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Writing, Illustrating and Designing a Printed and an Interactive Book for Children

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Rochester Institute of Technology

A Thesis Submitted to the Faculty of
The College of Imaging Arts and Sciences
in candidacy for the degree of
Master of Fine Arts

Writing, Illustrating and Designing a Printed and an Interactive Book for Children

by Sara Ponce-Rivera

May 15, 2006

APPROVALS

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_____ Signature of Associate Adviser	_____ Date
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Chairperson: Patti Lachance, Associate Professor, School of Design

_____ Signature of Chairperson	_____ Date
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Sara Ponce-Rivera

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ABSTRACT

The thesis, *Writing, Illustrating and Designing a Printed and an Interactive Book for Children*, as the title states, consists of creating a book for children and then developing it as an interactive educational application. The book as well as the interactive book, target children between the ages of seven to ten years old.

The title of the book is, *The Island of My Childhood Dreams*. The content is about my reflection of growing up in Puerto Rico, and its illustrations are used in the interactive book as the framework to further explore the cultural aspects of the island.

The interactive book includes audio narratives for each book section, two dimensional animations, rollovers, on-click commands, panoramic views, and photographic as well as written information. I used Adobe *Flash* to develop the interactive book, packaged as a CD-ROM for Mac and PC platforms.

PROPOSAL

The thesis will explore methods in which interactivity can be integrated to create an educational, dynamic, and fun learning tool for children.

I will design a book which will be converted into an interactive book that leads the user to explore the topics presented more in depth to help facilitate the learning process.

The two dimensional book is my reflection of growing up in Puerto Rico, and some aspects of the culture that stand out for me. Based on the story, the content of the interactive book will further explore different topics of the culture. I believe that in order for people to live in harmony, there needs to be an understanding and respect of different cultures. People need to not only seek to understand the cultures of others, but individuals need to understand their own culture more thoroughly. It is with this in mind that I was inspired to write a personal expression of my experience of growing up in Puerto Rico.

I will use Adobe Flash to develop the interactive application, and package it as a CD-ROM. I will also use various multimedia design software packages to develop artwork, and to incorporate the information to be explored throughout the project. The project targets children between the ages of seven to ten years old.

THE PRINTED BOOK

WRITING THE MANUSCRIPT

The manuscript of a book is the most important feature since it will drive all of the other elements within it. I took this task to heart and set out to find a topic that would translate into an educational experience for children. I searched in my mind for a topic to write about, and after considering many options, such as an alphabet book, a number book, or a counting book, I decided to write about a topic that was close to my heart. I decided to write a children's book about Puerto Rico where I could share my most fond memories about the culture.

The manuscript of my book is my reflection of growing up in Puerto Rico. It speaks about different cultural aspects in a narrative, whimsical manner. The manuscript is targeted to children between the ages of seven to ten years old. I edited the manuscript several times while keeping the essence of the original version. I made changes to some of the vocabulary words to make sure they were age appropriate, for instance, I changed the usage of the word aristocrats and I also replaced the word rambunctious. The following is the final edition of the manuscript. The way in which it is divided is the way in which the illustrations were developed.

THE FINAL MANUSCRIPT

The Island of My Childhood Dreams

by Sara Ponce-Rivera

I grew up on an enchanted island.

A magical place of sandy beaches and coconut trees.

Where the sun dries your mist and the rain caresses the trees.
Where the flamboyán tree adorns our valleys, our mountains,
and our city streets.

I grew up bathed by the sun, eating mangos, and throwing rocks
at the coconut trees.

The island of my childhood dreams is an island of many people
indeed. We come from the African, the Spaniard, and the
Taíno people.

On the island you will find a blend between the people. We are
of many shades.

The folklore music of my enchanted island has African, Spaniard,
and Taíno roots. With this music we can dance to different tunes.

With the classical Danza we dance with our partner hand-in-hand.
But...with the playful Bomba, and Plena, we can dance with the
whole town at once.

On the island of my childhood dreams are many delicious foods
to eat. The favorites are rice and beans, and sweet, ripe,
fried plantains...

Fish pulled fresh from our deep blue seas, fruits picked fresh from our
backyard trees.

The sweet song of our tiny frog, El Coquí, on our island can be heard.
Everywhere we hear... Coquí! Coquí! Coquí

In my childhood dreams I dreamt of Columbus and his discovery.
I dreamt of Fort El Morro and its battles by the edge of the sea.

I dreamt of sailboats and seashells as I ran from the waves at my feet.

I grew up on an enchanted island of Poets and Singers, of Painters
and Thinkers!

Puerto Rico is The Island of My Childhood Dreams...
The Pearl of the Caribbean Sea!

THE STORYBOARDS

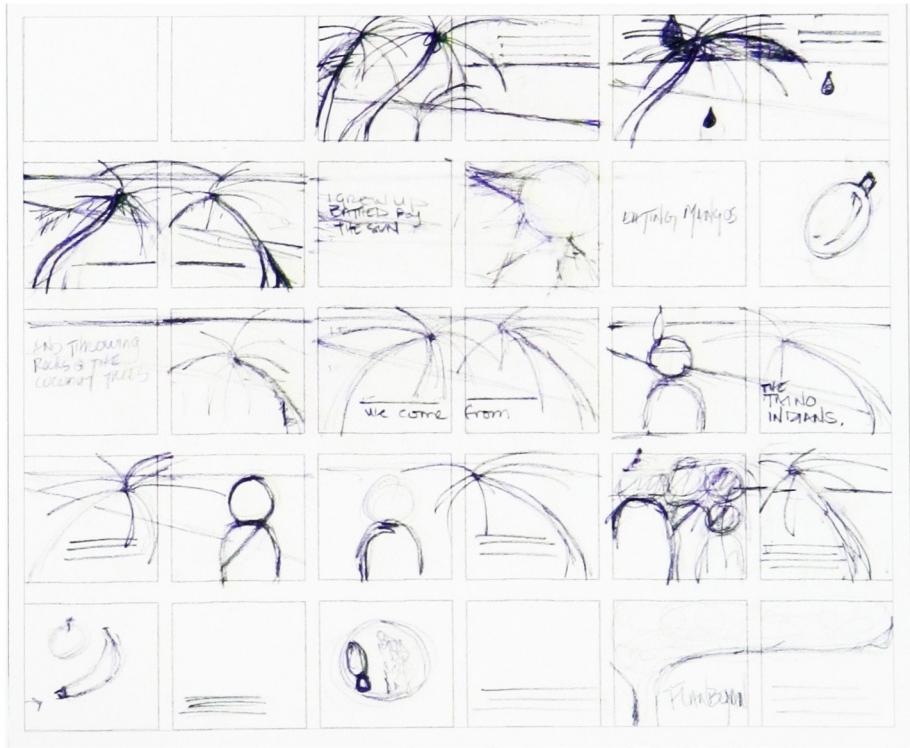
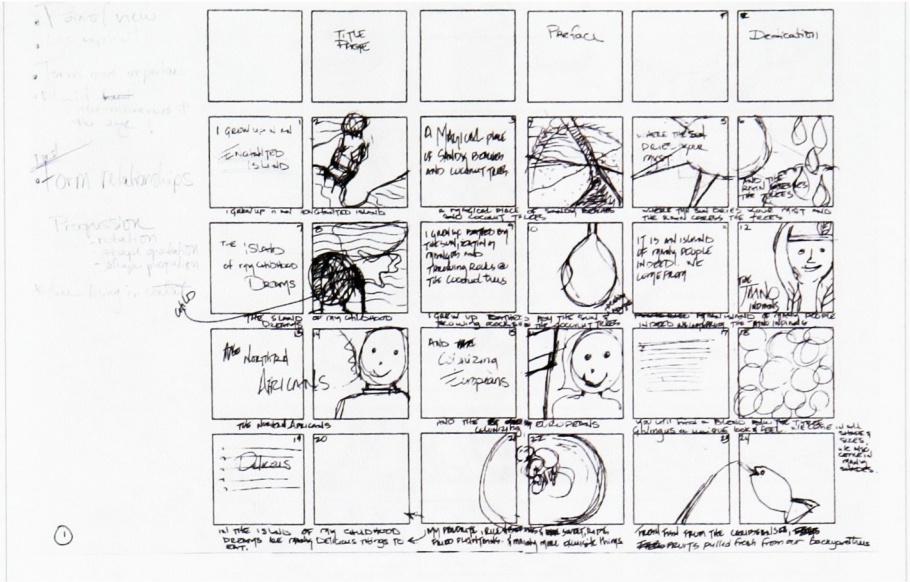
I developed a number of storyboards to define the pace and rhythm of the manuscript. I had to consider the requirements for the production of a children's picture book during this process. There is a limit of thirty-two pages for children's picture books which was the driving requirement for the number and the flow of the illustrations.

When I started the story board process I made some boards with and without the narrative. I soon discovered that the storyboards done without the narrative did not work. The story boarding process went smoothly once I divided the manuscript into sections and into the number of required pages.

