A2: Design Alternatives, Low-Fidelity Prototype, Storyboards, Evaluation Report & Design Implications

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Design Alternatives

Throughout the discussions about potential solutions during our brainstorming sessions, we put lots of factors into consideration and ultimately summarized three solutions that we believe are the best for addressing our problems based on practicality, feasibility, and efficiency (see Appendix: *Ideation Process*).

The initial proposal involves the idea of "bridging the gap" by establishing an online platform aimed at building meaningful connections between high school and college students. With features for organizing and attending meetings, this platform would enable high school students to seek advice from their college counterparts, who, in turn, can share their insights, experiences, and perspectives. They are able to discuss a range of topics and engage in conversations, facilitating a mutual learning process.

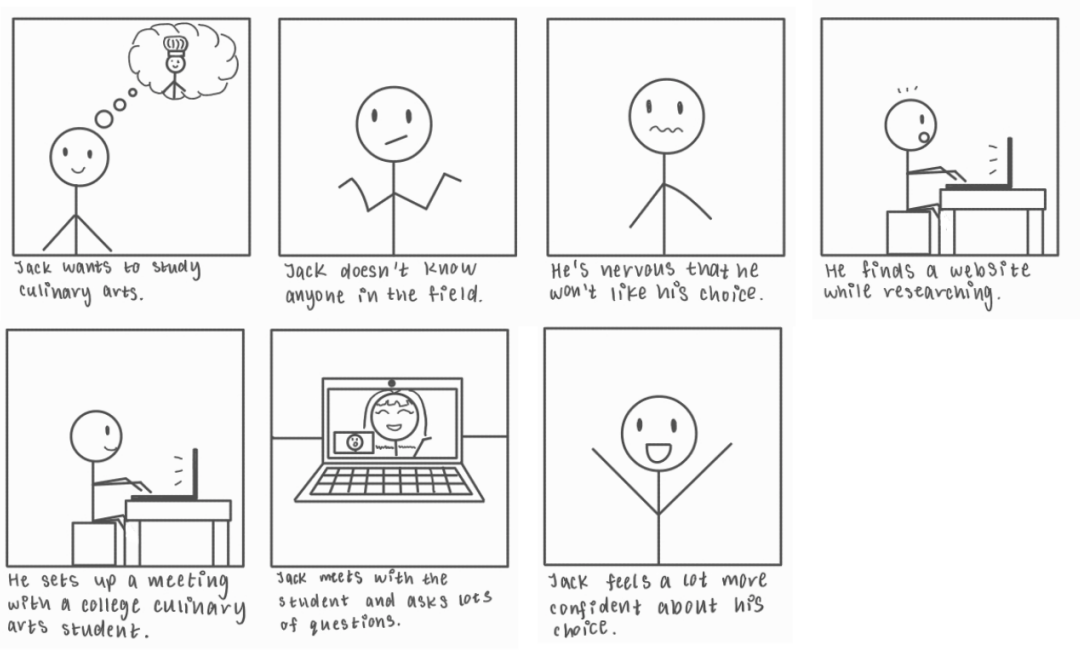

Figure 1.1 (Storyboard: Bridging the gap from S2 presentation)

Advantages of the first design include the proximity of college students to high school students since college students graduated from high school only a few years ago. This advantage ensures that their advice is relatable and relevant. The second advantage to our first design is that college students can offer a realistic perspective on the coursework at their

academic institution, which is valuable to high school students. Based on our field study interview from A1, the high school student interviewee commented that she “would not say that our teachers have provided any valuable resources" on picking majors, universities, or on career paths (see Appendix: *A1 Field Study Interview Transcripts*).

But, it is important to recognize that college students' advice may be insufficient to guide high school students. Unlike working professionals, they have not entered into a career yet, and, as a result, their societal knowledge, insights, and relevance are limited, which is a disadvantage to our first design. The second drawback to our first design proposal stems from the fact that it is impossible to guarantee a standard on the quality of advice the high school student receives. From the same interview, the student expressed concerns on feeling discouraged to future-planning among her high school cohort, and commented that “most students simply aren’t motivated or ambitious enough” to join clubs after school (see Appendix: *A1 Field Study Interview Transcripts*). Since every university student has a different personality, academic ambition, interests, and willingness to join extra-curricular activities, they may negatively influence high school students by dissuading them from participating in such activities.

The second solution is an online platform that enables students to acquire valuable experiences through shadowing and auditing professionals or university students in their workplaces and lectures. The design goal for this proposal is to help high school students prepare for professional and university academics by actively enabling them to experience course and workplace difficulties for their major interests, and different aspects of learning, allowing them to adapt to the rigorous standards that universities and workplaces expect.

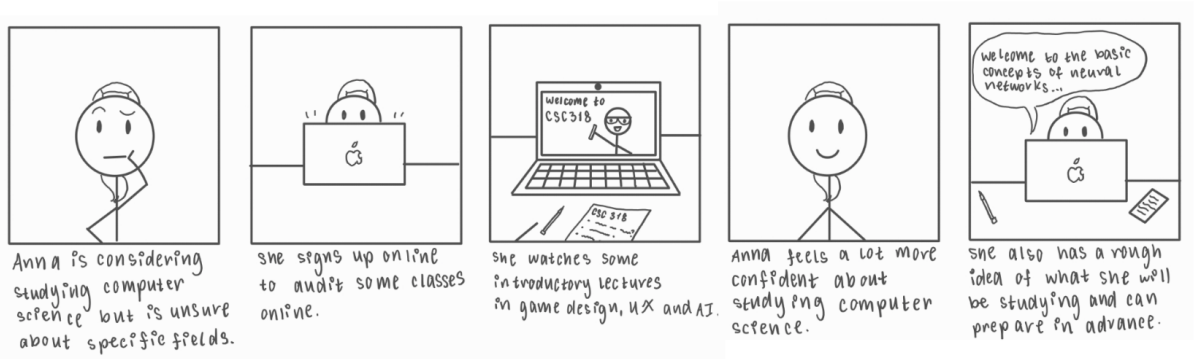

Figure 1.2 (Storyboard: Lecture auditing from S2 presentation)

The second solution offers distinct advantages, as we improved it based on our questions to the audience in the S2 presentation and feedback from S2 Peer critiques (see Appendix: *S2 Peer feedback & Studio 2 Feedback*). Firstly, students gain direct exposure to the daily lives of professionals and university students. This allows them to go beyond the theoretical understanding of a subject matter, and acquire practical, hands-on experience in their chosen fields. A second advantage to this solution is that this approach is efficient as mentors can contribute to students' learning experiences bearing minimal extra time or effort, as they would simply go about their day normally. However, there are also a few disadvantages to consider. College-level lectures could potentially confuse or intimidate high school students. Depending on the student's exposure to foundational courses, this may or may not be true, but it may steer them away by convincing them that they are not suited to study a subject because it is too difficult. Another drawback could be that not every college lecture is suitable for auditing: asking too many questions can cause disruptions to the entire class, non-professionals' presence in prohibited areas could lead to ethical concerns, and public safety or security issues for minors might also be a challenge.

