

JOURNY

Building stronger teams through
collaborative journaling

Final Report

CS147 Winter 2022 - Hybrid Collaboration

Kelly Chen, Zander Lack, Sam Silverstein, and Ben Thier

March 13, 2022

Table of Contents

Team Members and Roles	1
Problem and Solution Overview	1
Needfinding	2
POVs and Experience Prototypes	5
Design Evolution	9
Final Prototype Implementation	25
Summary	26
Appendices	27

Team Members and Roles

Kelly: Designer

Zander: Mobile Developer

Sam: Mobile and Web Developer

Ben: Designer

Problem and Solution Overview

Once people were forced to move to remote and hybrid settings due to the COVID-19 pandemic, it became much harder to maintain good collaboration on teams. This occurred across multiple contexts, from students working on school projects over Zoom to colleagues spread out across the globe. The normal social cues people rely on in person, from facial expressions to body language, became covered by masks and computer screens. Even more, the facilitators of those teams - teachers and managers - found it difficult to stay informed about how their teams were working together and remaining productive. Even as we slowly move back into an in-person world, many aspects of hybrid collaboration are here to stay.

Our solution, Journy, leverages the power of collaborative journaling and reflection to help teams and their facilitators create more honest and open lines of communication. Our mission is to enhance team collaboration by building empathy and trust. Our team's Journy: help your team on yours.

Needfinding

We interviewed team members and facilitators across a variety of contexts to hear about their experiences moving to hybrid collaboration settings. During this process, we recruited from our personal network and did not compensate participants for their time. We interviewed:

- Soren: co-instructor of Stanford’s Learning Design and Technology (LDT) Master’s Program
- Tracy: PhD candidate in Consumer Behavior at Washington University
- Erika: ear-training instructor at Stanford University
- Eric: Data scientist an an energy company
- Tony: buy-side analyst at Bloomberg Hong Kong
- Claire: call-time manager and fundraiser for a U.S. Senator campaign

(Note that photos of interviewees are not included due to some interviewees not providing consent to have images of them taken.)

It was important to us to hear from people in both school-based learning environments and professional workplace environments, as collaboration is part of everyday life in these settings (Figure 1). We heard from students working on team projects, teachers facilitating student teams in their classes, and working professionals who are members of hybrid teams.

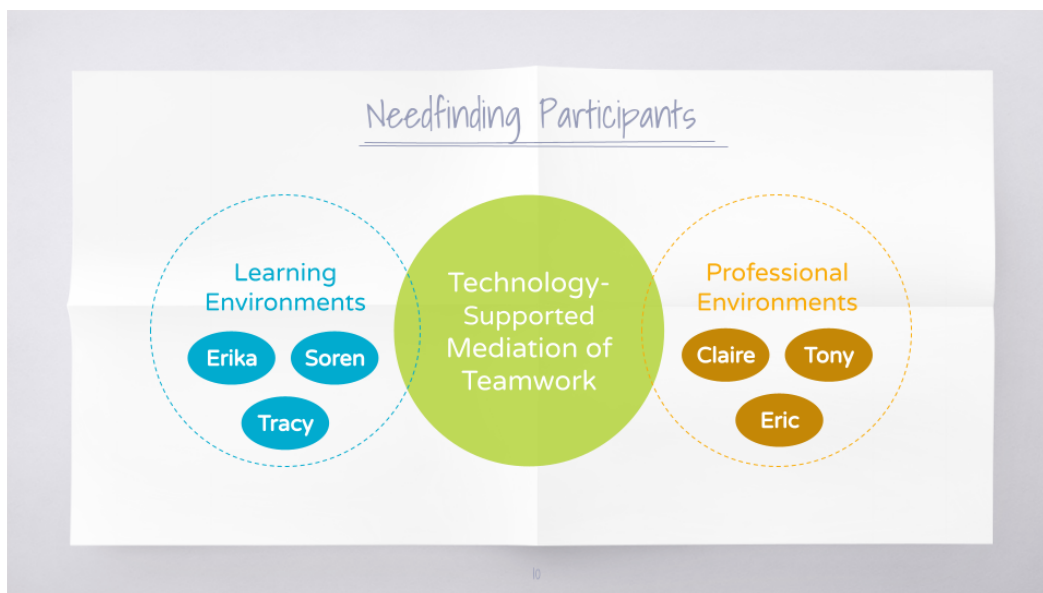


Figure 1: Breakdown of needfinding participants

We made it a priority to hear from “extreme users” who do not share characteristics with typical users. For example, Tony is on an international team with members spanning many continents, meaning he has the additional burden of different time zones and schedules when collaborating. Claire uses a wheelchair, which affects her participation in a hybrid collaboration setting where most of her team lives in a different state and travel is less accessible to her. It is

important to note that we do not assume Claire's personal experiences to speak for all people who have a disability, but her valuable perspective sheds light on one story of what it means to go to work with a disability.

One limitation of our interview process was that our students and educators all came from elite research universities. We can improve on this by seeking out a more diverse set of interviewees across learning environments, as well as hearing from younger students about their experiences on teams.

We came across many surprises elicited by our interviewees about their experiences facilitating and being on teams. Notably, in-person collaboration and facilitation skills do not necessarily translate to hybrid and virtual settings, and people had difficulty making this transition. Despite the many negatives spoken about - fatigue, boredom, lack of engagement and connection - we heard many *positives* about the experience. Erika noted that her students were able to work at their own pace and feel prouder about their work in hybrid settings. For Tracy, a previously unsocial member of her research lab, her new remote environment encouraged her to build deeper social bonds with teammates; she also found that the scope of her work was able to increase in meaningful ways and her productivity increased. These surprising insights about the positives experienced and felt by our interviewees helped drive our decision-making process down the line.

One interview in particular stands out as being the most generative for Journey in terms of future solution ideas: Soren (Figure 2). Soren's PhD research focuses extensively on what makes for good team collaboration; as such, he is a skilled facilitator of teams and has years of experience doing so in the LDT program. He implements several research-based techniques to monitor his student teams in person, yet acknowledged that he had trouble doing this after the shift to remote classes. For example, when his teams are in Zoom breakout rooms, he feels uninvited to intrude on their collaborative sessions, noting it feels less natural. The lack of data he receives about what students are doing and how productive they are means Soren feels ill-equipped to truly help his virtual teams. He mentions:

"I see a list of breakout rooms - which one do I jump into? There's no direction. You don't want to feel like you're picking on people or arbitrarily jumping in."

The cues Soren has access to and elicits from teams while in-person are absent in remote settings, prompting a much greater, and often frustrating, challenge for him as someone whose goal is to facilitate good collaboration between students.

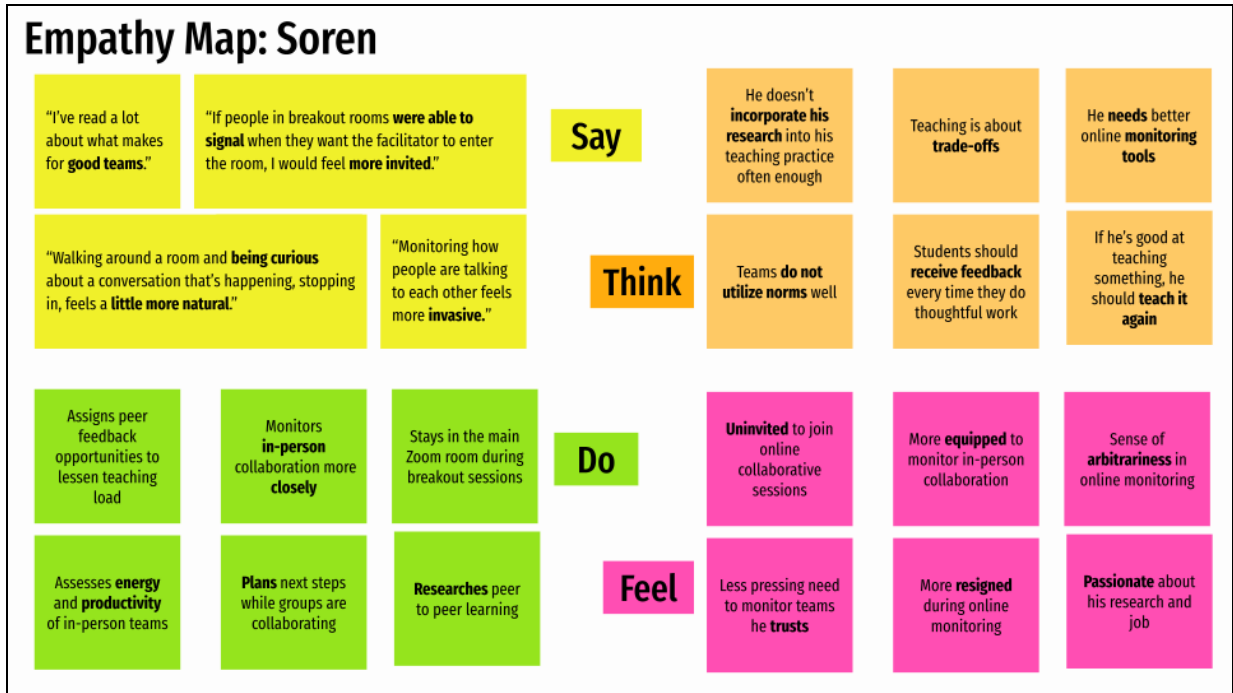


Figure 2: Soren's empathy map

In sum, our interviews were extremely generative in terms of enabling us to understand and empathize with the challenges, pain points, and needs of our target demographic. In our user-centered design process, our interviews serve as the foundation for our future prototypes and solutions.