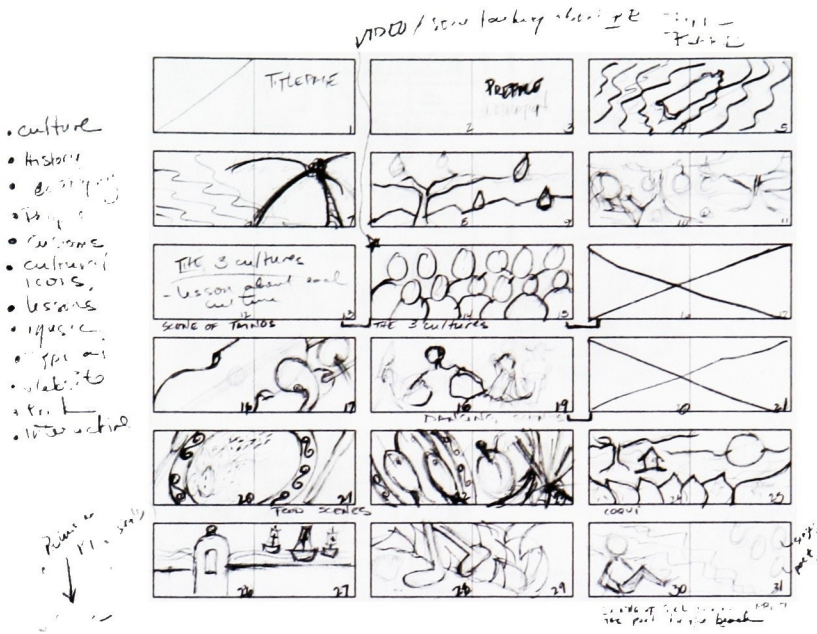
Using the story board process, I divided the narrative into fifteen page spreads, which allowed me to define the pace and rhythm of the book. With this process I defined which illustrations would have a close up view and which would be from a far away perspective. This process also allowed me to repeat some elements of one illustration to the other illustrations in order to enhance the rhythm of the book. The repeated elements however, were varied in scale and placement. Although I varied the final illustrations from the sketches on the story board the result of this process can clearly be seen in the final illustrations.

THE WORKING STORYBOARDS

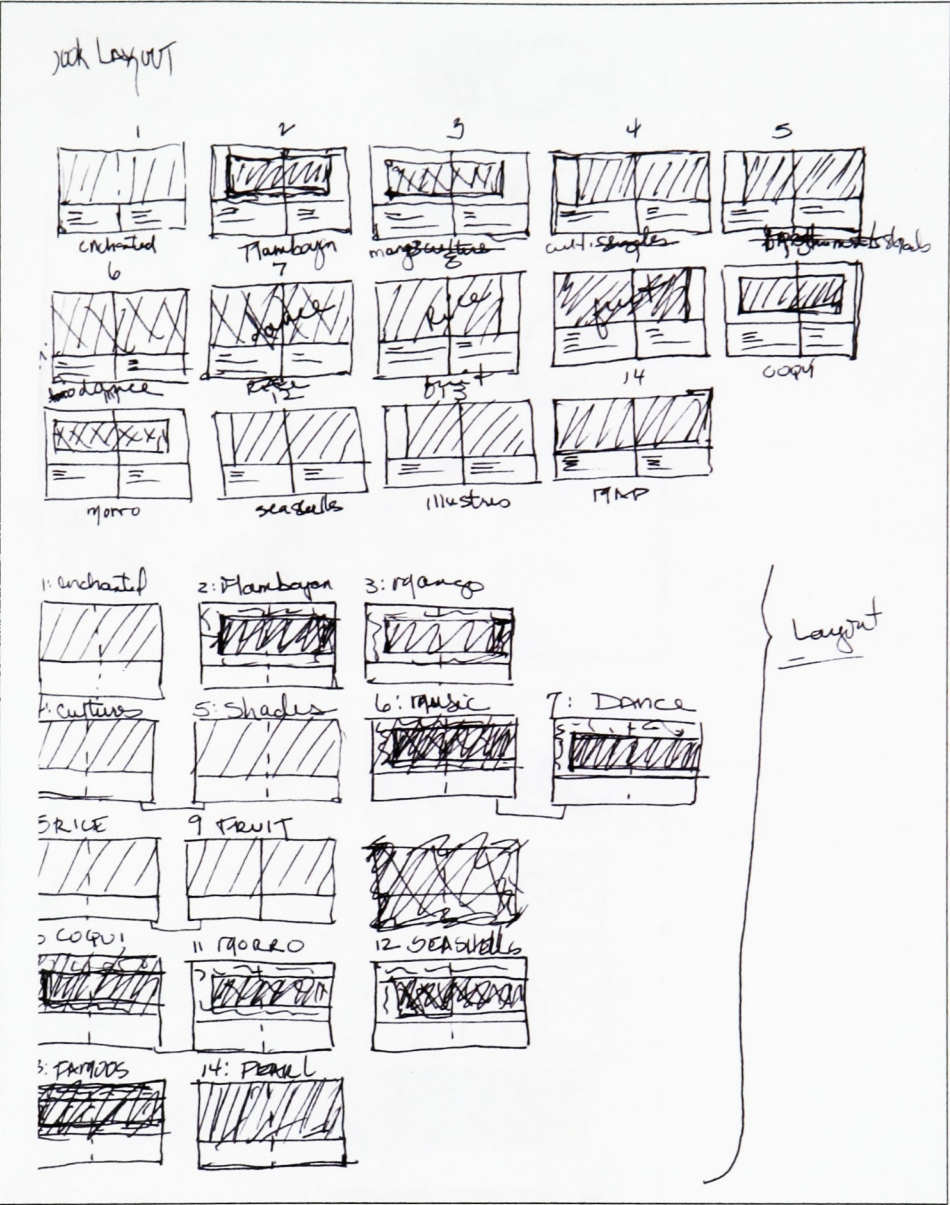
Storyboards 1 & 2: These two storyboards were developed before the narrative was divided into the fifteen spreads.



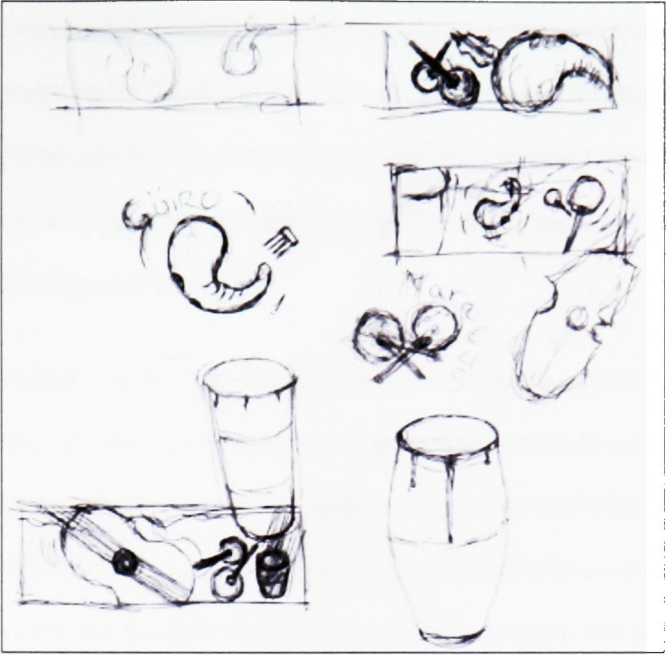
Storyboard 3: This is the final story board developed once the manuscript was divided into spreads. The essence of the story board can clearly be seen on the final illustrations. I made notes throughout it to help me define the illustrations.



Storyboard 4: Working out the book layout into page spreads.



Storyboards 5 & 6: Sketch studies for the storyboards.



ILLUSTRATING THE BOOK

I rendered a total of fifteen page spreads to illustrate the book's manuscript, and used the story board as a guide to develop the compositions. Although the final illustrations are not an exact rendering of the story-board sketches, the essence of the sketches can clearly be seen throughout the book.

I used two techniques to make the book illustrations. The first technique was to develop full size color pencil sketches to work out all of the details of the illustration's composition. The other technique was to use *Photoshop* and copy free images to make collage compositions and work out the details of scale and placement. This technique also allowed me to make variations of the collages until I found the best solution for the illustration. The only draw back was that it was time consuming. Whichever technique I used, it allowed me to obtain the result I wanted for the specific illustration.

After making a collage composition, I made a line drawing which I rendered using color markers and pencils. I chose to use the markers and pencils because of their vibrant colors and their ease of use. These media were also quick to use since the illustrations did not need to have any drying time during the process. I also found that the quality of the color and the details remain intact when scanned into the computer. The only disadvantage to this process was that it was also very time consuming. Some of the illustrations took between three to six hours to render.

RENDERING THE ILLUSTRATIONS

As follows. I will discuss the techniques I used to render each illustration.

I will also include the narrative represented by the illustration. The final illustrations were 3.5" x 9." These remained the same size for the interactive book. They were scanned and enlarged to 8.5" x 22" for the printed book.

Spread 1: This spread represents various aspects of the island found throughout the book. It was made in photoshop by using various images from the different illustrations I had already rendered.

Narrative 1: I grew up on an enchanted island.

Images used to compose the illustration.



Final illustration



Spread 2: I developed this spread from my sketches. This spread is a close up view to draw the reader into the scene.

Narrative 2: A magical place of sandy beaches and coconut trees.

Color pencil sketch



Line drawing



Final Illustration



Spread 3: I developed this spread from my sketches. I wanted to focus on the beauty of the flamboyán tree.

Narrative 3: Where the sun dries your mist and the rain caresses the trees. Where the flamboyán tree adorns our valleys, our mountains, and our city streets.

Color pencil sketch



Collage 1



Collage 2



Final illustration



Spread 4: I used a personal picture for the girl on this illustration and added the mango tree to the background using Photoshop. I then developed a color pencil sketch to incorporate the mango tree and bring in the flamboyán tree. I wanted this illustration to show a relationship with the previous illustration. The mangos were re-touched in *Photoshop*.

Narrative 4: I grew up bathed by the sun, eating mangos, and throwing rocks at the coconut trees.

Collage



Color pencil sketch



Line Drawing



Final Illustration



Spread 5: I considered many options for this illustration. From illustrating each culture separately to using cultural items to represent each culture. I decided to represent each culture side by side, giving each one of them equal importance.

