
CSE 440 SECTION C
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BookWurm: Final Report

Finding Time to Read

Team

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Problem and Solution Overview

The habit of reading on a daily basis has become a sort of ideal in our technology focused society, instead of a habit. There are many individuals who used to enjoy reading but find themselves reading less as time goes on. Others are able to find time to read but find their reading habits to be too erratic. We hope to create a design that allows people to convert reading from an ideal in the back of their minds into a habit that they can monitor, manage, and more easily plan out. To this end, we propose using BookWurm, a design project that combines the usage of a smart bookmark and a phone application that easily allows you to track the amount you read and displays metrics and recommends how much you should read in future sessions. BookWurm also gives advice on how to finish books before a certain deadline in order to help readers commit to continuous reading rather than forgetting about a book and shelving it for a long period of time. Overall, we hope that BookWurm can add more incentives to the normal reading process.

Design Research Goals, Stakeholders, and Participants

During our design research we hoped to find out more about the times that people chose to read as well as what motivated them to read. We addressed this by interviewing individuals who fell into our pool of potential target audience. Some of the questions we asked included asking people how often they read, what times they chose to read, what kind of books they liked to read, and what value they saw in reading as opposed to other mediums of entertainment. Through these questions, we were trying to find out ways in which to motivate people to read, as we felt as if there were many people that wished reading played a bigger role in their schedules, but weren't able to find time. By digging into these motivations, we were able to come up with new ways in which to present our application so that it would be attractive to this group of hopeful readers.

Stakeholders

Former/Prospective Avid Readers: People who were once able to read avidly in the past but can no longer do so due to a change in their schedule or lifestyle might find this application of interest to somehow give them metrics on how they are choosing to read and how they can increase the amount they read in the future.

Prospective Enthusiasts: People who wish to learn more about a particular subject, such as a specific historical event or an academic subject, and hope to do so through reading could find this application useful in budgeting their time towards reading books that increase their learning.

Participants

Our interview participants were all students from the University of Washington in the Informatics major. As part of a pre-screening, we sought out people who already had established reading habits. Within our pool of participants, we interviewed people who had different reasons for reading as well as different genre preferences (self-help books, fiction, etc.). Participants were also asked to talk about when they read, what distractions they encountered, and how they found new material to read as well as what medium they preferred to read on. Many participants expressed a preference for physical books, liked to read for a combination of learning and excitement, and also liked to figure out what to read next by looking online and getting recommendations from friends. Some liked to read nightly while others preferred to read in bursts when something caught their attention.



Design Research Results and Themes

Reading Before Bed

The idea of reading before bed resonated strongly with all participants interviewed. This leads to suggest that reading before or after an important event in the day would be a great way to enforce a strong habit of reading. Perhaps we could continue to encourage users to read before bed in order to fall asleep, or we could possibly encourage students to read for one hour after their last class in order to unwind. One issue that might come about reading before bed specifically is that it could interfere with sleep on occasions where a book is too interesting to put down for certain users. However, the idea of reading surrounding specific events is definitely something we would like to explore more.

Preference of Physical Books and Phones as a Distraction

While one participant stated that they usually read on their phone nowadays, all users expressed a preference toward physical books and cited phones as a major distraction to their reading. This suggests that reading a physical book over using an electronic device could help promote focus on the reading. However, we cannot force all users to utilize physical books, so it might be difficult to use this theme to further our design. It might be worth looking into a non intrusive way to promote physical book use, such as a “collection” tracker that shows the transformation of a bookshelf over time. We will also need to explore how we can leverage phones as a means of keeping people focused during their reading sessions rather than acting as a distraction. A common problem was that phones caused a distraction, but there was no method for our participants to re-engage in their books.