POVs and Experience Prototypes

Based on our needfinding interviews, we generated several points of views (POVs) from our target users' perspectives. Our POV informed by our interview with Soren had the greatest impact on our design decisions:

“We met Soren, a co-instructor of the Stanford LDT Master’s Program and peer collaboration researcher. **We were surprised to notice that** despite Soren’s expertise in facilitating in-person student collaboration, he does not always implement this knowledge in online collaborative settings due to the more invasive nature of monitoring. **We wonder if this means** he does not feel invited to engage in best monitoring practices in online settings. **It would be game-changing to explore** how the more authentic feeling of monitoring in-person collaboration can be transferred to hybrid and online settings.”

The HMWs that stemmed from this POV and the top solutions inspired by these HMWs are listed in Table 1:

HMW	Solution
How might we facilitate trust-building in collaborative teams as well teams and the technology they use?	Solution 1: Virtual teammate that pings the team to remind them of best collaboration practices
How might we translate natural visual signals into virtual cues?	Solution 2: A multisensory feedback system with sounds, color, finger gestures used to indicate emotions/states
How might we encourage teams to be more vocal about their needs in learning experiences?	Solution 3: Anonymous reporting of feedback in groups that alerts groups when someone would like to regulate the group dynamic/interject

Table 1: HMWs and Solutions

We then conducted three experience prototypes to test key assumptions embedded in these solutions:

- **Solution 1: Virtual teammate** that pings the team to remind them of best collaboration practices
 - **Assumption:** Team members **do not feel distracted** by a “virtual collaboration facilitator” that periodically sends prompts.
 - **Experience Prototype:** We created a collaborative task for Julia and Heather, two non-Stanford participants, on Miro. During the task, a Wizard of Oz virtual teammate named Kika (shown in the orange sticky note in Figure 3) would help the team keep track of time, progress of completion, and periodically provide prompts to ensure good collaboration (shown in purple sticky notes Figure 3).

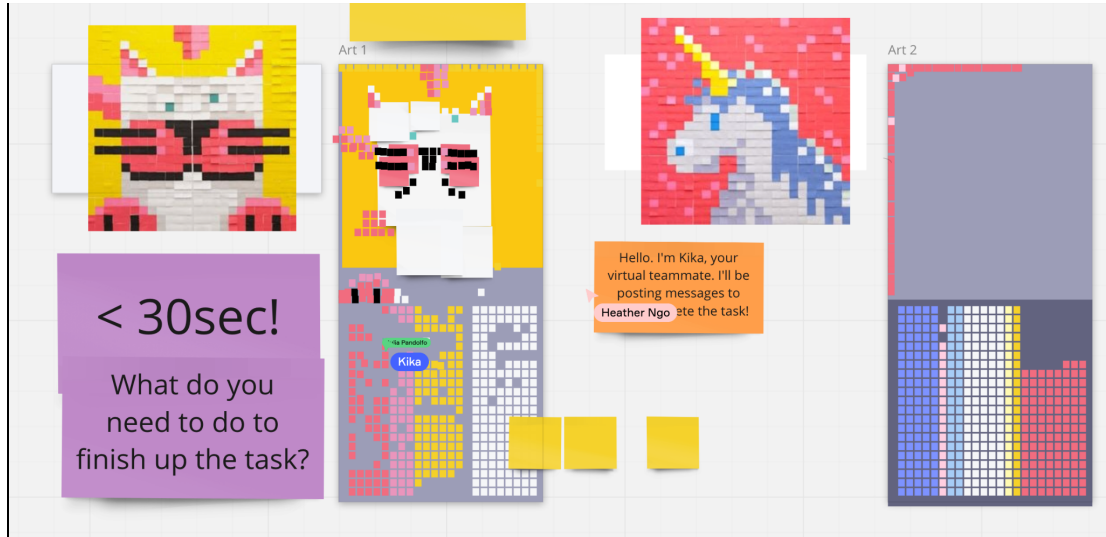


Figure 3: Experience prototype 1

- **Results:**
 - This experience prototype was ineffective in testing the assumption because the participants did not notice nor interact with the virtual teammate Kika at all.
 - **Negatives:** After we debriefed our experience prototype with participants afterwards, our participant Julia said, “because we’re doing a visual task, it doesn’t make sense for the notifications to also be visual because you’re dividing our attention.” Also, she mentioned, “because Heather and I were so focused on making [the artwork], I feel like I wasn’t paying attention to really anything else that was happening.”
- **Insights:**
 - We realized that the **medium of the alert** shouldn’t be the same as the medium of the task (e.g. visual tasks with visual notes are less effective than visual tasks with audio alerts).
 - Teams should be given the option to **resolve** the comments or make them go away.
 - Teams’ preference for a virtual teammate may depend on the nature of the task (e.g. people may not want a virtual teammate if they are on a time-sensitive task).
- **Solution 2: A multisensory feedback system** with sounds, color, finger gestures used to indicate emotions/states
 - **Assumption:** People are able to associate colors with particular emotions in a **consistent and widespread way**.
 - **Experience Prototype:** We designed a Google Form survey of color/emotion associations based on a total of 12 colors (Figure 4). Then, we sent the survey to a total of 17 non-Stanford participants and gathered data from their responses.

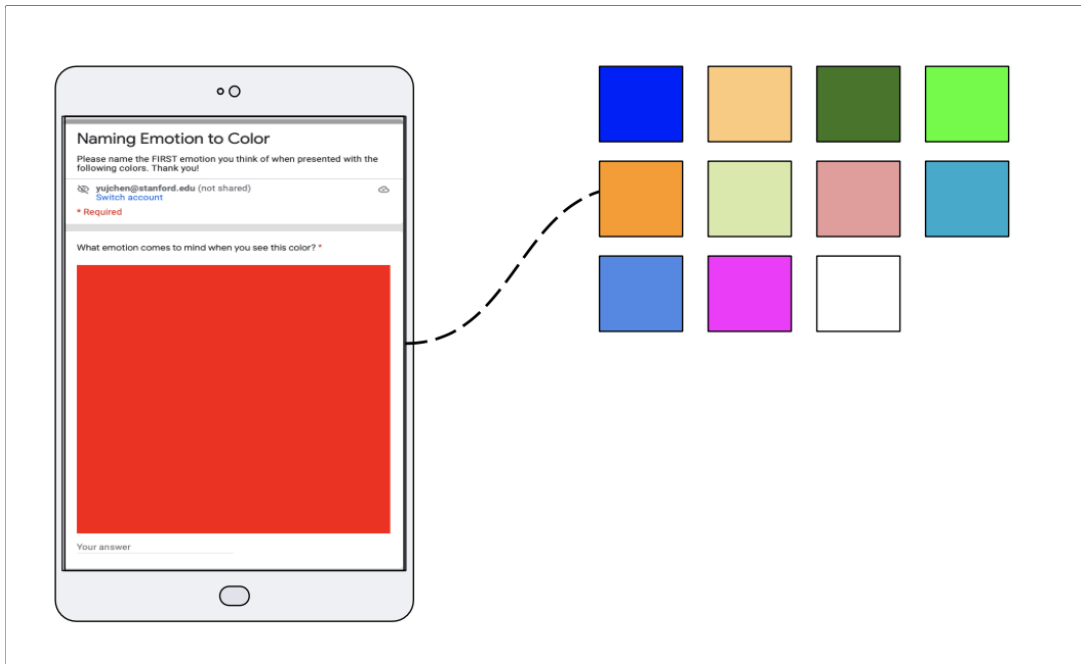


Figure 4: Experience prototype 2

- **Results:**

- Positives: Participants provided more consistent responses for colors that are common/frequently used (Figure 5).

