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Discovering Galapagos: A Children’s Website

BY

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Fine Arts in Visual Communication Design

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Abstract

Information technology is changing people’s lives. It changes the way people communicate with others, how people search for information, and how people study and learn new knowledge. According to several studies and reports, more and more parents are using computers and mobile devices to teach their children. However, with the exception of games, there are only a few fun educational websites are created for children.

As a designer and young mother who wants to find good educational resources for children, I think this would be a good opportunity for me to design a website for our tiny thinkers. Because children are easily attracted to animals and nature, I wanted to choose a subject that is relevant to these subjects. After visiting Dr. Robert Rothman, who has been dedicated to studying the Galapagos for many years, I was impressed by how interesting this subject is and decided to choose it as the topic of my thesis. Finally, I defined my thesis as “Discovering Galapagos,” an interactive web design project that is aimed at presenting the Galapagos Islands to children or young people in interactive and engaging way.

Designing for children was a special process, as I had to find a solution to the problem of how to address children’s attention. In order to help children read the material, the text content on the website was separated into small pieces that include the environment, animals, and support. Illustrations, charts, interactions, short text content, and photos were used throughout the website in order to help to draw the attention of these little users, and improve their understanding.
Introduction

When choosing the subject for my thesis, I struggled with whether to create a website just for children or for young adults as well. I even thought about creating a website for both age groups, because I didn’t think designing for children was interesting and could not see any big difference in user experience between those two audiences. But later, my thoughts were totally changed when I started to look at some children’s storytelling apps for my own child.

In the beginning, I thought that using vibrant colors and cartoon-style fonts would be too overpowering and cluttered to use. But when I found how excited my daughter was to use it, I started to ask myself the question: why are these things so appealing to the children? So I tried to kick my adult bias and understand the children’s app in a different way, and I was surprised at what I discovered. The colors, fonts, and “clumsy” buttons all seem to be designed that way on purpose. They may not look pretty and smart to adult eyes, but they can effectively attract children to look at it and touch it. Further, when I found out that the apps have functionalities that help improve the reading and speaking skills of my child, I started to think about how to design for children, and what makes a children’s website or app successful.

As I started the project, I found that designing for children was not as easy as I expected. From the user experience perspective, I found that I was facing a big question: what are children’s behaviors when browsing a website? What elements can draw their attention? How do they read text content on the browsers? How do children use the navigation menu to find the information they are interested in? Because it is so hard to think like a child, understanding the behavior of these little users was the first challenge in this project. Other than solving the user experience questions, the second challenge I was confronted with was to make the visuals attractive to children. Though we know that children’s worlds are full of color and cartoons, our
understanding of the way children think is still limited. Is the rule of using color still effective when used on a website? The third challenge for me is how to write for children. As a student with limited knowledge about writing content for children, I have to find a way to communicate the content and make it readable and understandable for readers. Last but not the least, developing a fully functional website is not always easy and may bring up some unexpected issues. Designing a website to come to life is a key goal in my thesis.

In order to solve all the questions gradually, I divided my design process into four steps. In each step, I concentrated on solving one question.

**Review of Literature**

Children books, scientific websites, children’s websites, and a few other resources were included in the literature review.

1. *Island: A Story of the Galapagos*¹

*Island: A Story of the Galapagos* is a winner of the 2013 Gryphon Award. It is not only a scientific book for children with considerable reading ability, but also a book for children who may not read, but be attracted by the beautiful illustrations. This book masterfully integrates geology, history, biology, and ecology, giving an eye-opening introduction to the Galapagos Islands where many people may not have the chance to visit. What I liked most are the illustrations that help young readers understand the content. They are beautiful and can arouse children’s desire to read.

2. Websites

In addition to books, I also wanted to review some existing children’s websites that are relevant to introducing the Galapagos. But after doing some research online, I found that there were not too many children’s websites focusing on this topic. As a result, in order to review more websites to get more insights, I found some scientific websites that are designed for adults.

2.1. Galapagos@RIT

Dr. Robert Rothman at the Thomas H. Gosnell School of Life Sciences is a professional in this subject. He has been to the Galapagos many times since 1989. After talking with Dr. Rothman, he introduced his own website, Galapagos@RIT, to me and let me use his website as a reference. Leading a summer program at RIT, Dr. Rothman has many opportunities to travel to the Galapagos to learn about the islands and its creatures. His website is a knowledge and photo library that fully covers almost every topic relevant to the Galapagos, such as the formation, climates, animals, plants, and conservation.