The third solution involves organizing in-person immersive camps that provide a range of mini-tutorials covering various subjects and interactive activities. This format allows students to quickly explore diverse subjects and discover their interests and talents.

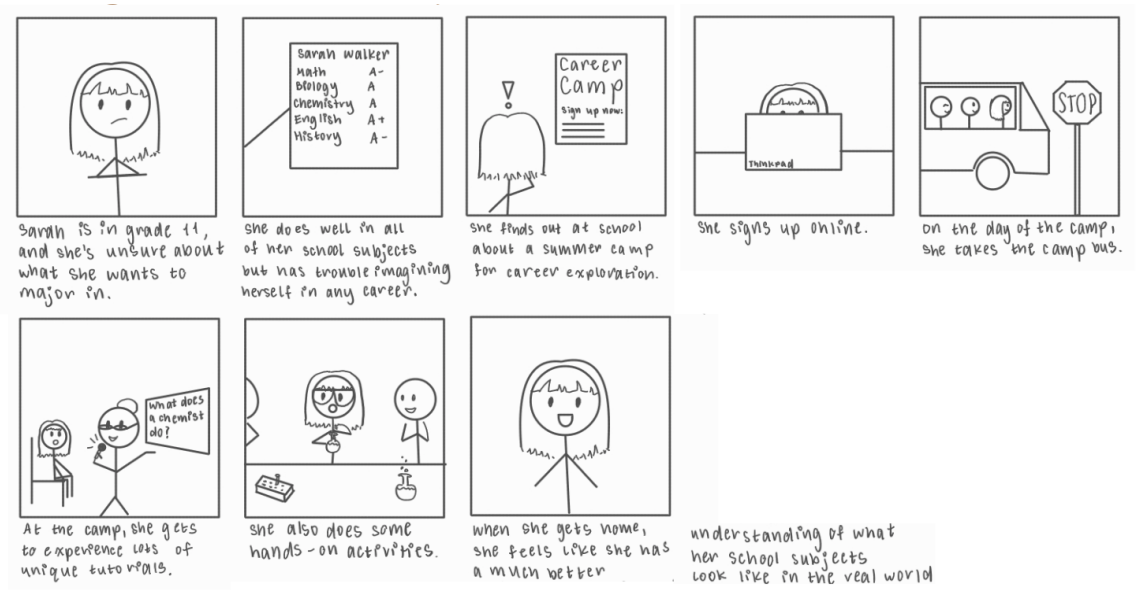

Figure 1.3 (Storyboard: Exploration camp from S2 presentation)

The first advantage of this solution is that participants are exposed to various subjects in small groups and at a beginner-friendly level of difficulty. It encourages participants to explore potential areas of interest, draw their attention to significant issues, and connect with mentors. The second advantage is that mini interactive activities, or tutorials, create a dynamic learning environment which strikes a balance between theoretical learning and hands-on experiences. The first drawbacks of this approach include the need for additional resources, such as financial investment or time commitment, and a formal process to organize these camps. The second drawback is that it may not precisely represent the rigors of university learning and future professional work as the emphasis is on more fun activities.

Instead of selecting between these design concepts, we have opted for an integrated and cohesive approach by combining elements from our first and second design solutions. The result is an online platform, or a web app, that incorporates the aforementioned features. Per the features in the first solution, high school students should be able to establish connections with college students by requesting or scheduling meetings to discuss their needs. In this case, college representatives act as intermediaries between the university and high school students. Since they have the authority on courses offered by the university in

their respective subjects, high school students would need to apply for lecture audits through them. We decided not to pursue the camp solution based on the feedback from Studio 2: offline solutions might be challenging to illustrate with paper prototypes, making it difficult to progress to the next stage.

