

# **Final Report**

## **1. Title:**

**StudyMate**

## **2. Team:**

Hang Yin: Storyboarding, Documentation

Jiayang Zhou: Storyboarding, Management

Senghout Lim: User Studies, Documentation

Yepingzhi Kuang: Task Development, UI Design

## **3. Problem & Solution:**

Academic research results have shown that higher-achievers in college are more goal-motivated and able to better organize study. However, due to the fact that students have diverse backgrounds and experiences, a universal study plan is not applicable. Our project aims to solve such problem and help students develop individual study approaches and better understand their own study habits. Our solution enables students to set their academic goals and track their daily study behaviors and academic performance. Based on the individual information, our design can generate a personalized study plan. As part of the study plan, the tool can also help student find the best study location based on personal preferences.

## **4. Contextual Inquiry:**

### **Target & Stakeholders**

Our target users of our design are all UW undergraduate students. Other stakeholders can be UW faculties and students' parents. To avoid information bias, we're planning to approach our contextual inquiry participants in different settings such as location, day and time in order to grab diverse set of data ranging from major, year standing, and background experience. To be more specific, we will visit the undergraduate library where students are more likely to have various backgrounds, to randomly choose students. We also plan to pursue participants with more concentrated background, from the Foster Library and the Computer Science Undergraduate Labs. We plan to choose a weekday and a weekend to interview participants in the morning (weekday only), afternoon and evening. Since our target participants are basically UW students, we can find them on campus very easily, and should not have difficulties to gain access to them.

Due to the attributes of our inquiry, which is about studying habits, are not observable in a short period of time, we will only ask participants questions to acquire knowledge about their

background and studying behaviors. We will start out with a small conversation to break the ice then explain the objective clearly to our potential participants. Furthermore, we are planning to extract the information regarding their studying habits and courses. We will try to ask open-ended questions and follow with clarification questions and some example scenarios. Some open-ended questions can be “what are some of your personal secrets on getting a good GPA?” and “what are some areas you think you could improve to have a better performance in a course?” We hope to avoid interviewer/interviewee relationship.

## **Participants**

### ***Melissa***

Melissa is a junior student studying accounting at UW. We interviewed her on Thursday noon at the common area in Paccar. It was crowded and noisy. She sets her minimum GPA to be 3.2 for accounting classes. And she mentioned that there was only one time when she was not able to reach her minimum GPA because the teacher wasn't good. To reach her goal, she always tries to study and do assignments ahead of time. She puts her study plan in a calendar application, such as when and where she will be studying. She studies by herself most of the time and she usually chooses places where her friends will not go to study, especially when she has exams coming up because talking to her friends is one of the biggest distraction.

### ***George, Shane***

George and Shane are both physiology majors, who were studying together at the Foster School Library when we interviewed them. As we observed, they were not very focused and were playing with their phones once a while. George is a senior and Shane is a junior. They chose to study at the Business school library because it's quieter there. Since the average GPA in their major is about 2.8, they both set minimum GPA to be 3.0. They both agree that they were not quite sure about how to study in freshman or sophomore years but after they got in the majors, they are more aware of some good studying habits. For example, they both think that it is efficient to study alone first, and then form a study group if they have questions to discuss. For Shane, some videos on YouTube help explain concepts. George thinks that social event is the biggest distraction for him.

### ***Ethan***

Ethan is a freshman who is still deciding what major he wants to choose in college. We talked to him in Suzzallo Cafeteria in the evening. His list of intended majors includes statistics, math, and computer science. He sets his minimum GPA to be a 3.5 and tries to gain a 4.0 whenever possible. He thinks that reading textbooks and spending more time studying will help him receive a decent grade. He finds his cell phone to be distracting when he concentrates on

studying. He prefers to study alone in a library rather than working with friends or going to office hours. He has never used any tools to help him study.

### ***Winfried***

Winfried is an exchange student from Germany. He studies computer science and this is his fifth year in college. We interviewed him in Odegaard library during the long weekend. Winfried prefers to study alone unless there is a difficult question, he will go to TAs or friends. He doesn't have a specific plan but he does prioritize his current courses. He tends to spend more time on the subject he feels more important to him. He thinks that library is a good place to study in because it has a good atmosphere. He thinks that spending too much time on hanging out with friends will distract him. He has never used any tools or apps to help him study.

## **5. Result & Themes:**

### ***Studying settings***

All of the participants we interviewed had some common studying habits. All participants prefer studying alone, and spending some times soaking up the materials before asking for help. Some would try to avoid places where they might run into people they know. They tend to be not as productive surrounding with friends when comparing to study alone, especially when they have important exams coming up. One student likes to watch screencast lectures to make sure he does not miss any important materials or if he is in the needs of refreshing some information that he might miss during class. Furthermore, all participants make use of various online resources, such as the discussion board, YouTube and the search engine, to aid them while studying. Ethan who is currently taking Math 125 and CSE 142 claims that most of the course topics can be found online, he would only go for help from TAs only if he's stuck on problems or concepts.

