SkillSwap Low-Fi Prototyping

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Introduction:

Our project is SkillSwap, and our mission is to foster a community of learners and teachers. In our needfinding, we found that people often struggle to find adequate resources to learn interesting skills and topics, and often view themselves through the lens of either being a learner or a teacher, but not both. We believe that every person who wants to learn something also has a skill or topic which they could in turn teach. Our application helps bring together users and help them both learn new skills as well as develop their abilities and identities as both learners and teachers.

Sketches:

<table>
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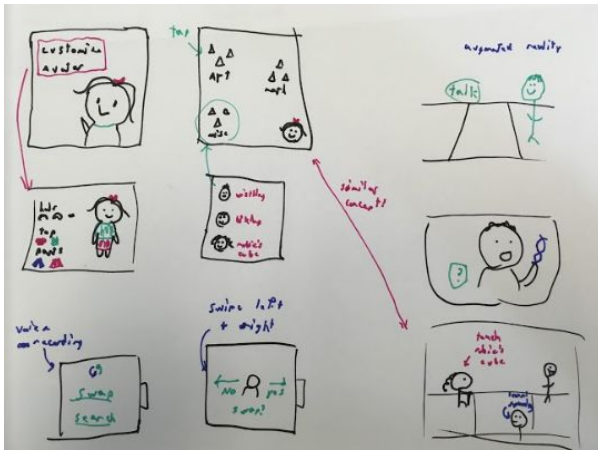
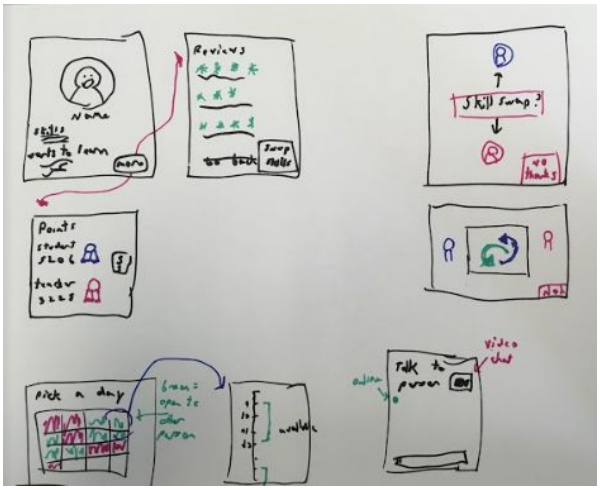
<td>  </td>
<td>  </td>
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<td>Sketch of user customization, skill searching (Apple watch, augmented reality)</td>
<td>Sketch of look at profiles, making plans to meet with other users (Android, Iphone)</td>
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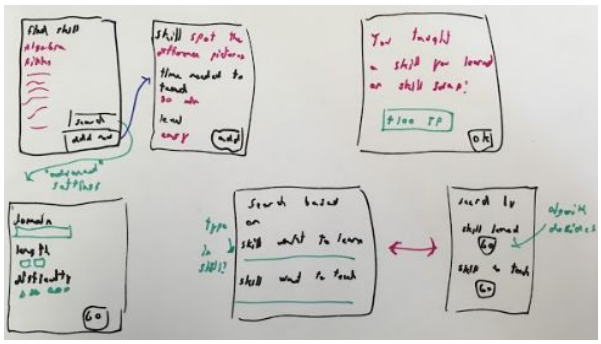
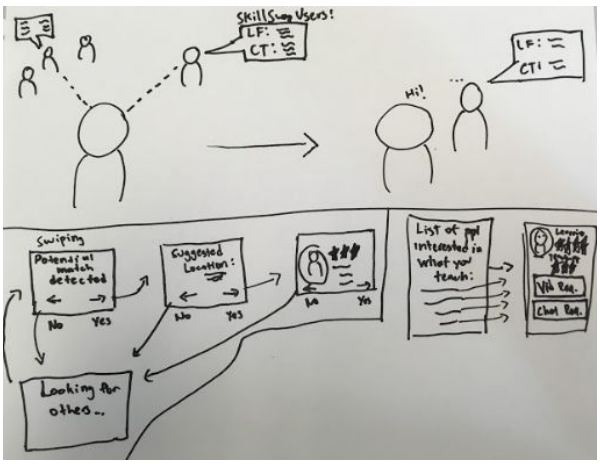
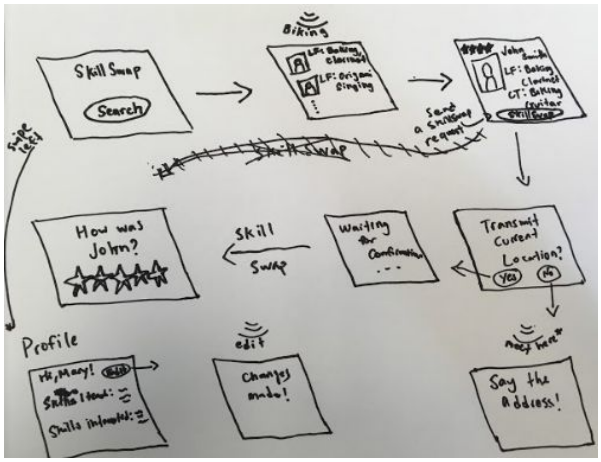
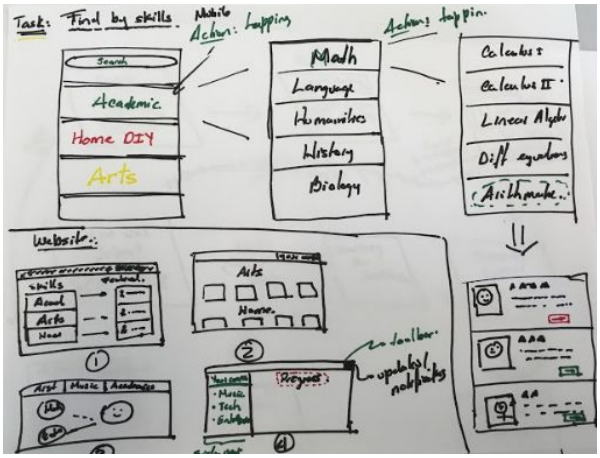
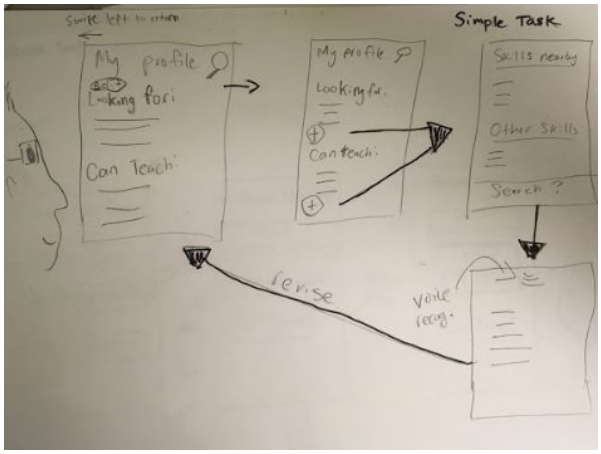
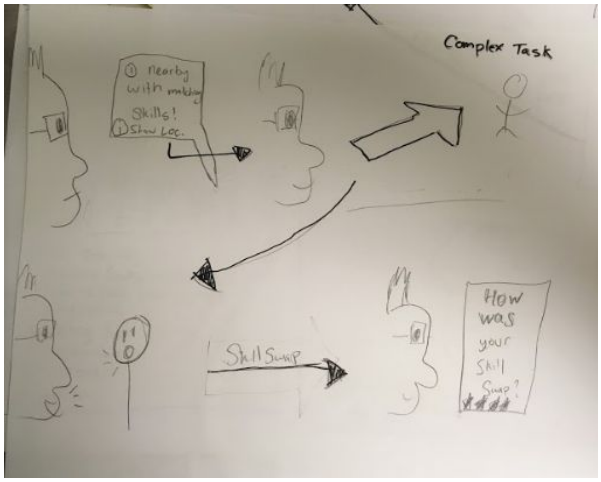
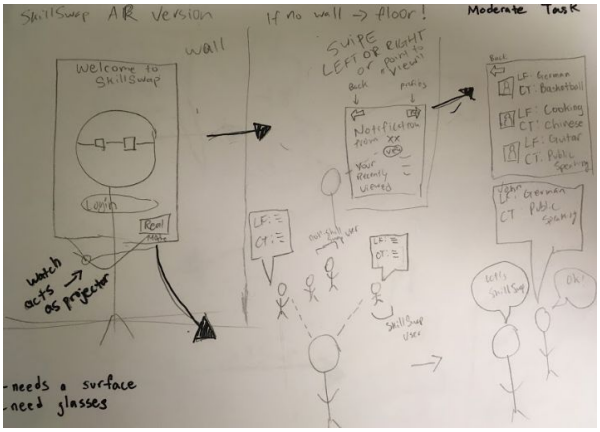
	
