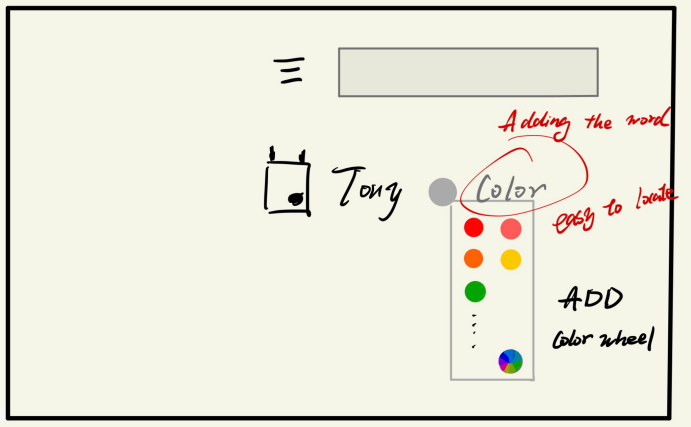


Figure 5.3 Demonstration of redesign color wheel option



WHY?

Due to the limited color options, we added a color wheel with the option for inputting hex codes so users can get exact colors. This was added directly to the "creating an event" tab to ensure that all color customization is in one place. This reduces the need for adding an extension that many users don't know about or find troublesome to install.

Figure 5.4 Storyboard idea for color customization

Simplifying the Interface

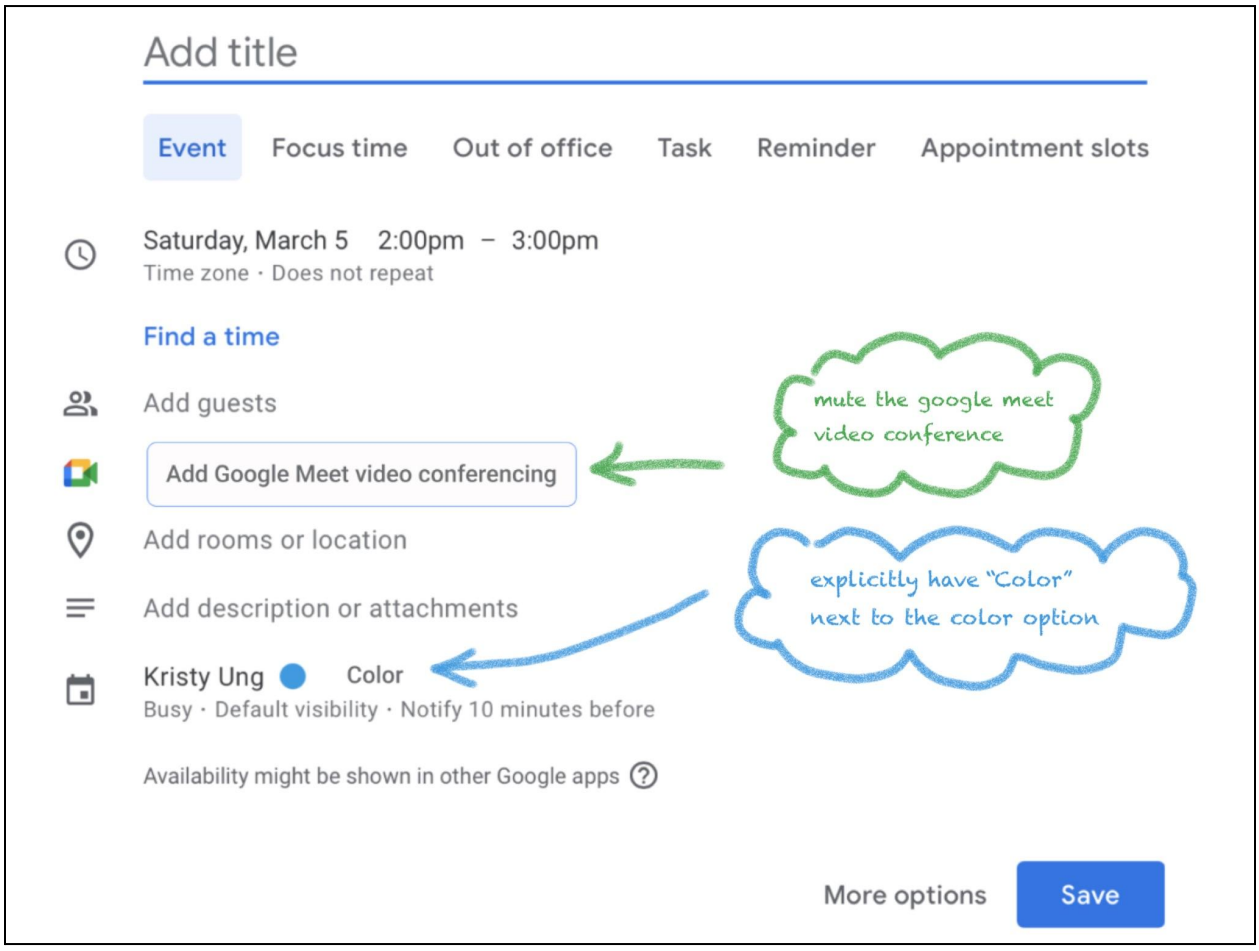
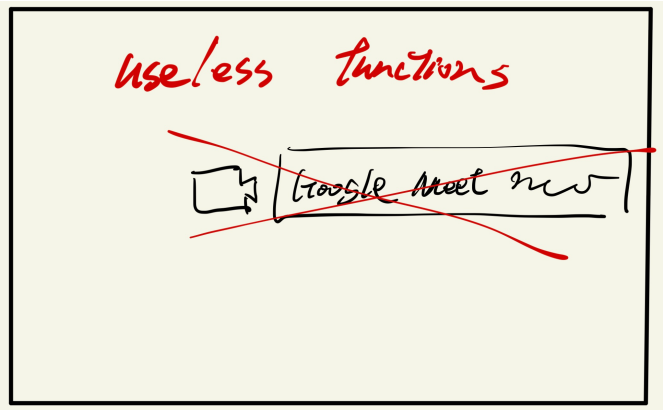