Narrative: The island of my childhood dreams is an island of many people indeed. We come from the African, the Spaniard, and the Taíno people.

Collage 1



Collage 2



Collage 3



Final collage



Line drawing



Final Illustration



Spread 6: I wanted to represent the melting pot of people found in Puerto Rico. I made various collages using different photographs to define the final layout. The final spread was composed using personal photographs of children in my family. I decided to use pictures of children so that the children reading the book would relate to the illustration. After the final collage I developed a pencil drawing and added the mountains and the flamboyán tree to the background.

Narrative: On the island you will find a blend between the people. We are of many shades.

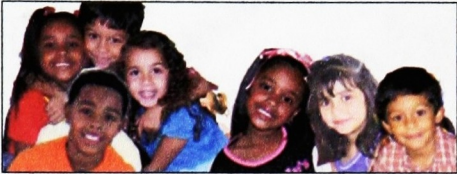
Collage 1



Collage 2



Collage 3



Final collage



Line drawing



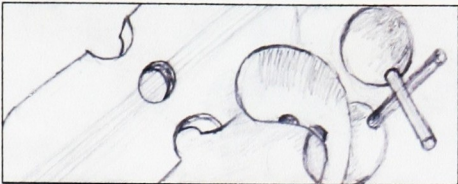
Final illustration



Spread 7: The focus of this illustration are the instruments used in many of the musical genres of Puerto Rico. I made various collages using photographs and kept the background neutral to keep the emphasis on the instruments. From the final collage I developed the pencil drawing and then rendered it with markers to echo the colors on the previous spreads.

Narrative: The folklore music of my enchanted island has African, Spaniard, and Taíno roots. With this music we can dance to different tunes.

Pencil sketch



Collage 2



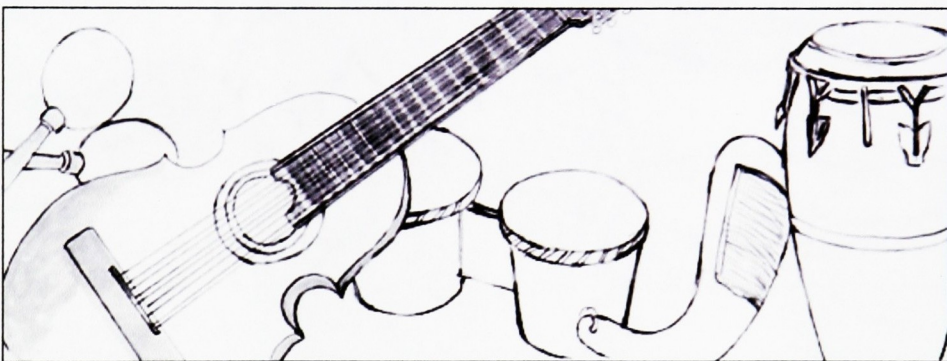
Collage 3



Final collage



Line drawing



Final illustration



Spread 8: After considering various layouts for this illustration, I found that the best solution was to do a close-up of the three individual dancers. Just as the previous illustration, each dancer reflects equal importance and the essence of the dance.

Narrative: With the classical Danza we dance with our partner hand-in-hand. But... with the playful Bomba, and Plena, we can dance with the whole town at once.

Collage 1



Collage 2



Collage 3



Final collage



Line drawing



Revised collage



Revised line drawing



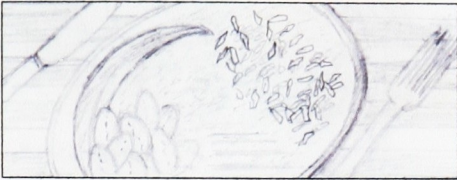
Final Illustration



Spread 9: This illustration reflects one of the typical food dishes of Puerto Rico. I prepared this meal and made photograph studies to obtain the result I wanted. For the final illustration I cropped one of the photographs and then used it as a reference to render the final illustration.

Narrative: On the island of my childhood dreams are many delicious foods to eat. The favorites are rice and beans, and sweet, ripe, fried plantains...

Pencil sketch



Color pencil sketch



Personal photograph studies for the illustration



Final personal photograph used



Final Illustration



Spread 10: For this illustration I focused on portraying a popular fish found in Puerto Rico and some of the most common fruits found throughout the island.

Narrative: Fish pulled fresh from our deep blue seas, fruits picked fresh from our backyard trees.

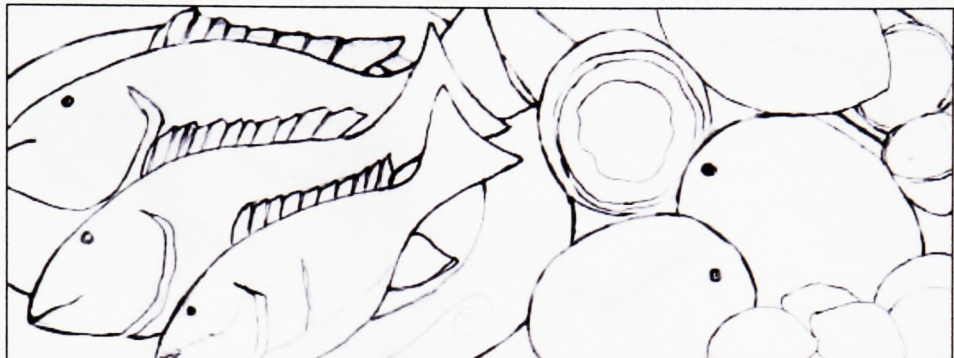
Collage 1



Final Collage



Line drawing



Final Illustration



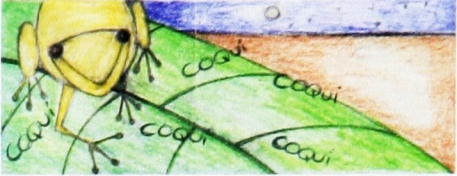
Spread 11: The main focus of this illustration is the coqui, therefore I decided to render it by itself.

Narrative: The sweet song of our tiny frog, El Coquí, on our island can be heard. Everywhere we hear... Coquí! Coquí! Coquí

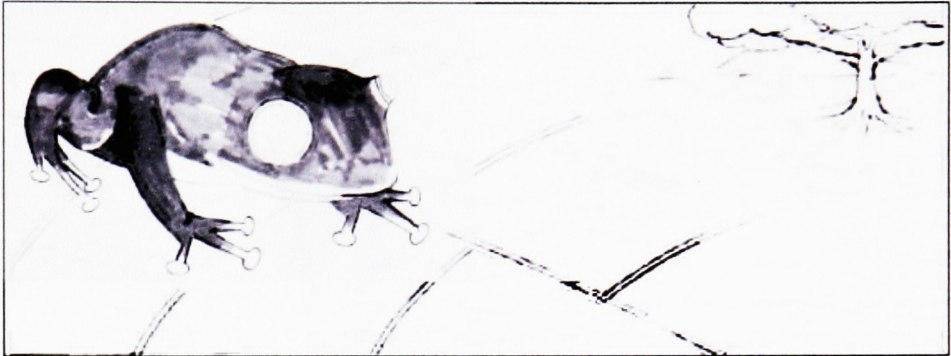
Color pencil sketch 1



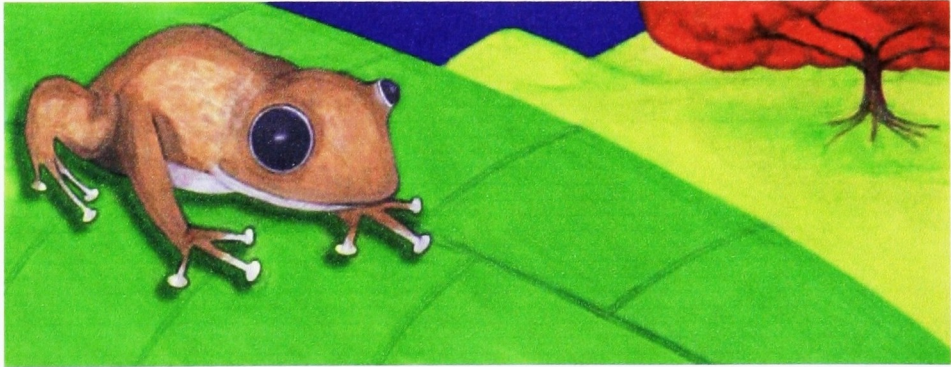
Color pencil sketch 2



Line drawing



Final Illustration



Spread 12: One of the most well know landmarks in Puerto Rico is El Morro. I wanted to showcase one of its most recognized features, the watch tower.

Narrative: In my childhood dreams I dreamt of Columbus and his discovery. I dreamt of Fort El Morro and its battles by the edge of the sea.

