Ink
Weaver

Create the perfect story.

Pierce Darragh, Aaron Hsu, Charles Khong, Rajul Ramchandani

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Team Members and Roles

Pierce Darragh	Core Concept Design, Writing
Aaron Hsu	Interface Design, Ideation
Charles Khong	Data Design, User Experience Research
Rajul Ramchandani	Graphic Design, Storyboarding

Problem and Solution Overview

Writing is one of the oldest professions in the world, but unfortunately the tools of the trade have remained outdated. While certain aspects of technology have improved the writer's productivity (such as moving from pen and ink to the computer), it remains especially difficult for a writer to plan all of their characters' interactions and movements throughout the story arc.

Our challenge was to design a solution around the writer that can provide various tools to help them reach their vision for the book. The combination of statistical data along with a robust environment, which integrates that data, will help the user be more informed of their choices and write more effectively. Our proposed solution tracks every character in the story and their appearances, background information, references in the text, and interactions with other characters. Also, our solution analyzes the author's writing to assess the conveyed mood of any given selection of text. With this tool, an author can reevaluate their word choice to better convey their desired mood.

Paper Prototype

The web application design below, features a sidebar that changes depending on which mode the user is in. The modes can be switched by using the tabs on the top left. These two tabs are the editor tab and the Wiki Tab.

The design philosophy behind the tabs was to mimic different sheets of paper or books that the user would switch between. The links are a familiar blue color to provide a well known affordance to make functionality intuitive.

Overall, the designs lean more towards a mobile-first design to make it easy to use and easily portable. The following tasks showcase all designs of the web application.
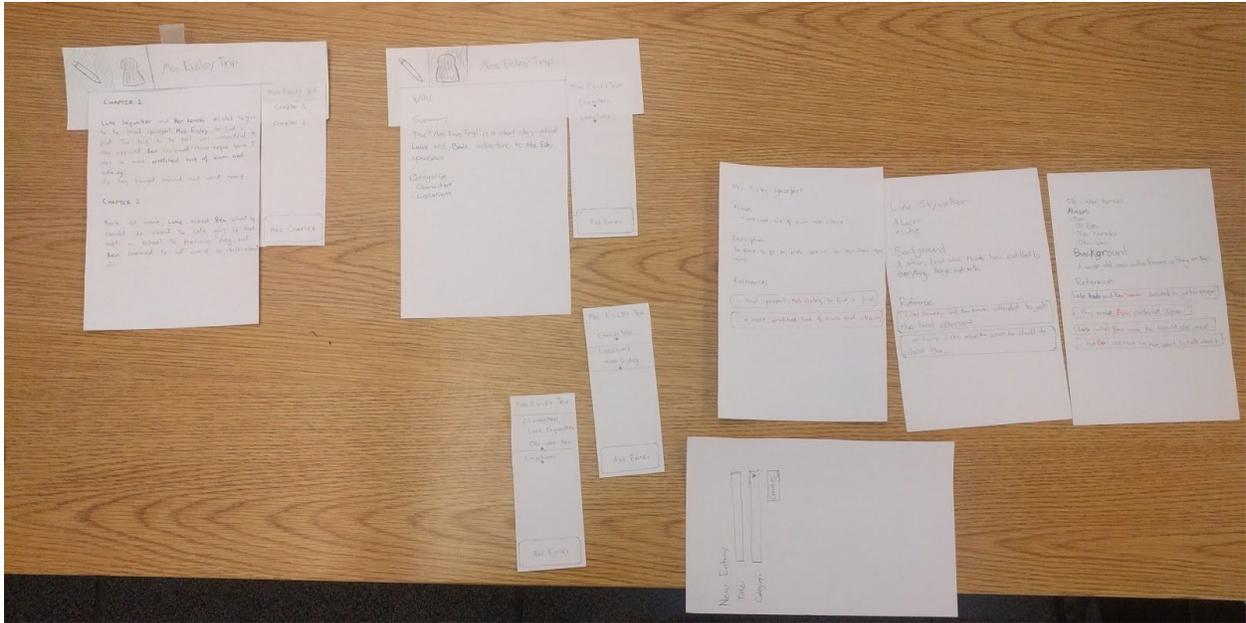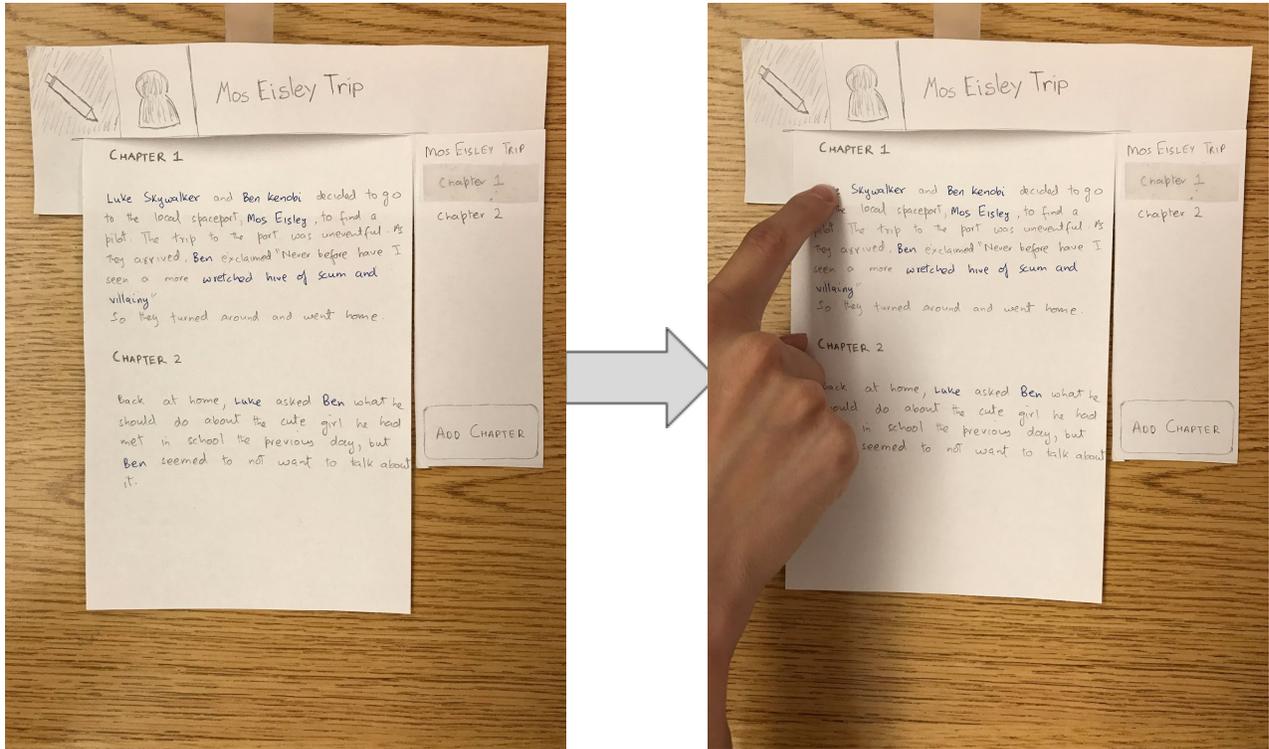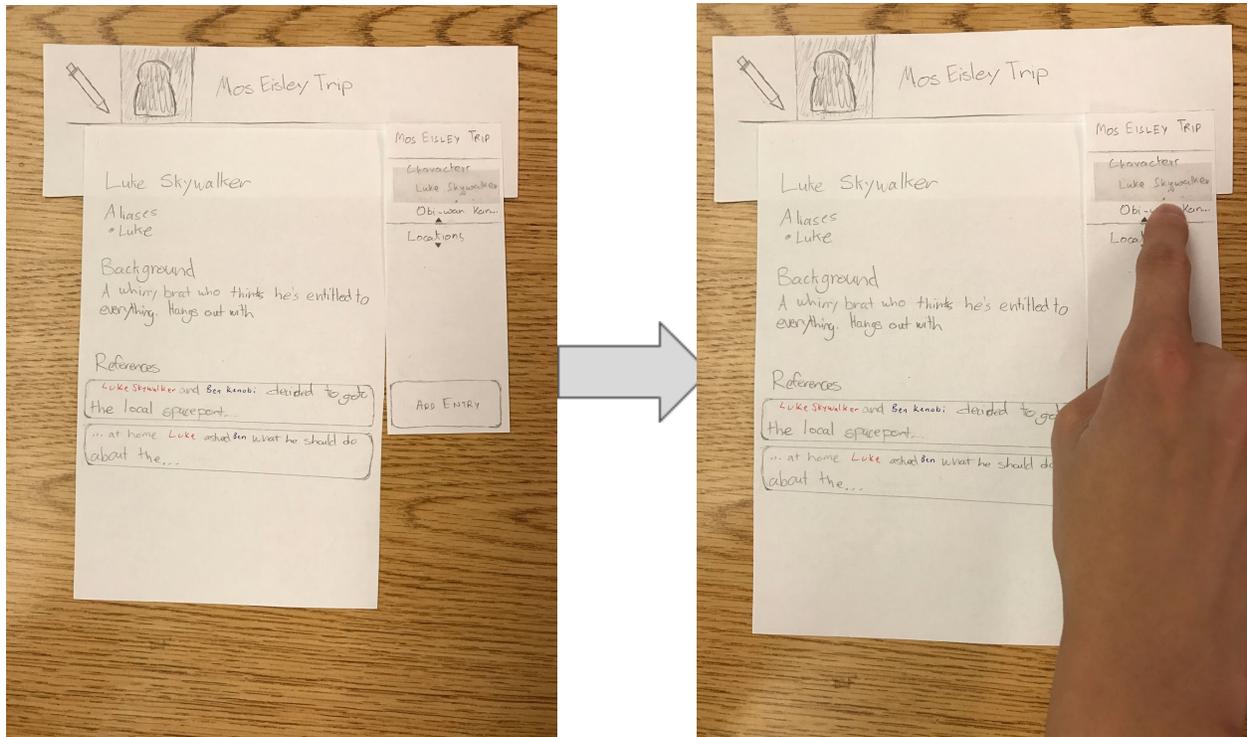
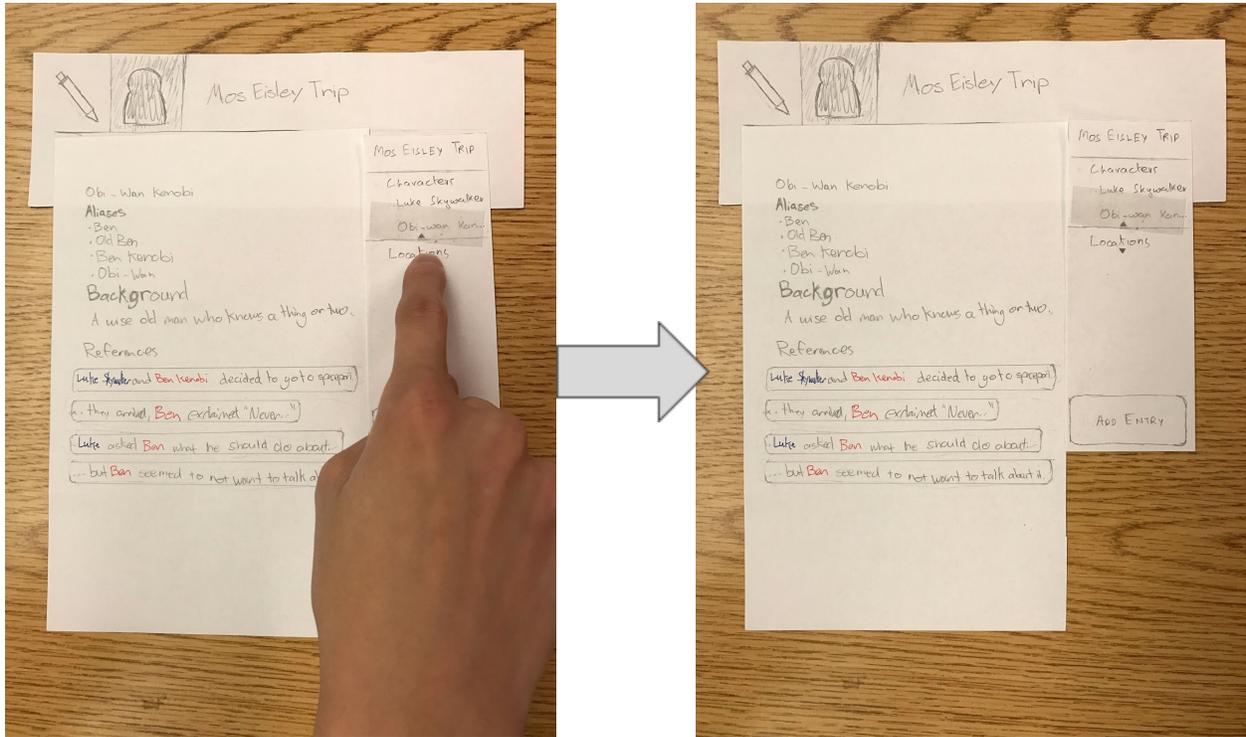Complete Master Overview