Figure 5.5 Demonstration of redesign with cleaner interface



WHY?

Aimed toward those who commented that the interface is too cluttered, specifically that the Google Meet function stuck out despite it being one of the least used functions. Additionally, signifying that color can be customized in this location makes it obvious to the user that this function is available.

Figure 5.6 Storyboard idea for getting rid of the Google Meet feature

Adding/Deleting Main Event Functions

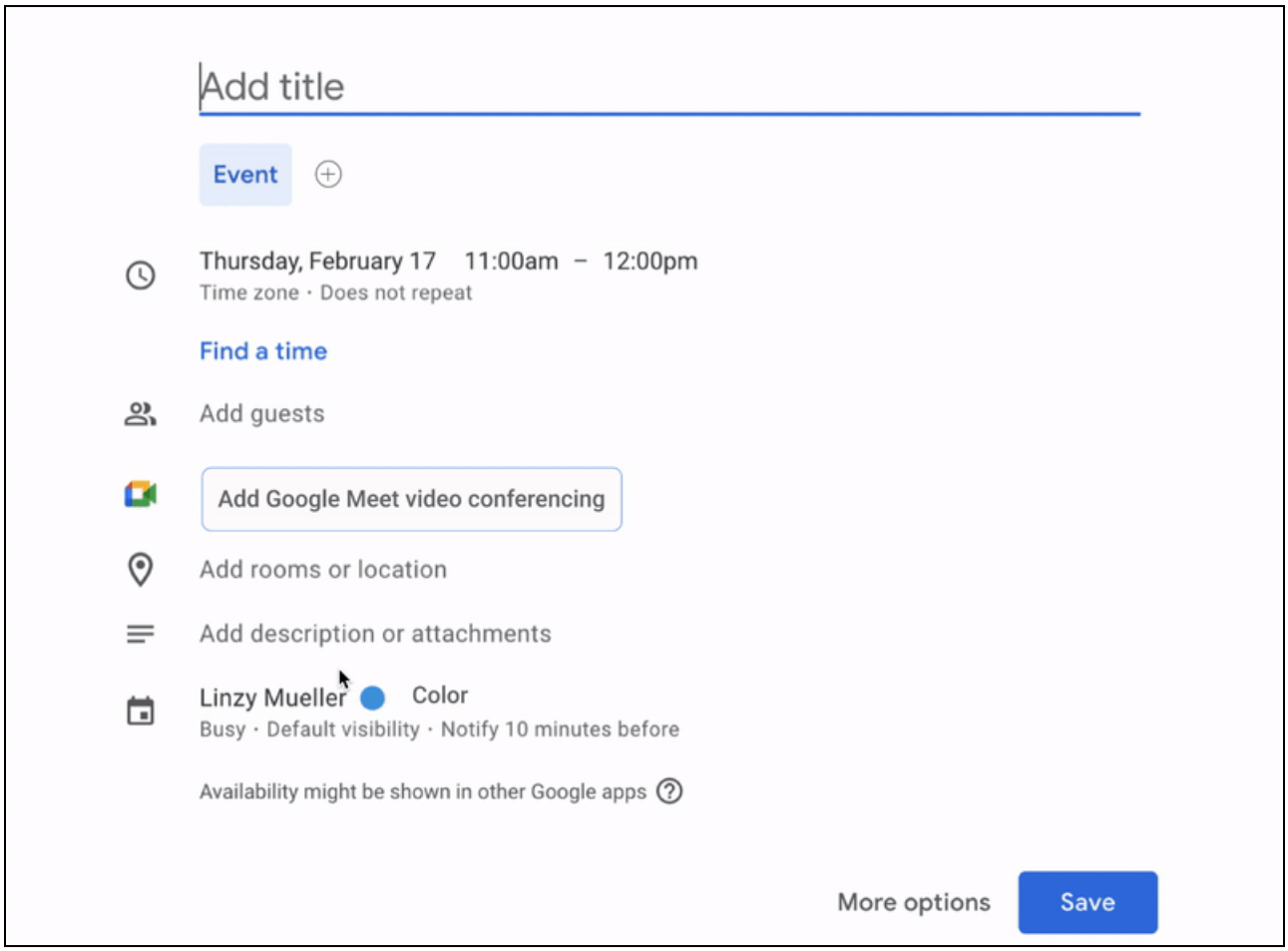
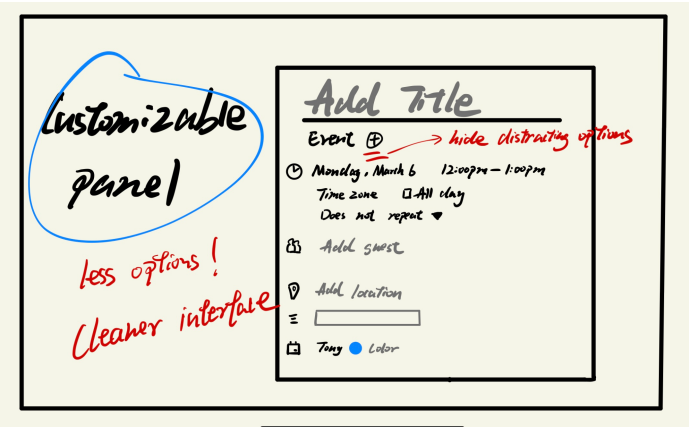


Figure 5.7 Demonstration of redesign on adding/deleting Main Events functions



WHY?

Users can choose which specific functions they want instead of having their interface cluttered with functions they never use and do not need. This helps solve the problem of certain features being unused by the user and develop a cleaner interface with higher aesthetic. Experience users can still tell the previous functions were there and can access those by just clicking on "+" button.