But Galapagos@RIT is too professional and is only suited for educated people who are aiming to learn about the Galapagos from the biology or scientific aspects. Unlike educated adults, young children have a limited reading ability. In order to provide readable content to children, I need to reselect the topics that children may be interested in and rewrite the content with simple and concise language.

2.2. Galapagos Conservancy


http://www.galapagos.org/.
When searching “Galapagos” on Google, Galapagos Conservancy usually returns as one of the top two results on the first page. Formerly known as the Charles Darwin Foundation, the Galapagos Conservancy is the most famous and important non-profit organization that is devoting their efforts to researching, protecting, and restoring the islands. Unlike most scientific websites, this website is more about introducing the projects run by the organization, but is not focused on introducing biology knowledge to the users. But it is still a good destination for users who want to browse beautiful images of the Galapagos.

2.3. National Geographic Kids

Other than adult websites, as a well-designed children’s website, National Geographic Kids, was covered in my review. Their text content is short, concise, and easy to read. It is a good resource for parents to use as an educational tool for their children. But for the Galapagos, the National Geographic only provides one page to introduce the giant tortoises, a famous endangered animal living on those islands. Though the content is limited, I still can see how well they separate the content into small pieces and write with simple language. Other than the language composition, National Geographic also does well in visual design, which I will analyze from the user experience angle.

2.4. Animated Video: Galapagos Song

Introduced by Dr. Rothman, “Galapagos Song” is an animation song. The animation presents many types of scenery on the Galapagos Islands, which allows users to learn what the natural

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4 http://kids.nationalgeographic.com/.

5 https://www.youtube.com/watch?v=4Q0D9cfKE5s.
environment looks like, where the animals live, and what the plants look like. Its visual style also can be referred to in my thesis.

**Process**

**Process One: User Study**

When creating a great experience for website users, we always need to take the users’ perspectives into consideration. Before starting the project, I kept telling myself: the target audience is a special group of people. They are young, have limited reading ability, have a strong interest in electronic devices, and like playing games. But other than those typical impressions, I know very little about the behavior of how children browse the websites. In order to learn better about children and provide a better design solution for them, I started to read UX reports and articles relevant to designing for children.

Written by Heather Nam, “Designing User Experiences for Children” is a good report that is based on many real usability tests and studies. Based on the testing executed by the Mediabarn User Experience Lab, they shared several big findings in the report. The key finding is that children prefer to use a mouse rather than trackpad and keyboard. They prefer using the mouse for pointing and clicking on the screens. They also observed that children have no patience to scroll through long pages. Because their hands are too small to control the mouse well, many children will have trouble using the drag and drop function. But other than these observations, I was surprised to know that children wouldn’t play on the computer by themselves. Normally, parents or old brothers or sisters will instruct them how on to browse the website and solve the

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technical questions they may run into. Last but not the least, Heather found that children may stop exploring or interacting with the computer because of being accidentally removed from the experience. Keeping them on one screen and providing better navigation are important. Based on these findings, the project should be following several rules: First, it is unnecessary to add keyboard function to the website. Second, instead of presenting all the content on a few web pages, it’s better to split them into many small pieces and keep each page short to avoid scrolling. Third, avoid using drag and drop functions in the websites. Fourth, though we need to consider content that is easy to understand, we don’t need to worry too much about this since they have instructors. Fifth, creating simple navigation and avoiding jumping between different pages are key to the website.

Other than the findings from Heather, I also got some insights from other articles, including “The Finer Details of UX for Kids”7 by Justin Smith and “Design Considerations for Little Fingers”8 by Andrew Smyk. Both of them are user experience designers working in the creative industry. Their articles are based on real experiences and observation. They make the observation that color is a key element for children’s websites. For some young children, because their eyes are not fully developed, they may only be attracted by vibrant colors. Other than drawing attention from young eyes, the color will help highlight certain UI elements. The stark contrast helps younger children see differences that they might ignore with more subtle color differences.


As well as reading articles, I chose two famous kids websites to do the analysis. PBS Kids⁹ and National Geographic Kids (NG Kids) are two main kids website with high rating and reputation. Other than attracted by bright color, users may notice more things:

1. **Characters**

Characters are great for recognition by kids. Kids tend to remember a character’s face over the name of a product or website. Based on this guideline, creating some cute characters for my thesis website is necessary.

