

# FOAM AND PAPER PROTOTYPE PROCESS REFLECTION

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## 1. MATERIALS AND RATIONALE

Materials	Rationale
Form cores	<ul style="list-style-type: none"><li>• These materials are easy to shape.</li><li>• The texture of form cores enable a concrete feeling, and give a better impression of shape and weight than paper.</li></ul>
X-ACTO knives	<ul style="list-style-type: none"><li>• These knives have high quality, so they are sharp enough to cut off the form cores.</li></ul>
Self-healing cutting board	<ul style="list-style-type: none"><li>• The cutting board can protect the table in design space, preventing us to scratch the table.</li><li>• It's easier to cut off the form core when putting the cutting board under form cores.</li></ul>
Rulers	<ul style="list-style-type: none"><li>• We could define the length and width of any shape by using rulers, and also create a straight edge to cut and draw from.</li></ul>
Glue	<ul style="list-style-type: none"><li>• Glue is necessary to stick pieces together.</li><li>• Glue is quick to dry.</li></ul>
Double-side tape	<ul style="list-style-type: none"><li>• It has high quality that it can stick pieces firmly, especially is good for sticking form cores.</li><li>• It keeps your hands clean, compared to some glue may stick into your hands.</li></ul>
Card stock	<ul style="list-style-type: none"><li>• Card stock provides color to the prototype. It was also used as a "skin" over many places on the foam core because it is easier to draw and color on.</li></ul>
Color pencils	<ul style="list-style-type: none"><li>• Color pencils are flexible that they can be used in any place on the prototype to provide color.</li></ul>
Black pens	<ul style="list-style-type: none"><li>• Blacks pens are as flexible color pencils that they can be used anywhere.</li><li>• They are good to attract people's attention when people are looking are the prototype.</li><li>• They can be used to draw the shape or frame of icons.</li><li>• They are perfect tools for writing words or sentences.</li></ul>

## 2. PROTOTYPING PROCESS

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### **First Session: foam core prototyping**

The objective of this session was to use foam cores to cut it into the appropriate shapes and sizes and give the appropriate form to the interface.

First, we had a group discussion, a discussion regarding interactivity. We decided to have the foam core cut into two equal halves for the final and the present form of the interface. 38 inches was the complete length of the hand easy device. Next, we decided to have two copies of 38 inch interfaces. One of the foam cores would be made into the map function, and the other, the e-book interface.



For prototyping the e-book interface, small blocks of the foam core were cut using the X-ACTO knife to give affordance to various buttons of the interface. Shapes were approximately cut on the foam board. Although we did not decide concretely whether we would use physical buttons or a touch screen, we will want the visual affordance of buttons, and decided a three dimensional representation of the buttons would suffice for this.

For the map interface, a rectangular section was cut out of either “page” of the prototype, in which slides could be placed in depending on the user’s actions. We envision a touch screen input for this part of the device, from map navigation to onscreen keyboard, and opted to leave out “buttons” to leave room for larger slides.

Finally, we used black card stocks to cover the surfaces of foam core, making it concrete in shape and to give it a more accurate aesthetic appearance.

### **Session 2: paper prototyping**

The objective of this session was to give the final touches to the interface using the various elements of foam which had been.

Before starting prototyping the hand-easy, we decided to distribute the work. Basically, four team members were divided into two small teams. One team worked towards the map interface and other team worked towards the book interface.



The book interface was decided to have a multiple sequence of the various possibilities possible using the interface. Color pencils were used to give affordance to the parts of the interface which required interactivity with the end user, indicating the buttons. Different pieces of paper were used to show various sequence of certain functions. First, we cut off some paper, making the size of paper suitable for the hand-easy device. Then, we drew different sequences of the functions using black pens. Color pencils were also used in the drawings.

The map interface process was similar, but all of the interactivity, in this case, was placed on the slides. On the left, a search bar slide could be flipped from an empty slide to a results slide, while the slides on the right would start from a central location on campus, and allow the user to move one slide in each cardinal direction. In the future, we would implement arrows over the slides to indicate directions to search locations. We would also explore input methods such as an onscreen keyboard, which could also be simply implemented with slides.