### ***Studying habits awareness***

Some people think that if they knew their past studying habits and the corresponding results, they could perform better in the future, others believe that they are aware of their studying habits and most of them study in the same routine everyday. George and Shane claim that their failure to achieve their goals is due the fact that they didn't know how to study in their freshman and sophomore years. And they believe that as they become older, they are more aware of their studying habits and thus are more likely to achieve their goals. Most people believe that spending as much time as they can on studying is a good habit, though they may not always do so. Most people spend more time on the courses that they think are more important, such as courses in their majors.

### ***Handling external distraction***

Participants find having mobile phones around them can sometimes be distracting. When there is a message ringing, Ethan claims he has to check it. He tries putting his phone in silent mode and further away from his reach to avoid the temptation of checking his phone for messages and emails. It costs quite a bit of time to locate a quiet place for studying when participants have a busy schedule and constantly have to move between classes. Some people don't mind studying at a noisy place but they don't like to run into friends who may distract them.

## **6. Task Analysis**

### **1. Who is going to use the design?**

College students who want to improve their studying habits in order to achieve their ideal GPA. College students are coming from diverse background and different base experience. In particular, the primary users are the students who currently don't have a studying plan, have trouble staying on track for their course schedules, and usually procrastinate on homework assignments.

### **2. What tasks do they now perform?**

They all try to find a place to study, either alone or in a group, and search solutions online. One of our participants, Melisa, used an online calendar to keep track of her classes and studying schedules. She allocated different amount of time for studying based on the difficulty of the subjects. As an accounting major, she takes two accounting classes and one marketing class. Due to the different amount of workload in each class, she put a bit more emphasis on accounting classes to balance out the workload.

### **3. What tasks are desired?**

Most participants don't have a plan to help them study more efficiently. They want to manage their time more wisely. George, who is a member of the fraternity, thinks that the idea of being able to keep track the amount of time he spends on studying would be helpful.

### **4. How are the tasks learned?**

Both Shane and George mentioned that they have trouble staying on task without giving into activities going on in their fraternity. Little by little, they would fall behind on schoolwork. Shane thinks that some historical data would be beneficial as he can measure some attributes regards his school performance.

### **5. Where are the tasks performed?**

There are some attributes where we think they might contribute to a good studying habit. Users would have to input some data to measure their performance during the study session or after the

completion of assignments. Later, they would need to log in performance (exam or assignment scores) in order to create a feedback loop system.

## **6. What is the relationship between the person and data?**

We identify two types of data, one is people's personal history of studying habits, such as time commitment and study location, and the other is people's historical performance. People use such data to understand what kinds of studying habits could help them achieve their goals. George and Shane both learned from their experiences in freshman and sophomore years and achieved a better GPA by acquiring better studying habits.

## **7. What other tools does the person have?**

Melissa is currently using a Calendar on her MacBook to help manage time. George watches screencast lectures to make sure he does not miss any important materials or if he is in the needs of refreshing some information that he misses during class.

## **8. How do people communicate with each other?**

All of our participants prefer studying alone, spending some times learning the materials before asking for help. Some would try to avoid places where they might run into friends. Only after they had spent an adequate amount, they would form a study group or go to T.A office hour for clarification.

We will be focusing on a single user and how they performance under different studying habit. Therefore, the data will be personal to each individual and we are not in needs of sharing with others users.

## **9. How often are the tasks performed?**

Based on the user's studying habit, the number of tasks performed in a day may varies depends on the number of studying sessions.

## **10. What are the time constraints on the tasks?**

To avoid forgetting or entering wrong data, users would ideally need to enter data before and after each study session. The product should be able to display daily and weekly study schedule.

## **11. What happens when things go wrong?**

There could be a situation where user forgets to log in their data or fail turn off the app after a study session. To resolve these issues, we want the users to be able to manually edit or enter the data.

## **7. Tasks**

### **Task 1: Recommend study locations**

We've learned that students have different preferences in choosing a place to study. Some like to have a quite place and some want to have access to computers. The goal of this task is to recommend more study locations to students based on their previous preferences and study habits. Large campus like UW, it can be hard to know and find a good study place that fits your preferences. For example, if a student likes to study in a quiet and bright place, this feature should recommend a list of similar places that are next to him or her. UW categorizes study locations based on locations, windows, computers, and room capacity. Using such readily available information, we can use it to help students make informative decisions.

### **Task 2: Record a study session**

The goal of this task is to track user's study session through the measures of time spending on study session, study location, and phone usage. Before each session starts, users should input the study subject and number of study partner. By recording the size of the study session, the system should provide insights of whether group or individual study is more efficient for each user. When the session is over, users can view the detailed information of the last the session and determine how location, ambient noise, and phone usage affect their study.