2. **Icons**

When paired with text, icons can provide much faster recognition than just icons or text alone. In PBS Kids and NG Kids’ websites, arrows and magnify glasses are used throughout the sites.

3. **Be Bold**

The articles suggest that designers shouldn’t be afraid that using bold UI elements would annoy kids. In adults’ eyes, some bold and big elements may seem to be too crowded and loud. But children have the opposite view. Using bold elements in the design is one of the most direct and quick ways to draw attention from children.

4. **Animation**

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⁹ http://pbskids.org/.
Animation is another finer detail that can improve the user experience, and using animation can help children understand complex theories or concepts. Other than improving understanding, animation is also another way of drawing attention from users.

5. Other Finer Details

Other finer details include using sound and friendly shapes such as a round corner shape in visuals.

Process Two: Defining Content and Creating Structure

Defining content is a key process, and the goal is to find the content that children expect to read. Since the website is aimed at teaching children about the Galapagos, some key information should be covered in the site, such as location, the weather, plants, animals, formation, history, etc. To find this information, I read through Galapagos@rit.edu by Dr. Rothman, and Galapagos: A Natural Story by Michael H. Jackson. During the reading process, I rewrote the content randomly as notes. When finishing whole document, the content is long, unorganized and lacking in logic. To make the notes readable for children, I had to nest relevant content into groups and create a structure for the site. After that, five groups are defined, which includes Home, Environment, Animals, Support, and About. In each group, a general intro page will lead users progressively, going deeper into different small topics. After defining the basic structure, there was still one more step, which was simplifying and relabeling everything. Children are a special audience with a limited reading ability. Keeping content simple and easy to understand can help improve the user experience. Once all of the text content was optimized, I translated the website structure into a site map ((Figure 1):

Process Three: Writing and Editing Content

Writing for children has its own rules and is different than writing for adults. Choosing a universally interesting topic that can be reduced to a small number of words and maximum amount of pictures is the key. Another difficulty I met was simplifying the content and story without changing the whole story. For complicated concepts such as demonstrating how sea currents affect the climate of Galapagos, using pure text context wouldn’t be a good idea. Instead of only using pure text, adding graphics or animations makes the theory easier to understand.

Other than finding a better solution to communicate the content to children, finding help from an experienced editor can also bring great improvement and enhancement to the project. To finalize the text content, I sent the copy to all committee members and to an editor. All the feedback that I received from them helped make the final copy accurate, simple, and easy for children to understand.
Process Four: Creating Graphics and Design the User Interface

Children’s taste in visuals is different than that of adults. A clean and detail-rich website with few colors may attract many adult users. In contrast, children have a hard time noticing those subtle details, and they prefer graphics with bold colors, cartoon characters, and animated elements. Keeping these key ideas in mind, I started my design from the homepage.

When reading the books, I found there was a mysterious story about pirates. As a topic that children may be interested in, I incorporated this mysterious element into my visuals. The first version of the homepage was simple with just a few elements. But after it was reviewed by all of the committee members, I learned that there were many things that could be improved. From the biology perspective, the ocean theme on the home page cannot truly reflect the environment in the Galapagos. Other than the non-volcanic theme, the captions also got some comments. To the users, the subtitle is unnecessary information that children wouldn’t be interested in. In order to eliminate the unnecessary information, I removed the subtitle from the homepage (Figure 2).

Other than those two improvements, a toolkit that helps users understand more about this website and navigation were also added. After making these improvements, the new homepage looks more exciting and more like to the volcanic environment in the real world (Figure 3).
Other than the homepage, many changes were undertaken in the sub pages. Take the Environment page (Figure 4) as an example. In the beginning, the Environment page was designed to be a page with content that could be controlled by mouse scrolling. The content was split into five paragraphs. In each paragraph, there was an image to lead the content and indicate the topic of the paragraph. The design seemed good because of the visuals aspect. Though it was not perfect, the
style looked consistent with the homepage. But there were still many issues. The first comment from the committee was that the experience was not engaging and lacked deep content. At the same time, I realized the second issue was that the long scrolling content broke several rules, including boring reading and using drag and drop functions. In order to improve the experience, I talked with the committee again and found out the solutions. In connection with lacking of engagement, changing the way the content was presented would help. As a result, I introduced parallax scrolling into this page.

