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Prototype Modifications Report

The Stories for Sustainability application is designed to be a platform for children in schools throughout Georgia to read and enjoy stories teaching them about the United Nation's Sustainable Development Goals (SDGs). The most important tasks for users are logging into the application, navigating the bookshelf, and viewing a book. The application must closely mimic the experience of a user going to a bookshelf, finding the book he/she wants, and reading it. To achieve this real world model, students must be able to gain access into the application, browse through all of the possible books they can read, and then seamlessly open and read through their selection in order to achieve their goal of reading a book. Ideally, the integration between all three of these tasks will be so seamless that children will not notice they are performing these tasks, and will instead focus on their higher level goals of absorbing a story's message and learning about the United Nation's SDGs.

Task 1: Logging In

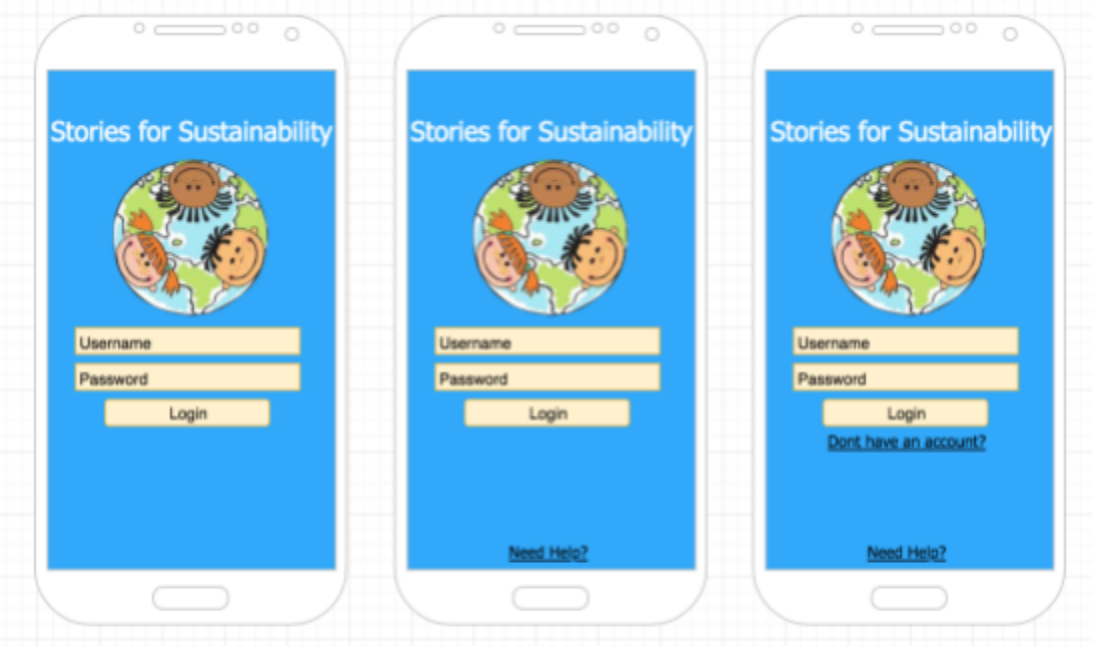
Through the heuristic evaluation process, multiple successes and shortcomings of the app's user interface were uncovered. It was initially assumed that the login feature would be fairly intuitive, but the evaluators considered different paths for implementation in addition to the gaps that the application's login interface initially had. They identified that the application was most lacking in the last Nielsen heuristic regarding help. Users would likely have difficulty

logging in for two main reasons. First, the targeted demographic is children, so requiring them to login with a student email might be difficult. Second, users that are not students might attempt to login and will have difficulty in doing so. The app should be designed so that users can navigate through it effortlessly, and have guidance available when needed. This requires a delicate balance, though, because an abundance of help will stray too far away from the eighth heuristic about a minimalist design. Unfortunately, the exact level of user guidance necessary cannot be identified until a working prototype can be tested on actual potential users. The login issues discussed above that need to be changed are detailed in the below chart, in addition to their urgency and accompanying change.