Storyboards: From Design Concepts to Cohesive Solution

High-Level Storyboard 1

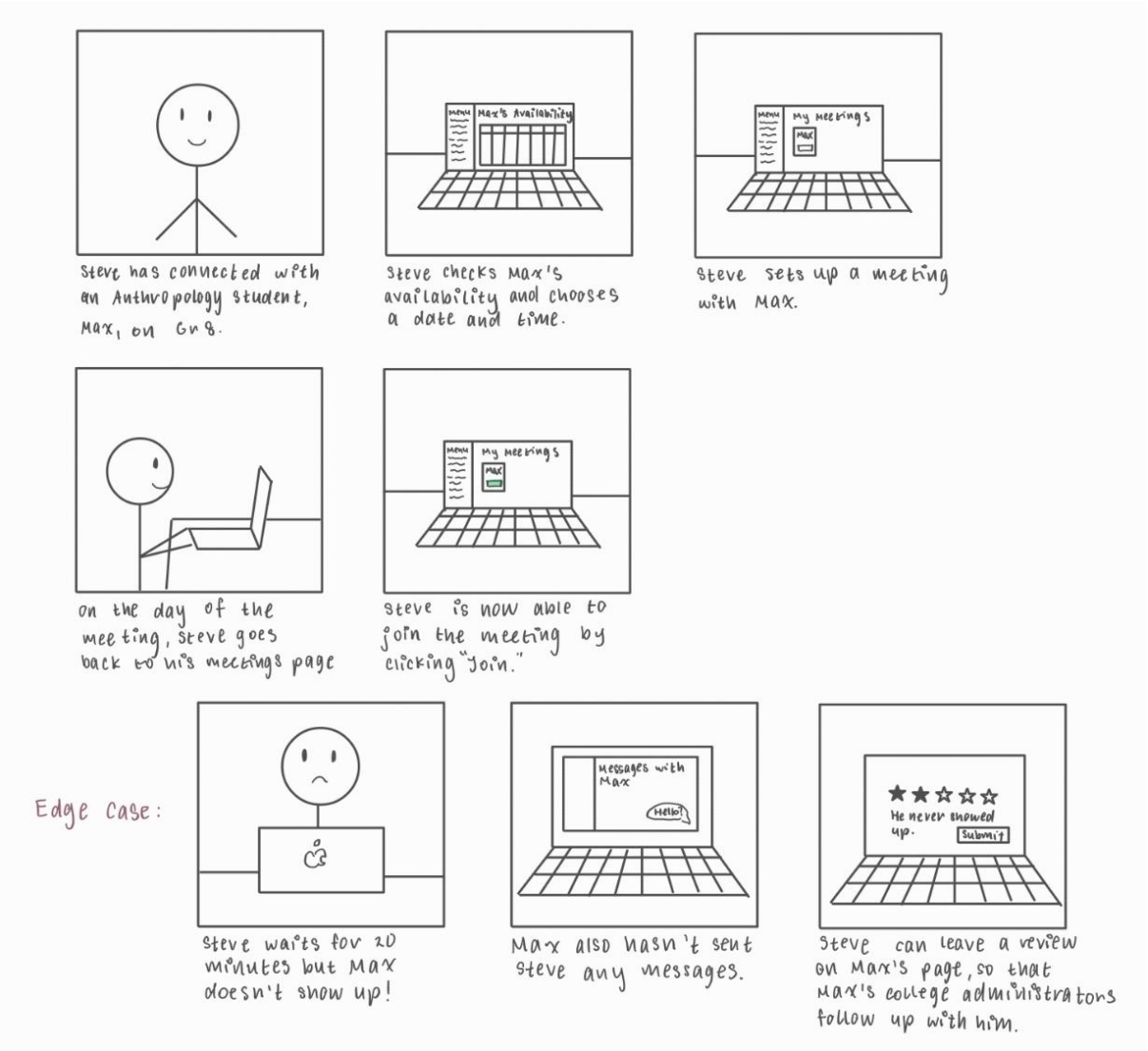

Figure 2.1: High-level storyboard 1

The purpose of this storyboard is to outline the general process that a high school student would go through to set up a meeting with a college student after they have already been matched. It also covers the case in which the college student does not show up to the scheduled meeting, which is an important concern to consider, as one of our design requirements was to make the solution approachable and engaging. Hence, demonstrating that the process of setting up a meeting is easy and incentivizing college students to be diligent allows this requirement to be fulfilled when it comes to the meetings component of

the application, as it mitigates the probability of high school students feeling demotivated from using the application due to a lengthy setup process or due to a college student's irresponsibility.

High-Level Storyboard 2

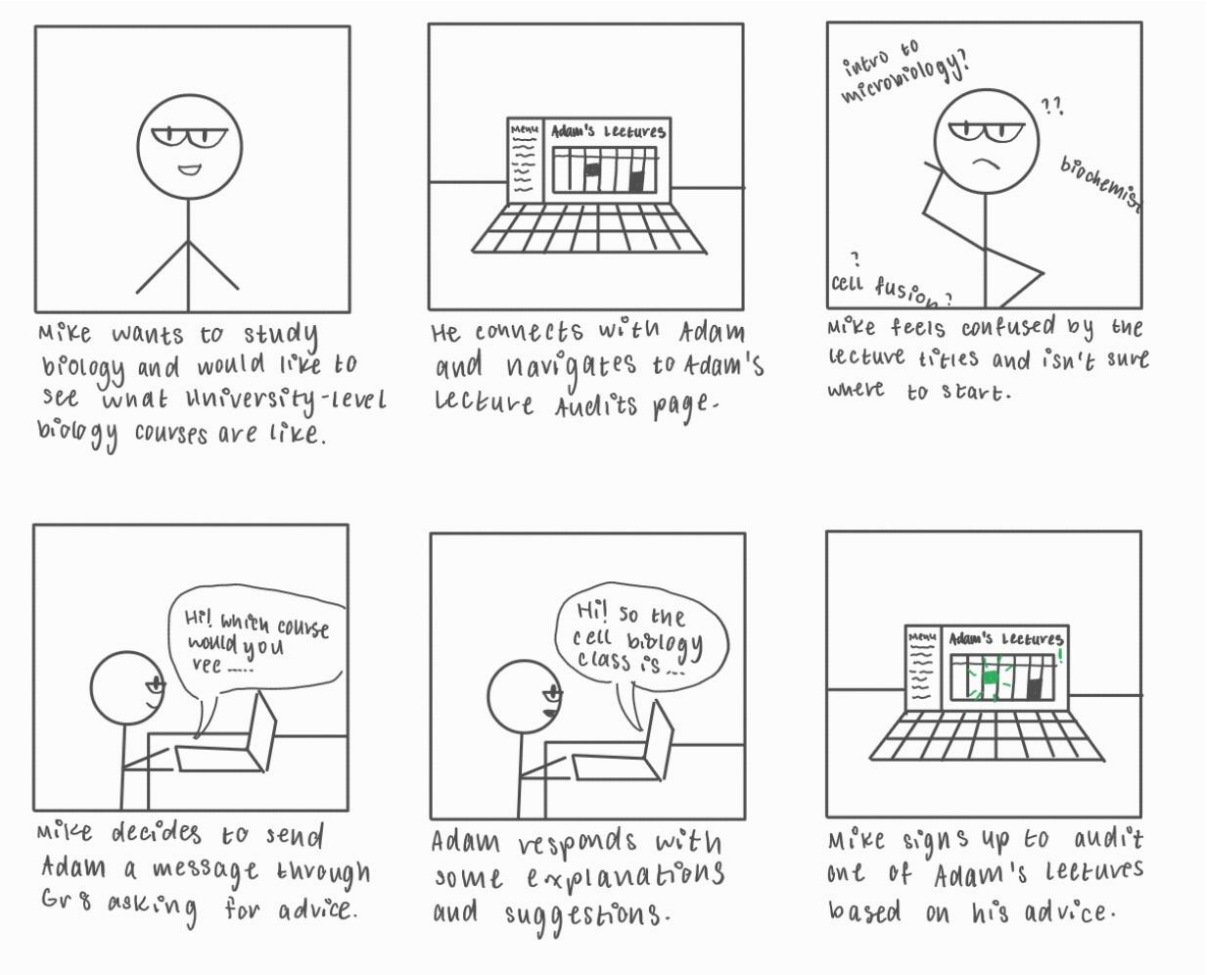

Figure 2.2: High-level storyboard 2

This high-level storyboard's purpose is to address the potential problem brought up in our S2 Group Presentation feedback that certain lectures could be entirely foreign to high school students, making it difficult for them to select lectures to audit as they don't have the prior education required to know what these lecture topics are. In this case, the solution is the "messages" feature of the application, which allows the high school students to directly communicate with the college students that they connect with, and allows them to seek

advice and clarification. This addresses our design requirements for making the application approachable and easy to use, enabling students to explore their existing interests, sub-fields or niche areas they are interested in, or new interests that are unfamiliar to them.