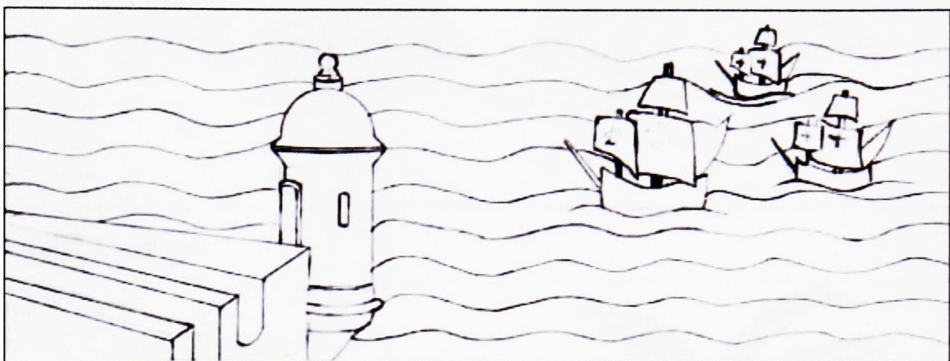
Color pencil drawing



Final collage



Line drawing



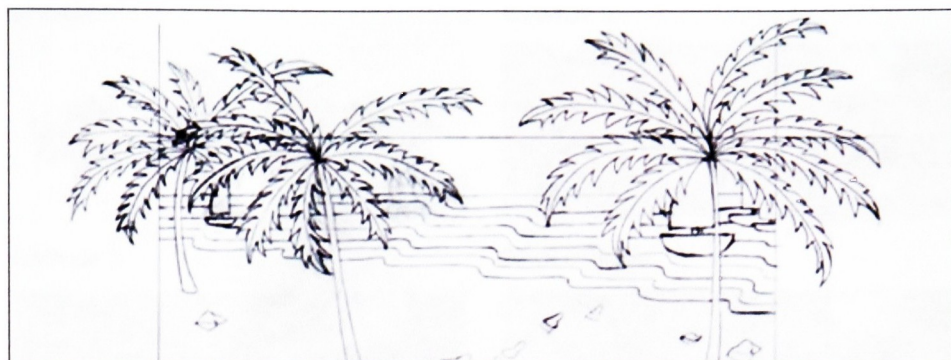
Final Illustration



Spread 13: I made a line drawing for this illustration and rendered it using markers. Once I scanned it and cropped it I did not like the proportions. To save the work I had done I changed its proportions in Photoshop by raising the sky line, and re-doing the sea and boat.

Narrative: I dreamt of sailboats and seashells as I ran from the waves at my feet.

Line drawing



Marker rendering



Final illustration



Spread 14: By far this was the most difficult illustration to compose because it was hard to narrow down the famous people I wanted to include in the illustration. The images I used are from a copy free booklet that children use in Puerto Rico to write school reports. I made a series of collages with these images considering various compositions. At the end, I decided to make a close-up collage of five famous persons which represented the narrative of my book.

Narrative: I grew up on an enchanted island of Poets and Singers, of Painters and Thinkers!

Collage 1



Collage 2



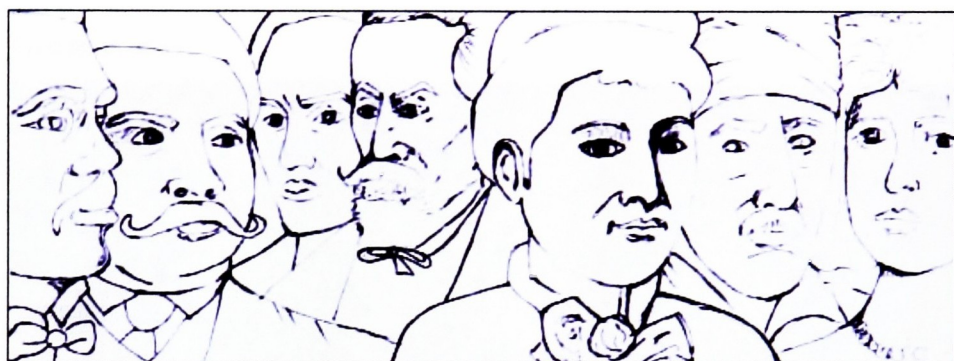
Collage 3



Final collage



Line drawing



Final illustration



Spread 15: For this illustration I wanted to focus on the shape of the island itself to teach children what the Island of Puerto Rico looks like from an aerial view.

Narrative: Puerto Rico is The Island of My Childhood Dreams...
The Pearl of the Caribbean Sea!

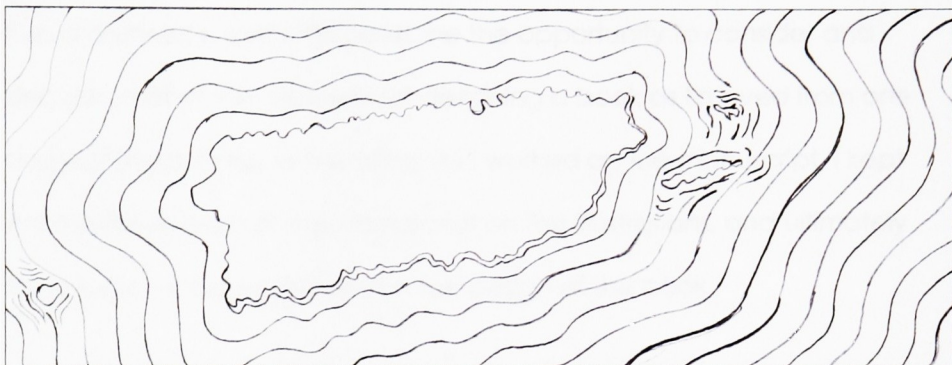
Pencil color sketch



Collage



Line Drawing



Final Illustration



DESIGNING THE BOOK

Designing a book consists of incorporating the required publishing elements to make a complete work. The designer has to weave these elements into the book with as much care as it is given to the artwork. This is why it is important to keep the required elements in mind as the artwork is developed. For this project, I served as the writer, the illustrator and the designer, which proved to be challenging, but exciting to see it as a complete work. This gave me the opportunity to consider and decide on all of the elements of designing a book as I moved from one stage of the process to the other. As I worked on the manuscript, I kept in mind the impact of the manuscript on the illustrations, and ultimately the impact of the illustrations on the design of the book.

When designing a children's picture book there are specific elements to integrate to create a complete work. The elements which comprise the anatomy of the book are: the cover; the jacket for a hardcover book, or a cover for a softcover book; the endpapers; the title page; the copyright page; the dedication; the body; and the back matter which is optional. Publishers divide these elements into the front and back matter of the book.

The book's cover is the first element a reader encounters when choosing a book. The book may have a hardcover or a softcover. The hardcover consists of three parts, the front, the back and the spine. The hardcover book usually has information on the spine only, this information includes the name of the author, the publisher and the title of the book. Hardcover

books come with book jackets which contain more detailed identifying information. The elements included on the book jacket are, the title, the author, the illustrator, the publisher, the price and the ISBN number (International Standard Book Number). The book jacket usually includes artwork found in the body of the book. The jacket also has flaps which are often used to include promotional information. In contrast, the softcover or paperback book does not have a book jacket. The identifying information as detailed above and artwork are placed on the front and back covers of the book.

When the cover is open on a book the next element encountered are the endpapers. These include the papers attached to the cover of the book and the papers in between the cover and the book title. The endpapers may be plain, colorful, fancy and may include a pattern. The title page is found right after the endpapers. The title page also includes the names of the author and illustrator, and the publisher. On children picture books the title usually includes illustrations also.

The copyright and colophon page comes right after the title page, although some publishers may place this information at the end of the book for design reasons. The most important function of this page is to place the copyright notice although other information may be included here. The colophon provides information about the production of the book, such as materials used on the illustrations, and typefaces used. The page after the copyright page is the dedication page, but in some picture books the publishers place the dedication at the beginning of the copyright page.

Finally, after all the front matter is completed, the body of the book starts. This is where the author's and the illustrator's work is found.

On picture books the body is not divided into chapters. The narrative is presented in a continuous narrative. Finally, on children's books there may be back matter. Back matter is information usually written by the author but the publisher may choose to write it also. The back matter may include learning games related to the content of the book, a glossary, an index, or any information that the author or the publisher may determine valuable to the book.

After the manuscript was edited and the illustrations were rendered it was time for me to design the book as a complete work. Because I had considered the anatomy of the book and the elements required throughout the process taking on the role of the designer was a smooth transition. At the end of the process I had designed a book which included all the required elements while keeping the integrity of the content and artwork.

THE COMPLETE BOOK

I will discuss the overall design of my book and will show the anatomy and elements of a book in the following section as it relates to my book. I will also discuss the rationale behind the design decisions I made in regards to typography, rhythm, pace, illustrations and ultimately the overall design of the book. For the final overall design of my book my main consideration was the illustrations and how to best represent them without interfering with the art work.

I designed both a book jacket and a cover. The difference between the two are the flaps included on the book jacket. I choose to leave the flaps of the jacket blank at this time, upon getting it ready for publishing, the publisher along with the author would decide which type of information would be included on the flaps. The endpapers are a pattern of waves found in one of the illustrations. These pages could have been plain white paper or a color paper, but I wanted to bring an element of the book into this section to give it more interest.

The title, copyright and colophon, and the dedication pages were kept very simple but I included elements from the illustrations. This was a way to give the reader a preview of the type of drawings they would find throughout the book.

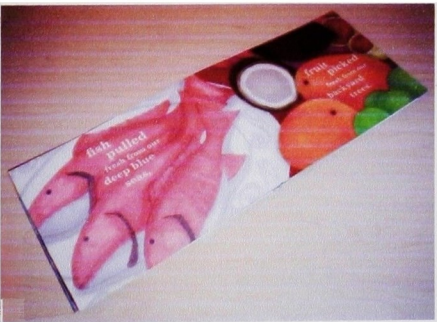
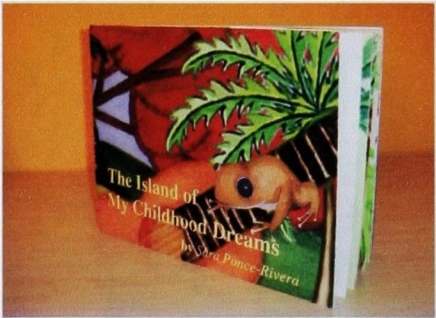
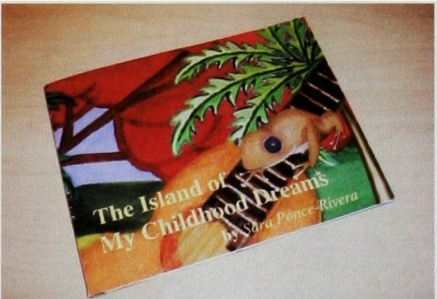
The body of the book includes the narrative and the illustrations. I decided to integrate the narrative as another element of the illustration with the typographic treatment. The typography follows the contour of the drawings in the illustration. I also kept it simple in terms of color

to have them stand out from the color on the illustrations and to unify it throughout the book. I used the typeface Century Schoolbook which is a classic typeface found in many children's books at various font sizes. I emphasized some of the words throughout the book by making them a larger font size.