Sketch of searching for skills (Android)	Sketches of finding other users to swap skills with (Augmented Reality, Iphone)
	
Sketch of rating system and settings (Android)	Sketch of Skill specifications (Web App)

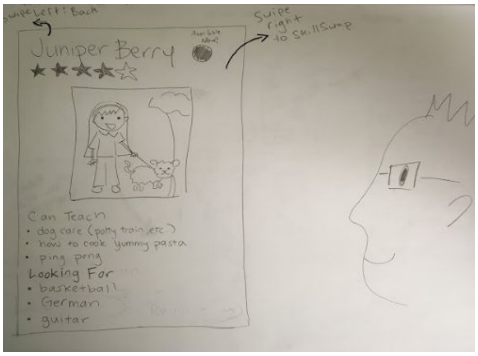
Storyboard 1 (Augmented Reality):

For our first design, we considered what an augmented reality UI for the app might look like. To choose skills, a profile would project in front of the user's view; they could look at given location to search and select different features. When they were in public, other users of the app would appear to have their information hovering next to them, giving the user a chance to recognise them and ask them to skill swap in person.









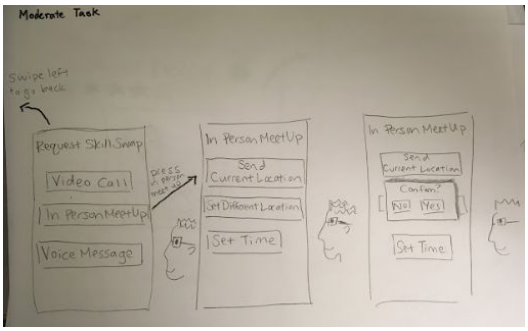


Fig 1: (Task 1) navigating profile to add new skill to learn

Fig 2: (Task 3) meeting with person, swapping skills

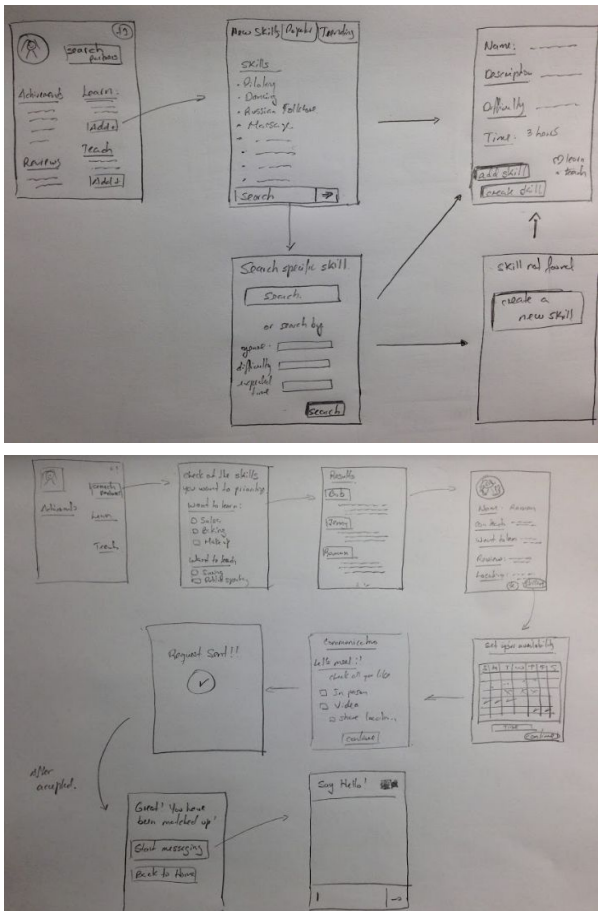
Fig 1: (Task 2) finding a person to swap skills with in public