### **Task 3: Focus & Distraction**

The goal of the task is to help users reduce distraction during study by disconnecting social apps on their phones. We've learned that some of our participants went to a great extend to avoid getting distracted. Students like going to social media for many quick breaks while studying, which yield less productivity. It would be beneficial to isolate students from social media and disable cell phone signals and blocking major social medias such as Facebook, Instagram, and Twitter. Limiting distraction would let students focus on more important tasks. Users would enter the amount of time they want to spent studying and the software would temporarily block their social media accounts accordingly. To ensure productivity, there should be a mechanism alerting users when they're getting distracted. The software would evolve to learn users habits and recognize the pattern of their productivity.

### **Task 4: Preview course materials**

We've learned from our participants that some of them will do better in the course if they know some materials in advance. Our tool will provide flashcards that summarize the knowledge the participant should know. These flashcards can be made by students who took this class before. By looking through the flashcards, participants can have some basic ideas about how the course/chapter looks like.

### **Task 5: Evaluate study behaviors**

It can be difficult to know whether you have spent enough time to study. This task helps students look back on their past study habits and patterns to determine if they are on track. By looking at the historical graphs, users are able to know how much additional time they need to spend to meet their goal GPAs. In addition, it also projects users' current standing in the course by comparing their past performance in similar courses.

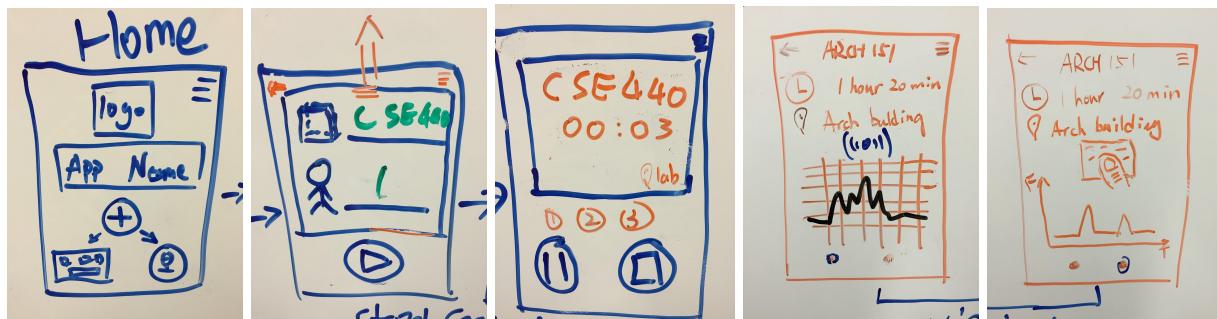
### Task 6: Make study plan

This task aims to help students organize coursework and better manage time. One of contextual inquiry participants, Melissa, uses the calendar on MacBook to organize her time. She made her weekly study plan, which specifies what subject, when, how long and where she will be studying. This existing task helps her study efficiently. Based on this task, we want our design to enable students to make a more reasonable and personalized study plan. The tool uses machine-learning algorithm to learn the user's study habits. It will allow student to input his goal GPAs for his current courses. Based on his goal and all the historical data about his study habits and past performance, the tool will generate an ideal study plan.