The help heuristic was the primary shortcoming of the login function. However, the evaluators stated that the prototype was successful in a few key heuristics. Primarily, it was successful in implementing the error prevention heuristic. The chart below details a few more specific scenarios about what would happen if the user entered incorrect information so that the app can handle any edge cases if needed.

Urgency	Feature	Description
Serious	Login Help	The prototype did not provide any information about what type of users can log in nor how users get accounts. Moving forward, the application will assume students will be using their school accounts to login, and this has to be set up in advance. However, if a random user downloads the app, it is difficult to glean this information about using their student account. **Recommendation:** To provide additional guidance to random users, the application will have a 'Need Help?" button underneath the login information, that users can click on if they are having difficulty logging in. Clicking on it will pull up a page that contains documentation about how users log in with their student accounts. Scrolling will be implemented and once the user is

		done reading, they can click a ‘close’ button to return to the login screen.
Serious	Keep Users Signed In	The app must be as simple to use as possible so it would be ideal to have the user login once, and never have to login again unless they choose to log out. This will make it simpler to use for the intended audience - children. Currently, the user has to login for each session that they use the app. **Recommendation**: The app will keep a session and login token locally so that it can be used the next time the app is opened. This would allow the user to open and close the app without having to login again.
Minor	Create Account	Currently, there is no way to create an account from the login page. The user has to already have an existing account with the school in order to login. As a result, schools and academic institutions can create batches of accounts, but individuals can’t. If time permits, a button can be added so that individuals can create an account with an email as well. This would also be useful if students don’t have school emails given to them. **Recommendation**: Add a button for users to create their own account on the login screen. This would bring users to a new page where they would fill out their name and email. The user would then receive a confirmation email that they have to click on to fully activate their account.



From left to right: The login interface previously, the interface with login documentation

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Task 2: Navigating the Bookshelf Display

The next major task for the application, navigating the bookshelf display, was a great success for the app. The evaluating team appreciated the application's close following of the second Nielsen heuristic (match between system and real world), especially given the intended user demographic of young children.[1] Specifically cited was the intuitive scrolling through book covers, allowing a lack of reliance on text within the app's navigation.[2] In order to further justify the application's design choices, similar interfaces designed for children were researched and compared to the strategies utilized. In a journal published by the National Science Foundation, design specialists discussed the development of an interface for a remarkably similar 'digital library' for children.[3] As a specific design principle, the researchers "made the interface very visual, avoiding the use of text as much as possible and therefore reducing the cognitive load" that would be faced by the users.[4] In the future, the Stories for Sustainability application will make sure to follow this principle.

Through self and group evaluation, some issues of varying importance were discovered, alongside some potential improvements to be made during the transition to a digital prototype. These are outlined in detail below, listed in descending order of urgency.

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[1] "10 Heuristics for User Interface Design: Article by Jakob Nielsen," Nielsen Norman Group, accessed March 6, 2019, https://www.nngroup.com/articles/ten-usability-heuristics/.
[2] Engle, Max and et al. Heuristic Evaluation by Team 9103. March 4, 2019.
[3] Druin, Allison, Benjamin B. Bederson, Juan Pablo Hourcade, Lisa Sherman, Glenda Revelle, Michele Platner, and Stacy Weng, "Designing a Digital Library for Young Children: An Intergenerational Partnership," The Craft of Information Visualization (2003): 178-85, doi:10.1016/b978-155860915-0/50023-8.
[4] Druin, Allison, Benjamin B. Bederson, Juan Pablo Hourcade, Lisa Sherman, Glenda Revelle, Michele Platner, and Stacy Weng, "Designing a Digital Library for Young Children: An Intergenerational Partnership," The Craft of Information Visualization (2003): 178-85, doi:10.1016/b978-155860915-0/50023-8.