Screen-Level Storyboard 1

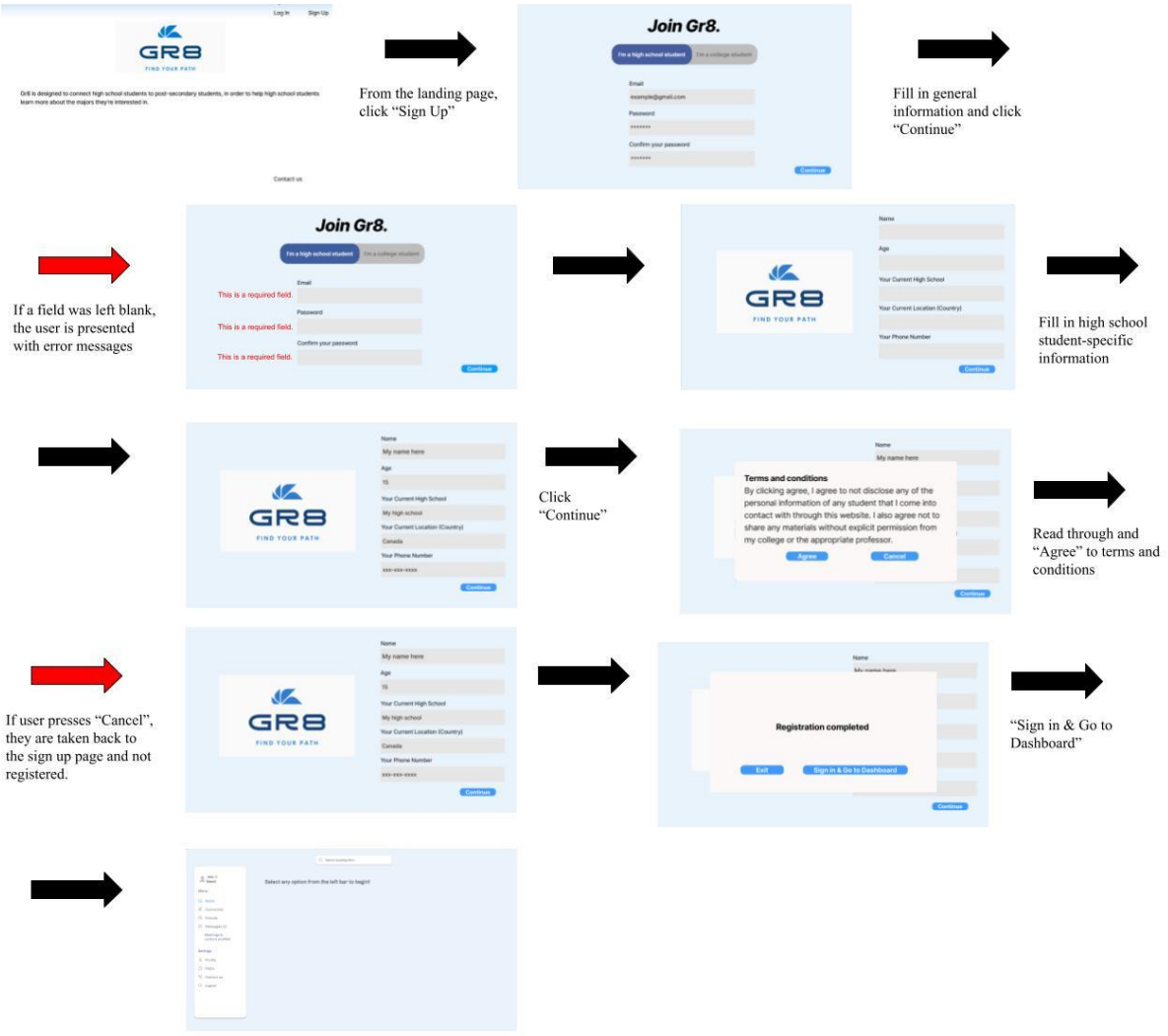

Figure 2.3: Screen-level storyboard 1

This storyboard outlines the process of registration for a high school student. Specifically, it shows that the signup process is very simple and intuitive to show that it is approachable for high school students. It also showcases the design's adherence to Jakob Nielson's heuristic #6, Error prevention, as it doesn't allow students to sign up without providing correct information. In addition, it underlines the fact that the design provides

students with terms and conditions prior to allowing them to sign up, so they can make an informed decision about using the application as well as being aware of potential risks in usage.

Screen-Level Storyboard 2

Figure 2.4: Screen-level storyboard 2

Here, we demonstrate the process of registration from a college student's perspective. In our original prototype, college students were not considered but, seeing as they are vital to the application, we have derived this workflow for them as well to ensure that it is also intuitive and easy to use. In terms of features specific to college students, this storyboard also shows how a college student can select their meeting time availability. We wanted to ensure that the meeting and lecture audit-related pages on our application are very clear and easy to navigate, and this storyboard demonstrates this through the very simple interface and clear instructions. In retrospect, the simple interface was one of the most common pieces of positive feedback given to us by the experts during our heuristic evaluations (see *Expert Evaluations* key insight 5).

Screen-Level Storyboard 3

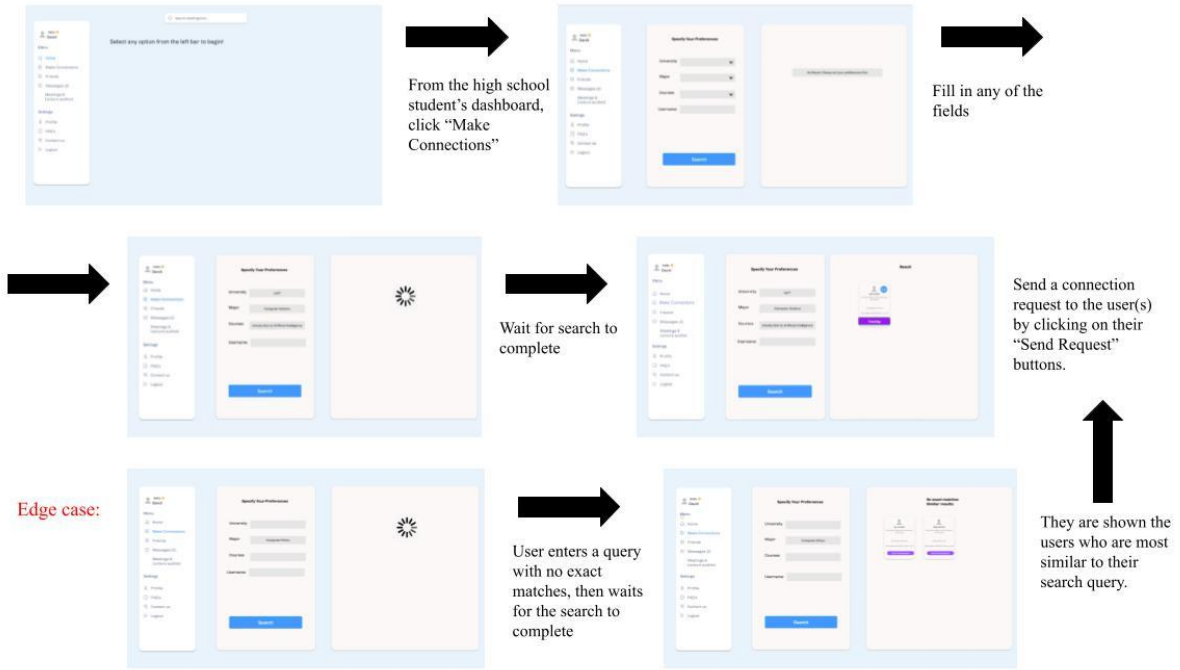

Figure 2.5: Screen-level storyboard 3

This storyboard shows the process of high school students making connections, which is typically the first task they counter upon signing up on the website. Hence, it is important to highlight that this is an easy process to get started with, especially now that it can be done