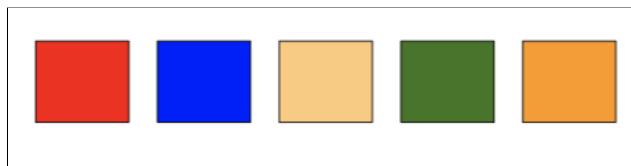


Figure 5: Examples of common colors with consistent responses

- Negatives: However, participants provided a wide variety of responses for colors that are less common (Figure 6).

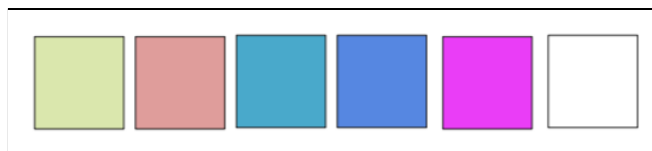


Figure 6: Examples of less common colors with inconsistent responses

- **Insights:**

- We learned that people tend to associate **common colors** (e.g. red, blue, green) with specific emotions in a consistent way.

- **Solution 3: Anonymous reporting of feedback in groups** that alerts groups when someone

would like to regulate the group dynamic/interject

- **Assumption:** People actually **feel comfortable interjecting** with feedback about group dynamics during collaboration sessions.
- **Experience Prototype:** We had a Stanford Master's student watch a video of an example of bad team collaboration over Zoom and asked the participant to pretend as if they were a part of the team (Figure 7). We wanted to see whether and when they would feel comfortable butting in or giving feedback by pressing the raising hand button on Zoom.

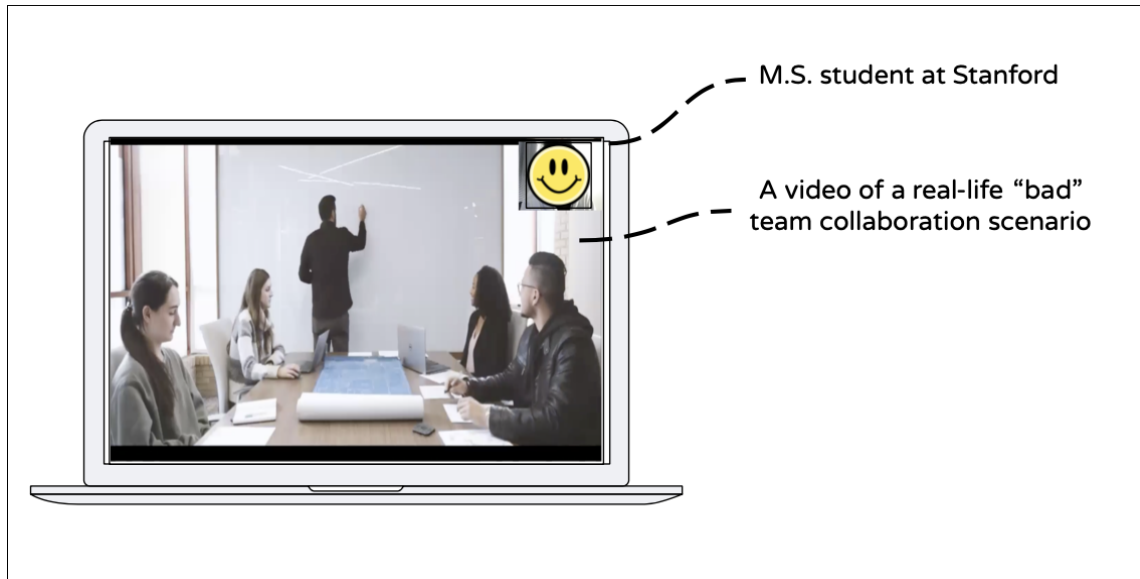


Figure 7: Experience prototype 3

- **Results:**
 - Positives: Our participant said, “[pressing a button] let me take a feeling before figuring out what I’d actually say.”
 - Negatives: Our participant stated, “this did not feel as realistic” and “this is what I would ideally do. Not sure what I would realistically do in a situation like this.”
- **Insights:**
 - **Easing the feedback giving process** may increase people’s motivation in providing feedback.
 - People have **different reasons for interjecting** with feedback. According to our participant, “I personally don’t care as much about silence or conversations not being productive. I would say something when someone is being rude or the group dynamic is really off.”

In all, our needfinding and experience prototyping successfully helped us frame our solution in the context of existing needs and behaviors of our target users.

Design Evolution

Final Solution

Based on our needfinding including interviews, POV and HMW generation, and experience prototypes, we identified a need for enhancing trust building and feedback in hybrid collaboration: facilitators such as teachers and managers often find peeking into Zoom breakout rooms invasive and unnatural. From our experience prototypes, we learned that people are generally willing to provide feedback to enhance overall team dynamics and collaboration. Thus, the final solution we developed was a mobile app that leverages the power of collaborative journaling to open more lines of communication for both team members and facilitators in teams.

We identified the following key tasks in our app:

- **Simple Task:** The simple task is for users to **view a past journal entry** (Figure 8). We identified this task as a simple task because it is a core functionality for all users (both team members and facilitators). Without this task, team members are not able to reflect on past team collaboration, and facilitators are not able to provide feedback.

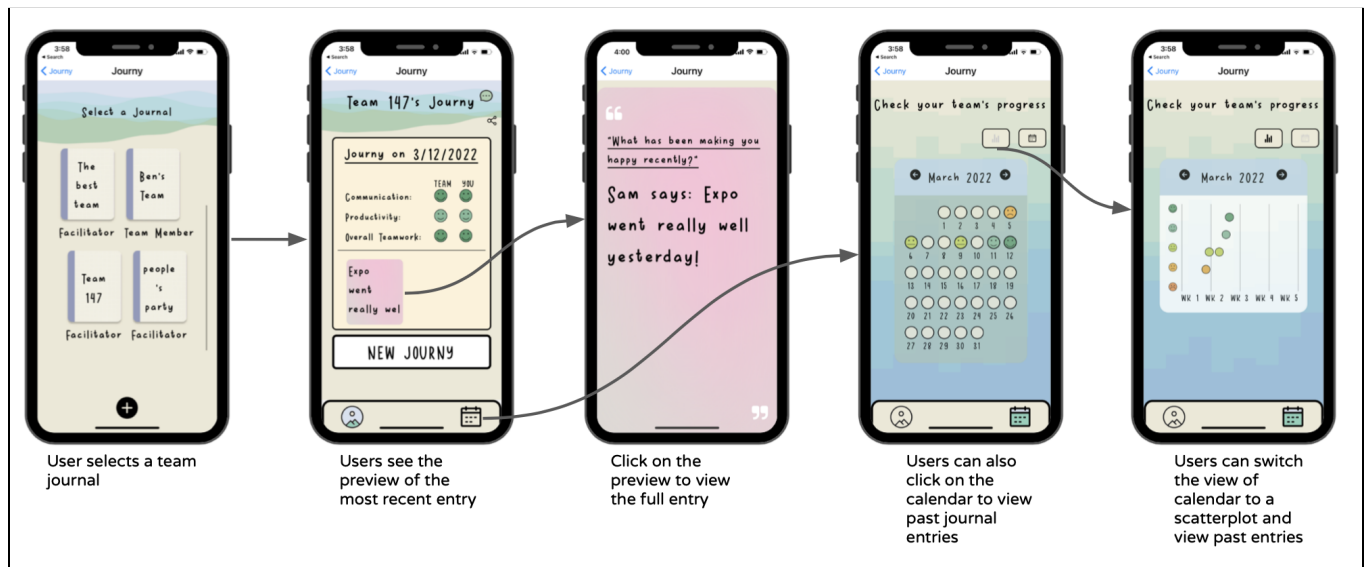


Figure 8: Task flow of the simple task in the high-fidelity prototype

- **Moderate Task:** The moderate task is for users to **submit a journal entry and view the team's journal entry on that day** (Figure 9). We identified this task as a moderate task because it is a core functionality for team members. Facilitators are not able to provide feedback unless team members have completed their journal entries.