Figure 5.8 Storyboard idea for customizing the create event tab

Dark Mode & Import Theme

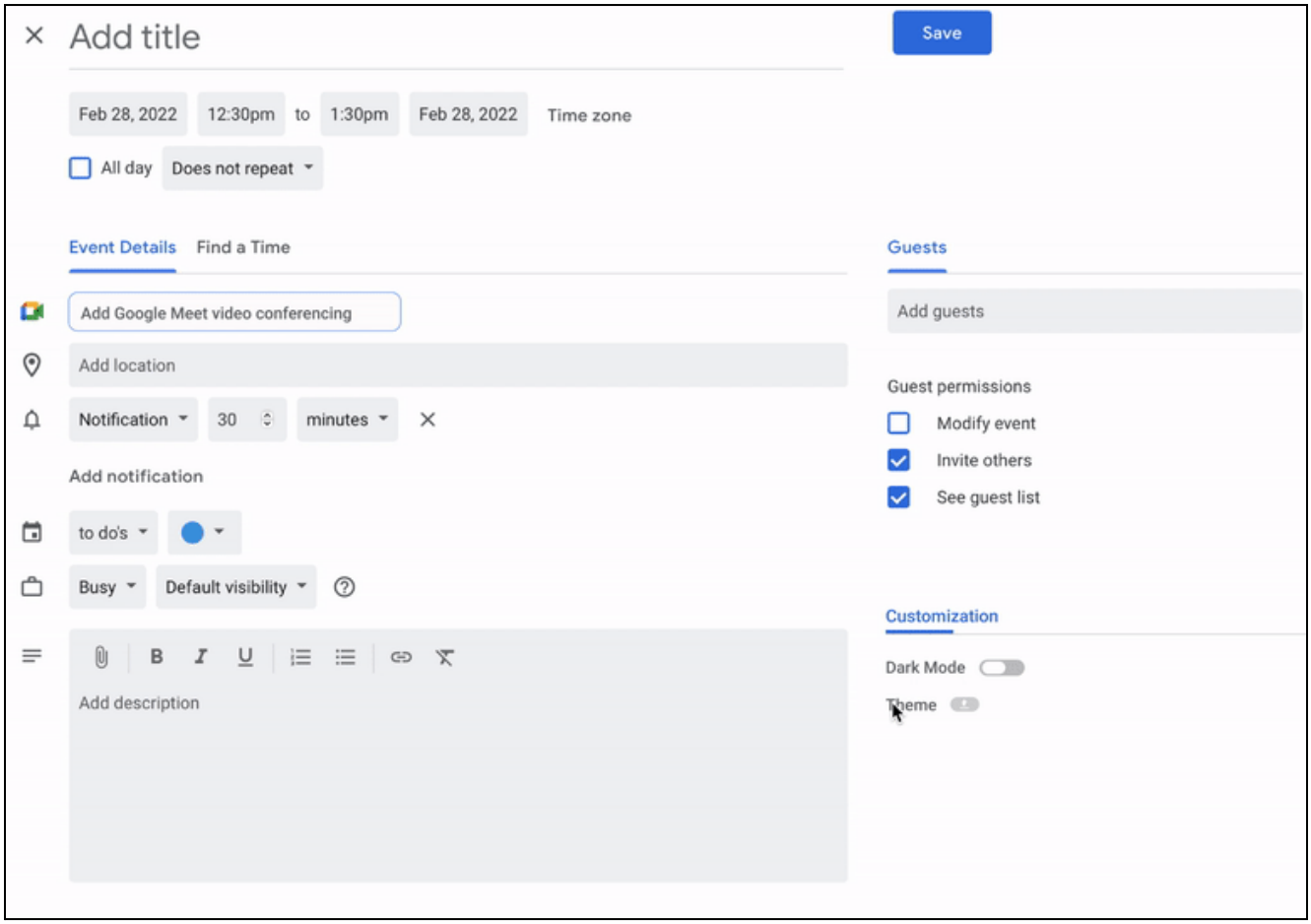


Figure 5.9 Demonstration of redesign on changing the theme

WHY?

Users can structure their calendars in whatever way they please. The addition of a "customization" section gives users the option to customize the outlook of Calendar according to their own preferences, without having to go to settings or add an extension. Many of our interviewees wanted a dark mode or the option of importing themes, so these functions were added. The redesign makes switching to dark mode much easier, users just need to click on the "flip" to switch between dark and normal mode and do not need to download any extension like before.