The illustrations flow from one to the other to make the overall body of the book a cohesive unit. And, although the narrative changes topics from page to page, the treatment in terms of colors, point of view, and repeated elements help the reader move from page to page in a seamless transition.

The back matter of the book includes the endpapers. In the future as I plan to publish the book, I will develop a section for vocabulary words and more detailed historical information about Puerto Rico.

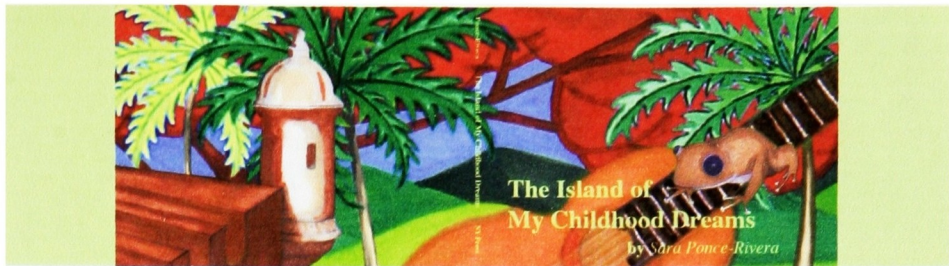
Photographs of the book printed for placement only.



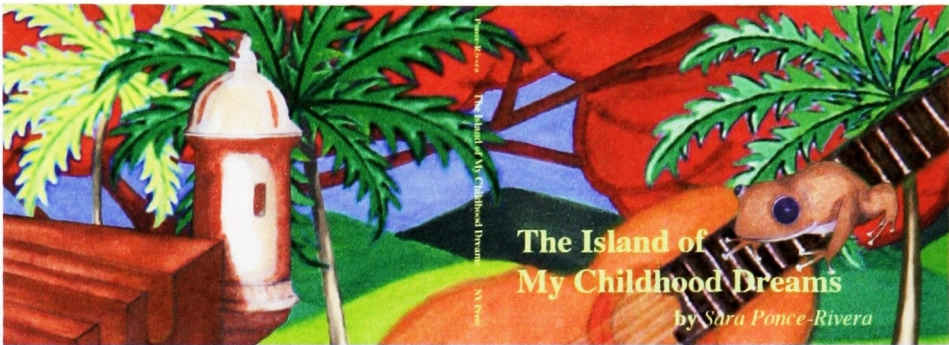
THE ANATOMY OF THE BOOK

THE FRONT MATTER

Book Jacket



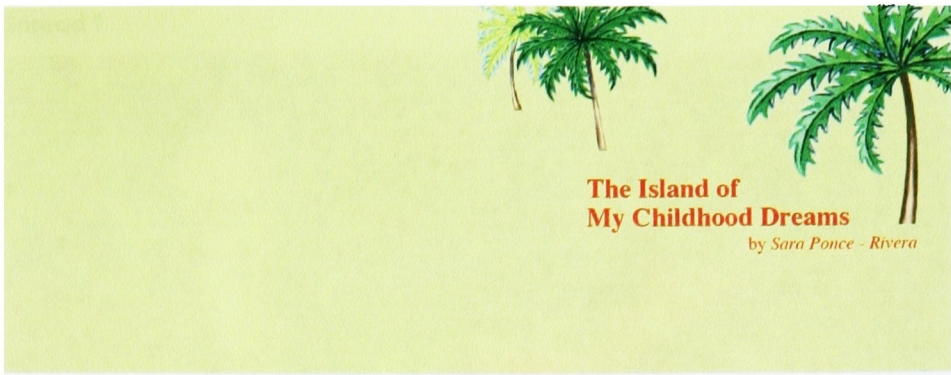
Cover



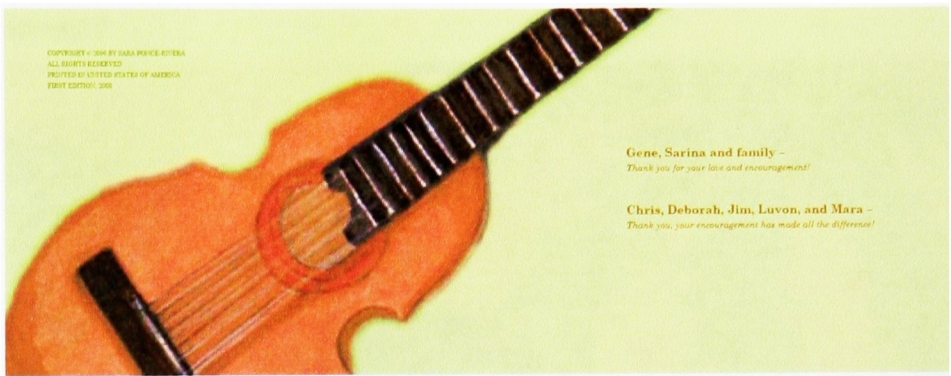
Endpapers for the front and back of the book