either from the Make Connections tab, as shown, or from the Friends tab (see *Lessons Learned and Implications for Design*). Specifically, this storyboard supports our design requirement regarding the application being inclusive to students from all fields, as it shows that, if there are no college students in the field that the high school student is searching for, for example, instead of giving them an empty search result page, our application suggests some students from similar fields.

Paper Prototype of Current System Design

Original Paper Prototype

The initial paper prototype used in the Expert Evaluation Session has fewer components and features than the current prototype, notably excluding specific sections like the unique sign-up and profile editing pages designed for college student users (which are included in our improved paper prototype).

Furthermore, the experts often found the ambiguity between "Make Connections" and "My Friends", and the purpose of the "Meetings" page, to be confusing when performing the tasks (see *Expert Evaluations*). Hence, we changed the design to allow users to make friends from their My Friends tab by redirecting them to the Make Connections page (originally, this could only be done from the Make Connections page). Similarly, users can now make meetings from their Meetings page (originally they had to first navigate to their friend's profile).

Improved Paper Prototype Workflow

1. Improved Prototype (High School Workflow).pdf
2. Improved Prototype Edge case workflow (suggest similar results when there is no matched result)
3. Improved Paper Prototype Workflow (College Student).pdf
4. Meetings & Lecture Audits page for High School (when there is no scheduled meeting or audit)

Rationale behind the different design features

Given our aim to connect high school students with college peers, our prototype's key features align with this purpose. Our rationale are as follows:

1. The "Make Connections" feature stands as a pivotal element designed to facilitate this connection. Through the "Make Connections" component, high school users can

explicitly define their preferences regarding University, Major, and Courses on the dedicated page. It is not mandatory to complete all three fields, for instance, a user could choose to specify only the Major they are interested in. Once these preferences are set, our system filters and displays matched college students from our database.

In cases where there isn't an exact match among our registered college student users, our system will display individuals with related fields. For example, if there are no college students specializing in "Computer Ethics", the system will broaden the search, displaying students with majors such as "Computer Science" or "Ethics and Law".

The results showcase potential matches to allow high school users to send friend requests to selected college users. This initiates the possibility of requesting a meeting with the chosen college student and even selecting an online audit for a course offered by that student. For example, if a high schooler sends a friend request to a college student who accepts, the high school user gains access to the college student's profile, where they can schedule a meeting and opt for an auditable course.

Conditions for course auditability would be stringent: firstly, the university must permit external high school students to audit specific courses, providing an online audit link. Additionally, all users, upon sign-up, must consent to our Terms and Conditions. These terms outline copyrights, explicitly prohibiting the dissemination of course materials.

2. The distinct sign-up and profile editing for college users represents another pivotal design element. Once a user registers as a college student, their profile page shows differently. This adaptation empowers college student users to establish their available meeting slots and indicate which lectures are available for audit. This functionality is crucial for the success of our "Make Connections" feature. Without the ability for

college students to set their availability, high school users won't be able to request meetings, essentially the goal of making connections.

Moreover, the procedures involving obtaining permissions and lecture audit links from educational institutions are excluded from our Low-Fidelity prototype. These necessities entail intricate negotiations between our application and the educational entities and are omitted from this prototype. The logistical complexities at the backend and negotiation level will be considered in our high-fidelity prototype. In this paper prototype scenario, we are assuming possession of permissions and the lecture audit link for CSC111H1.

3. The additional features, such as the Meetings & Lecture Audits page and My Friend page, are incorporated to enhance user flexibility and efficiency of use in line with Jakob's Heuristics:
    1) The Meetings & Lecture Audits page serves as a hub where users can conveniently access their scheduled meetings and upcoming lecture audits. Users have the ability to join meetings directly from this page, consolidating accessibility. If a high school user doesn't have any scheduled meetings or lecture audits but has college friends listed, the Meetings & Lecture Audits page will showcase the high school user's list of friends. From there, the high school user can directly request meetings with their college friends.
    2) On the My Friends page, users can directly navigate to a specific friend's profile. If the friend is a college user, high school users can then initiate requests for meetings or lecture audits. Additionally, users can expand their network by adding friends using usernames.
    3) The inclusion of an always-on navigation bar, persistently displayed on the

left side of the screen, ensures easy access to key pages. This design choice aligns with the principles of "Recognition rather than recall" and "Consistency and standards," allowing users to effortlessly switch between different sections, fostering a more intuitive and consistent user experience.

Advantages of the Current Design

1. Our application has the capability to empower high school students by providing detailed insights into diverse majors. This information equips students to make more educated decisions about their academic pursuits.
2. The navigation bar serves as a reliable guide, and allows users to effortlessly explore the app's features and interact with it. It also minimizes any potential confusion that might hinder engagement. Its intuitive layout and clear navigation streamlines the user experience, making it accessible and straightforward for users to navigate and make the most out of the app's functionalities.
3. Our “Make Connections” feature empowers high school users to filter available college users based on their preferences. By specifying various fields like Major, University, and Courses, high school users can discover precise matches among college users, sending them friend requests. This approach streamlines the process, allowing high school users to efficiently filter specific college users in our database in less time, significantly improving efficiency.

Disadvantages of the Current Design

1. The non-mandatory profile editing for college users might cause a delay in the availability of important information (such as meeting slots or available lectures for audit). If college users don’t promptly and frequently update these details, it could hinder high school users' ability to schedule meetings or audits effectively.

2. The success of the "Make Connections" feature heavily relies on the availability and accuracy of college students' information (especially those relevant information are solely provided by college users and no verification at all). If there's incomplete or outdated data in the system, it could lead to mismatches or a limited pool of available connections for high school users, reducing the system's effectiveness. Fake (made-up) information shared by college users could also pose a risk to our high school users.

Evaluation of the Low-Fidelity Prototype

Expert Evaluations

(Based on the original prototype used in Expert Evaluation Session at Nov.3, 2023; changes made to the prototype after the Expert Evaluation session are not covered here)

Description of Study Protocol

During the expert evaluation session, we enlisted students from various groups, including ByteBrilliance, Team Uxperts, Group 14, Vulcan, and ThankQueue. As this was a course-designated expert evaluation session, the participants were selected by the course team.