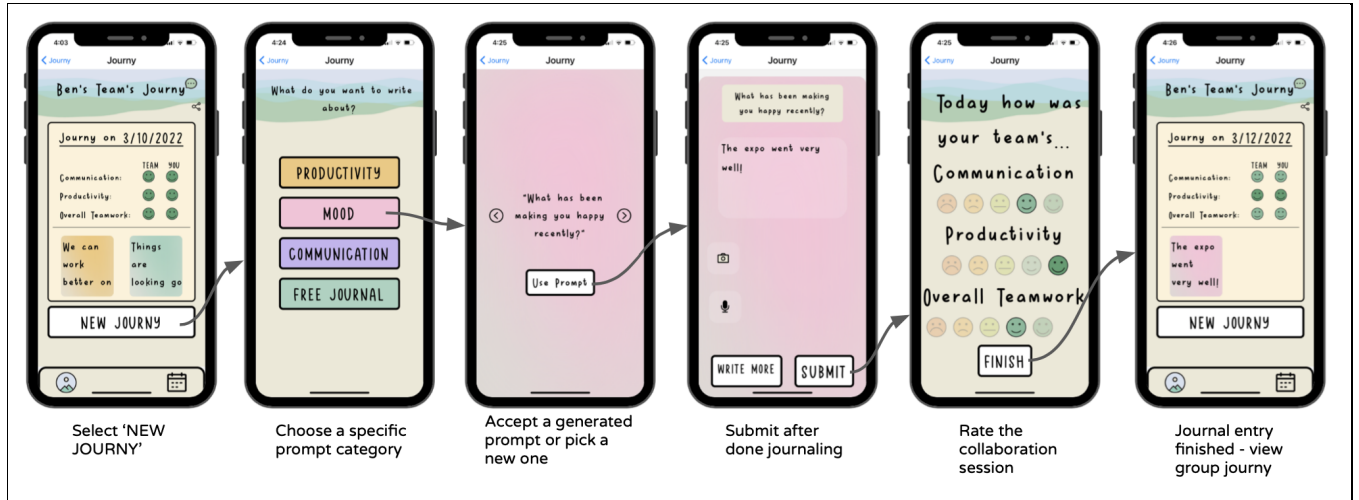


Figure 9: Task flow of the moderate task in the high-fidelity prototype

- Complex Task:** The complex task is for users who are **facilitators to send feedback to the team** (Figure 10). We identified this task as a complex task because it is a core functionality for facilitators, which constitutes the smallest portion of our user population.

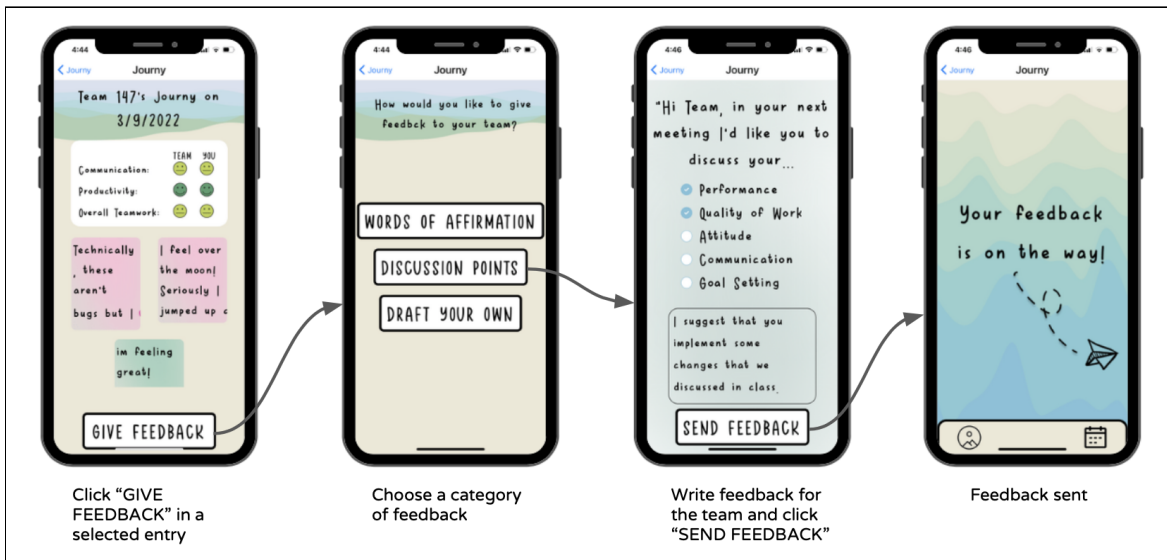


Figure 10: Task flow of the complex task in the high-fidelity prototype

The following sections show the progression of the design process from the low-fidelity prototype to the final high-fidelity prototype task flows shown above.

Low-Fidelity Prototype to Medium-Fidelity Prototype

Methodology

A total of four user tests were conducted. Participants were recruited based on their status of being potential users. Emphasis was placed on testing with a diversity of team facilitators and people on teams in both professional and academic settings. Our participant group included a senior producer at a podcast overseeing multiple collaborative teams, a software engineer working remotely, a Stanford graduate student working on a long-term collaborative project, and a Columbia graduate student participating in multiple team projects. Two user tests were conducted in person, and the other two were tested over Zoom. Prior to testing, all participants signed consent forms.

Users used Figma to click through our low-fi prototype. Since the user role (i.e. team member vs. facilitator) determines their progression through the app and specific task flows, we asked users to perform different tasks based on their role: team members demonstrated tasks of creating new journal entries and accessing past entries, and facilitators focused on accessing team's past journal entries and providing feedback. During user tests, we asked participants to talk us through their thought processes regarding their actions and decisions and took notes using the critical incident logs.

Findings: Execution of Tasks

Users progressed through the task flows efficiently and quickly, indicating coherent functionality and obvious interface interactions. While users were able to successfully navigate through the tasks, we also noticed significant points of confusion. For our simple task - viewing a past journal entry - there was slight confusion surrounding the red dot on the calendar page: some thought it noted an absence of an entry on that day, while others thought they were supposed to click on that dot to view the journal entry. For our moderate task - create a journal entry - due to the limitations of the click-through prototype, users could not opt to enter text or input a voice memo into the platform; the prototype "auto-filled" their entries upon participants clicks into the textboxes, which led to some confusion as to how the voice memo and picture upload would function in a fully functioning version. Also, the position of the "enter here" field on the journal entry page in our low-fi prototype caused confusion regarding its functionality.

Findings: Strengths and Weaknesses

In terms of strengths, users from both academic and professional settings indicated their willingness to use this app in team collaboration as this app "allows [them] to share a bit more than [they] normally would with a team." Moreover, users expressed that they liked the pre-generated prompts as they help "scaffold the structure and content" of journaling. Finally, our users praised the simple and "organic" aesthetic of the overall design.

In terms of weaknesses, in addition to the confusion surrounding task execution mentioned above, our facilitator users wished to see more robust facilitator features. Moreover, users expressed the need for the ability to join or facilitate multiple teams and easy navigation between different teams. Finally, our user testing results directed us to reconsider the usefulness of viewing past journal entries as the archival function and navigation in the low-fi prototype caused major confusion to our users.

Medium-Fidelity Prototype Creation

Response to Low-Fidelity Prototype Testing: Design Changes

We made four major design changes to make the user experience more robust and efficient for our future users. The four changes that were implemented were:

- **Sign in Setup: Multiple Teams**
 - In the low-fi prototype, signing in as a team member or a facilitator resulted in completely different task flows: team members were guided to either create a new entry or see archive whereas the facilitators were directed to the journal archive automatically. The updated design in our medium-fidelity prototype enabled the possibility of a user being both a team member on one team and a facilitator for another. Also, this design change enabled users to join or facilitate multiple teams and easily navigate through different teams by selecting different team journals. In making this change, we wanted to enhance the flexibility of our app to different users' needs.