## 8. Proposed Design Sketches

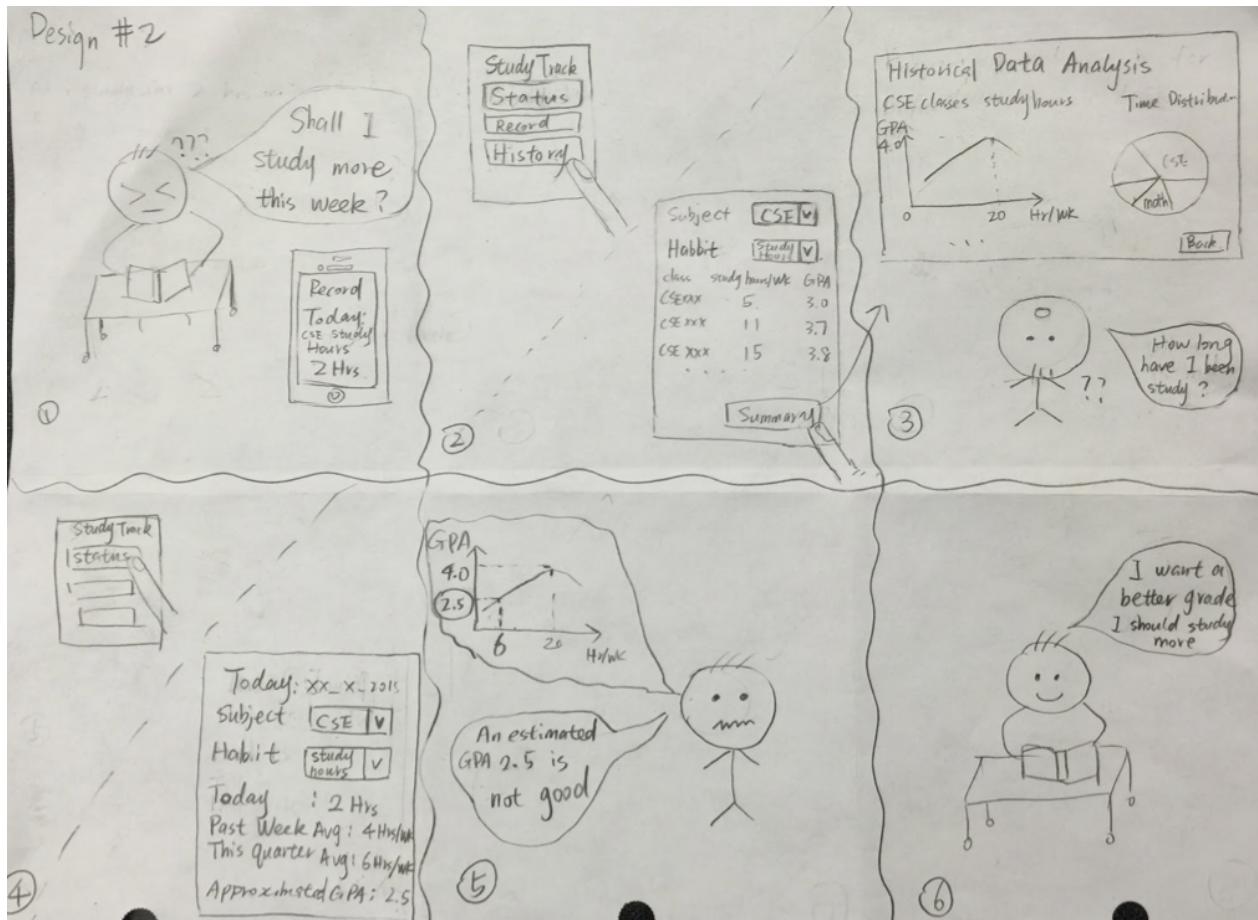
### Design 1

The first design focuses on tracking study sessions (**Task 2**) and distraction (**Task 3**). Our tool allows users to initialize a study session via voice or keyboard. The system tracks the time spending on each study session, number of participants, noise level and phone usage during each session. Users can also use the Anti-Distraction feature to prevent distraction from other apps.



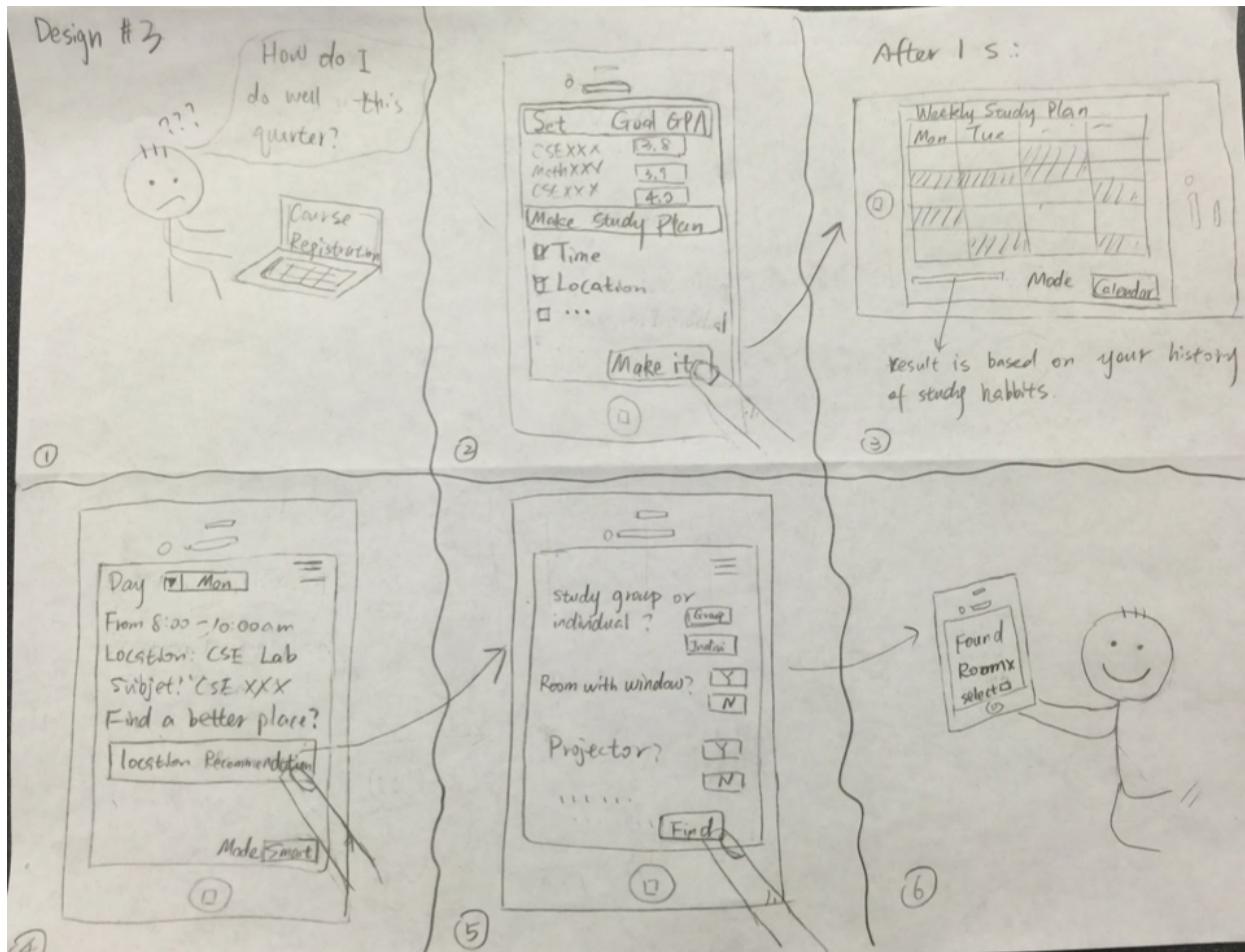
### Design 2:

This design is a mobile app that supports the (**Task 5**), which is evaluating the user's study behaviors. The design allows the user to see how his certain behaviors affected his past performances on a subject. By looking at a summary of historical data, the user is able to better understand what is a good study habit for him to achieve higher performance in the course.



### Design 3:

Our last design focus on two tasks, helping students pick out ideal study location (**Task 1**) and generate a planner based on workload and personal preferences (**Task 6**). The user would have to input current class schedule and their goal GPA. In order to generate an appropriate planner, some additional information are needed to better understand their study preferences. The software would ask student to choose options of studying alone compare to group and morning compare to evening. The app can be manually modified based on customers if users are not happy with the recommended planner and study room.



## 9. Selected Design

We selected the third design because it encapsulates three tasks which could recommend ideal study plans for our users. The design is easy to use and creates a useful tool for students to understand their study habits and achieve their goals. This design focuses on three tasks - track study history, make study plan based on GPA goal, and recommend study locations based on preferences. There is a research suggested that “students with lower GPA were less self-regulated learning than students with higher GPAs.” (Veronica X. Yan, Habits and beliefs that guide self-regulated learning: Do they vary with mindset?). We believe these three tasks will help students pay more attention to self-regulated learning and better their organize study. The design is suited for our target users for the following reasons. First, a personalized study plan is helpful because we learned that most of our contextual inquiry participants do not follow any study routines and they all agree that a good study plan helps achieve higher academic performance. Second, setting GPA goals allows students to be more aware of their short-term goals in each quarter and more motivated towards study. Moreover, finding a study place on UW

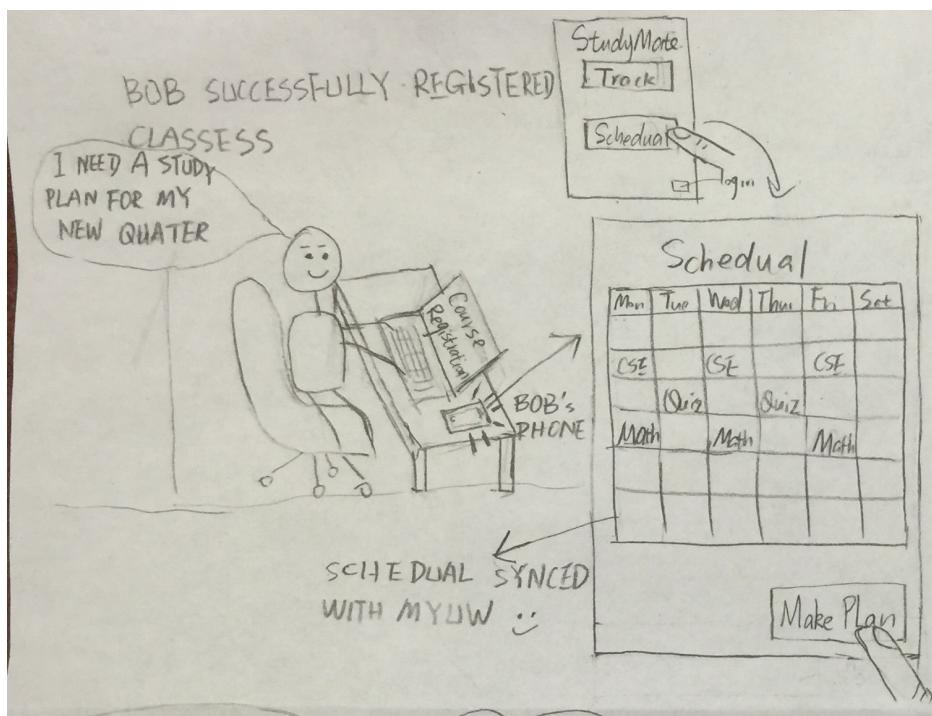
campus helps students study more efficiently. Based on our interviews, many students think that study environment is important. These three tasks are more compelling than others because they help solve some more common problems we identified during the contextual inquiry.