The following are the scenario, context, and tasks we provided to our participants:

[For this study, we understand that you fulfill the following as you are in CSC318 2023 Fall:

1. You are familiar with Jakob Nielsen's Heuristics (the ones shown in lecture).
2. You have expertise in operating a web application (ex. Website).
3. You are familiar with the expert evaluation process.

Considering this, we plan to conduct a paper prototype session for a web application currently named Gr8. During this session, we'll request your participation in completing various tasks within the web application. As you engage in these tasks, we kindly ask you to refer to Jakob Nielsen's Heuristic table, offering feedback and identifying any flaws you may encounter in relation to the heuristic criteria. The heuristic table sheet will be provided to you for reference.

Here is the scenario you should assume:

Imagine that you are a high school student who is interested in computer science. You found a web app online that can help you connect to a university student and attend an introductory university lecture. You decide to first create a meeting appointment with a computer science student on Nov. 4, 2023. Next, you also want to audit a relevant lecture

from that student. Feel free to explore the interface as you see fit, and to make any comments you have about the interface out loud.

Task 1:

I would like you to show me how you would set up your personal account.

Task 2:

Find a computer science student and send them a connection request.

Remember, you are interested in Computer Science but aren't sure which university you would like to go to.

Task 3:

Set up a meeting with the student that you find on November 4th.

Then, if you want to join the meeting or check which meetings you have scheduled, please show me how you would do this.

Task 4:

Please select a course from the university student that you matched with and audit it.

Once again, show me how you could check the details of the audits you've signed up for.

After finishing all the tasks, kindly share any flaws you identified while using the system in accordance with Jakob Nielsen's Heuristic table. Additionally, please assess the severity of each identified flaw. If you prefer, feel free to interact with the application as you review the heuristic table.]

Given that our primary target users are high school students, we instructed our participants to assume the role of a high school student. The tasks assigned to the participants cover various main components of our paper prototype:

- Task 1 corresponds to the sign-up component of the prototype. [Sign-up component (old version)].

- Task 2 aligns with our Connection component, wherein users can search for college students based on specified preferences and send friend requests to them. [Make Connection Component (Old version)].
- Task 3 is associated with our Meeting Set-up component, allowing users to send meeting requests. This task also involves the Send Request and Go to Profile features. The latter part of Task 3 aligns with our Meetings component, enabling users to join and review scheduled meetings. [Meetings set-up & Meetings (Old version)].
- Task 4 corresponds to our Audit Set-up and Friend components. In this task, participants are required to navigate to the Friend section, locate the recently added college student, visit their profile, and select a course to audit. Same as Task 3, the second part of Task 4 asks participants to use the Meetings component to review their scheduled lecture audit. [My Friends & Audit set-up & Meetings].

In essence, all our main components and features were addressed through these four tasks.

Key Insights & Discussion of Results

(Please refer to our original paper prototype, see *Appendix: Original Paper Prototype - Expert Evaluation*):

1. In nearly every instance, the expert consistently referred to both scheduled meetings and audits as part of the "Meeting" category, which caused confusion. The repeated suggestion to separate meetings and audits into distinct sections reflects a crucial need for clearer segmentation. This emphasis signifies a critical user experience pain point, as users express difficulty in differentiating between these functionalities. By organizing these elements into separate sections, the design can drastically enhance user understanding and streamline navigation, addressing a fundamental usability concern.

Refer to the notes: (3) of Round 1, (4) of Round 2, (2) of Round 3, 4 of Round 6 (in Appendices - Data Collected from Expert Evaluation Session - Expert Evaluation Notes).

2. Across several rounds, the demand for clearer guidance, tooltips, and introductory tutorials (documentation) surfaced as a recurrent theme. Experts appreciated the intuitive interface - a bright spot - but still required more accessible help, especially for first-time users. This insight indicates an opportunity to improve the overall user experience by providing supplementary information, clarifications, and guidance, such as a walkthrough guide, to significantly ease the learning curve for new users. *Refer to the notes: (4) Round 1, (7) Round 2, (3) Round 3, (3) Round 5 (in Appendices - Data Collected from Expert Evaluation Session - Expert Evaluation Notes).*
3. The recurring mention of ambiguity between “Make Connections” and “My Friends”, as well as the confusion surrounding different types of meetings and lectures, underscores the importance of clearer representation between the two. The experts found "Make Connections" and "My Friends" confusing, and suggested combining "My friends and make connections" within a single subsection (Refer to Appendices - Data Collected from Expert Evaluation Session - (5) Round 2). In our view, it's imperative to highlight that "Make Connection" should not be nested under any overarching section. This distinction is crucial as the core functionality of our platform revolves around fostering connections between high school and college students. The confusion between meetings and lectures can be solved with insight 1 where all scheduled meetings are under Meetings and all scheduled lecture audits are under Audits; but the suggestion to use icons to represent whether an item is a meeting or a lecture audits remains valuable, as implementing distinct visual

indicators or iconography can further prevent potential confusion and errors, particularly for new users who might be unfamiliar with the system. The insight suggesting the use of icons, not limited to representing just meetings and lecture audits, underscores the importance of visual cues in enhancing user comprehension and navigation within our system.

Refer to the notes: (1) Round 1, (5) Round 2, (4) Round 4, (1)&(9) Round 6 (in Appendices - Data Collected from Expert Evaluation Session - Expert Evaluation Notes).

4. An expert highlighted that the button label "Send Request" lacks clarity, making it difficult to discern whether it sends a friend request. Therefore, it's crucial to rename it to "Send Friend Request."

   Refer to the notes: (3) Round 4 (in Appendices - Data Collected from Expert Evaluation Session- Expert Evaluation Notes).

5. Most experts mentioned that the interface of the application is very clear and intuitive. Specifically, the popups are descriptive and helpful, and the layout is easy to navigate.

   Refer to the notes: All 6 rounds raw notes (in Appendices - Data Collected from Expert Evaluation Session- Expert Evaluation Notes).

Think-Aloud Evaluations

Note: For the think-aloud evaluations, we used our improved paper prototype, which is similar to the prototype used in the expert evaluations but with some improvements based on the experts' feedback.

Description (High School version)

We used similar context and tasks to those used in the expert evaluations for our think-aloud participants. For example, the high school students are tasked with registration,

reading through terms & conditions, signing up for lecture audits and meetings, as well as viewing their mentor's profiles.