The biggest benefit of parallax scrolling was that I could simulate the environment of the Galapagos because of the unlimited space. With the new design (Figure 5), children can use their mouse to scroll the site parallax and find more content in the hidden part. By clicking the round children, can learn the subject by reading through the big white bubble. The language on the bubbles is short and easy to understand at a glance. Other improvements included shortening the text content, removing the scrolling function, creating more visual elements, and adding more depth to the page to make the whole page more engaging.
Color is also a big consideration in this process. A good example of how I improved the user experience by tweaking colors was the way I revised the Wildlife page (Figure 6). In the old version, there were already many layers in the visuals. But after reviewing it by myself, I thought that it was very hard to recognize the depth because the similarity of the colors. An additional issue caused by similar color was a lack of visual contrast. The important elements such as the call to action buttons are not standing out. The third concern for this design was the limited number of colors. All of these issues may not only cause children to lose attention, but also affect the user experience.
Adding and changing colors was the solution to this problem. First, I changed the background color from green to gradient blue. As a result, the visual looked not only more realistic, but also had more depth. In order to keep consistency with the homepage, I also changed the graphics from the generic scenery to volcanic Galapagos’ scenery. As a result of the changes in the graphics, I gained more chances to add color variations. Due to the color revision, the second version of the Wildlife page (Figure 7) looked more appealing and clean. The navigation and interaction were also improved, thanks to the more popped-up call to action buttons.
Last but not least, typography was an important change throughout the whole website design. In the original version (Figure 8.1 and Figure 8.2), there were lines in both the top and bottom sides of text content that visually helped separated the graphic elements from the text. But after several rounds of reviews, I realized that the lines were not a good way to create a visual separation and that it made the visuals even more crowded. In addition to the lines, the layout of the type was lacking consistency. The text alignment and the width changed in many pages. Inconsistent layout could be not only an issue for a children’s website, but also for other websites.
In order to improve the typography, I removed the thin lines and improved the consistency from many aspects, including the fixed width, same font size, font style, spacing, and inline height. Finally, the consistency in typography made the reading more fluent and easy (Figure 9.1 and Figure 9.2).

Characters that can help build up a connection with children is an important element in children’s websites. In the old About page (Figure 10), I put my personal photos on the airship to indicate the designer of the site. However, the photo was not a necessary graphic elements and lacked relevancy with the subject, so I redesigned the graphics.
A child holding a telescope was added to the airship, looking like he was discovering the unknown world (Figure 11). Though this was a small change, it improved the graphics a lot. Sometimes when designing a website for target audiences, creating the items the audience will like is more important than fulfilling personal interest.

![Image of a child with a telescope on an airship]

Figure 11: After

**Process Five: Website Development**

As an interaction and visual designer, designing wireframe and visuals are not enough based on industry requirements. Some programming skills are also necessary. Before starting development, I had to choose a programming language that matched my requirement. Since HTML and jQuery would not allow me to integrate multiple animations in the shortest time, I chose Adobe Flash and ActionScript.

Though Flash was losing its occupancy and popularity in websites design, it could still be a good tool for me to bring my project to life. In addition, the timeline in Flash is still the best tool for
designers to create animation on the websites. To save time and remove my limitations on programming, I started with Flash.

Several things were taken into consideration during the development process. My first consideration was keeping the size of the website small. Since the graphics were not designed in Flash, graphics exported from Photoshop and Illustrator should be in the optimized size. The second consideration was keeping the balance between creating animation in the timeline and creating animation by code. Creating animations by code was also a good way to shrink the size of the website. In addition, detecting the bugs was also important during the development process. Sometimes when bugs popped up, the development would become delayed. Reading proper tutorials may help find the solutions for the bugs. The final issue I met during the development was the difficulty of keeping the consistency of styling. Unlike developing websites with HTML and CSS3, there was no universal style sheet to format the website in Flash. But spending more time on styling still could solve these problems.

**Process Six: Website Review, Testing, and Improvement**

During the development, I also reviewed the website frequently with committees. The feedback gained from them was important and meaningful for improving the experience of my website. Some important changes were implemented based on the feedback received from committees.

**1. Adding local navigation to the subpages**

On the parallax scroll page, locating a hidden target by using the mouse was really hard because of the width of the page. When reviewing the website, Professor Marla Schwepppe had a problem with finding the Environment and Wildlife pages. In order to add visual indications and help users quickly locate the target content, I added a local navigation into these pages. To provide the
best experience, a hover effect with text indicators was incorporated into the navigation bar (Figure 12). Considering a lacking of feedback from scrolling, two arrows were also added to these pages (Figure 13). With these two improvements, the navigation issue was solved.