## 10. Storyboard

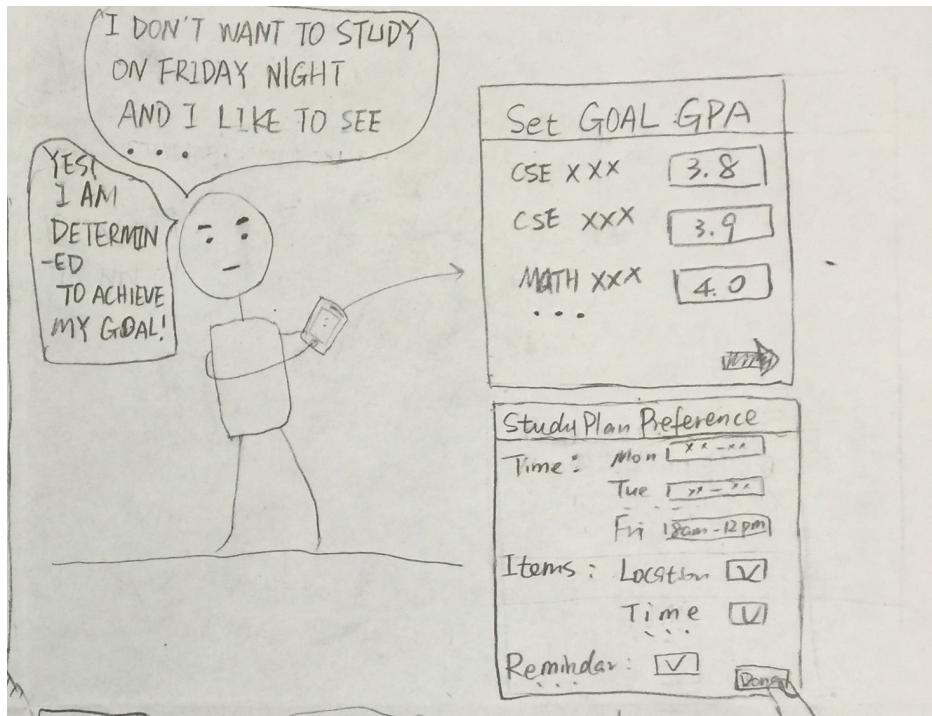
### Task 1

Scenario:

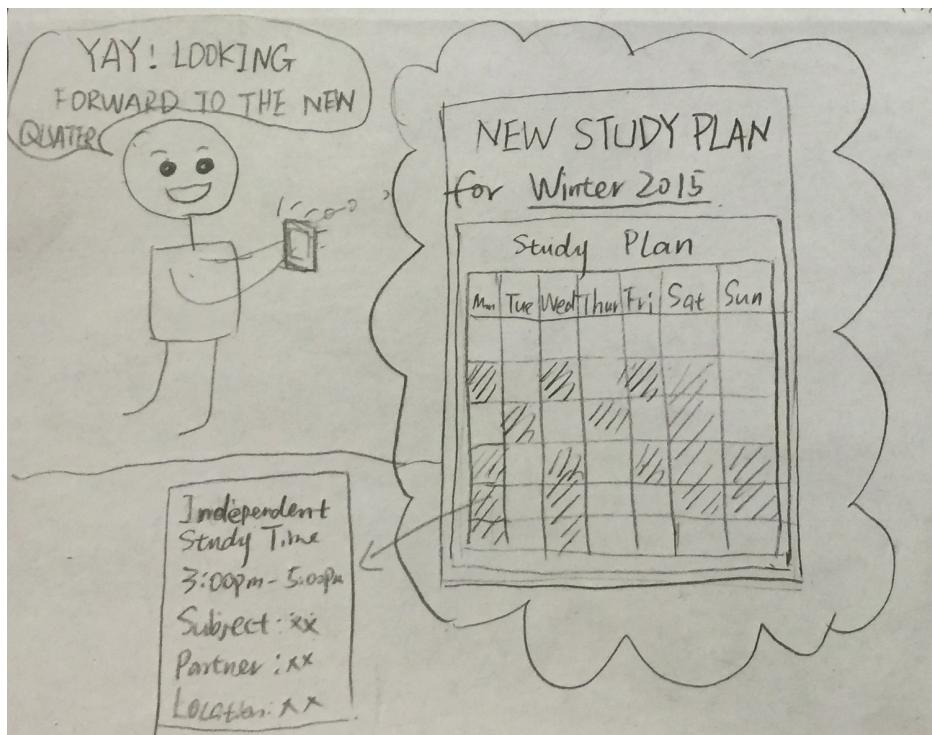
Bob initializes the app by entering his course schedule. Some additional information regarding his studying preferences is needed to personalize a study planner. The app learns Bob's studying habit along and gives notification to help him stay on track with schoolwork.