Title page

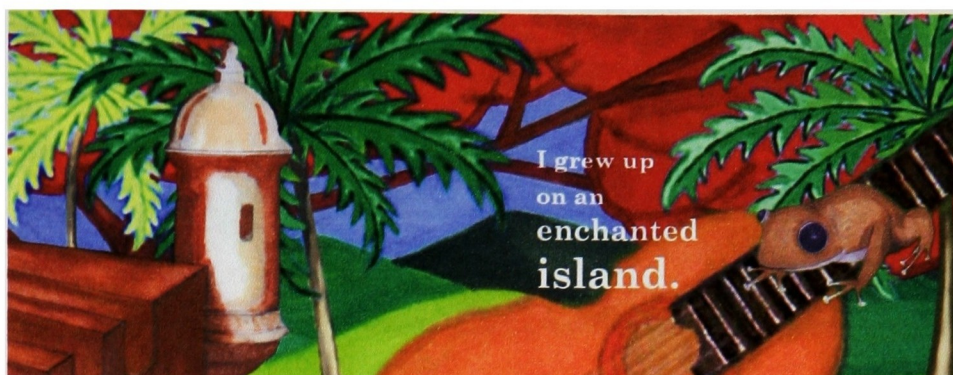


Copyright, colophon, and dedication pages



THE BODY OF THE BOOK

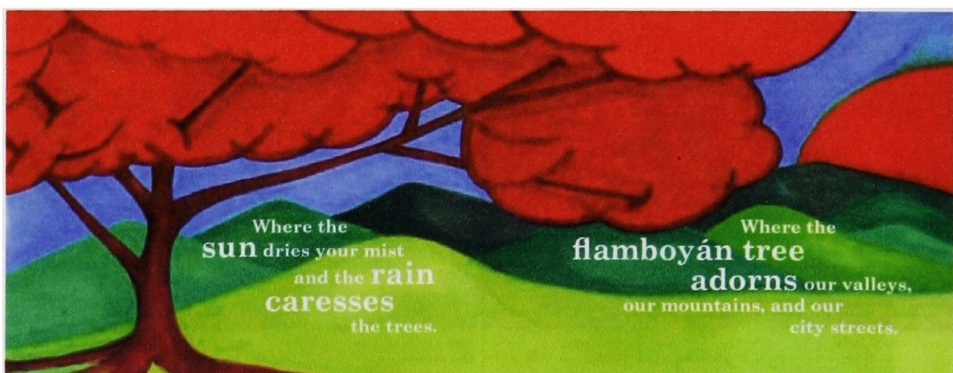
Spread 1



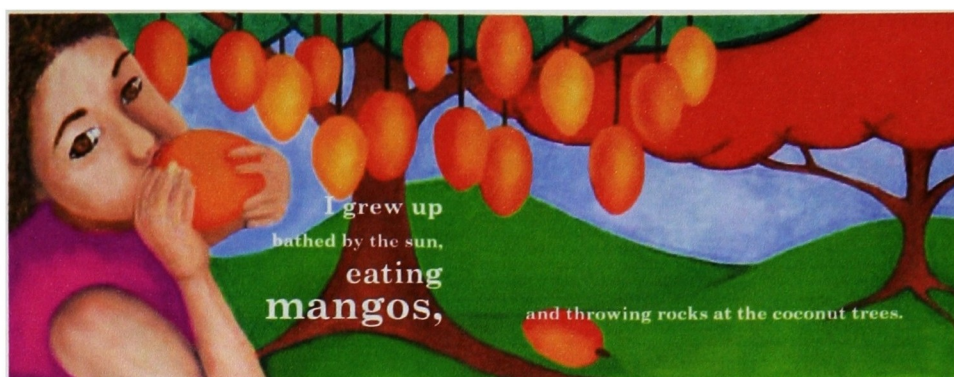
Spread 2



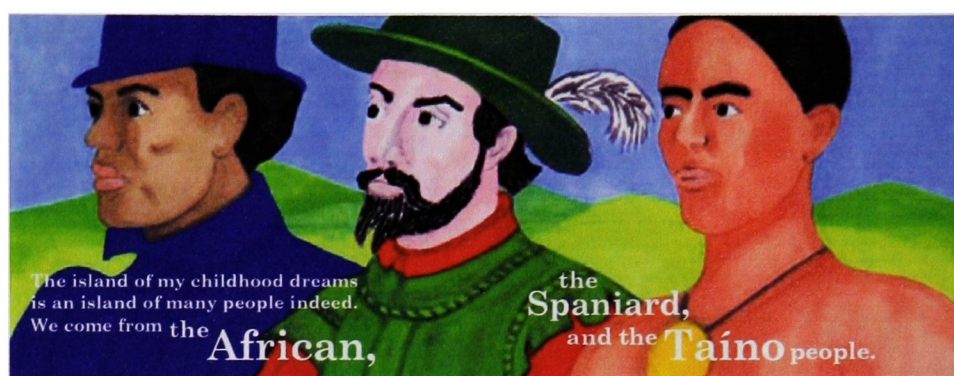
Spread 3



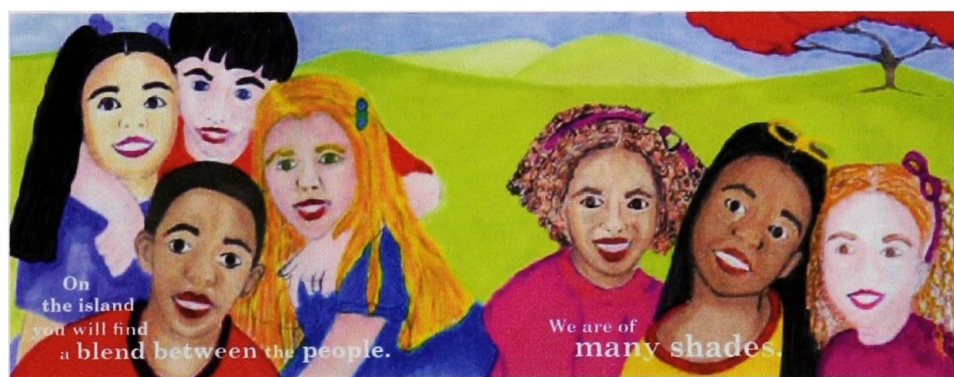
Spread 4



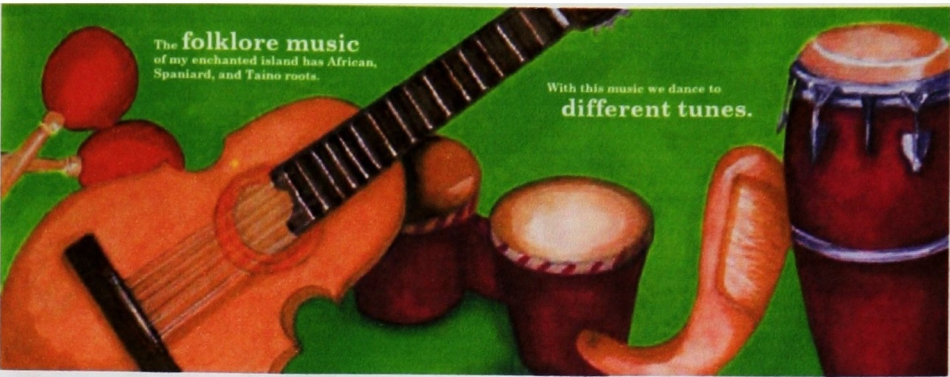
Spread 5



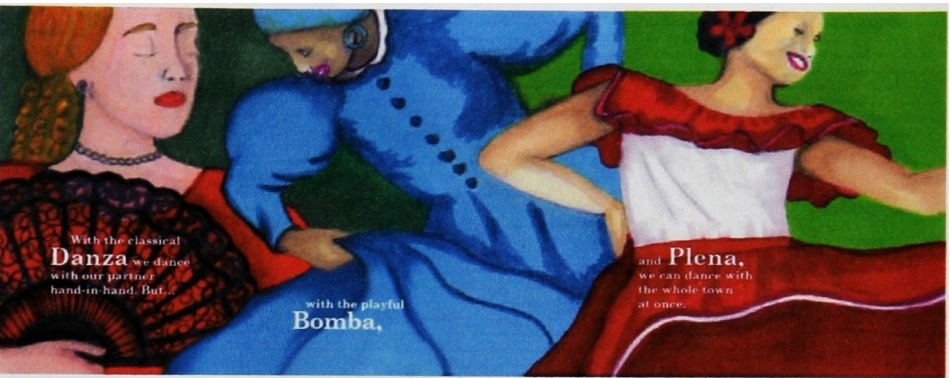
Spread 6



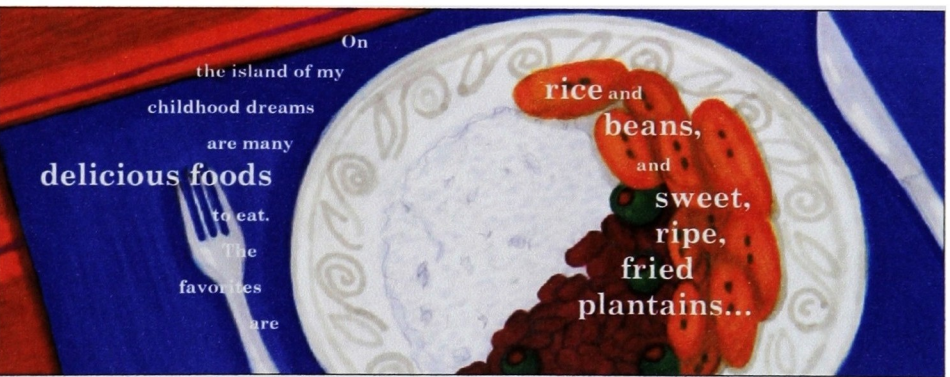
Spread 7



Spread 8



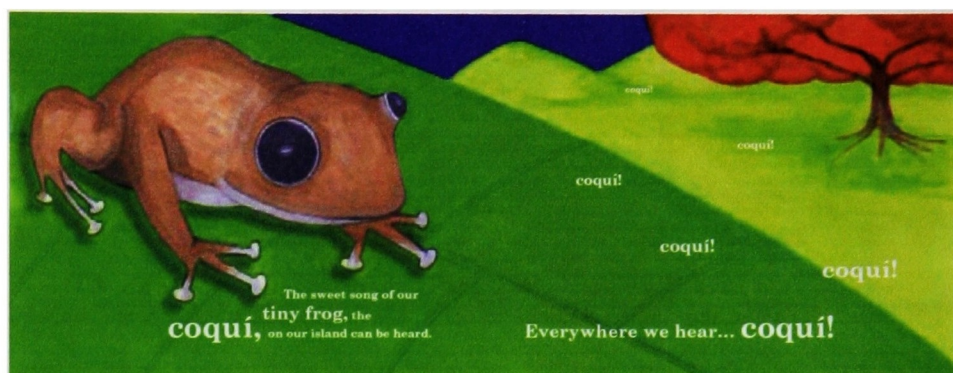
Spread 9



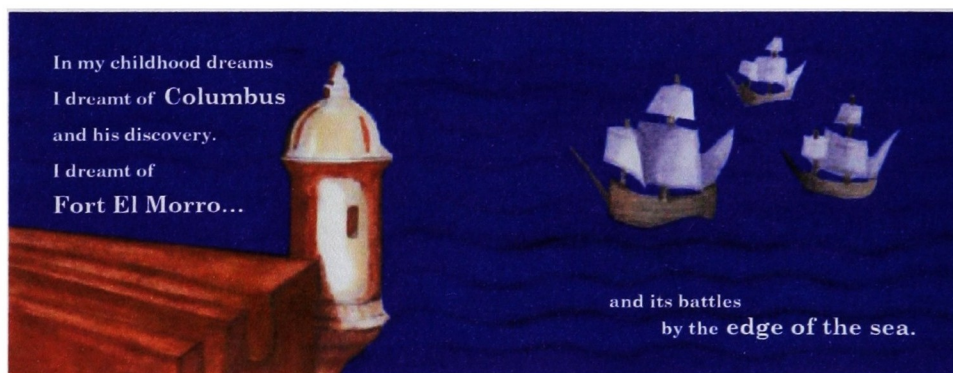
Spread 10



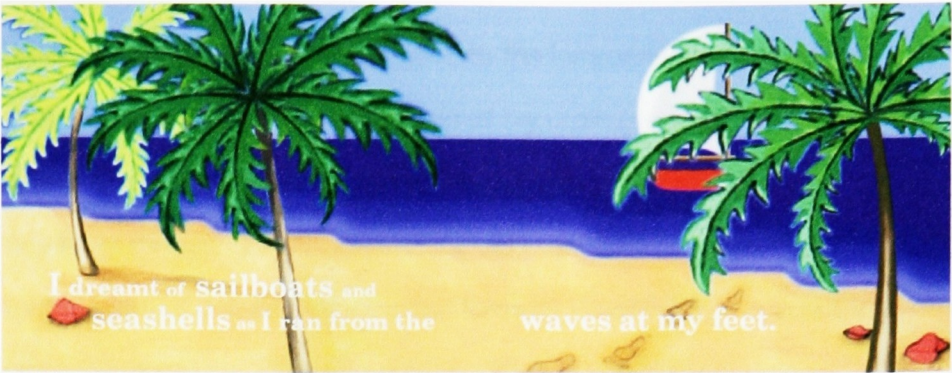
Spread 11



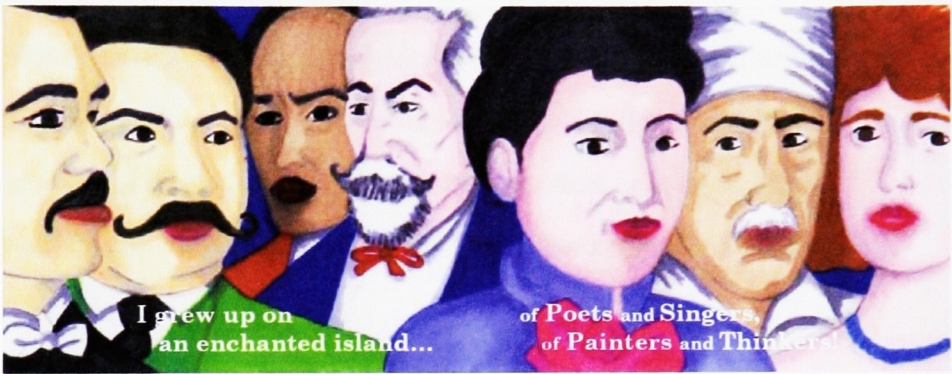
Spread 12



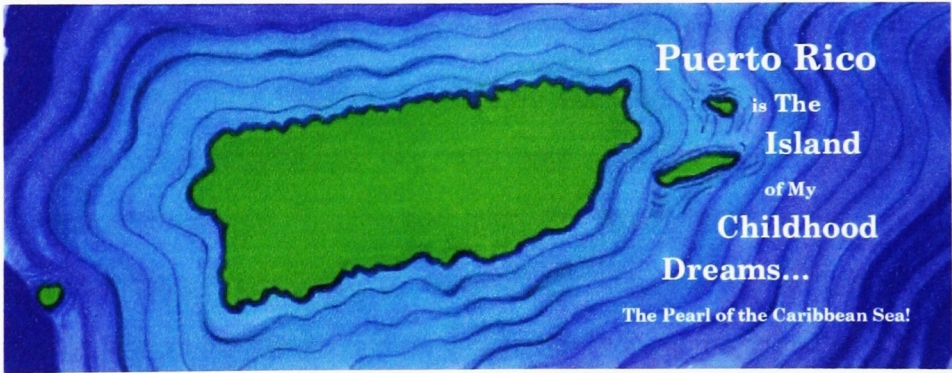
Spread 13



Spread 14



Spread 15



THE INTERACTIVE BOOK

When translating the printed book into the interactive book, many aspects had to be considered. One of my main goals was to keep it as true to the printed book as possible. I asked myself a series of questions throughout this process; should I keep the same format as the book or should I find another format? What type of interactivity would work better; a rollover, a click, 2D or 3D animation, video, photographs, panoramic views, words, music, audio, etc.? I found that each illustration dictated which interactive approach would be better in order to expand on its content. I found that a combination of the multimedia options was the best solution, and once again the content of the illustration dictated the best approach for each illustration and narrative.

After various design solutions were considered, I came to the conclusion that simplifying the interactive book's format was the best solution. The typography that was set on each illustration was eliminated on the interactive book. Instead the text narrative was placed on a solid color background, isolated from the illustration. The text of the book also became the audio narrative of the book, providing the user with visual as well as auditory stimulation. This approach allowed me to focus on the illustrations as the frame work for the interactivity.

The interactive application opens to a main interface where there are two navigation menus. I made a distinction between the two menus