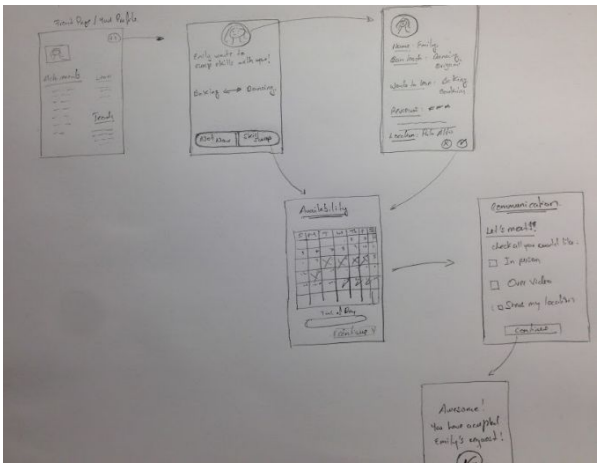
Fig 2:(Task 2) viewing a person's profile and ratings

Fig 3: (Task 3) choosing when to meet with another user

Storyboard 2 (Android):

For our second design, we considered a version of the app on an Android device. Users could navigate to different pages using buttons and hyperlinks on their main page. Other features of the android included swiping left or right to skill swap with someone and using the text bar to leave reviews for other users. Part of the design was considering features of android such as the built-in back button, and how that can influences things like circular design.





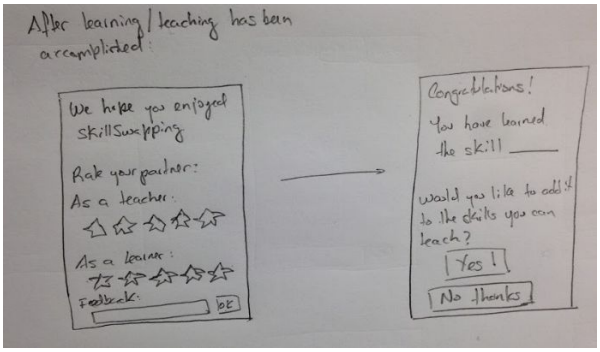


Fig 1: (Task 1) browsing skills for a new skill to learn

Fig :(Task 2) sending a swap request to learn a new skill

Fig 1: (task 3) swapping skills using a skill you just learned by accepting request to skill swap

Fig 2: (task 3) adding newly learned skill to list of skills you can teach

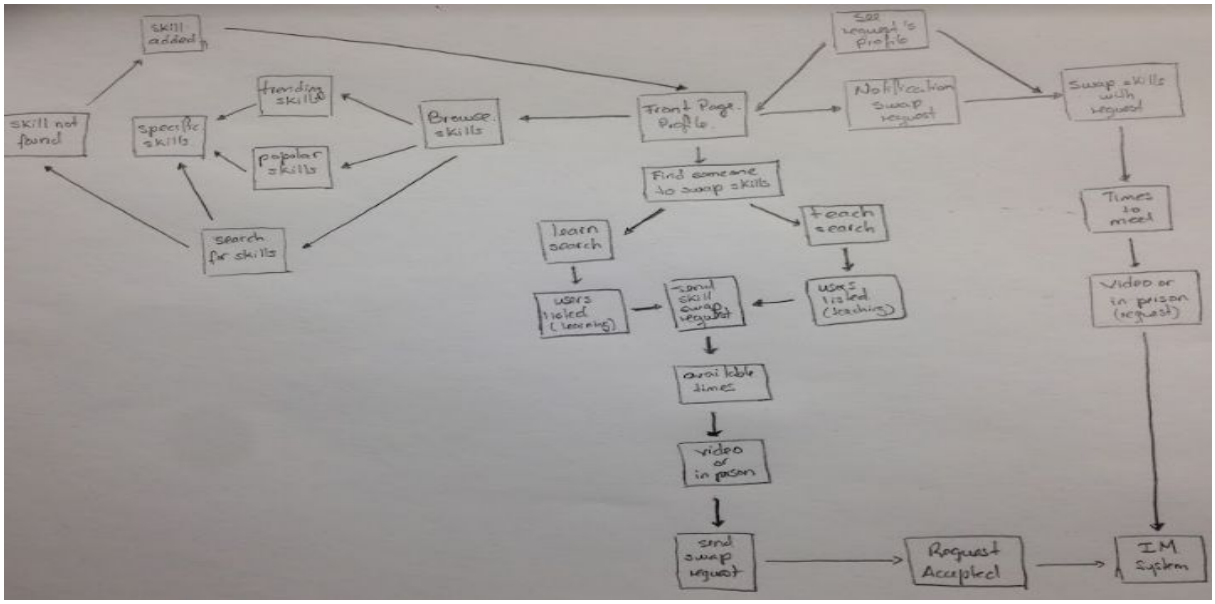
Reason for Selection:

We ultimately decided on the Android design for our prototype. While the augmented reality version provided interesting new ways for users to navigate our app and provided a degree of novelty that could potentially entice more users, the Android platform is more readily accessible to a wider range of people. This is especially important considering how social our app is; our app depends on a community developing around it, so ideally we should try to reach as many people in our target group as possible. Android also has the additional benefits of a well-tested interface, potential for portability to other devices (such as iphone), and readily available tools for increased feasibility.

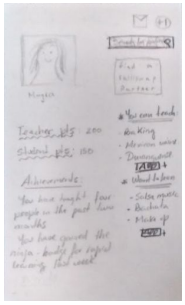
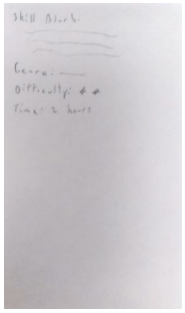
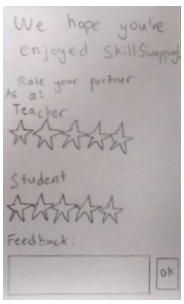
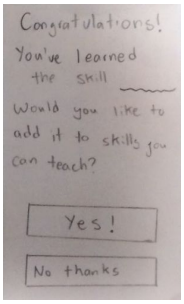
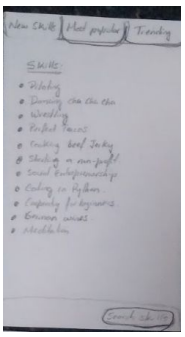
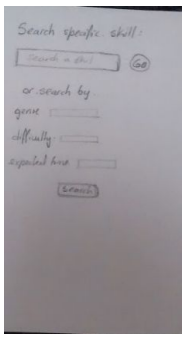
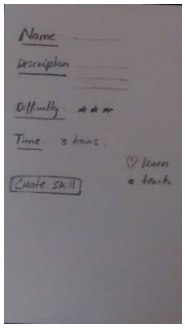
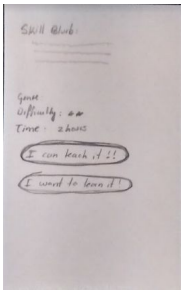
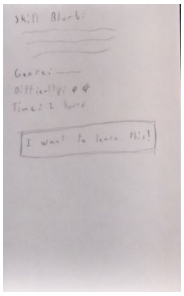
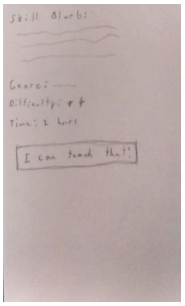
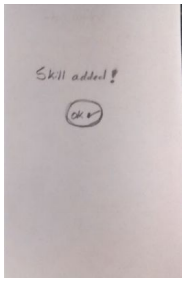
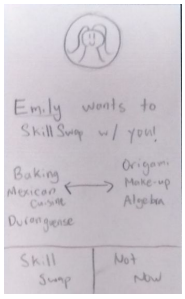
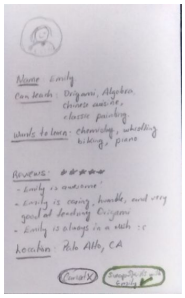
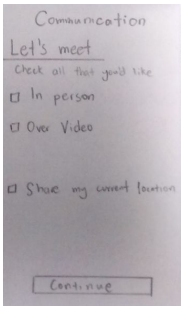
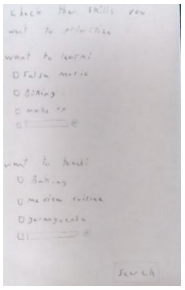
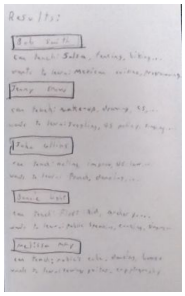
Selected Interface Design:

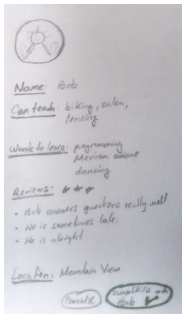
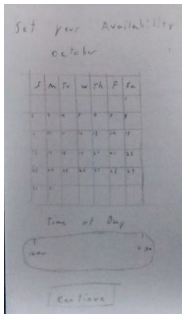
Our prototype started on the front page (the user's home screen and profile page) and branched from there. They have the option to browse skills to add to their profile as skills they want to learn or teach. They can also browse for other users to swap skills with based on whichever skills they choose to prioritize in their search. If they find a person they want to swap skills with, they can send a request. They can also check notifications, such as whether they've received a request from another user. If they accept a request, they can begin communicating with said user using an IM messaging system. Finally, after the user swaps skills with someone, they can rate the person and choose to add their newfound skill to the list of skills they can teach.

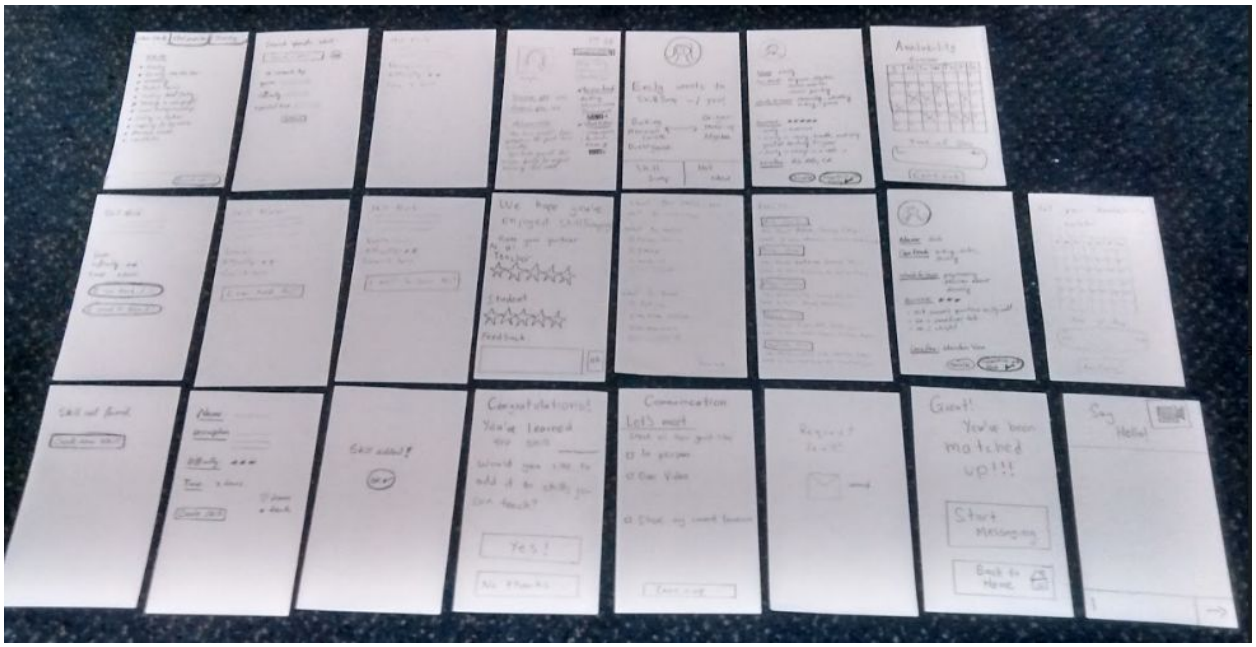
We designed the tasks as follows: first, the user find a new skill they want to learn and add it to their profile. Second, the user must find someone else to swap skills with. Finally, assuming the user has completed their first skill swap, they add their new skill to their list of skills they can teach, and accept a request from another user to swap skills with them.