Task 1 - Navigation
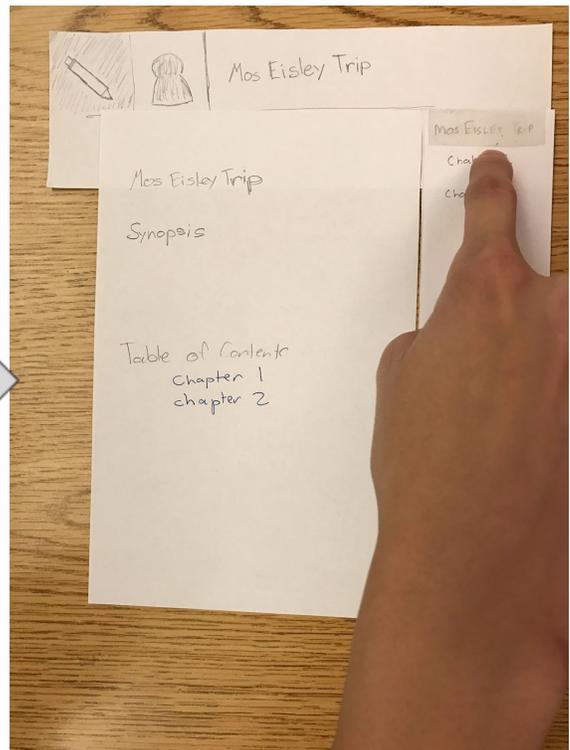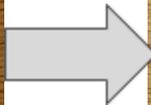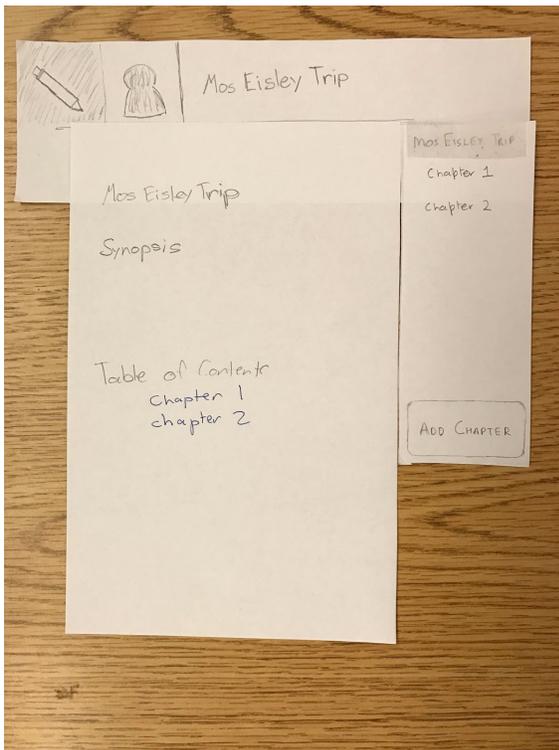
1.1: The user opens the main welcome page. The user selects "Chapter 1" on the sidebar.

1.2: The text is loaded. The user clicks on the "Luke Skywalker" link in the text.

1.3: The application changes to the "Wiki" mode, displaying the page for "Luke Skywalker". The user selects "Obi-Wan Kenobi" on the sidebar.