Time Zone Map

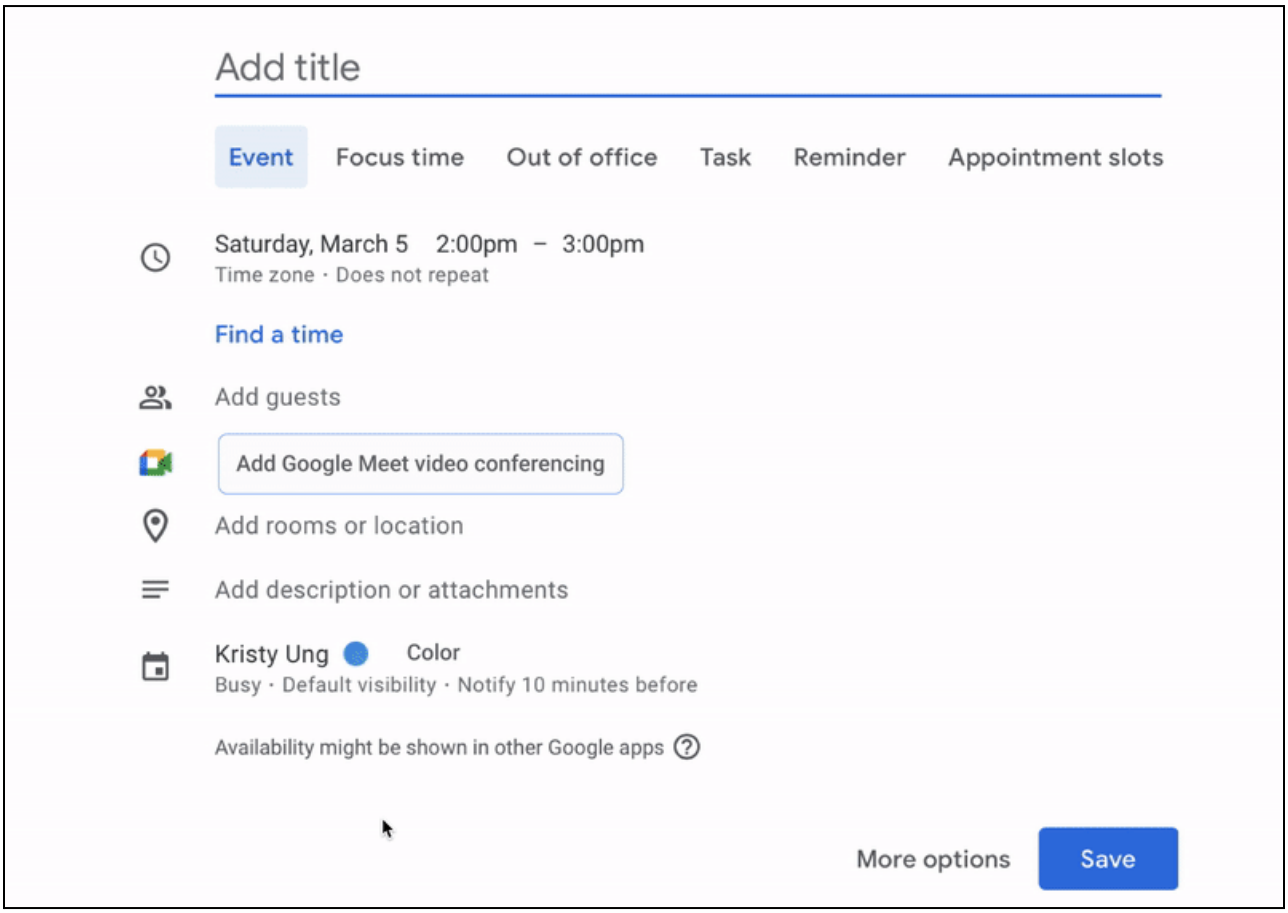
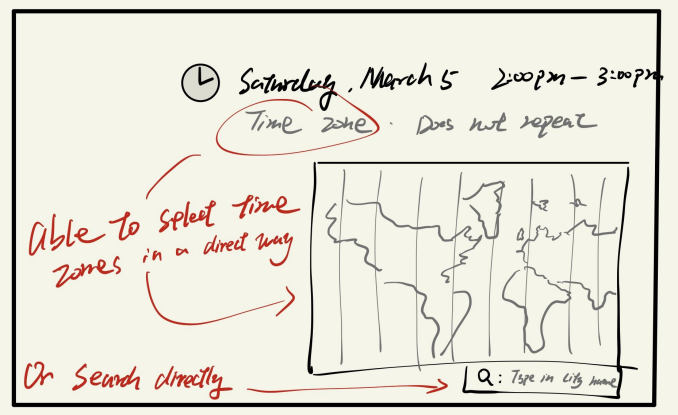


Figure 5.10 Demonstration of redesign of time zone map selection



WHY?