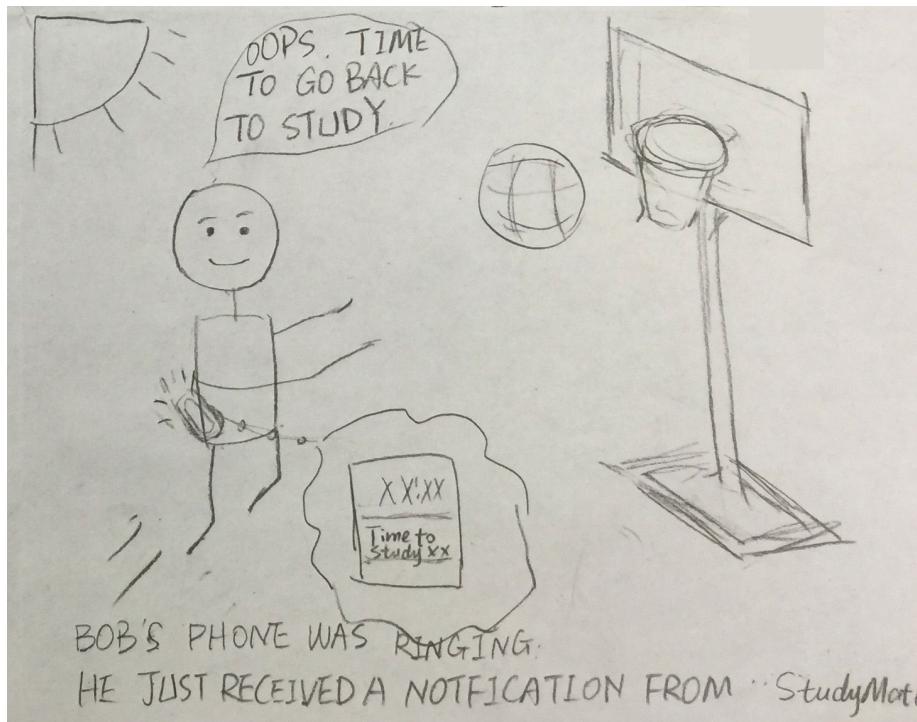
Imports course schedule from MyUW in order to generate a study plan.