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Urgency	Feature	Description
Critical	Logout Button	During prototype development, the necessity of a logout button was overlooked. The prototype must account for the possibility of a student borrowing a peer's phone to log into his/her account. Another essential use case relates to shared family devices; parents and children may share a tablet computer for entertainment, and multiple users may want to use their individual accounts. Perhaps the most important of the considerations was introduced by the evaluators, Team 9103; the team mentioned that this functionality should exist in any app with authentication for 'security purposes.'[5] Furthermore, not allowing a way to log out violates the third Nielsen characteristic (user control and freedom).[6] **Recommendation:** We will add a clearly-visible 'Logout' button to the bookshelf page (given the page's status as a landing page). Users will easily be able to log out to allow guest users to log into their separate accounts.
Serious	Tutorial	The app is designed with younger users in mind, and as such, we want all user interactions to be as intuitive as possible. It is likely, however, that children will still need guidance to get started with the app. Team 9103 made an excellent suggestion to create a 'Tutorial' page on the landing (bookshelf) page of the app upon first login.[2] A simple tutorial would allow for new users to quickly learn how to use the app's primary functions. **Recommendation:** We will create a simple yet informative tutorial page which will present itself when a user first logs in to the app. Keeping user demographics in mind, the app will primarily use visuals to convey instructions and keep text to a minimum.
Minor	Sorting / Filtering Books	The initial paper prototype for the bookshelf page featured a simple bookshelf display without any specific ordering. While this would not necessarily be an issue for bookshelves with limited books, as a user accumulates a large amount of stories, sorting would allow for quicker story selections. As stated by Team 9103 during the heuristic evaluation, the functionality

[5] Ibid.
[6] Ibid.

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		would "speed up the process for those familiar with the app," and at the same time, "not interfere with a novice user."[7] This balance of functionality for both novice and experienced users is key to the app's interface design, given the large age gap in the app's user demographics. **Recommendation:** Upon completion of all **Critical** and **Serious** tasks, a simple way for users to sort and filter books on their bookshelf will be implemented. Initially, options should be available for users to sort by name or date added, but future sorting can be implemented to allow users to sort by story categories or tags.
Minor	Favorites / Read Later	During the conversation regarding sorting of stories (discussed previously), Team 9103 also suggested a simple 'favorites' feature to allow users to mark stories they either enjoyed or want to read later.[6] Stories with 'favorite' tags would be more visible on the main bookshelf, allowing for quicker access. Although similar, this is a distinct feature from sorting; while sorting allows users to more easily organize their stories, favorites allow for users to tag individual stories, essentially modifying their presentation with the app. **Recommendation:** Upon completion of all **Critical** and **Serious** tasks, a simple way for a user to tag a story as a 'favorite' and access it more easily in the future will be implemented. For the near future, this should involve a simple 'star' or 'heart' icon on a story's cover within the bookshelf when the story has been marked as a favorite. We could later implement a separate bookshelf entirely for favorites.

Task 3: Reading A Story

During the prototype evaluation, Team 9103 mostly critiqued the login screen and had only a couple remarks on the single Book View. Based on prior research into designing for children and the Nielson article, the application's interface strived for a minimalist design to

[7] Ibid.

prevent users from becoming lost or confused. As a library app is not complex in theory, there should not be any need to unnecessarily complicate it. Simple tasks the user wants to complete should not require explanation.[8] Team 9103 described the application's interface as "well-thought out" and reliant on images with minimal use of text, a decision especially pertinent since the app is for children.[9] This minimalist philosophy is why the team had such an easy time navigating the app's interface. One thing they did note, however, was to incorporate some sort of bookmarking feature into the reading experience. This would be very useful if a student found a passage interesting and wanted to mark it for later. Overall, after incorporating this useful feedback, the application will be able to produce an easy to navigate and useful app for its users.

Urgency	Feature	Description
Serious	Bookmark	Team 9103 pointed out during their evaluation that the application did not incorporate a bookmark option within the stories.[7] While the design assumed the book would open to the last place the user was read, adding a bookmarking feature would allow a user to save a favorite section as well. Adding this feature would support Nielson's point of matching the system to the real world since users can bookmark favorite sections in real life.[10] **Recommendation:** A small bookmark icon will be added that will open a drop-down menu letting the user decide between 1) Bookmarking the Current Page and 2) View All Bookmarks.

[8] Norman, *The Design of Everyday Things*, 3.
[9] Ibid.
[10] Ibid.

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