because they serve different functions, however both menus are always available to the user. One menu provides general navigation buttons, the other one provides navigation specific to the interactive book pages. The general navigation menu is located at the bottom of the interface. It allows the user to view a help screen, to control the volume, and to exit the application at any moment. The page menu allows the user to view the book pages either in sequence or randomly. It also allows the user to load the pages of the book individually, and to also load the entire interactive project as a unit. This menu allows the user to control how he/she want to view or use the interactive book.

My main objective with the design of the interface was to keep the navigation as simple and easy to use as possible. Once a user starts moving the mouse over the buttons, wether it is the general menu or the page menu, he/she has immediate feedback, making it very simple for the user to navigate throughout the project.

As follows, I will discuss in detail the multimedia approach I used for each interactive page. Some pages contain simple two dimensional animations while others contain more in depth information about the topic presented with the narrative and the illustration. I tried to balance the project as a whole by weaving simple and complex interactivity throughout the project. It is also my belief that the user will be more engaged when there is a variety of surprising elements to discover.

THE MAIN INTERFACE

Figure 1: The main interface includes two types of navigation. One navigation controls the book page navigation with the rectangular buttons to the left of the screen. The other navigation is the general menu navigation which includes the help, volume, sound and exit buttons at the bottom of the screen.

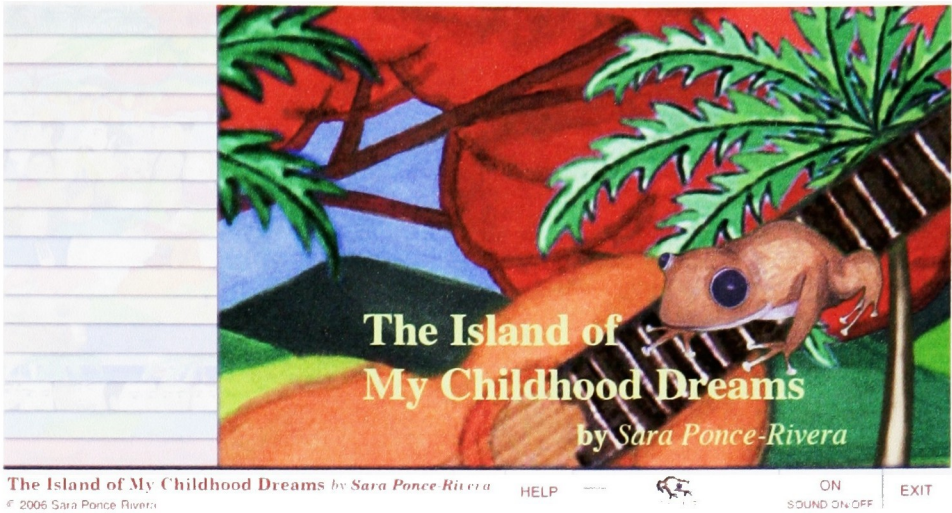
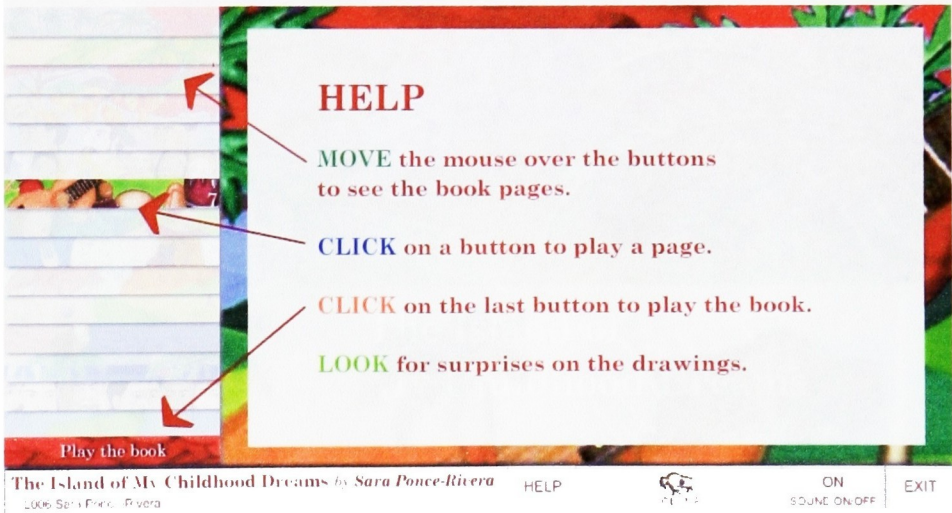


Figure 2: The help screen helps the user navigate throughout the application. I kept the instructions short and simple emphasizing the first word so that the user can glance quickly at the instructions.



THE INTERACTIVE BOOK PAGES

Figure 3: This spread is a collage of different drawings found throughout the illustration. I separated the drawings in order to create a collage of the images. Each image is highlighted when the user moves the mouse over it, giving the user a hint of what is to come on the other interactive pages.

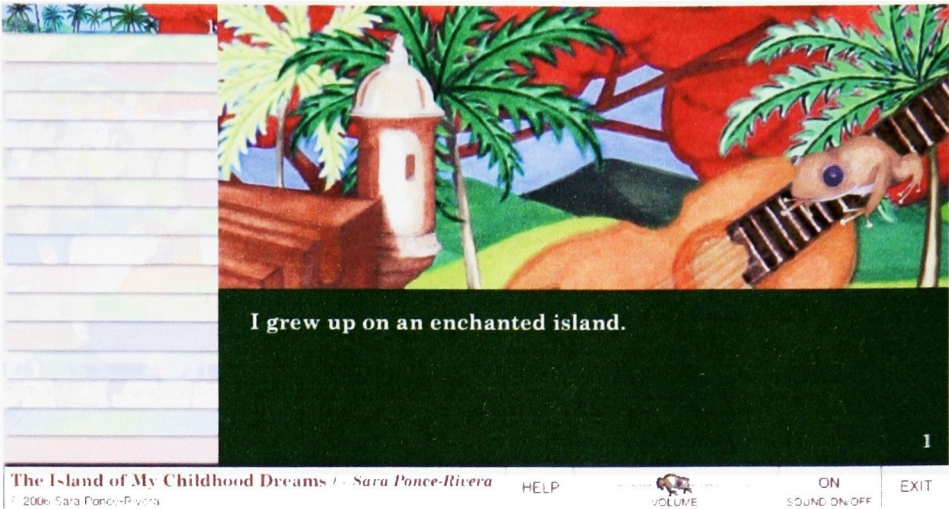


Figure 3.1: Images used to create the interactive page.