User can input their goal GPA and study preferences to personalize a study plan



A personalized study plan is generated

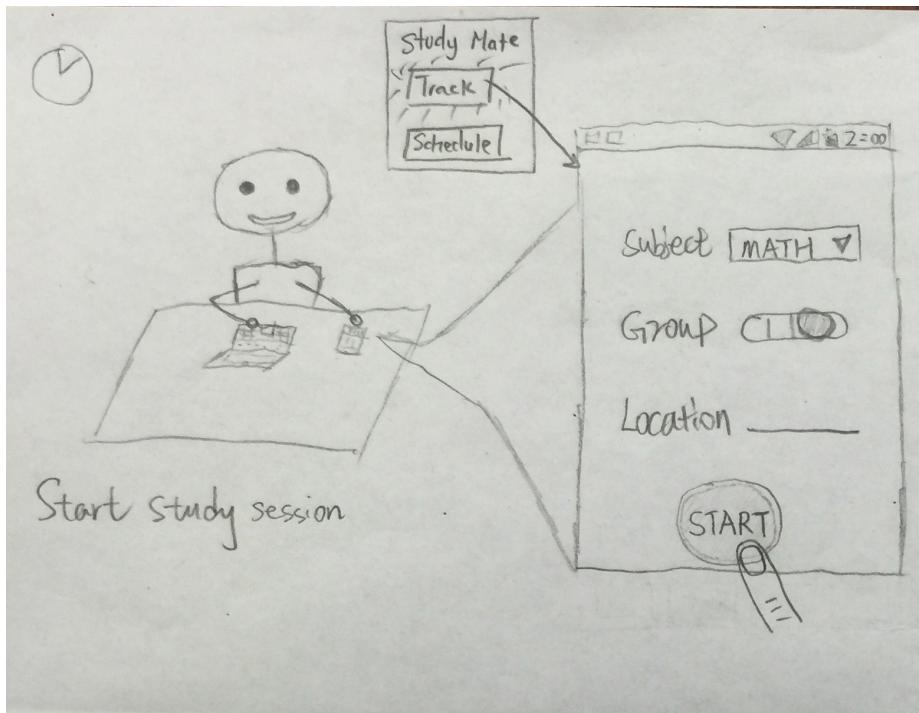


The app sends a notification message to remind user for a upcoming study session

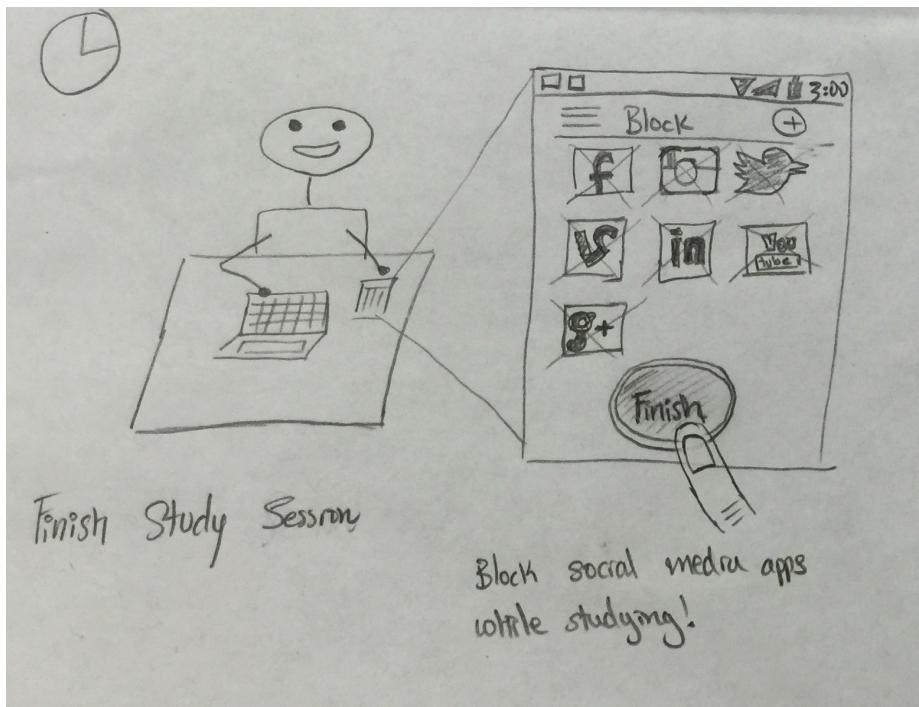
## Task 2

Scenario:

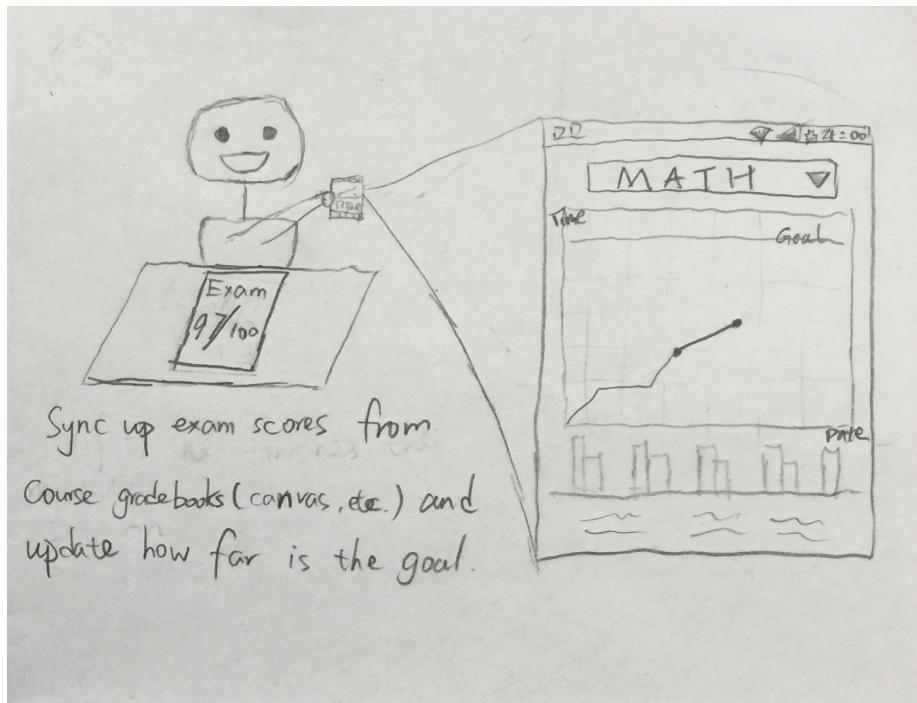
When Bob sits down in a library, he pulls out his cell phone and records a new study session. After he enters study mode, the app blocks all his social apps to help him create a quiet environment. After one month of consistent use, Bob successfully scores a higher mark on his exam. The app retrieves his score from Canvas and updates his progress in the chart.



Enter study subject, location, and group study information, and press Start to record a session



While the app is in progress, all social media apps will be blocked. Press Finish when user is done with study session.



Users can upload their scores to reflect the effectiveness of their study sessions.