Reading as a Means of Personal Development

Two out of three participants enjoyed reading as a way to improve themselves. Participant 1 stated that he liked to read in order to gain ideas for his own personal reading. Participant 2 also stated that she preferred to read nonfiction books as a way to learn about new subjects. Based on the responses from these two participants, we assume that including some aspect or functionality in our design that allows users to track their reading within a certain subject will allow for an interesting way for readers to track how in depth they are able to learn and read about a certain subject. If we are able to track the amount of books read about a certain subject for example, and allow users to check off certain books, it might serve as a fun and simple way to encourage readers to make progress, as checking things off a list is often seen as something that generates a

sense of accomplishment. However, we want to include this functionality in a way that doesn't pressure or stress out those who hope to pursue reading for fun.

Task Analysis

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

Based on our research work, this design would likely be used by individuals that have an enjoyment for reading, and perhaps somewhat of a habit of doing so already. We have found fewer people than we originally expected that indicated that they wanted to read, but did not necessarily have time for it. We decided to exclude individuals who did not have an interest in reading at all since they were not apart of our target audience.

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

Currently, our interviewees reported that reading tends to be a very conscious effort for them, something that they do as needed to fill the time, or right before they go to sleep. It is notable that in both of these cases, reading is used as a sort of transition between two parts of a person's day.

3. **What tasks are desired?**

Our interviewees reported that they had the desire to read more, but sometimes found doing so to be difficult. This can be broken up into tasks by considering that they tend to use reading as a sort of transition between events. To better help individuals to accomplish this goal, we can a) identify transition periods during which a person can read, and b) help to eliminate/limit distractions from outside sources, such as the commonly identified phone.

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

For the most part, our interviewees identified themselves as already having a sort of habit built up for reading. They had instead expressed desire to build upon it. Each person that we interviewed identified a slightly different motivation as to why they chose to read, but they each came back to wanting to be able to consistently undertake this task.

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

From our interviews, we discovered that most people tend to conduct their reading sessions in a relaxing environment, such as while lounging on the couch or in bed before sleeping. They also identified it as a sort of intermediate in some cases, such as while being on a bus, during which they would use the reading to fill the time.

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

The primary relationship between the person and the data results in their ability to accomplish their original motivation for reading. Each person's motivation is different, and that cannot necessarily be quantified through page numbers of the time that they read. What we do propose is that through design, we are able to help people better meet these goals by pushing them to extend these quantifiable metrics. It is from these that people can further build their habit of reading.

7. What other tools does the person have?

Each of the people that we interviewed identified regularly having a phone on them, though this was more often than not identified as a distraction. However, this is worth nothing as a potential tool. It is also important to note that this does not necessarily hold true for a wider population of people that this design could perhaps be applicable to, though we do continue to limit the scope of our problem to college age individuals.

8. How do people communicate with each other?

The individuals that we interviewed did not identify any major points at which they communicated with other people during the task of reading. This is not to suggest that there is not the potential for such a thing, merely that it does not often occur currently.

9. How often are the tasks performed?

A trend we noticed was that reading was completed either while traveling (between school and home) or at night (before going to bed). The participants identified as reading 3 days out the week on average, with a desire to increase this number being something that they have identified throughout the interviews.

10. What are the time constraints on the tasks?

Most people can only read for a limited time before getting bored, being interrupted by another task, or getting distracted. From the interviewee responses, we gauged this time frame to be anywhere from 30 minutes up to 2 hours. This is a significant limitation on our ability to increase the amount that an individual is able to read. This will likely also drive us towards an increase in the number of times that a person is able to read, instead of solely the longevity of a single sitting.

11. What happens when things go wrong?

When our interviewees got distracted while reading, it would result in ending their reading session prematurely. This was because they would move on to a new task and forget to continue their reading session. This also makes for an important consideration in the potential use of a phone as a tool to help direct people, as

they find it to be one of their biggest distractions, and could potentially prove to be counter-intuitive.