For the users who had difficulty selecting their desired timezone and/or got frustrated with this design, we added a visual time zone map. Instead of an endless list of timezones, the user can easily select their time zones. The map would be color coded which allows the users to figure out what location is in what time zone efficiently.

Figure 5.11 Storyboard idea for time zone map

Time To Leave

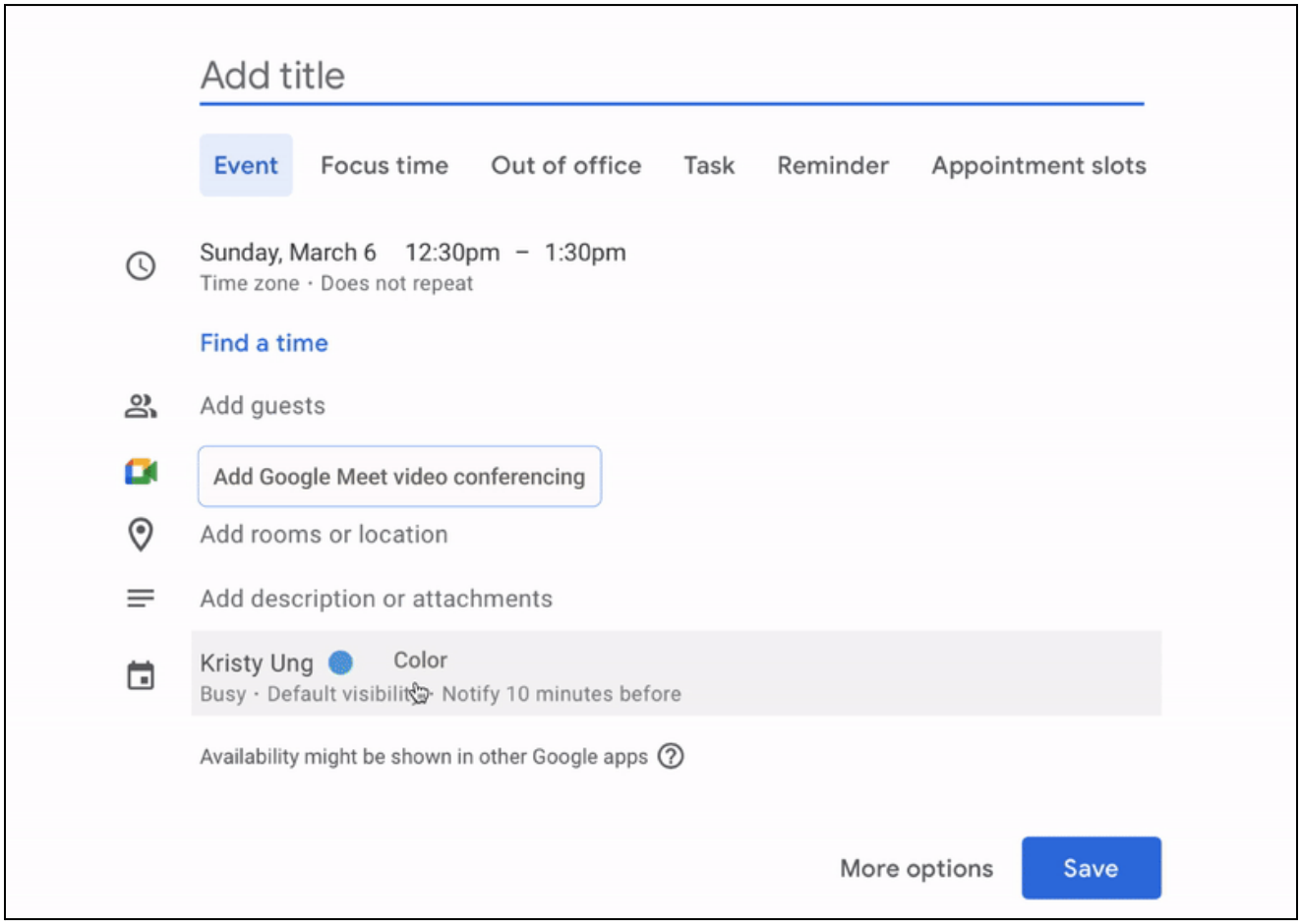


Figure 5.12 Demonstration of the redesign on time to leave function

WHY?