1.4: The application loads the "Obi-Wan Kenobi" wiki page. The user selects "Locations" on the sidebar to expand the available location entries.
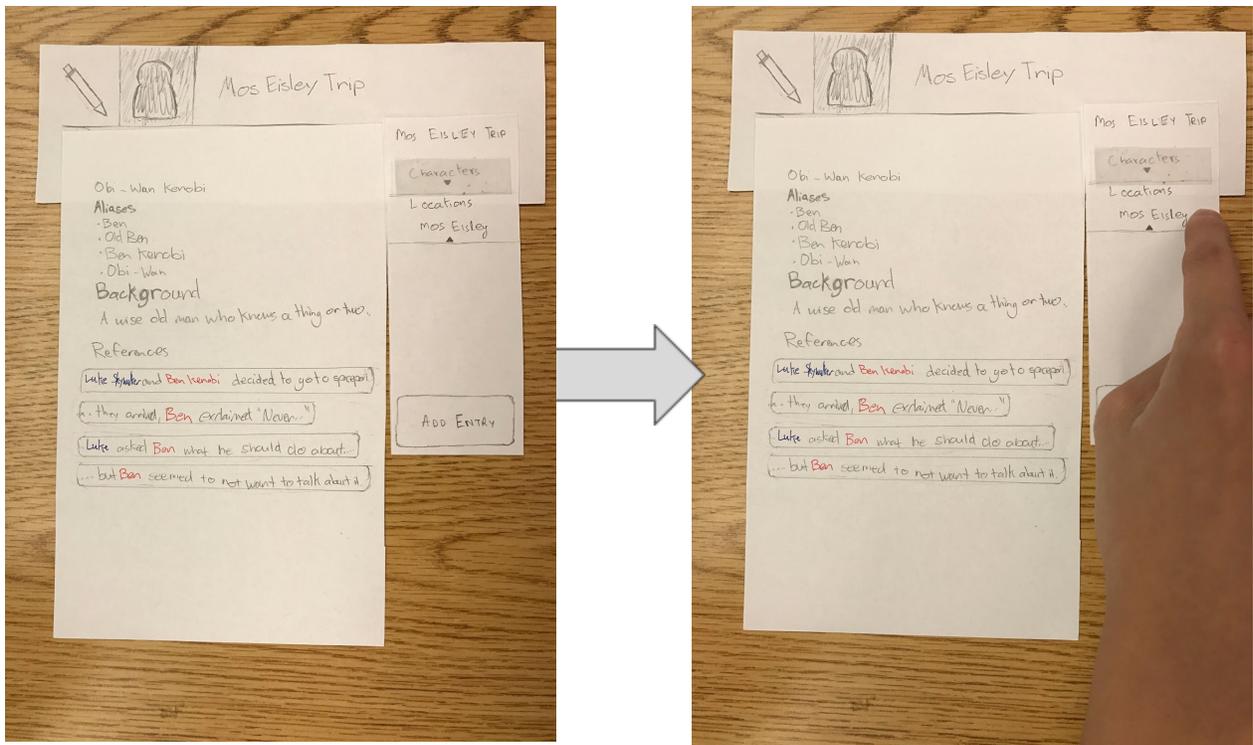
1.5: The "Locations" category in the sidebar expands to reveal relevant wiki pages. The user selects "Mos Eisley" on the sidebar. The application loads the "Mos Eisley Spaceport" wiki page.
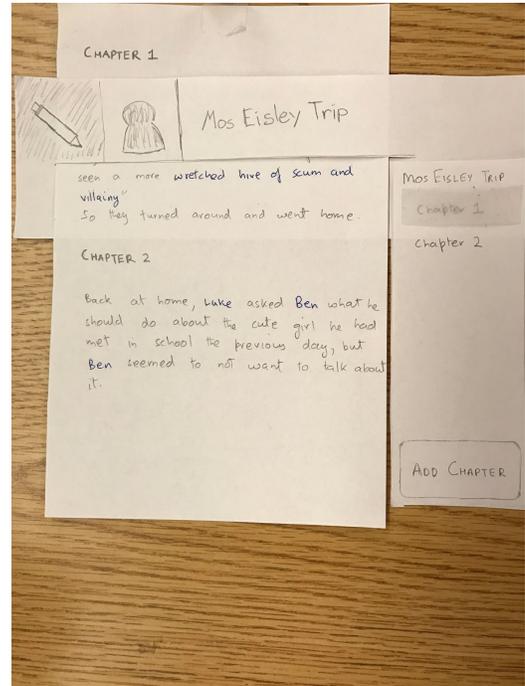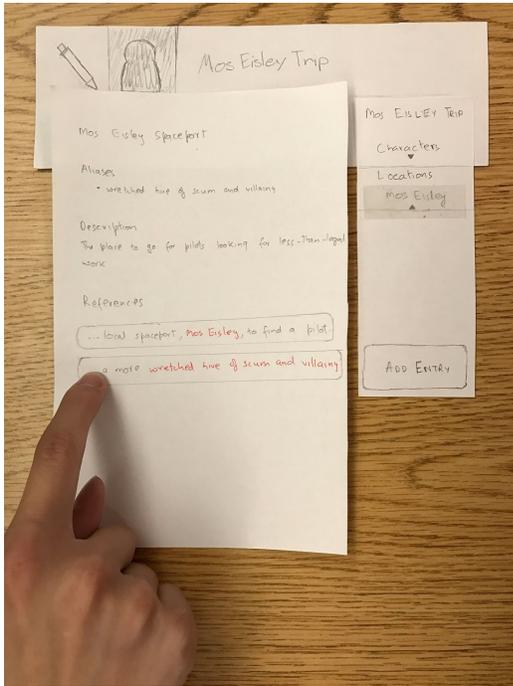
1.6: The user clicks on a reference on the page. The app changes back to "Edit" mode and scrolls to the appropriate text.