Flowchart for prototype (used the program Twine to help with formatting). Generally Speaking, the left portion covered task 1, the lower portion covered task 2, and the right portion covered task 3

					
Front Page	Skill Summary	Rating System	Teach new Skill	Browsing Skills	Search for skill
					
“Skill not found”	Create new Skill	Add new skill	Add skill to learn	Add skill to teach	Confirm Skill Added
					
Skillswap Request	Request’s profile	Set Availability	Set how to communicate	Search for swap partner	List of partners

					
View other user profile	Set availability	Skill swap request sent	Skill Swap confirmation	IM system	



All of the cards for the prototype together

Methods:

Participants:

Participant #1:

Subject 1 is around twenty years old. She is originally from Mexico and currently works as a Chef for one of the Row Houses at Stanford. She has only finished a middle-school, but is an active learner. She is interested in learning about cooking, makeover, fashion trends, political news, etc. As someone interested in learning, she was a suitable candidate for testing.

Participant #2:

Subject 2 majored in Computer Science at Stanford with a concentration in Human Computer Interaction. She is interested in creating and empowering minorities students to pursue higher education. She is also passionate about good design and building user-friendly applications. She is twenty two years old, African-American and is currently working as a research assistant in the Symbolic Systems department. Due to her education, she was a suitable candidate for testing.

Participant #3:
Subject 3 is a part time teaching assistant at a local elementary school in Redwood city. She is around thirty years old, white, and is concurrently pursuing an online Bachelor degree in Education. Thus, she has significantly experienced learning through computer or mobile devices and that's why we chose her as one of our interviewees.

As active learners and teachers, we felt that our 3 participants were good choices for our pilot testing.

Environments and Compensation:

We interviewed our participants in different environments based on their schedules and availabilities. For example, we biked to subject 1's workplace to interview her during her lunch break (see Figure 1). We compensated her by helping her fill out some paperwork for one of her relatives.
Similarly, we met subject 2 at Stern dining hall during her lunch break (see Figure 2). We compensated her by letting her interview one of our team members for her research.
Lastly, we met subject 3 at the lobby of the building where she lives (see Figure 3). We compensated her with a Jamba Juice gift card.

Figure 1: Participant 1 being tested

Figure 2: Participant 2 being tested

Figure 3: Participant 3 being tested

Tasks:

Our team gave the participants three main tasks based on the rationale studied in class: asking the user tasks in increasing level of difficulty. Our tasks were:

1.) Simple: Let others know what you want to learn
2.) Moderate: Find a partner to teach and learn from
3.) Complex: Teach a skill you learned from a previous task to someone new

Procedure:

We asked our participants well in advance about their availabilities and willingness to participate in our tests. Before the interview, we thanked them for their time and gave some context regarding the idea of the app. After that, we asked them to read and sign the consent form and if they felt comfortable being recorded. Then we proceeded with the testing. Tuan acted as our greeter/facilitator, Dana acted as our computer, and Jacob as our observer.

We explained to them the basics of the app, but did not share any relevant clue that might have helped them solve the tasks. We let them explore and figure out the app on their own unless they got very stuck. Observing their mild frustration provided us with valuable feedback. We asked them to perform task 1 first, and then upon completion, task 2, and then task 3.

Test Measures:

We used different tests to measure the usability and readability of SkillSwap. Some of these measures include:

- Time they spent in completing each task.
- The number of questions they asked. Our rationale was that the more questions they asked the less clear and intuitive our prototype was.
- The number of errors they made.

Results:

Participant 1

During our test with subject 1, she showed confusion during many instances regarding how the application works. Specifically, she had difficulty distinguishing searching for skills versus searching for partners. For instance, she attempted to click on links that were not clickable. In addition, it was not intuitive to her that the teaching and learning of two skills would occur during one session. However, when asked about what she liked about the app, she mentioned that she found the app intuitive to use. Regardless in this case, we feel that actions speak louder than words. Some functionality of the app was

also not clear to her, such as viewing user profiles. Due to this, she felt some degree of a lack of personal safety when using the app.

Participant 2

Similarly to subject 1, subject 2 also exhibited much confusion in our search function. She felt that it took too long to reach the screen where you would SkillSwap. Furthermore, she thought clicking on a skill in her profile should automatically do a search for matches for her instead of adding a skill and then searching for a partner. She also found our task flows for finding a partner too redundant. Particularly, she specified that adding availabilities on a calendar every time she would interact with a partner was unnecessary. She also felt uncomfortable adding skills learned from other users to her repertoire of teachable skills because she did not feel as if she was good enough to teach the skill yet. She stated that it would be useful for her to have an expertise level associated with each skill.