Proposed Design Sketches “3x4”

Book Wearable

A wearable device (Apple watch in our case) for reading is something that would be simple and not be too intrusive on the user. Like mobile apps, it provides different technology features but at the same time, has less functionality. An user is able to interact with the wearable during his reading session easily through his wrist without having to look around for his phone and be distracted by other notifications from it. The watch’s interaction allows for the user to perform a few tasks to help them understand their reading sessions. Since most watches complement phones, it is possible for it to send and control data stored on the phone. (Figure 1)



Figure 1 - Book Wearable

Mobile App

Even though many participants during our interviews noted that cell phone are a distraction, a mobile app allows for the most flexible tracking and sharing functionality. It can present many different tasks, and smartphones are something that people will bring along with them everywhere they go. Our mobile app to track the time spent reading and also enable “Do Not Disturb” mode, provide news and media recommendations, share books with your friends, and reading a goal number of books within a period of time. (Figure 2)



Figure 2 - Mobile App

Smart Bookbag

The smart book bag is designed around being able to seamlessly collect information about the books that a person carries, as well as for how long they read. It is paired with a mobile app to deliver notifications and reminders about grabbing books, and a web app for deeper communication with friends. The smart book bag is able to detect the books that it contains, is able to communicate wirelessly to convey how long a person reads for, and is able to automatically mute the person's phone so as to limit potentially distracting notifications. (Figure 3)

Selected Design

Mobile App & Smart Bookmark

For our chosen design, we decided that creating a Smart Bookmark would be optimal choice. We focused on selecting a design that took from the best aspects of each of the proposed sketches that we put forward. This bookmark brings immediate availability of a smartwatch, the deep details of the mobile app, made possible through a companion app, and the unintrusive nature the backpack. This design will utilize a form similar to the "snap bracelets", which sit flat when inside of a book, but can be wrapper around a person's wrist for storage while reading. These two states provide a consistent way in which to gather data from the device regarding time spent reading. For our selected design, we would carry over the following tasks: The mobile app would allow users to store information about reaching a certain long term reading goal. The smart bookmark allows user to track the current length of his current reading session.

Written Scenarios - "1x2"

Reading Books Within a Certain Timeframe:

This storyboard (Figure 4) illustrates a scenario where a reader obtains books from a library which she wishes to read within a certain timeframe. At the start of the scenario, the reader obtains the books she wishes to read, and checks them out from the library. As part of the second step, she scans the barcodes of her chosen books with the mobile companion application, which can automatically record details such as title, author, and number of pages. If the books she is reading do not have a barcode she can enter the information in manually as well. She also enters the date by which she would ideally like to finish these books, which in this case might be the time that she needs to return the books to the library. When she is reading, she takes the smart bookmark out of the book and attaches it to her wrist so that it can track her hand movements to keep track of page count, and can also track the amount of time she spends reading. The smart bookmark sends this information to the companion application. Once she is finished reading, the companion application notifies her of her progress so far in terms of number of pages read and time spent reading, and advises her on how many pages she needs to read tomorrow in order to reach her goal. She continues this process over the next couple of days until she has completed the books and achieved her reading goals.

Time Spent Reading

The time spent reading storyboard (Figure 5) centers around a person that has a pre-existing tendency to read (or previously did) and has a desire to read more than they currently do. In the given scenario, a student is busy with school work and has not had a significant amount of personal time in which to read (outside of school material). This character has decided that they want to change that, and in the given scenario, use our design to do so. While not depicted in the storyboard, to get started, the person would need to first scan the book with their phone to register it against the bookmark (one-time action per book). They could then place the bookmark inside of the book. From then on, anytime that they read, then would remove the bookmark from the book, and wrap it around their wrist. This would be the indication for the bookmark to begin tracking the reading. On completion of that reading session, they would remove the device from their wrist, and return it to the book. The device could also show some basic relevant stats, such as time and pages read.