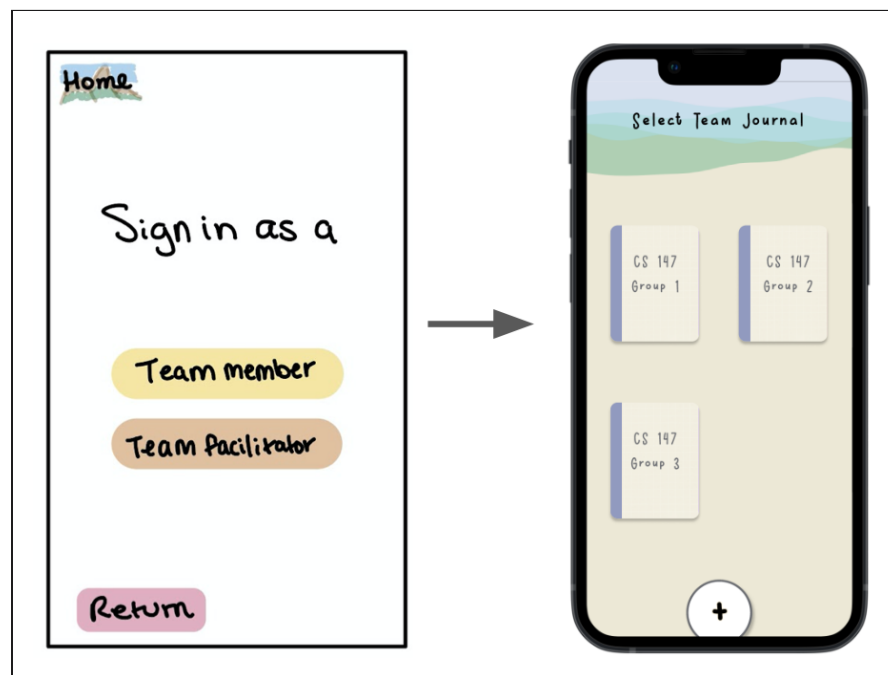


Figure 11: This design change linked the role of a team member or a facilitator to the journal instead of the account

- **Archive and Calendar Navigation**
 - The red dot in the calendar was confusing to our users: some perceived it as the most recent date whereas others thought it represented a missing journal. The users wished that the calendar was more robust than just an archive. In our med-fi prototype, a gray dot represented a day without a journal entry. When there is a journal entry on the day, the average of teammates' collaboration ratings will show, making it easier for both team members and facilitators to reflect on positive or

negative team collaboration on a specific day. Finally, we added a “statistics” view so that users can more easily track performance over time. In making this change, we wanted the calendar view to be more straightforward in communicating team performance to both team members and facilitators. The updated design enabled more robust utility and clearer navigation for users.

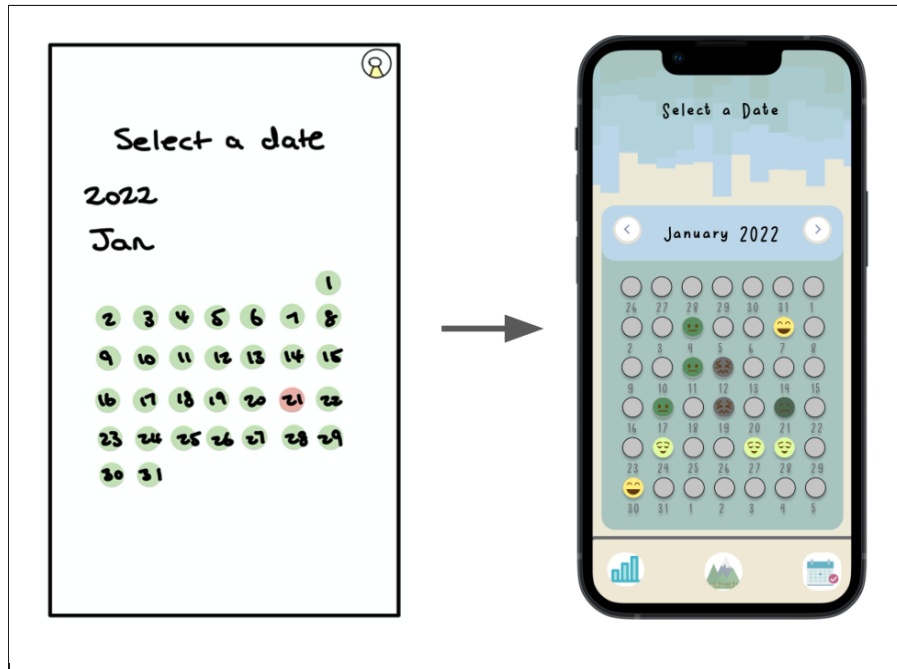


Figure 12: The design change enabled easier calendar navigation and showed more meaningful information

- **Journal Entry**

- The low-fi prototype had two separate sections for free journaling and prompted journaling. This could be misleading as users were not able to view categories of prompts before making a choice. In the medium-fidelity prototype, we included different prompts and free journaling in the same frame. This enabled users to choose the type of journal entry in less clicks. Moreover, a rating system has been incorporated to ease the reflection process and to enable progress tracking over time. In terms of the frame layout, our low-fidelity prototype had multiple prompts on the same page, which caused confusion to our users. Additionally, multiple fields for journal entry made navigation unclear. In our medium-fidelity prototype, we incorporated a prompt selection function to allow users to either accept or reject a randomly generated prompt. Also, instead of having multiple fields for entry, the medium-fidelity prototype only had one designated area. In making these changes, we wanted the journal entry process to be clear and efficient for users.



Figure 13: The design change led to cleaner user interface and clearer journal entry process. A rating system was also incorporated.

- **Facilitator Functions**

- In the low-fidelity prototype, after the facilitator selected a past entry from the calendar, they will be directed to the feedback giving page directly. The design provided minimum guidance and lacked robust functionality. The medium-fidelity prototype included pre-generated templates and words of affirmation in addition to the option to draft their own messages. The pre-generated templates cover a variety of topics for the facilitator to select from. Since providing feedback to the team as a facilitator is a complex task in our design, we wanted to support users with more robust functionality and provide more guidance in their use.

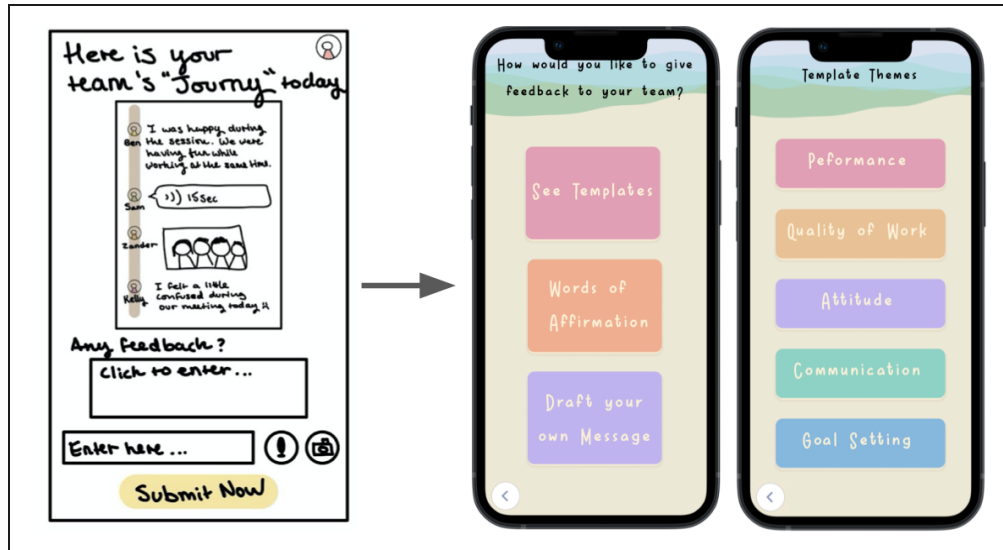


Figure 14: The design change provided more support to facilitators in feedback giving.

Medium-Fidelity Prototype to High-Fidelity Prototype

Methodology

A group of four peer evaluators provided a heuristic evaluation of Journey's medium-fidelity Figma prototype using a modified version of Nielsen's "10 Usability Heuristics for Interface Design." 89 violations of varying severity were found (Table 2). The 42 severity 3 and 4 violations are the main focus of this section, which aims to describe major changes made between Journey's medium-fidelity and high-fidelity prototype.

Category	# Viol. (sev 0)	# Viol. (sev 1)	# Viol. (sev 2)	# Viol. (sev 3)	# Viol. (sev 4)	# Viol. (total)
H1: Visibility of Status	0	1	4	0	2	7
H2: Match Sys & World	0	2	7	7	1	17
H3: User Control	0	1	1	8	0	10
H4: Consistency & Standards	3	5	5	9	0	22
H5: Error Prevention	0	0	1	2	1	4
H6: Recognition not Recall	0	1	0	4	0	5
H7: Efficiency of Use	0	0	2	1	0	3
H8: Minimalist Design	1	5	2	1	1	10
H9: Help Users with Errors	0	1	0	0	0	1
H10: Help & Documentation	0	1	1	0	0	2
H11: Accessible	0	1	1	1	1	4
H12: Fairness & Inclusion	0	0	1	0	1	2
H13: Value Alignment	0	0	0	1	1	2
Total Violations by Severity	4	19	25	34	8	89

Table 2: A summary of violations identified by the heuristic evaluation

Sign in and Journal Creation Process

Major violations of the sign in and journal creation process were related to user control and freedom (H3) and consistency and standards (H4). The main change to the sign in process is

that the user role is now journal-specific rather than user-specific. This is to account for one user potentially having different roles on different teams, increasing their efficiency of using the platform. Users pick their role during journal creation, not sign-in (Figure 15). Other violations in this process deal with consistency of button placement and navigational headers; these have been resolved by the consistent placement of a back button on the top of the navigation bar in the high-fidelity prototype.