The addition of the "time to leave" will remind users "x" amount of minutes they need to leave their current location to arrive at their desired location on time. This is already a function within the Apple Calendar but it also can be integrated into Google Calendar especially because it can link with Google Maps. This adds to the functionality of notifications regarding events.

Trade-offs

Our redesign presents multiple trade-offs. Creating the option to reorder and hide features grants flexibility for different users, but it can also increase confusion and/or users may not utilize this capability because there are so many other things going on in that interface. Additionally, providing more customization for users, such as dark mode, import theme, and color wheel customization, can further complicate the difficulty of operation and lead to frustration and increase the decline in the use of Google Calendar.

While more customization offers more functions for users, it might lead people to find the Calendar hard to use because they have to learn more things about these additional functions. It is hard for users to bridge the gulf of execution in this sense. Also, we have noticed that our redesign might disturb the consistency of Google suite. Since many features within the Google suite look the same, if the calendar app is changed, it might confuse users who are used to the old settings. Thus, we decided to make our redesign following the pattern of the old calendar to ensure the consistency of standardization. We have tried to add similar style signifer icons in the redesign. Thus, the redesign calendar will still fit into the natural mapping in the users' mind while providing a more personalized experience for users.

Iteration

We utilized the Double Diamond Model of Design when iterating different ideas for our redesign prototypes. From our interview responses, we were able to gather and discover ideas about comparable calendars to draw inspiration from and figure out which aspects of the "event" interface were more favorable than others. We discovered the problems with Google Calendar through the interviews, which gave us insight into the user experience and how it could be improved. As we identified that the problems most users had with Google Calendar were with its interface, we narrowed our scope and decided that our redesign will focus on simplifying the interface and including opportunities for users to customize and tailor it to their needs and preferences. Even though we had a rough idea of what we wanted to improve, we didn't know exactly how to accomplish this; developing prototypes for our redesign was difficult without exploring possibilities and existing alternatives. Therefore, the web search extra credit opportunity conducted by Tone was very beneficial! During that study, we discovered more features and designs from existing calendars that we wanted to iterate into our redesign. For instance, Apple Calendar has a drop down menu where more features expand within that function (which keeps the interface simple until users need it). We had a few ideas for time zones, including simplifying the current drop down menu, but ultimately drew inspiration from an existing time zone map that is color categorized. Since we don't actually work for Google, we could not deliver this update to their calendar. Though the delivery process was not fully explored (which we hope to explore if we continued working on it), we did test out different redesign ideas for the customization.

We thought that including the option for dark mode and import themes would be overwhelming on the initial “event” interface. Therefore, we opted to iterate that feature once the user clicks “More Options” on that interface. That way, users who desire to turn on dark mode don't need to go to settings or download an extension, but simply click on one more button for that feature.

Conclusion

Overall, we obtained valuable insight from the findings of our research regarding the problems people face when using Google Calendar. Generally, creating an event was fairly easy to do for most users regardless of skill level. The process is streamlined enough due to the intuitive nature that Google calendar currently possesses. Despite all this, there were still complaints. The main issues we observed included the interface being not aesthetically pleasing, too cluttered (making it hard to find features), and functions that many people don’t use being too prominent. We designed solutions to these issues that focus on the user’s experience by simplifying the interface, creating and editing functions to allow for better discoverability and convenience, and enhancing customizability. If we were to continue working on this project, the next steps would be to implement the redesign and interview users again to gauge how positive or helpful our ideas are. We could also take a more in-depth look at other competing calendars such as Microsoft or Apple to gain more insight. Finally, we would polish our current iterations or analyze another aspect of Google Calendar and repeat this process.