### 3. REFLECTION

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#### **Vertical or horizontal**

Our prototype belongs to the vertical prototype, as we focused on two main functions: e-book and map. By choosing the vertical prototype, we concentrated on making the users to understand the design concept of hand-easy, as well as giving clear views of the main functions. Also, we considered the coming usability test. We wanted our tester to better understand the functions of our design, rather than the display of our interfaces. In order to make it clear in the usability test, we decided to use vertical prototype instead of using horizontal prototype. Usability testing, at this point, would be intended to find out if this device's overall functionality would be useful or appropriate for the intended demographic.

#### **Shape**

We thought it would be best to make the affordance of a book to give the e-reader a comfortable and familiar feel. The rectangle cut-out gives us affordance of screen, while the black frame gives us affordance of the device frame. By cutting only partly through the rectangular foam core, we were able to successfully simulate a book bind.

#### **Materials**

Paper was used to represent the sequences of different interfaces. Color sketch pens were used to denote different buttons and interactive parts of the interface. Black card sort was used to make the frame of the device. Different forms of color pencils were used to give importance to different buttons on the interface. This importance was also associated with giving the buttons a clickable effect. Categorization of different buttons helped us to assign the colors for specific buttons on the same page or different pages of the interface. In the search functions and map, colors were used

mostly to separate areas in the search bar as well as areas on the map.

## 4. CRITIQUE

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### **Visual representation**

The visual representation gives the user the sense of book, and the black interfaces indicate a sophisticated look for prototype. The paper inside the device serves as different sequences of the functionality, and gives a feeling of a flat screen. But the paper is not transparent, so in some extent, it doesn't similar to a real screen. And the texture of the materials fails to give the feeling of a real metal frame.

### **Tactile appeal**

We give the prototype ability of folding open and close, which is similar to the folding function of a book. When touching about the prototype, a user can imagine a real book. Moreover, the user can naturally use the device in a common sense way. Using the black card stock to cover the form core, we not only hide the flaws of the cutting track of the form core, but also give a smooth surface.

### **Associations**

We wanted users to associate this with a traditional book, but surprise and delight them with a real map that can connect them to their social community, such as twitter, facebook, etc. We want to give them a comfortable and reliable feel, with less clutter and more usefulness.

### **Emotions**

A satisfying sense of freedom will be felt by the user, because of the small size and portability. The user would enjoy studying, as many books would be available to the user without the complexity of going around the library to look for the books of interest. The saving feature will help user feel more productive about his/her studies. The user would also have a element of surprise and fun using the interface as we have features like map can be used to find social events, like meetings and parties. Therefore, our multi-purpose interface was a combination of fun and seriousness required for socializing and studying respectively.

## 5. REFLECTION OF THINKING

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By breaking the process into two parts, we were able to pay more attention to the physical dimensions of the device, as well as core functionality, and later think more about aesthetics, icons, and interface. We were able to add more details to the concept, and focus more on the function they carry. Having a 2-part prototyping process allows more time to produce the design and sequences of functions without ignoring the important but sometimes overlooked characteristics of

size, weight, and feel.

## **6. REFLECTION OF COORDINATION**

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We found that the physical prototype gave us insights into the design that needed to be addressed. Due to the time constraints, during the prototyping process we frequently asked each other if we should improve certain aspects of the design. We did this several times as we continued to build our prototypes.

The work was divided into two sessions. The first session was related to using the foam core to give the shape and the frame of the interface. Team members coordinated by seeking opinion from each other during various points in the first session, for example, the length of the shape. The second session was aiming towards giving the interface an appearance resembling the form of the book, as well incorporating effects of affordance and interactivity to the interface. The team divided into two teams, consisting of two members in each team. One team worked towards the interface of the book reader functionality whereas the other team worked towards the map functionality of concept. Video recordings were carried out for both the session and constant consultation between the two teams was there during the second session. This allowed us to maximize our output while minimizing the loss in reflection and collaboration.