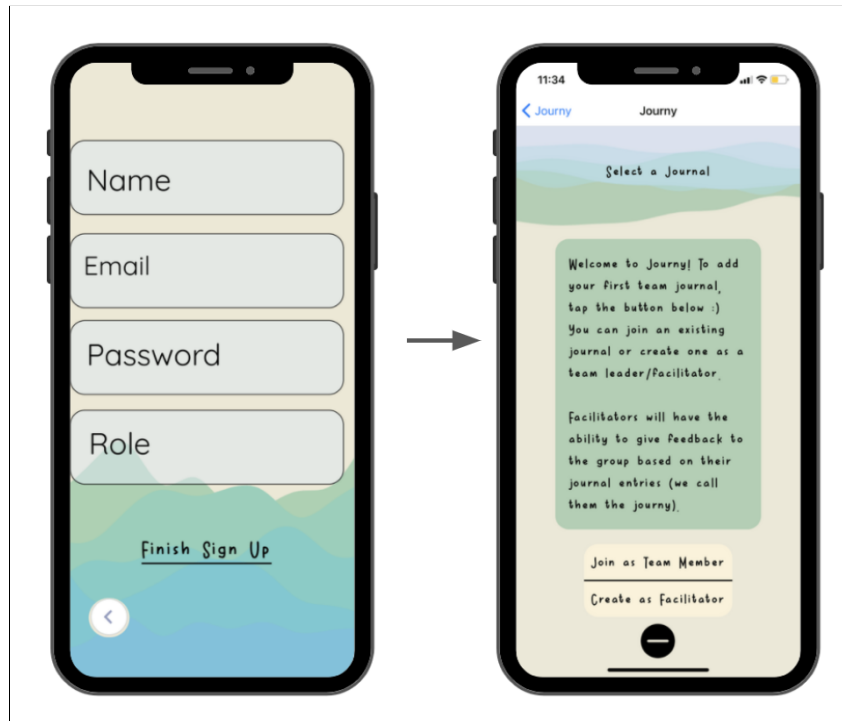


Figure 15: Role selection changed from being account-specific to journal-specific.

H3: User Control and Freedom (3)

Problem: in the facilitator flow, there is no log out button on the page where all the journals are displayed

Solution: the journal role process is journal-specific rather than user-specific, so there is no need to log out and sign into another account.

H3: User Control and Freedom (3)

Problem: when adding a new journal, there is no back button or close button.

Solution: every screen has a back button on the top navigation bar.

H4: Consistency & Standards (3)

Problem: the position of the back button changes between screens

Solution: every screen has a back button on the top navigation bar

H4: Consistency & Standards (3)

Problem: the sign out button placement is not consistent on all pages. As the user chooses a journal, they are redirected to a
Solution: every screen has a back button on the top navigation bar and the sign out buttons have been removed due to roles being journal-specific.

H4: Consistency & Standards (3)

Problem: The home page of each journal does not have a header.
Solution: the name of the journal is present on the top header.

H6: Recognition rather than recall (3)

Problem: it is hard for team members to remember the codes for journals and add them
Solution: we enabled facilitators to easily copy and share the new journal codes for students to input (Figure 16).



Figure 16: It is easier for facilitators to copy and share new journal codes in the high-fidelity prototype.

Homepage

H7: Flexibility & Efficiency of Use (3)

Problem: The "most recent" button is unnecessary on this screen as it is the only button users can click.

Solution: We eliminated the "Most Recent" button on the homepage and replaced it with a preview of the most recent Journey to reduce the number of clicks and prioritize the display of more important information; on the home page, team members can now click into the recent

Journey to expand the entries, and see a comparison of the team’s overall collaboration feelings to their own (Figure 17).



Figure 17: Team Member Home Page Update from Medium-Fidelity to High-Fidelity

Journal Entry Process

The journal entry page underwent significant changes as a result of the violations in this section. In order to provide users with more flexibility and freedom, the journal entry page has

been streamlined onto one screen instead of multiple; users are now able to create a journal via multiple modalities (text, speech, image) on the same screen instead of choosing beforehand the single modality they would like to use (Figure 18) . Buttons for viewing, discarding, and re-doing components of the entry have been included for user control.

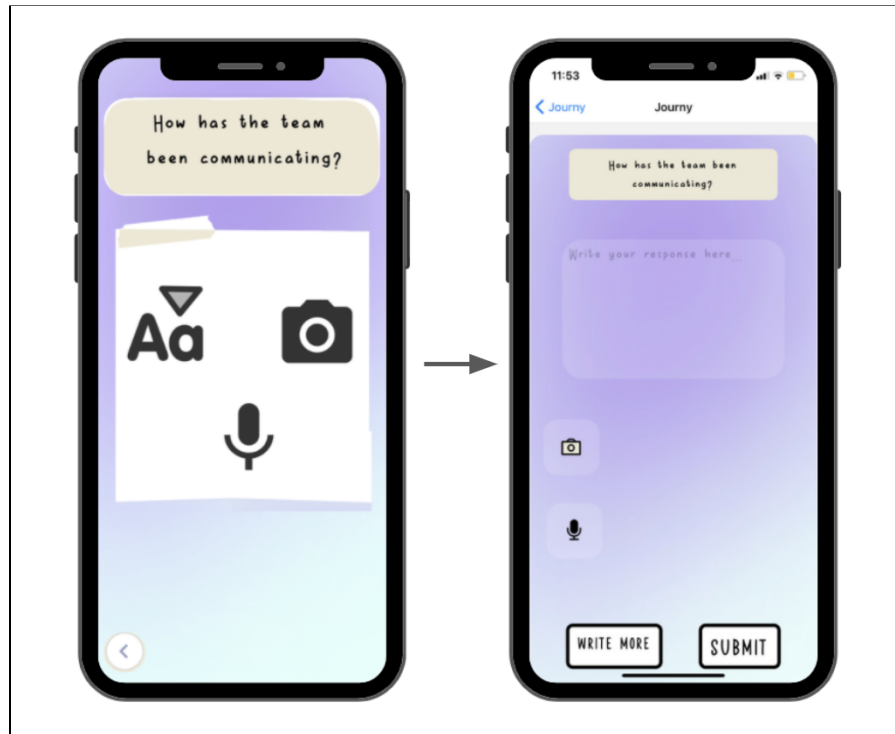


Figure 18: The journal entry process is more streamlined and flexible in the high-fidelity prototype. Users can now choose multiple modalities for one entry and review or discard entry components before submission.

H2: Match Between System & World (3)

Problem: when the user is adding text to their journal, there is no textbox to indicate the boundaries of the entry.

Solution: we included an opaque text box with “tap to enter” to clarify boundaries.

H2: Match Between System & World (3)

Problem: when the user wants to use the voice record feature, there is no voice button to record.

Solution: the speech entry feature has record, playback, and discard buttons.

H2: Match Between System & World (3)

Problem: when the user wants to upload a photo, there is no picture upload button.

Solution: the image entry feature has upload and discard buttons.

H3: User Control and Freedom (3)

Problem: when adding a journal entry, here is no back button.

Solution: every screen has a back button on the top navigation bar.

H4: Consistency & Standards (3)

Problem: The emojis have very similar colors, making it difficult for users to differentiate.

Solution: we changed emoji colors and facial expressions to reflect the overall aesthetic and maintain differentiation (Figure 19).

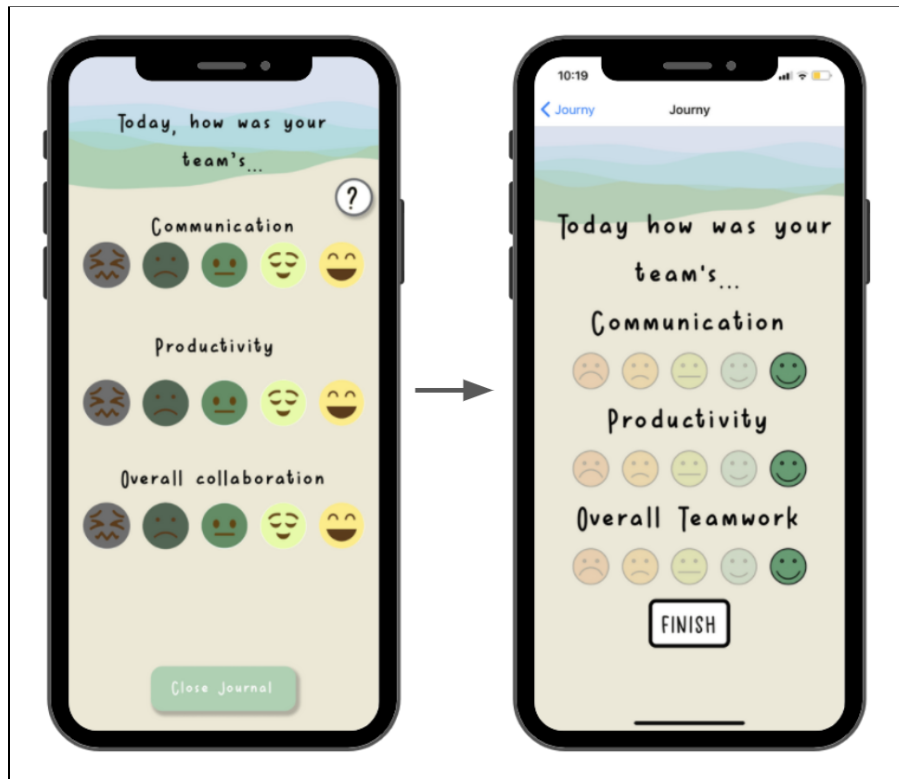


Figure 19: The style and color of emojis was changed to better reflect the app's aesthetic and differentiate between emotions.