Task 2 - Creation and usage of links
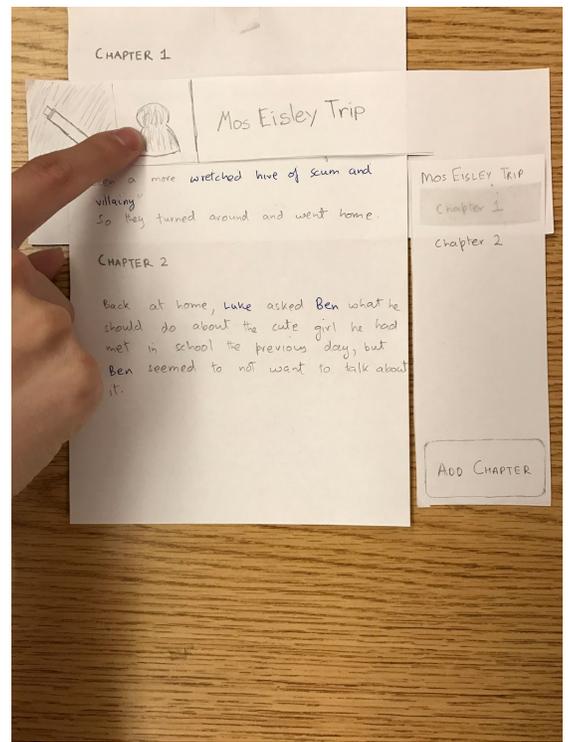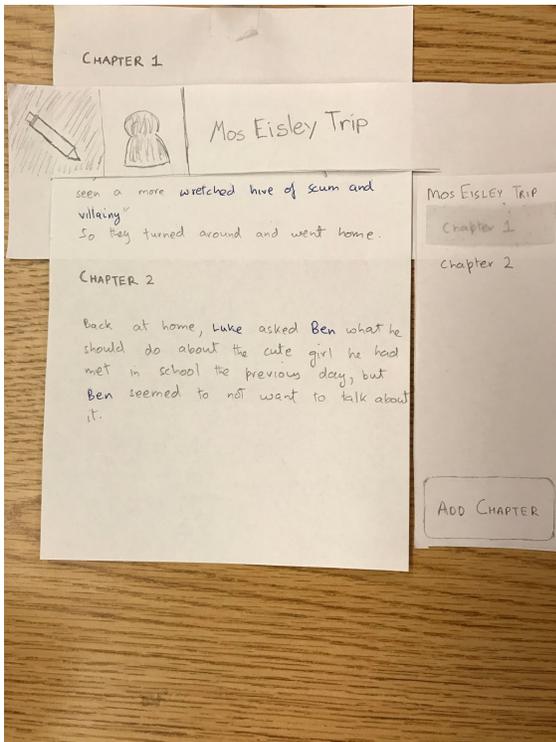
2.1: The user is currently in the text of the story. The user clicks the "Wiki" tab bar item.
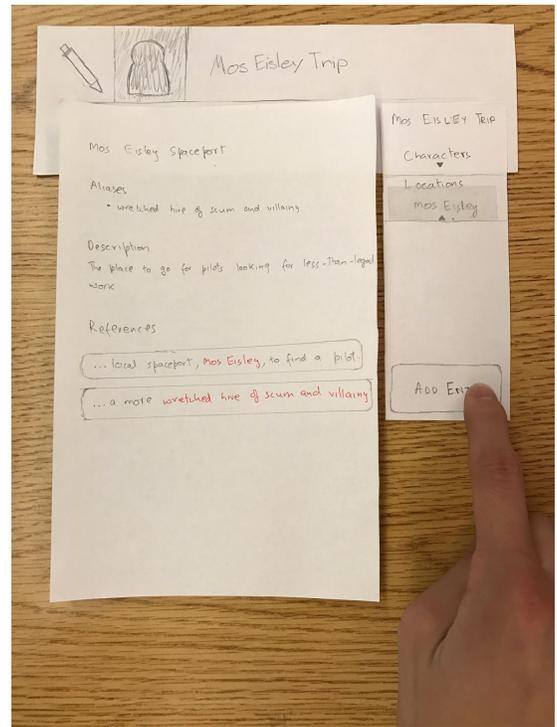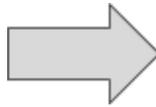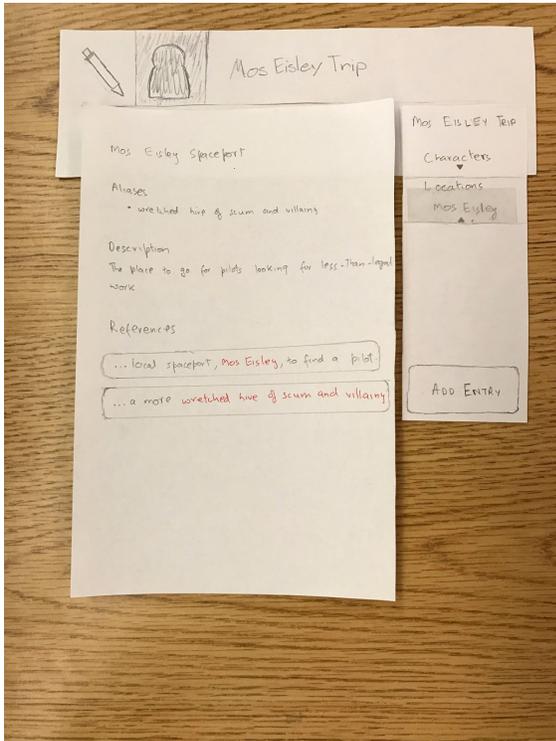
2.2: The application loads the most-recently-visited wiki page; "Mos Eisley Spaceport" in this case.
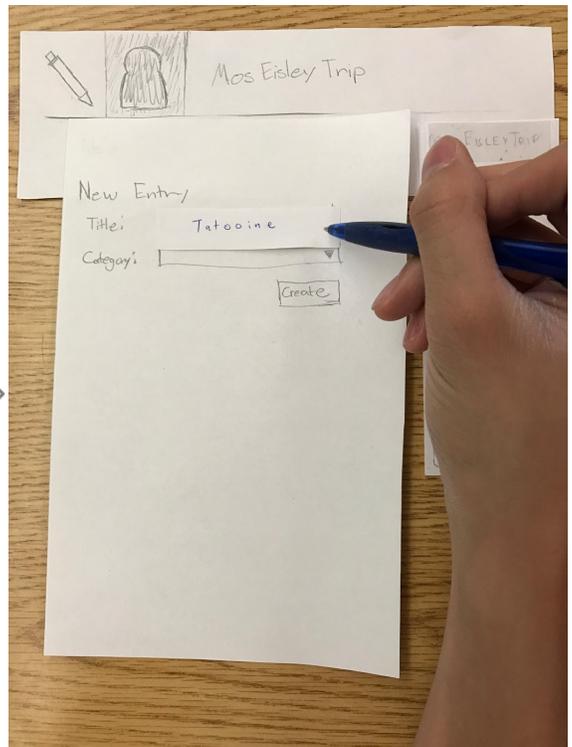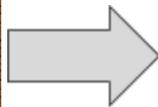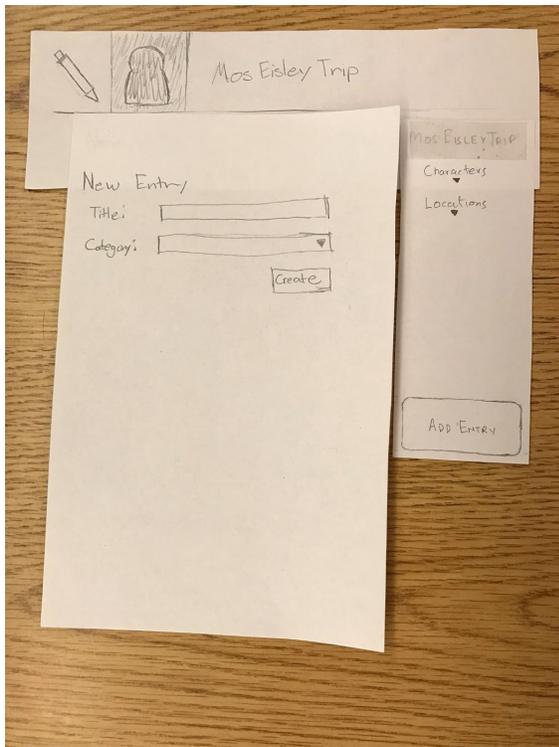
The user clicks "Add Entry" on the sidebar.
2.3: On the "New Entry" wiki page, The user fills in the title of the new page, "Tatooine".
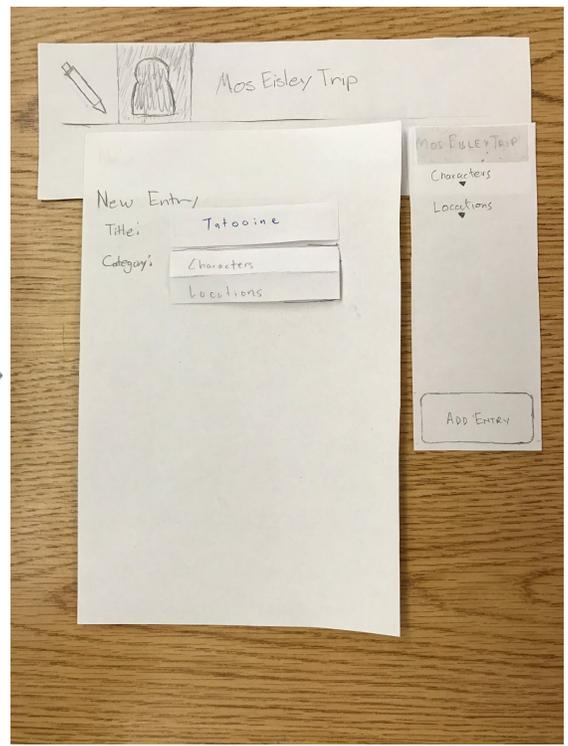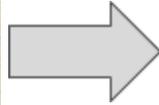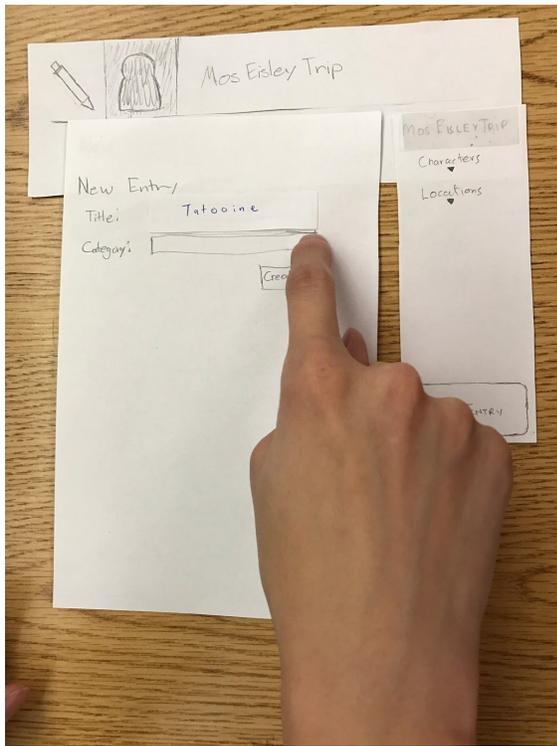
2.4: The user clicks the "Category" dropdown. The dropdown expands to reveal the available categories.
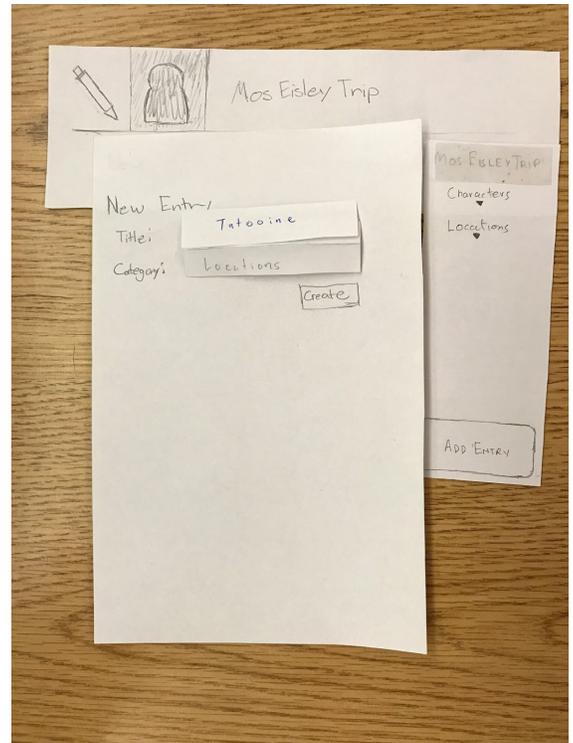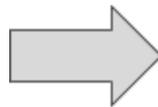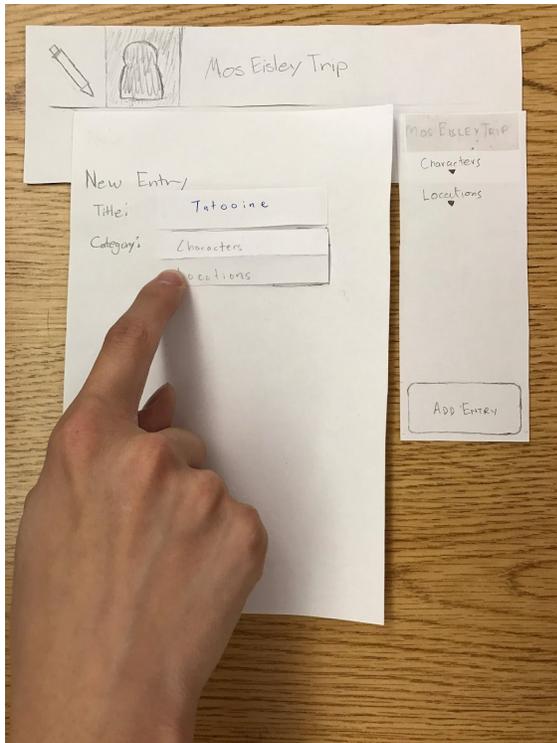
2.5: The user selects "Locations" in the dropdown. The dropdown collapses with the user's selection.
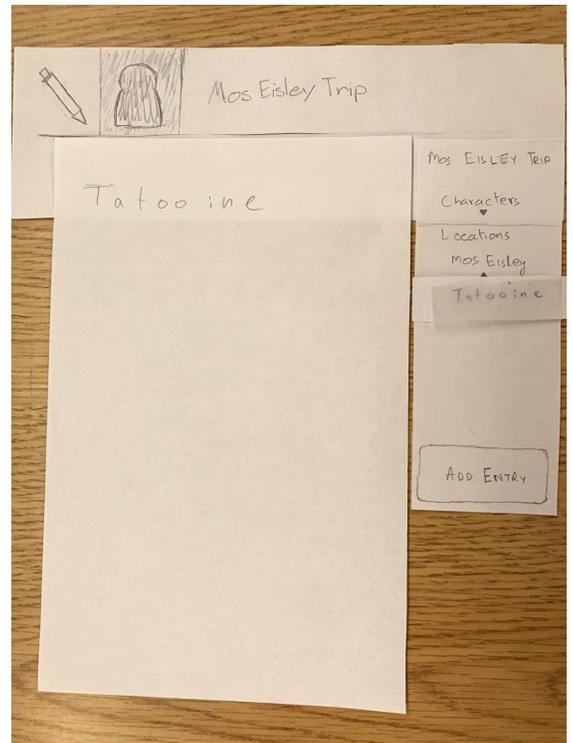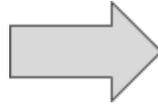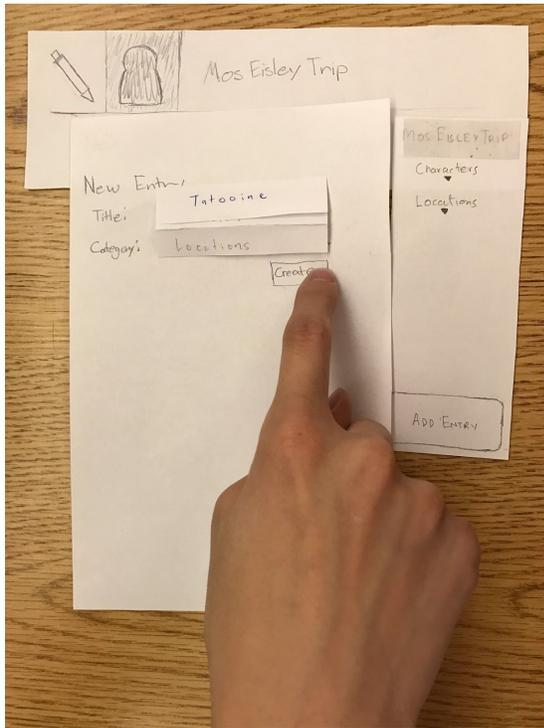
2.6: The user clicks "Create" to create a new page. The application loads a blank "Tatooine" page in the "Locations" category, where the user can write.