2. Adding Copyright Information to Avoiding Issues and Show Respect to the Owner

Copyrighting is a common issue in the Internet world. As designers that may use a lot of photos in daily work, we have to be sensitive when dealing with these photos. A comment from the committee reminded me that there was no copyright information in my website. For the text content that referred from books and websites, I added an information toolkit to mark the reference sources. Photos are different information media than text content in that they communicate information in a more direct way. Because of this difference, I chose a different visual treatment for the photos’ copyright information. As the most common visual treatment for photo copyright information, watermarks were used throughout the website.

3. Add and Improve the Animations to Make the Website Engaging

One of the testing feedbacks that I got from the committee was that some of the pages, such as homepage and subpages under the Environment, were not exciting enough. I then went back to
the design rules that I summarized from the UX articles to find some solutions. On the homepage, the most important design goal should be drawing attention from the little users and introducing the website to them. So the solutions are adding an animation and an introduction bubble to the homepage. After making these improvements, the experience on the home was different than before. After launching the homepage for two seconds, a big info bubble would pop up to tell the users what was the website about. A looping animation, a flying frigatebird that flies across the page was also added. With more useful information and detailed animation, the page looked more interesting. Other than adding new animation, polishing the animations was also helpful for improving the experience. After finishing the first version of the website, I tested the website with some friends. One of the comments they had was that the transition animation among pages was not smooth. Because of this small detail, they thought the website had bugs and something was broken. Based on this comment, the transition was revised.

4. Add Breadcrumbs to Enhance the Navigation

Breadcrumbs were a big enhancement to the website, especially for the young users who lose their way easily when jumping between the pages (Figure 14). Though breadcrumbs sometimes may not look “pretty” on some websites, they are still the most efficient approach that can directly improve the navigation quickly.
5. Other improvements

Other than suggestions from the committees, I also gained feedback from children and a professional editor. The feedback gained from children included a lack of sounds or music in the website, bad navigation for marine wildlife, and some broken interactions. Meanwhile, the editor helped me finalized the text content and made the language more fluent. Thanks to their help, the website was finally launched.

Summary

This study was conducted for the purpose of exploring the process and approach to designing websites for children. The biology books, websites, and knowledge learned from Dr. Rothman were used as the reference for writing the web content. The usability test report, UX study, and articles were used for summarizing the design guideline. The Illustrator, Photoshop, Flash, and audio editing software served as the tools for designing and developing. User tests were taken.
with the committees and children, and their feedback and suggestions provided the approach for improving the website.

Navigation was a focus subject that was discussed a lot during the whole design process. Based on the UX report, children got lost easily when jumping among different web pages. The design goal of navigation design was to help users find their way on the website, make clear where they are at, and quickly locate the content they may interested in. Based on the feedback and discussions with committees, global navigation was not enough to serve a website that included multiple layers of content. Other than navigation, I met the issue of how to make the site engaging and fun.

**Conclusion**

Designing “Discovering Galapagos” was a process of learning the behavior of how children browse the website. The UX reports and articles gave the best answers, which was later used as the design guideline. Based on this guideline, some design solutions were implemented on the site:

1. Since children are not comfortable with reading long content, in the final production site, the long content was all separated into small pieces that didn’t require long scrolling reading.

2. Because children get lost easily when using a multi-layered website, the navigation became a big concern throughout the design process. In the final production, global navigation, local navigation, and breadcrumbs composed the navigation.
3. Providing a good experience for children means making the website playful. Colorful and cute illustrations were used throughout the site. Other than graphics, animations and animal characters were used to attract our little users.

4. Children have limited reading skills. Though parents may help them understand the content, providing fluent and simple text content was still a big challenge in this project. The solution was to invite a biology professor to find a way to help learn, understand, and concisely translate the content into children’s language. An editor was also helpful when finalizing the text content.

5. The development process was difficult, not only because of the difficulty of writing the code, but also because of the debugging. Getting feedback from other users and testing the site with users were helpful approaches for enhancing the site during the development process.
When looking back on this design experience, I am proud to have solved all the questions at the end of the project. Except for the accomplishment gained from solving the design question, I was surprised to find that there will be no end of polishing my work. There is always a possibility of continually improving the work that has been done. As designers, we should always keep our eyes on the details, and never lose the faith of reaching for the best.
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