Storyboards

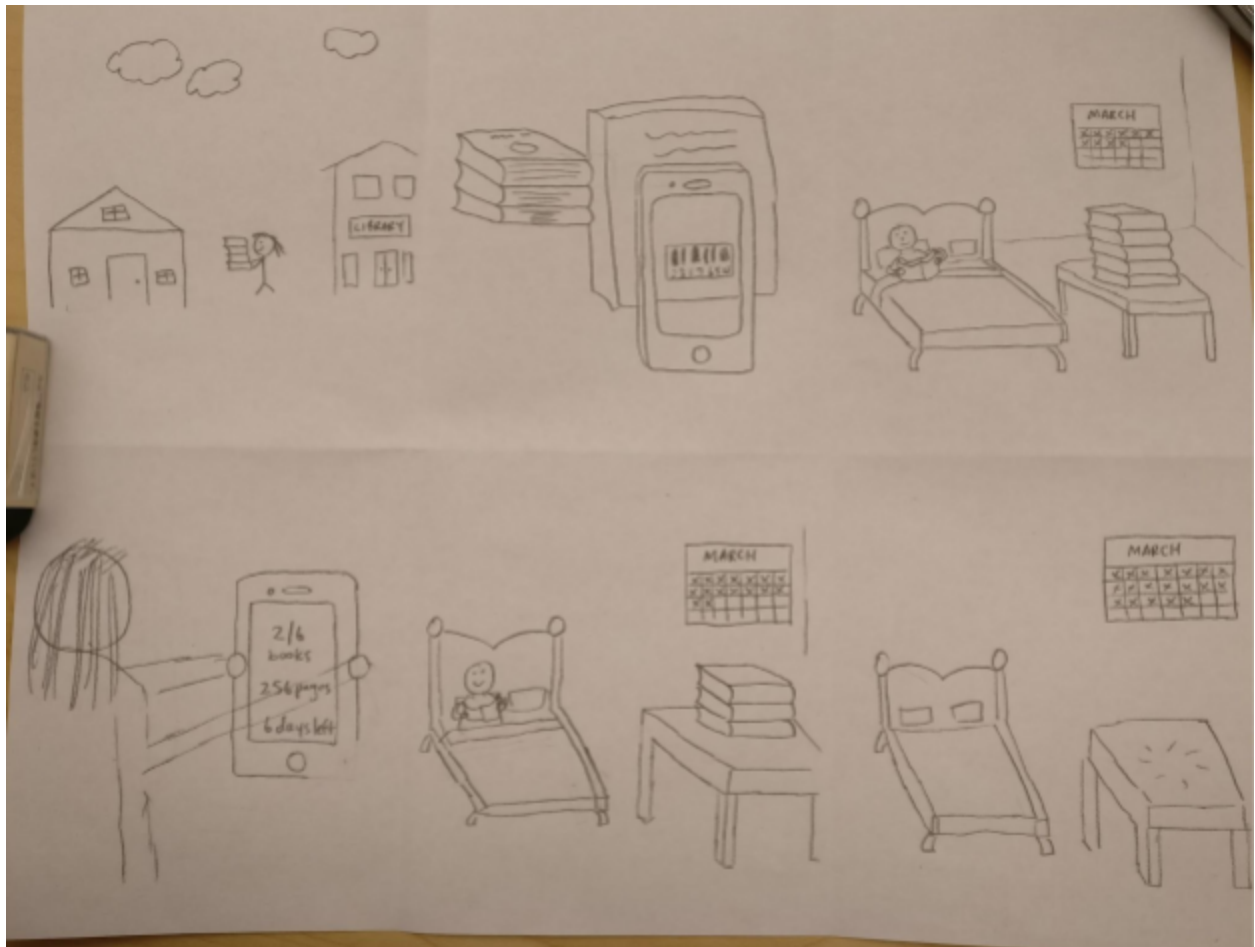


Figure 4: Reading Books in a Certain Timeframe (Storyboard)



Figure 5: Time Spent Reading (Storyboard)