When addressed with the notification, she wished that she could communicate to the notifying user earlier than the app let her. Regarding user ratings, she said she would feel bad about being honest due to the amount of time she would have spent with the other person. Like subject 1, she also felt that there were potential safety concerns and that the star rating system would only be enough if the user had several ratings. She also felt that the rating system was unclear in terms of what aspect of the person would be actually rated.

In terms of the concept of the app, she wondered if it was necessary to actually swap skills and whether it was possible to simply learn or teach and expect nothing in return. This is currently not one of our functionalities in this prototype.

Participant 3

Subject 3 did not show confusion in the same way that our previous participants did. Rather, she was unaware of certain aspects in the app, such as checking user profiles. However, due to the fact that she did not find issue with not checking profiles, it may have either been a simple oversight on the subject's part or she did not feel it was a necessary feature. However, she stated that the app would give her anxiety in meeting someone so she would prefer the video call option over meeting in person. Like subject 2, she wondered if there was a possibility to sign up for the app as merely a learner or a teacher.

Discussion:

Two of our subjects had major complaints with the search function. They claimed it was unintuitive and redundant. Therefore we will have to implement changes in the search system in order to streamline the searching process while finding a way to synthesize the search for skills and the search for partners to SkillSwap with. Currently, confusion is created when searching for skills to add to a profile and searching for partners with those skills.

Some subjects did not notice the possibility of clicking the user's image to see more details in the profile. In our real UI, we have to make it more apparent that this is a feature. We believed that users would want to look at profiles more, but some of our participants did not choose to do so.

Personal safety seems to be an issue for our potential users. Some users may feel anxious, or even fearful, at the thought of meeting someone new. We may have to implement features in the UI to emphasize the trustworthiness of our userbase.

Participant 2 in particular made several insightful remarks. For instance, due to her statement regarding the lack of clarity in our rating system, we could create more individual aspects of the rating system to better evaluate our users. In addition, we should implement skill levels like beginner, intermediate, and advanced when it comes to the skills available in our app in order for people to be matched more fittingly. We should also streamline the availability process that users go through, such that their availabilities should be saved rather than them inputting new availabilities for every new partner they interact with.

Communication with other users appears to be a potential issue as well, as stated by participant 2. Therefore, we should make it easier to reach the IM system and potentially remove the systematic approach and leave the arrangements between users more to the users themselves via the instant messaging feature.

Our subjects were curious about the ability to sign up as only a learner or teacher. We may want to look into implementing this as a feature of our app for greater flexibility of function. While we are really fond of the idea of enforcing an exchange of skills, others may find it not accessible enough to have this restriction.

Overall, we received praise at the idea of the app from our users, and parts of the app were intuitive while others (namely the search function and profile selection) could definitely be improved. Along with implementing the other features mentioned, we should be able to address our users' most frequent concerns.

Word Count: 2444

Appendix:

Consent Form

The SkillSwap application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of SkillSwap. Data will be collected by interview and observation.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers Jacob Yu Villa, Dana Murphy, Tuan Caraballo, or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the SkillSwap experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name _____
Participant Number _____
Date _____
Signature_____
Witness name _____
Witness signature_____

Participant 1 Data

- Took about 18 minutes to complete tasks
- Tried clicking on something unclickable (skill on user profile)
- Clicked 5 stars on student only
- Confused about search bar
- Had several questions regarding app functionality
- Safety concerns

Participant 2 Data

- Took about 13 minutes to complete tasks
- “I’m really confused” at search function
- Doesn’t know why she’d share her current location
- Wants a way to rank expertise level of a skill
- Keep track of availability
- Feels bad to be honest in rating system
- Wishes she was talking to user in IM system before reaching screen
- Liked that she could meet people
- Thinks there are too many steps
- “Why were there friends?” in the main profile (useless function)
- “Do we have to swap?”
- Says app is only niche-skill friendly
- Safety concerns
- Levels of teaching-dependent
- Seems more like an app to meet people than to learn

Participant 3 Data

- Took about 7 minutes to complete tasks
- Liked the concept
- Thinks there is more demand for learning
- Did not mention safety
- Felt anxious about meeting people
- Wondered if you could just learn instead of teach