The scenario, context and tasks we provided to our participants are almost the same as the version we used during the expert evaluation session except for several minor changes (see Expert Evaluation):

1. We kindly asked participants to tell us out loud what their thought processes are.

2. Instead of booking a meeting appointment on Nov.4, 2023, we asked them to book an appointment on Nov.11, 2023.

3. We didn't ask our participants to give feedback based on Jakob Nielsen's Heuristic table.

The tasks assigned to the participants covers various main components of our paper prototype:

- Same as Expert Evaluation: Task 1 corresponds to the sign-up component of the prototype…
- Same as Expert Evaluation:Task 2 aligns with our Connection component, wherein users can search…
- Task 3 is associated with our Meeting Set-up component, allowing users to send meeting requests. This task also involves the Send Friend Request and Go to Profile features. The latter part of Task 3 aligns with our Meetings & Lecture Audits component, enabling users to join and review scheduled meetings.
- Task 4 corresponds to our Audit Set-up and Friend components. In this task, participants are required to request to audit a lecture from the college student they have connected with. This can be done in two main ways; first, by navigating to the Friend section, locating the recently added college student, visiting their profile, and selecting a course to audit. Secondly, they can now also navigate to their Meeting

section and go to the available lecture audits of the college student without having to go to their profile. Same as Task 3, the second part of Task 4 asks participants to use the Meetings & Lecture Audits component.

Description (College version)

For this version, we want to evaluate how well college students are able to use our prototype. They were tasked with registration, creating a new lecture section for high school students to sign up, and view profiles, as well as setting up available time slots for meetings. (See exact workflow in Improved Paper Prototype Workflow (College Student).pdf)

Given this context:

Imagine being a second-year Computer Science student at UofT.

To introduce yourself, you would like to write the following in your profile introduction:

1. Second Year Computer Science Specialist Student at University of Toronto (St. George Campus).
2. Courses Taken: CSC110, CSC111, CSC207, MAT137, CSC123, …
3. Skills: Java, Python, C, C++, …

You'd mention your open availability for meetings, set for every Saturday and Sunday from 7 AM to 2 PM throughout November. Additionally, you'd highlight the specific lectures available for audit: CSC111H1 from 10 AM to 12 PM.

Tasks given to participants:

Task 1: Sign-up an account as a college student.

Task 2: Edit your profile (write an introduction about yourself).

Task 3: Set up your available meeting time slots.

Taks 4: Set up your lectures that are available for audit.

Key Insights & Discussions of Results (High School and College Student Users)

1. The first insight we gained is a bright spot. Changing the original prototype to allow users to make connections from the Friends tab proved to be useful; for example, high school student 1 (Grace) made a connection in this way. Similarly, high school students 2 (B) and 3 (J) went to the Meetings tab to set up a meeting instead of navigating to the user's profile from the Friends tab. The main insight we derive from these observations is that we should continue to try to make our interface flexible, and to make features accessible from all places where a user may logically look for them.
2. We found that high school students 1 (Grace) and 2 (B) think they could schedule a meeting directly from the message tab. They thought that they were able to chat with the college students at a meeting time in the message tab. In addition, once the college students accepted their friend request, they ignored and skipped "profile", probably because they think "profile" does not do anything except showing their information. However, the "scheduling a meeting" and "requesting to lectures audited" functions are actually in the "profile" page. College student 1(E) also struggled with this issue where the user clicked on the message tab, then the friends tab, to show their availability.
3. There was ambiguity on whether all of the search fields (university, field, courses) are required to fill. For example, for high school student 2 (B), the student was aware of the field "Artificial Intelligence", but did not know the exact course number to search and connect with a college student. For college student 2 (M), the user struggled with a minor design interface problem on finding the cross to close the timetable, but overall there were no issues.

Lessons Learned and Implications for Design

1. In our expert evaluation session, our paper prototype was an adequate representation of our ideation process so far. Even though there are some features that could be improved, it shows our design goals clearly. In this process, we learned that our paper prototype could better guide the user by providing more help and documentation. Some features were confusing and needed better clarification on its functionality going forward. On the bright side, the “next steps” to complete were generally intuitive for the user, and the interface was simple enough to convey core functionalities, and minimalist in terms of aesthetics.
2. Before conducting the think-aloud evaluations, we immediately improved our paper prototype based on the feedback we obtained from the expert evaluations (see the list of changes table below). In the think-aloud sessions, we observe that users no longer struggle with the same problems outlined in our expert evaluation prototype, which entails that our improvements were effective. Furthermore, we learned that it was easier for the user to make connections. But, we also realized that the user was confused about scheduling a meeting and auditing a lecture from the profile page, specifically they thought it was possible to do that task in the Messages or Friends tab. Going forward, we want to establish a better help & documentation system as well as a flexible user interface to aid the user through the functionalities of the web app, such as message checking, scheduling meetings & audits, and making connections.

List of Changes to our Expert Evaluation Prototype

Here are the improvements we already made to our design prototype, based on the expert evaluation session Expert Evaluation Notes Raw observer notes (Expert Evaluation) (see Appendix for the full Jakob Nielson's heuristics and severity specification):

Before	After	Justification for the change	Jakob Nielson's Heuristics	Overall Severity Score (0 - 4)
Can not schedule a meeting from the meeting tab.	Can schedule a meeting directly from meeting tab	This is an affordance suggested by an expert. (referring to expert evaluation #6 in round 1)	2	3
Name of function "meetings"	Changed to "meetings & audits"	The function includes both meetings and audit lectures, so it would be intuitive to mention both, improves the signifier for meeting and audits. (referring to expert evaluation #3 in round 1, #2 in round 3, #4&#9 in round 6)	6, 8	4
The user is unable to search a specific user by name.	Implemented a function to search user by username	Someone might have the need to search for a certain person he/she knows in real life by username. (referring to expert evaluation #6&#11 in round 6)	8	3
There is no function to rate the experience whether it's good or bad.	Implemented a function to rate college students after meetings/audits	Incentivize college students to provide better experiences. Disencourage edge cases like no show for college students. (this one is not from feedbacks of experts evaluation, but we include it because it seems essential)	1, 2, 8	1
Nothing will show up if the interested area has no matched college student	Automatically suggest similar academic fields if there are no direct results.	We want to make the UI more interactive, and prevent users from seeing a	8, 10	1

		blank page. (this one is not from feedbacks of experts evaluation, but we include it because it seems essential)		
No direct message function	Added a function to allow direct messages between users	Direct message function is needed to ensure the quality of the interaction (this one is not from feedbacks of experts evaluation, but we include it because it seems essential) (this is later mentioned in think-aloud evaluations, referring to think-aloud evaluation high school student #1&#2)	8	3
No indication that the search bars in “make connections” function allow dropdowns	Added an arrow at the right end of the search bars to indicate dropdowns	Make the UI more intuitive (referring to expert evaluation #2 in round 4)	3	2

Note: Overall severity score is informed by the expert evaluations, think-aloud evaluations, and discussions within our group. Some problems are repeated in both the expert and think-aloud evaluations.