Testing Process

Summary

Most of our testing was done with students that are passionate about writing. While some have written a fair number of stories and other pieces, the remainder of the subjects were amatuer writers. They were also somewhat familiar with competing products.

Over the course of our usability tests, we noticed that many of our testers found that the Wiki icon was too confusing. That is to say that the icon did not properly depict the functionality that we are aiming for. The users recognized that it was a button, but were usually unsure of where it would lead to or what it would do. One of our testers mentioned that the different "modes" for our application were unclear in the design. As far as our process went, we had a consistent testing protocol throughout our three usability tests. We learned to be more careful with our wording as administrators. As we became more comfortable with our design, our computer/wizard became quicker with transitions.

Usability Tests

Test I:
Our first usability test case was conducted with a college student who likes to do creative writing in his spare time at the library. We chose this participant because he has a passion for writing and is part of our target user base. Currently, our participant uses a word processor (e.g. Microsoft Word, Google Docs) as a medium for his writing. We felt that this was a perfect opportunity for us to get feedback from one of our targeted users for our initial design. We asked our participant to attempt a couple of tasks while we observed the interaction.

Tasks:
- Find out information about an existing character in the story
- Add a new entry to the "Wiki"

Test II:
Alex was another one of our previous contextual inquiry participants. Alex was very excited about the prospect of our application when we had last spoke with her. We wanted to give her the opportunity the get first-hand experience using our proposed design. As a reminder, Alex was the amateur writer that relied on using paper to keep track of her ideas. We believe that our solution would greatly benefit her in her writing.

Tasks:
- Look up an existing character's page in the wiki
- (Starting from a character's page) Locate the editing section of the design

Test III:
In our last usability test case, we asked a student, Ralph, who does creative writing as a hobby to participate in our test. We chose this student because he is part of our target group and could potentially provide us with helpful criticisms and feedback to improve our designs. The usability test was again conducted at the library.

Tasks:
- Navigate to the Wiki
- Find the Aliases of an existing character

Heuristic Review

Over our Heuristic review, we came across similar findings to the tests. The test was conducted in-class. Once the application and the tasks were explained, the users used their fingers to click through the paper prototype. While the participant was exploring and completing the tasks, we did not answer questions or provide help unless absolutely necessary. After the test, we debriefed the participant, explaining to them the path we were looking for in the tasks and asked them if they had any more thoughts, concerns, or suggestions about the application.

Testing Results

Over the course of the tests, both positive as well as negative feedback was recorded. This led to multiple versions of the paper prototype. We found that:
- Blue links — Blue links for the links was simple and intuitive for the user.
- Sidebar Navigation — The decision of using a sidebar made the application organized and easy to use.

As for negative feedback there were 3 major changes made to the design.
- Wiki icon — this icon was a poor affordance of the functionality.
- Navigation — Users complained of no history and so a breadcrumbs trail and a back button was added.
- Word choice — The word choice for the "Add Entry" button on the sidebar was ambiguous to almost all users.