H4: Consistency & Standards (3)

Problem: "next prompt" brings user back to selecting an entry

Solution: we changed the wording from "next prompt" to "write more" to indicate that this button enables users to write about another prompt.

H5: Error Prevention (3)

Problem: emojis on the rating page are small to click on.

Solution: as per Fitts' Law, we increased the spacing between emojis to prevent errors. The emojis also become highlighted when tapped, indicating their selection.

H5: Error Prevention (4)

Problem: when the user is adding to an entry, there is no confirmation button for pictures and voice.

Solution: we implemented record, playback, and discard buttons on the entry screen for each modality, allowing users to change and confirm their entry.

H6: Recognition not Recall (3)

Problem: when users are in a journal, they should see the name of the journal they are writing about.

Fix: we included the name of the journal on the top of the page for clarity.

H11: Accessibility (3)

Problem: some of the title headings are the same size as the body text, making it hard to distinguish hierarchy

Solution: we increased the font size of title headings.

H5: Error Prevention (3)

Problem: when the facilitator is adding their feelings through pictures, text and voice, there is no confirmation button.

Solution: similar to the team member journal entry changes, we implemented record, playback, and discard buttons on the entry screen for each modality, allowing facilitators to change and confirm their entry.

Calendar and Statistics Pages

The violations for the calendar and statistics page largely consisted of users being confused about what features were available as well as how to access them. There was a seemingly repetitive nature of the information presented on these two pages, which lowered utility for users. As such, we have combined the two pages into one and included a toggle view so that users have the freedom to select which data display suits their needs (Figure 20). Other fixes in this section pertain to including more guidance and information as to what the features are and what the data represent.



Figure 20: The separate statistics and calendar pages were combined into one page with a toggle view.

H8: Aesthetic & Minimalist Design (4)

Problem: the calendar page conveys the same info as the statistics page because each day has a colored emoji.

Solution: combined calendar and statistics page into one page with a toggle.

H1: Visibility of System Status (4)

Problem: it is unclear what the emojis represent on the calendar and statistics pages.

Solution: we include more visible instructions on the calendar page to indicate what the emojis represent (overall collaboration team average).

H11: Accessibility (4)

Problem: on the calendar screen, it is not intuitive that the users can click on the calendar screen emojis to access another screen

Solution: we implemented a pop-up modal with instructions on the calendar page to indicate the page's functionalities.

H2: Match between System & World (3)

Problem: when the user is on their calendar and clicks on their emoji, the thoughts of other team members show up.

Solution: we included instructions on the calendar page to indicate that users are viewing the team journal, not just their own.

We chose to disregard the remaining severity 3 and 4 violations provided by the heuristic evaluation. For a discussion of the remaining violations and justifications for why they were disregarded, see Appendix A.

Other Changes

Here, we highlight other key changes to the high-fidelity prototype that were not inspired by the heuristic evaluation. The first notable change we made was allowing the facilitator to not only offer feedback, but optionally enter a journal entry of their own to add to the team journal if they so desire. This was done to account for the fact that in many professional environments, teams would utilize Journey without the direct oversight of someone to give feedback. This way, all team members can act as equals on their Journey, with the “facilitator” serving as the Journey’s organizer.

The second key change we made is expanding the flexibility and efficiency of the facilitator’s feedback prompts (Figure 21). Whereas the medium-fidelity prototype had confusing templates for the facilitator to fill out, the high-fidelity prototype includes the “Discussion Points” option, enabling facilitators to highlight specific areas for the team’s improvement using a menu of options.

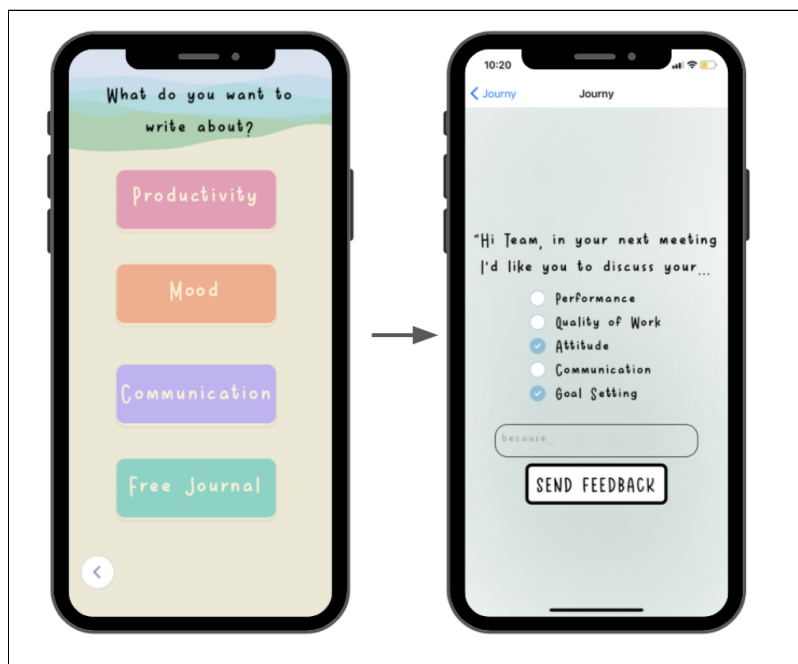


Figure 21: Expand facilitator feedback options from medium-fidelity to high-fidelity prototype

Values

Early on in the design process, our team was intentional about selecting core values that would inform our design process and decision-making. As our guiding mission is to support better collaboration between teams and facilitators, we determined our two leading values to be:

1. **Empathy:** being aware of, understanding, and sharing team members' emotional states
2. **Transparency and openness:** supporting an individual's ability to truthfully share feelings and opinions in a trusting environment

We intend for the collaborative journaling experience to increase empathy between team members, while at the same time being empathetic as designers to our users' lived experiences, needs, and wants. Transparency and openness come into play during the feedback process between teams and their facilitators; enabling more transparent communication for these two parties was a key goal for us through the development of the application.

These two values are embedded throughout several key features of Journy. First, the organic and natural aesthetic helps (such as the font that appears hand-written) recreates the feel of a physical journal and establishes a mood for openness and reflection. Similarly, the color palette is warm and inviting. Second, team members and facilitators have access to robust aggregate statistics that paint a more detailed picture of collaboration dynamics over time and serve as a reflective conversation starter. The entire team is able to get a quick snapshot of how everyone is feeling, evoking empathy and understanding. Third, team members and facilitators are able to express themselves through text, speech, and images. These accessibility features make journaling possible for a wider array of people and also display empathy for catering to people's preferred modes of communication with others. Lastly, we have deep empathy for how busy team facilitators (such as teachers and managers) are. Journy shows empathy towards these facilitators by enabling them to choose from feedback templates and prompts, making their facilitation process speedier and more efficient.

Just as importantly as the value-driven features we decided to implement are the features we decided not to implement. We intentionally decided to not allow any form of anonymous journaling in order to establish the most trusting and open team dynamics; team members learn how to communicate their needs more transparently to the rest of the team without the ability to be anonymous. Additionally, Journy does not allow team members to send journals directly to facilitators; that is, team members' entries are viewable by the whole team to establish an equitable collaboration and diminish potential power dynamics.

It should be noted that our values of empathy and openness may conflict at times - we want to support productive collaboration while remaining cognizant of individual needs in team settings. Although some team members may want anonymous journaling to protect individual privacy, Journy does not allow for that in order to create the best collaboration experience for the entire team. One of the challenges in addressing this conflict is explaining (in other words, being *transparent*) to users about why we have made this choice. We hope that removing the choice

of anonymity actually enables team members to embrace the collective journaling experience they are all going through together, creating a more empathetic and productive team.