List of Changes to our Current Design Prototype

Here is a list of changes we will make to our current design prototype for A3, based on the expert and think-aloud evaluations (Think-aloud evaluation).

Before	After	Justification for the change	Jakob Nielson’s Heuristics	Overall Severity Score (0 - 4)
No discussion board or forum for users to talk together.	Add a discussion board so that users can make posts and reply to everyone.	To bring convenience and improve interaction quality between users. (this is from the feedback from the professor)	10	2
No help function if the user feels confused about how to interact with the website	Add a FAQ function	Some of the feedbacks mention that they feel generally confused when first time use the prototype	10	1

		(referring to think-aloud evaluation high school student #2, and generally every confusion occurred during the evaluations)		
There is no function to see profiles that the user has navigated before (e.g. view history)	Add a function to enable users to see their own view histories	Some users might want to view certain profiles but they couldn't remember the details(e.g. names, fields) (this is from the feedback from the professor)	1	0
For college students users, cannot import their own calendars	Add a functi uon to import calendar when creating sessions	The interaction would be way faster if users can import their own calendars. (referring to think-aloud evaluation college student #1)	8	0
When viewing a profile, the user could tell if the person is already a friend	Add an indication to notify users if the profile being viewed belongs to a friend	Provide more information to make sure the quality of interaction (referring to expert evaluation #4 in round 4)	1, 8	1

Note: Overall severity score is informed by the expert evaluations, think-aloud evaluations, and discussions within our group. Some problems are repeated in both the expert and think-aloud evaluations.

Appendices

Ideation Process

Link to our brainstorming notes: Design Brainstorm_231023_222124.pdf

The first page of the doc records some ways to help high school students better choose their college majors: they can consult experienced individuals and visit their daily affairs (college students and professionals), learn more about the job market and other informational resources, and high school students also need to participate in some camps to gain hands-on experience. These are our initial ideas, and they are still very general and separate, but we have decided that our solutions should have roughly these functions and features.

When considering seeking help and advice from college students and professionals, a question naturally arises: How can we create an honest environment to avoid excessive advertising? How can we incentivize these individuals to assist high school students? Therefore, on the second page, we discussed the issue, and ultimately decided to seek guidance from the audiences during the studio 2 presentation.

Starting from the third page (please disregard the fifth page), we began to design our solution concept based on the general ideas from the first page. The first solution adopts our idea of connecting high school students with college students or professionals, as high schoolers can seek advice from these individuals. Our initial thought was to build an app that enables high school students to send chat messages and book appointments with the professionals. The inspiration for the second point comes from our desire to show high school students the real academic or career world. Our idea was to provide tours for high school students to visit campuses or workplaces, but later we modified it to creating an online app. Through this app, high school students can schedule to attend college classes, helping them to better comprehend the academic world, rather than just looking at university buildings. The

third solution arose from our belief that hands-on experience is more beneficial than just listening to advice or lectures. We wanted high school students to have the opportunities to personally engage in an activity, and in the meantime we also did not want to create another online solution. Hence, we decided to make this into a camp, offering numerous tutorials and activities.

Table 1

A table listing which students from other groups participated as experts for our group project. Ratings: 0: not helpful; 1: helpful; 2: very helpful.

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
Expert	Ipek	Yichen	Tim	Robin	Madhav	Annika
Expert's group	ByteBrilliance	Team UXperts	Group 14	Group 14	Vulcan	ThankQueue
Rating	2	2	1	2	1	2

Table 2

A table listing the other groups for which our team members served as an expert. Ratings: 0: not prepared, 1: well prepared; 2: very well prepared.

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
Member served as an expert	Yizhi	Pete	Elena	Qiaoyu	Adrian	Siyi
Target group	Design Disruptors	ByteBrilliance	ByteBrilliance	Team UXperts	404 Not Found	Project Team 12
Rating	1	2	2	1	2	2

S2 Peer feedback & Studio 2 Feedback

gr8Warriors_S2Critiques.pdf Studio 2 Feedback

Data Collected from Expert Evaluation Session (Notes)

Expert Evaluation Notes Raw observer notes (Expert Evaluation)

Data analysis process: For the expert evaluation sessions, we first went through the heuristic evaluation table in each round, and discussed the applicable heuristics and severity for each issue. As observers, we also made further notes, such as bright spots, beneath the evaluation table, and used that to discuss whether we wanted to make changes. The raw observer notes were then used to guide our expert evaluation notes. The expert evaluation notes represent our summary of the raw observer notes, key insights, urgent issues, user confusions, features to keep, as well as the experts' notes for each round. We went back and forth between the expert evaluation notes and the raw observer notes to determine a set of preliminary proposed changes to our design, which are the highlighted points in the expert evaluation notes document. It is important to note that the highlighted points do not represent all of the changes made, but it was useful in guiding our ideation process.

Data Collected from Think Loud Evaluation Session (Notes & Videos)

Think-aloud evaluation

Video 1 (High School Student 1)

Video 2 (High School Student 2)

Video 3 (High School Student 3)

Video 4 (College student 1)

Video 5 (College student 2)

Data analytics process: Based on video 1, 2, and 3, we summarized our findings and observations in the Think-aloud evaluation document. Since the users were asked to verbalize their thought process, this gave us insights on how regular users, such as our primary stakeholders, would use our solution without guidance. Hence, they represent an unbiased

perspective on our solution. Based on our observations, we added user feedback and suggestions which helped to guide our ideation process. We then discussed these observations with the whole group, and evaluated on the severity score (from 0 to 4, see the think-aloud evaluation document for specifics) based on how much the target users struggled with the feature.

Original Paper Prototype - Expert Evaluation

Paper Prototype Submission (Gr8 Warriors)

A1 Field Study Interview Transcripts

Interview J

Jakob Nielson's Heuristics

1. Visibility of system status
2. Match between system and real world
3. Aesthetic and minimalist design
4. User control and freedom
5. Consistency and standards
6. Error prevention
7. Recognition rather than recall
8. Flexibility and efficiency of use
9. Recognition, diagnosis and recovery from error
10. Help and documentation

Severity Rating Scale (Frequency, Impact, Persistence, Market Impact)

0 = Not a usability problem
1 = Cosmetic problem (fix if extra time)
2 = Minor usability problem (low priority to fix)
3 = Major usability problem (high priority to fix)
4 = Usability catastrophe (must be fixed before release)

Think Loud Protocol & Consent Form

Think Loud Protocol.docx

A2 Meeting Notes

10/11/2023: Meeting Notes

Paper Prototype Figma

Link to Figma paper prototype