Modification and Changes

1) Wiki Icon
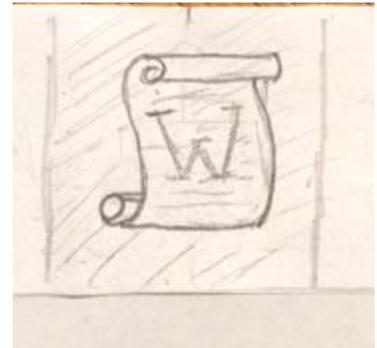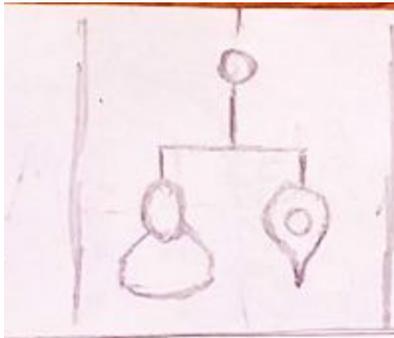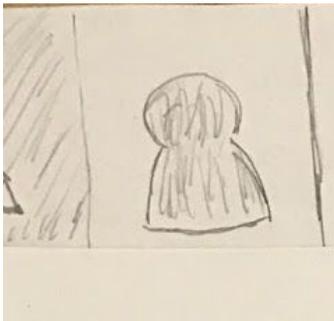
After receiving feedback on the Wiki icon, multiple icons were tested. The above pictures are the min three icons that were tested in order from left to right.

We found that these icons were not intuitive enough for the user and did not lead them to think the tab would lead to the Wiki mode. The third icon on the right was slightly more intuitive due to the familiar 'W' used with Wikipedia.

2) Navigation — Breadcrumbs and Back Button
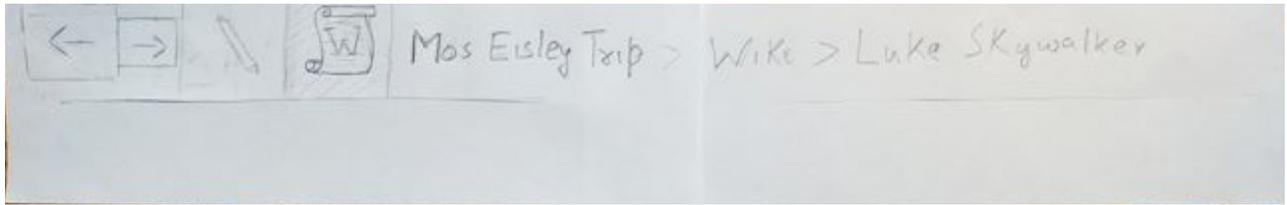
One of our users, suggested they would like to be able to see their navigation history as well as be able to go back to a page they had already visited. This was the reason for adding the back button and breadcrumbs.

After a few tests, it was concluded that this was not a practical change. Upon more research, it was found that breadcrumbs are mainly used in hierarchical navigational structures. This made us revert this change in our digital prototypes.

3) Word Choice — Add Entry
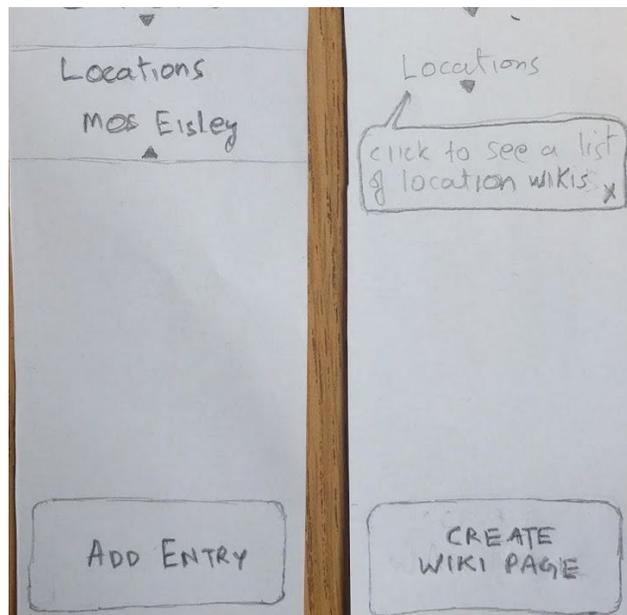
This was a suggestion we constantly saw in all our test results. The wording for this button did not convey what the button would do. We found that all of our users would only know what it would do after they clicked the button out of curiosity.

Final Paper Prototype

Our final paper prototype was nearly identical to our initial paper prototype, save for the modifications we made during our testing process. Specifically, we added back and forward buttons to help users navigate our application better. We also added breadcrumbs next to the title of the story. The wording for adding an entry was revised to "Create Wiki Page" in our final paper prototype. Finally, the wiki icon that we settled on for our final paper prototype was the scroll with a "W". Outside of these changes, our final paper prototype was the same as our initial.

Digital Mockups

Mos Eisley Trip

| 🖉 | ⬡ | 👤 |

🔗 | **B** | *I* | ☰ | 🔢

Search... 🔍

Mos Eisley Trip ⊕
  Character ⊕
    Luke Skywalker
    Obi-Wan Kenobi
  Location ⊕

Wiki

Summary

The "Mos Eisley Trip" is a short story about Luke and Ben's adventure to Mos Eisley spaceport.

Categories

• Characters
• Locations

    + Category

Mos Eisley Trip

| 🖉 | ⬡ | 👤 |

🔗 | **B** | *I* | ☰ | 🔢

Mos Eisley Trip

Chapter 1 📊
Chapter 2 📊

Chapter 1

Luke Skywalker and Ben Kenobi decided to go to the local spaceport, Mos Eisley, to find a. The trip to the port was uneventful. As they arrived, Ben exclaimed "Never before have I seen a more wretched hive of scum and villainy."

So they turned around and went home.

Chapter 2

Back at home, Luke asked Ben what he should do about the cute girl he had met in school previous day, but Ben seemed to not want to talk about it.

    + Chapter

Luke Skywalker

Aliases
• Luke

Background
A whiny brat who thinks he's entitled to everything. Hangs out with Obi-Wan Kenobi.

References

Luke Skywalker and Ben Kenobi decided to go to the local spaceport...

...at home, Luke asked Ben what he should do about the...

Obi-Wan Kenobi

Aliases
• Ben
• Old Ben
• Ben Kenobi
• Obi-Wan

Background
A wise old man who seems to know a thing or two.

References

Luke Skywalker and Ben Kenobi decided to go to the local spaceport...

...they arrived, Ben exclaimed "Never..."

...Luke asked Ben what he should do about...

B *I*

Chapter 1

Luke Skywalker and Ben Kenobi decided to go to the local spaceport, Mos Eisley, to find a. The trip to the port was uneventful. As they arrived, Ben exclaimed "Never before have I seen a more wretched hive of scum and villainy."

So they turned around and went home.

Chapter 2

Back at home, Luke asked Ben what he should do about the cute girl he had met in school previous day, but Ben seemed to not want to talk about it.

Mos Eisley Trip

Chapter 1
Chapter 2

+ Chapter

B *I*

Luke Skywalker

Aliases
• Luke

Background
A whiny brat who thinks he's entitled to everything. Hangs out with Obi-Wan Kenobi.

References

Luke Skywalker and Ben Kenobi decided to go to the local spaceport...

...at home, Luke asked Ben what he should do about the...

Search...

Mos Eisley Trip
Character
Luke Skywalker
Obi-Wan Kenobi
Location

+ Category

Luke Skywalker 🖉

Aliases
• Luke

Background
A whiny brat who thinks he's entitled to everything. Hangs out with Obi-Wan Kenobi.

References

Luke Skywalker and Ben Kenobi decided to go to the local spaceport...

...at home, Luke asked Ben what he should do about the...

Mos Eisley Trip

Mos Eisley Spaceport 🖉

Aliases
• wretched hive of scum and villainy

Description
The place to go for pilots looking for less-than-legal work.

References

...local spaceport, Mos Eisley, to find a pilot.

...a more wretched hive of scum and villainy.

Chapter 1

Luke Skywalker and Ben Kenobi decided to go to the local spaceport, Mos Eisley, to find a. The trip to the port was uneventful. As they arrived, Ben exclaimed "Never before have I seen a more wretched hive of scum and villainy."

So they turned around and went home.