Final Prototype Implementation

Tools

This section outlines the tools used to build the prototype along with benefits and limitations of the tools. We used a few essential tools to build our high-fidelity prototype. React Native, a UI software framework, was used to develop the prototype. React Native is beneficial because it allows for deployment onto both iOS and Android and simulates a natural user experience. GitHub was used for version control, which is essential for a two-person development team taking on a complex task. Firebase was used to store the database of user-generated information such as account log-ins and Journys and authenticate sign-ins. Firebase was a useful tool because it easily integrates into React Native and is free to use, unlike other database services. Expo Go was used for production and allows users to walk through the application on their own devices. Lastly, Asana was used for project management to track tasks, progress, and completion.

In terms of limitations, one limitation of Firebase was that images uploaded as part a Journey are currently only viewable on the local device it was uploaded from. In addition, the voice memo feature on the entry page is currently not implemented in the high-fidelity prototype due to difficulties in React Native. Another key limitation was that the shareable codes that were automatically generated are not user friendly in terms of familiarity, length, or ability to be recalled; a tool that enables users to generate unique codes for journal creation is preferred.

Wizard of Oz Techniques and Hard-Coded Data

Journey does not require any human intervention or third-party applications to simulate usability features. The application also functions without the use of hard-coded data. However, some data were explicitly hard-coded for the purpose giving test users at the Project Expo a richer sense of Journey's capabilities. For example, the calendar and statistics views were hard-coded to have previous data from a sample team's Journey appear, showing users how the application tracks progress over time.

Future Directions

Given more time, there are many features of Journey we would like to implement. First, team members are only able to enter a journal for the current day. We would like to enable team members to pick *any* date on the calendar to add an entry for to expand flexibility of when they can reflect on their team dynamics; doing so would subsequently change the team's aggregate statistics on the calendar page. Additionally, expanding functionality on the statistics page is a priority; right now, users only see one metric graphed over time (average overall collaboration score) but the ability to hone in on specific metrics (productivity, communication, etc.) would further help teams regulate their dynamic. Creating a "Synergy" metric that highlights how *aligned* the team was across each metric would be useful as well to avoid the mathematical pitfalls of averaging (i.e. outliers holding a disproportionate weight in the calculation). Further expanding the

statistics page to support wider date ranges (one week, one month, one year, etc.) enables long-term teams to see their progress over a long period of time. Lastly, we would like to offer more resources for teams who are struggling to regulate their collaboration and their facilitators.. Examples of additional scaffolds include special alerts to facilitators if they have struggling teams, team-building exercises, and readings and videos on what makes for successful teams.

Summary

Working on Journy has taught us a great deal about the future of hybrid collaboration. For one, even though the pandemic was stressful, fatiguing, and difficult on us as individuals and society, there were silver linings that came out of it. People all over the world became more connected online. Families spent more time together and the fast-paced demands of in-person life slowed down. We hope that Journy's collaborative team journaling approach is one way that we can take the positives of remote life and bring them back into face-to-face interactions as we return to a "new normal." Even though it is easier to focus on the negatives, designing solutions based on positives, strengths, and assets is a valuable approach.

Over this 10-week process, we have undergone a design process centered on empathizing with users, defining our problem space, ideating, prototyping, and testing. The rapid - and at times, overwhelming - iteration process has empowered us to feel comfortable with the idea of creating, discarding, and re-creating. It is easy as designers to become attached to our first solution because we think it is the best one, but continually putting our product in front of users has reinforced that design is truly about being user-centered, not designer-centered. After this project, we are of the belief that failure simply means progress and learning. Throwing something out even though we worked for hours on it does not mean we failed - it is just another step of progress towards our goal.

Thank you for reading about our Journy this quarter!

Appendices

Appendix A - Disregarded Heuristic Evaluation Violations

This section outlines all the violations from the heuristic evaluation that the design team has chosen to disregard for the high-fidelity prototype. The disregarded violations fall under two categories: Figma Limitations and Developers' Decision.

Figma Limitations

Our justification for ignoring the violations in this section is that they denote limitations of the medium-fidelity prototype on Figma related to a) hard-coded elements (e.g. sign-in processes, journal entries, templates, etc.) or b) errors in the clickable interactions that will be resolved in the high-fidelity prototype. As such, no design changes are being considered for violations in this category.

H1: Visibility of System Status (4)

Problem: as the user clicks on the graph button from the notifications tab, they would assume that the "What do these stats mean" would provide them with information

H2: Match between System & World (3)

Problem: when choosing to add a new entry into the journal, the mood button does not let you add your mood

H2: Match between System & World (4)

Problem: the buttons for 'team member' and 'facilitator' on the start screen are not clickable buttons. Rather, they give an error that users need to have an existing account.

H2: Match between System & World (3)

Problem: iuret seems like the user is unable to upload a picture

H2: Match between System & World (3)

Problem: the facilitator cannot make a new account

H3: User Control & Freedom (3)

Problem: users cannot log into an existing account

H4: Consistency & Standards (3)

Problem: after signing out and trying to sign back in as a facilitator, it says there is no prior account

H4: Consistency & Standards (3)

Problem: there is a screen that displays the question "How has the team responded to the feedback?" There is a sad face that is not consistent with the other art designs included in this application.

H4: Consistency & Standards (3)

Problem: calendar screen arrows are not clickable.

Developers' Decision

Justifications for why these violations have been disregarded are provided underneath the individual violations.

H3: User Control & Freedom (3)

Problem: Users would like to view multiple prompts at once without clicking on a new prompt each time.

Suggested Fix: scroll view of prompts

Justification: We made the decision to only show one prompt at a time so as not to overwhelm the user with too many prompts at once. In addition, only showing one prompt at a time will enable the user to more carefully consider which prompt they would like to select.

H3: User Control & Freedom (3)

Problem: users are unsure if there is a way to edit emoji selections after submitting.

Suggested Fix: add a button to return here

Justification: as the user is prompted to enter an emotion in the current moment, the ability to change the emotion later on defeats the purpose of the in-the-moment check-in. The user is currently able to change their mind on the screen before they submit, which allows them to consider multiple options and prevents them from inaccurately submitting.

H3: User Control & Freedom (3)

Problem: When the users are looking at the team's journey, there is no back button for the user to go back

c. Suggested Fix: Add a back button on top of the screen so they could go back

Justification: the user has already confirmed submission of their journal, so there is no need to go back to the journal entry pages. The team journal page already has a home button for users to return home. Error checking and prevention already occurs prior to the submission page.

H3: User Control & Freedom (3)

a. Problem Description: As the user clicks on the graph button from the notifications tab, there is no back button for the user to go back

b. Rationale: If the user accidentally selects the wrong button and does not want to go through the graph, they should be able to go back

c. Suggested Fix: Add a back button on top of the screen so they could go back

Justification: the bottom bar is already present on this page to take users back to the homepage, which is the previous screen.

H6: Recognition rather than Recall (3)

Problem: users are unsure if there is enough context in the journal entry previews.

Suggested Fix: Add a subject or title heading to each entry

Justification: the facilitators' expected behavior is to read through all journal entries, so the preview text is present just to give them an idea of what they are going to see.

H12: Fairness & Inclusion (4)

Problem: the facilitator can see the names of team members in entries.

Suggested Fix: the facilitator should not be able to read the names of those who have added to the diary but rather should give feedback based on the text

Justification: We intentionally chose to not incorporate the anonymous feature to establish the most trusting and open team dynamic. We hope to increase transparent lines of communication and really foster trust within teams.

H13: Value Alignment (3)

Problem: The values in your slides focus on team collaborative atmosphere, but only the facilitator can provide feedback. I would also like team members to provide feedback to each other as well.

Suggested Fix: allow team members to give feedback

Justification: We think that the journaling process itself is a process of giving feedback to each other within the team. Moreover, after the team receives feedback from their facilitator, they will be able to communicate further and reflect on the feedback they have received.

H13: Value Alignment (4)

Problem: names of team members are included in the journal entries for team members to see

Suggested Fix: Having a checkbox option for the user to choose from in the scenario that they do not want their thoughts to be shown to the group as a whole.

Justification: We intentionally chose to not incorporate the anonymous feature to establish the most trusting and open team dynamic. We hope to increase transparent lines of communication and really foster trust within teams.

Appendix B - Other Deliverables

Our project website can be viewed [here](#).

Our project expo poster can be viewed [here](#).

Our project expo pitch slide can be viewed [here](#).