Chapter 2

Back at home, Luke asked Ben what he should do about the cute girl he had met in school previous day, but Ben seemed to not want to talk about it.

Mos Eisley Trip
Chapter 1
Chapter 2

+ Chapter

New Link

Select the desired wiki page from the dropdown, or else select "Create New Page".

Luke 🔍

Select the category for the new page, or else select "Create New Category".

Character 🔍

Create New Category

Character

Location

Create   Cancel

Mos Eisley Trip
Chapter 1
Chapter 2

+ Chapter

Mos Eisley Trip

Mos Eisley Trip
Chapter 1
Chapter 2

+ Chapter

New Link

Select the desired wiki page from the dropdown, or else select "Create New Page".

Luke Skywalker

Set link text.

Luke

Create   Cancel

Mos Eisley Trip

Mos Eisley Trip
Chapter 1
Chapter 2

+ Chapter

New Link

Select the desired wiki page from the dropdown, or else select "Create New Page".

Luke

Create New Page
Characters
    Luke Skywalker
    Obi-wan Kenobi
Locations
    Mos Eisley Spaceport

Create   Cancel

Moving from Paper to Digital — Adobe Experience Design

Most of our major design changes were done in our paper prototype testing phase. For converting the paper prototypes to the digital mockups, we adopted a multiple-level process. This gave us a chance to revisit a lot of our design decisions that were not thought about.

Our user interaction tests revealed that our prototype had a few navigation problems. Our goal with our new design is to make the navigation more clear. Even though we added breadcrumbs to the design earlier, we decided to remove them as the application does not represent a level-based hierarchical structure. We produced our design while thinking of a physical analogue of two side-by-side notebooks — one for the story, and one for other ideas (characters, locations, etc.). Breadcrumbs do not lend themselves well to this design. Ultimately, the breadcrumbs were deemed too confusing for the users, so we removed them.

One of the problems we ran into while translating our paper prototype to a digital mockup was the overwhelming amount of negative space. In particular, the right navigation bar and the top navigation bar left an awkward blank space at the top right portion of our design. To fix this, we rearranged the icons to provide a more natural and intuitive design for the users. This allowed the user to create a direct correlation to the tab buttons with the changing sidebar.

Originally, we chose to use a grayscale color theme for our application, but quickly noticed the importance of color. After a lot of research, we concluded that every application has one, if not a few, defining colors. We also concluded that we must pick colors for the navigation bars in a way that doesn't draw the user's eyes away from the main writing space. This led us to choose more pastel-like colors for the navigation bars which were easy on the eyes, as well as keeping the focus of the workspace to the writing area.

Critiques & Changes

The major critiques that surfaced during the Digital Mockup review were:

1. Profile button looks linked to the tabs
2. Profile icon looks like characters icon
3. Indentation wasn't clear
4. Wanted hover over back button the nav bar would preview as feedback
5. Add plus button on mos eisley on chapter editor nav bar to add new chapter
6. Think about adding sub categories
7. Maybe get rid of button on bottom right for categories and stick with only plus buttons next to text

Discussion

Having access to outside feedback and critique, especially those outside of computer science, was extremely valuable for our team. Within our team, we had inherent biases because we all drew inspiration for our user interface from applications that we were familiar with. Since we are all computer science students, we all used similar applications for design inspiration. These applications would not be as prevalently used by writers or anybody outside of our department. Because of this, we made assumptions for how the interface may have been used, which is not intuitive for those without prior knowledge. Realizing our flaws, we were able to make a better design for users.

The process ultimately led us to making many changes to our design. At the beginning, we had our top navigation bar at the left, but we moved it to the right-side of the screen to make the connection between it and our sidebar more apparent. The icon for our wiki mode went through multiple iterations and is still currently being modified to better convey its usage. The buttons for adding chapters and wiki entries were removed in our digital mockup and were replaced with small plus buttons and placed by their respective areas. We were able to avoid color for a large portion of the process, but spent a lot of time deciding on the color scheme for the digital design.

Originally, our tasks were not specific in what exactly to do, but we worded it in such a way that would steer our users to a particular application flow. Through our usability tests, we noticed this and were more specific in the tasks that a user would need to accomplish and more generic in how a user could accomplish their task. When we moved to a higher fidelity solution, we were able to include tasks that were excluded previously. For example, adding and creating links in our paper prototype didn't make sense because a user could not select text easily. However, in a digital prototype, we could add this without jumping through too many hoops.

Our team likes the design that has resulted from the iteration process. That isn't to say that we would not like more iterations though. We feel that more iterations could help our team get a better understanding of the user base and their desires and habits. More iterations would also allow us to incorporate creative solutions and receive feedback for them. Our wiki icon could be finalized using more iterations. Overall, it would be beneficial for our team to iterate on our design more.

Appendix A — Instructions

We had originally planned to keep our instructions the same for all tests we conducted. However, shortly after the first test we realized that we had actually formed very leading questions, and we were concerned that this would skew our results going forward. We experimented with our instructions with various extra subjects in informal settings as we tried to formulate better directions which were both vague enough as to not give away information, but specific enough that the subjects were not stuck wondering "What do they want from me?" Below are some of the results of this extra testing.

- Identifying Current Screen
  - Can you identify which screen you are on right now?
  - How did you come to that conclusion?
  - What information would you expect to find on this screen (without reading the contents in advance)?
- Switching Modes
  - From "Wiki" Mode
    - Please switch to the "Edit" mode.
    - Please find a "Reference" and navigate to the text with it.
  - From "Edit" Mode
    - Please switch to the "Wiki" mode.
    - Please navigate to the "Luke Skywalker" page.
- Using Edit Mode
  - What chapter are you currently editing?
  - Please switch to Chapter X.
  - Please add a new chapter.
  - What is the differently-colored text in the main edit area for?
  - How did you identify its purpose?
  - Please add text to the story.
  - Please create a new link to an existing page.
  - Please create a new link to a new page.
  - Please remove an existing link.
- Using Wiki Mode
  - What page are you currently editing? How do you know?
  - Please switch to Page X.
  - Please find a list of pages in Category Y.
  - Please open a page in Category Y (where Y is not the current page's category).
  - Please create a new page in the current category.
  - Please create a new page in a different category.
  - Please create a new category.

Appendix B — Usability Test Critical Incidents

Test 1: Aishwarya
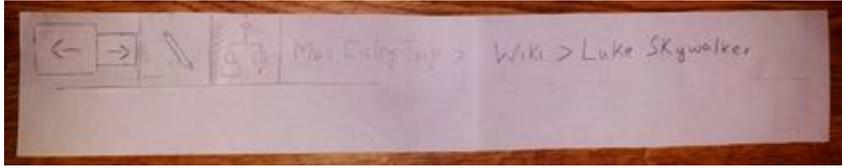
Prototype Image	
Incident Description	Ash was able to switch to the wiki and find a specific location page in it.
Severity (Negative Only)	
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	
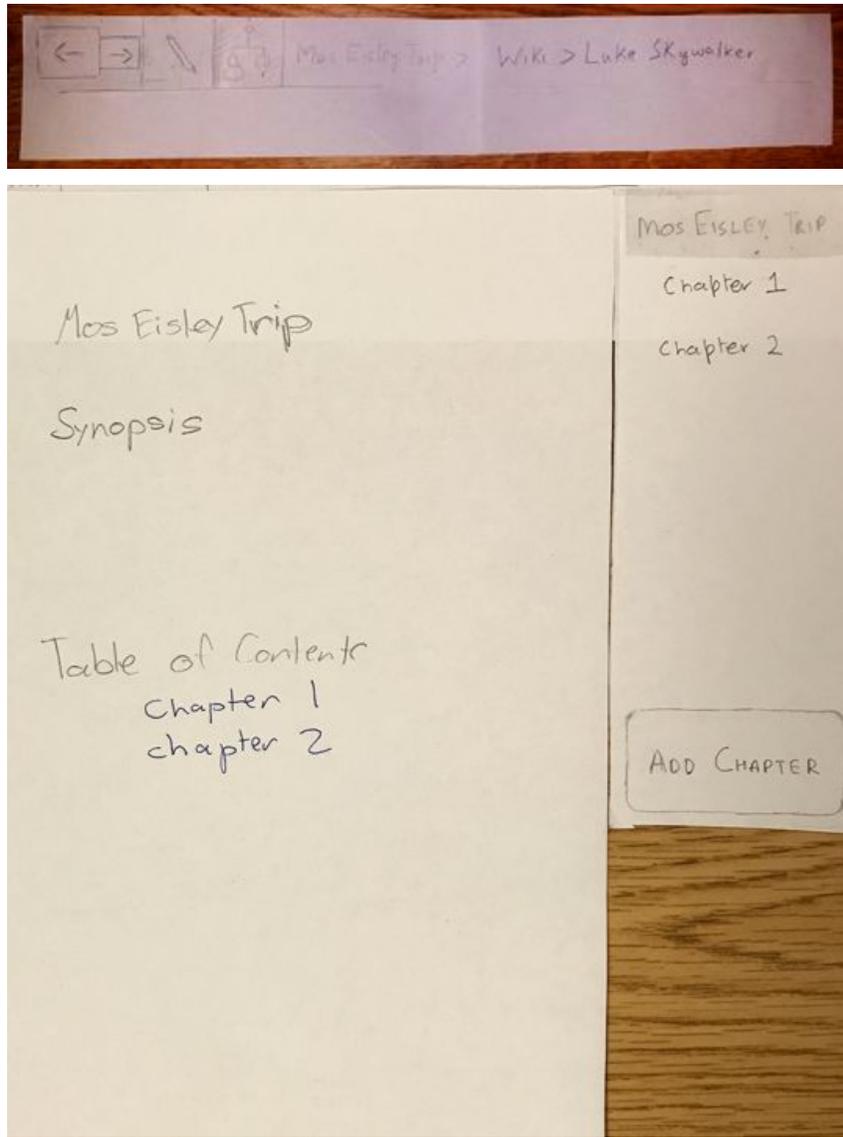
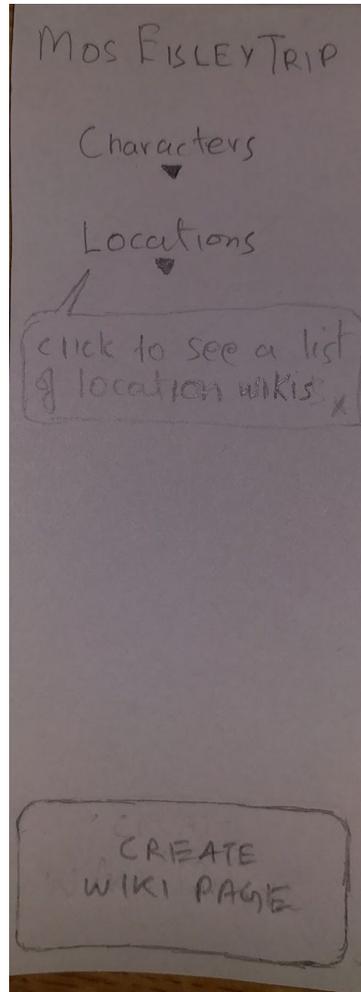|	
Prototype Image	
Incident Description	It took Ash longer than expected to get to the location page. She suggested that we could adapt either a tutorial or a more intuitive interface, possibly with tooltips.
Severity (Negative Only)	2

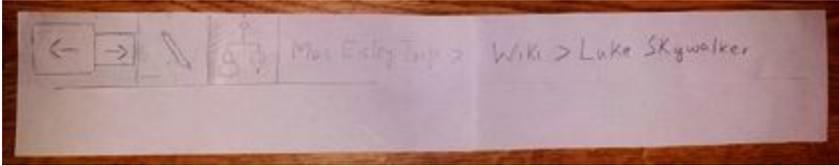| Revised Image (Negative Only)	
Revised Explanation (Negative Only)	This design adds a small bubble that will appear only for the first time. This will help tell the user what the locations list in the sidebar is for.

Prototype Image	
Incident Description	From the wiki, Ash was able to easily add a new character page.
Severity (Negative Only)	
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	

Test 2: Alex

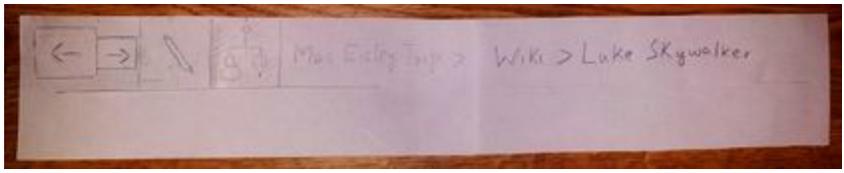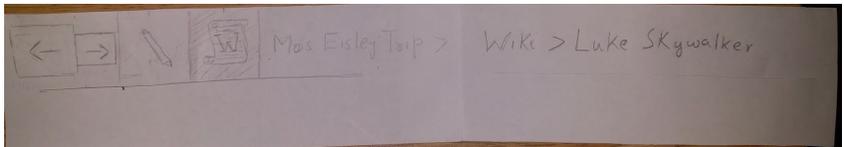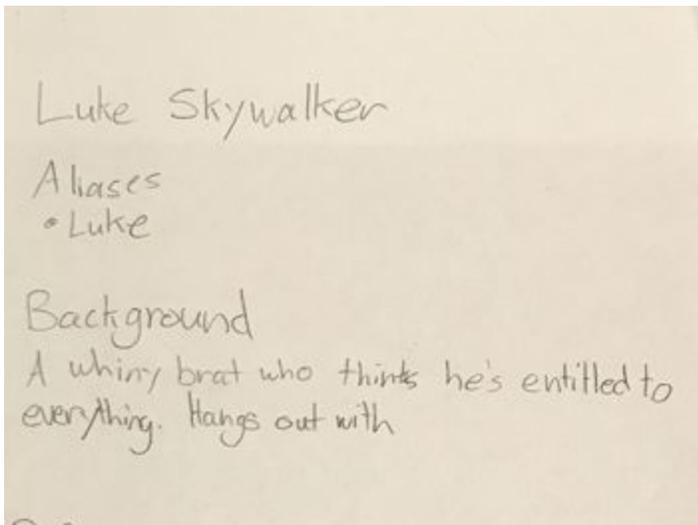| Prototype Image	
Incident Description	Alex was able to access the wiki from the text easily by following the highlighted links.
Severity (Negative Only)	
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	

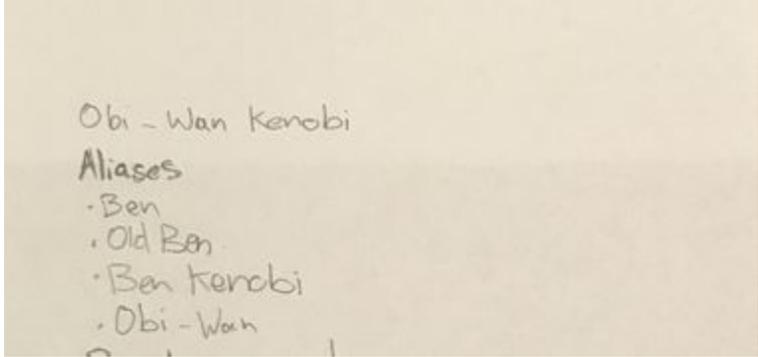| Prototype Image	
Incident Description	From the wiki, it was easy for Alex to find specific characters' pages along the sidebar and from other pages' text.
Severity (Negative Only)	

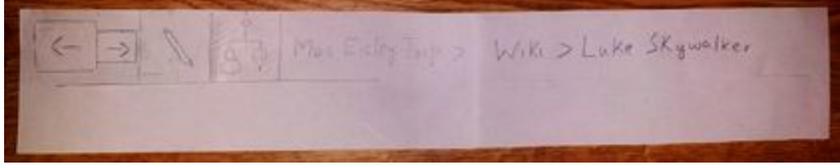|	
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	

Prototype Image	
Incident Description	Alex used the back button and the breadcrumbs to navigate back to the editing section. When asked if she thought that there would be another way, she correctly identified that the pencil would lead to the editing section.
Severity (Negative Only)	
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	

Test 3: Ralph

Prototype Image	
Incident Description	Ralph recognized that one of the buttons would lead to the Wiki. However, he mentioned that the icon was not very intuitive.
Severity (Negative Only)	3
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	The new logo clarifies what the second tab will do, making it easier for the user to recognize the wiki.

Prototype Image	

Incident Description	Having found the wiki, Ralph realized that the wiki pages would likely have aliases. He clicked on Luke's page and found the aliases. He also clicked on other pages to see if they had aliases as well.
Severity (Negative Only)	
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	

Prototype Image	
Incident Description	Ralph mentioned that he liked the breadcrumbs.
Severity (Negative Only)	
Revised Image (Negative Only)	
Revised Explanation (Negative Only)	