Figure 4: With a simple rollover the user sees a photograph of a beach scene.

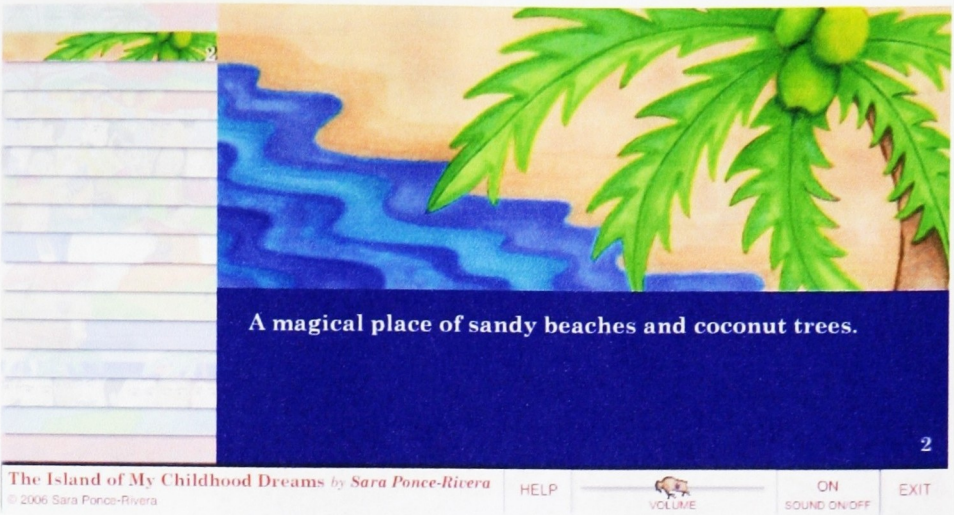


Figure 4.1: Photograph of beach in Puerto Rico.

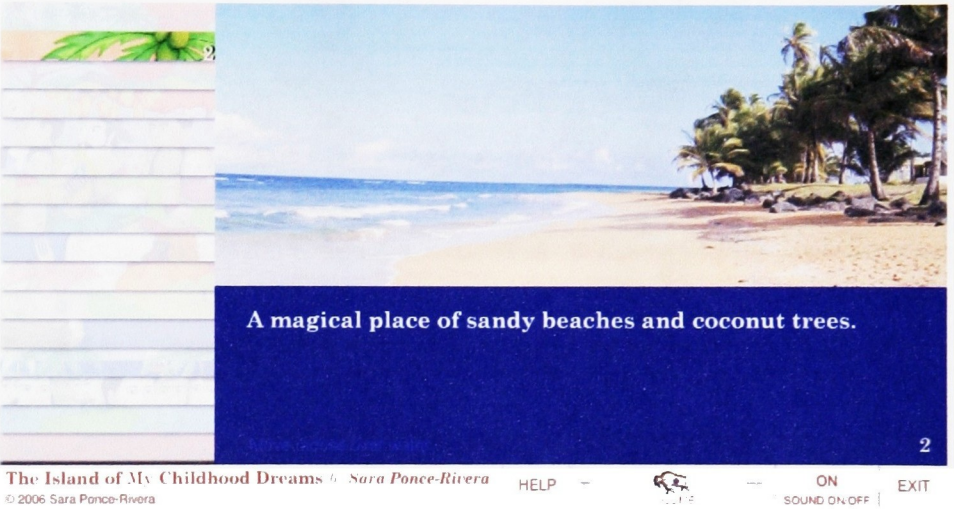


Figure 5: The flamboyán page.

Figure 5.1: The rain drop.

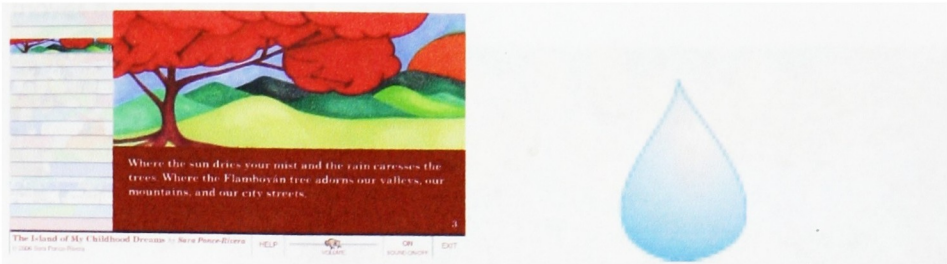


Figure 5.2: When the user goes to this interactive page a movie clip of a two dimensional animation of falling rain starts to play. This reflects part of the narrative of the book.

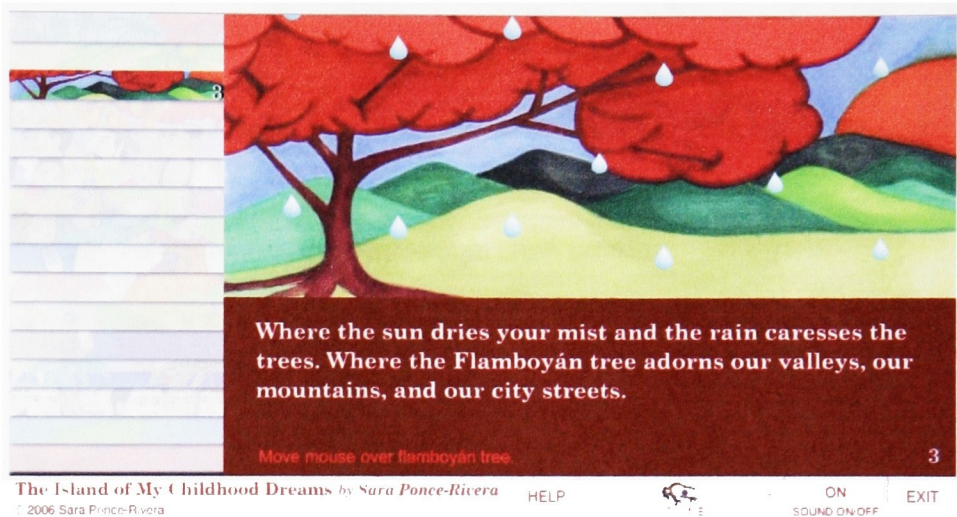


Figure 5.3: A close up photograph of a flamboyán tree branch shows when the user moves the mouse over the illustration. The animation of the rain drops continues to play.

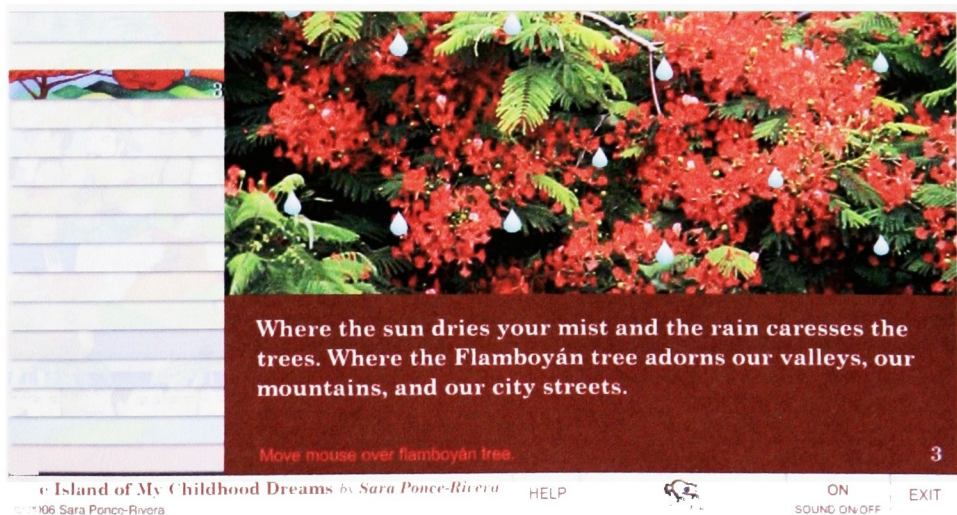


Figure 6: A two dimensional animation of falling mangos plays when the user moves the mouse over the mango tree.

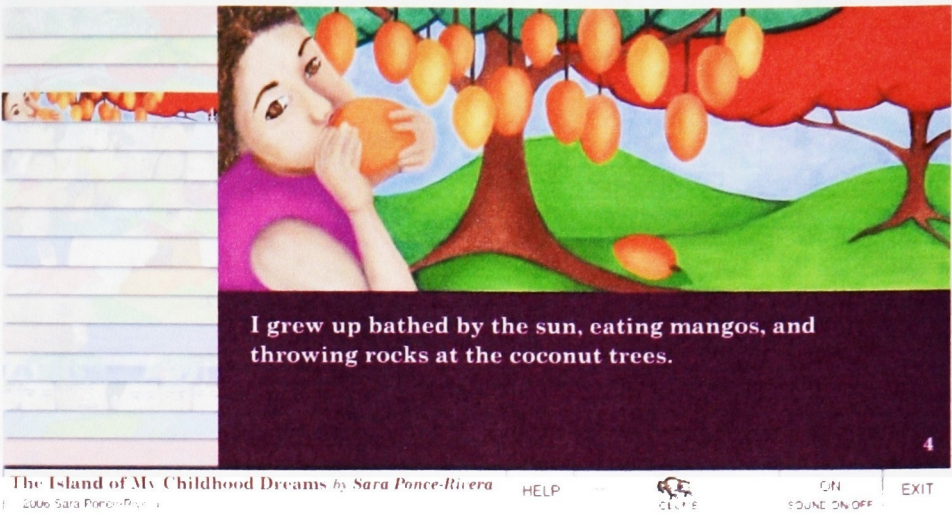


Figure 6.1: Images used to create the two dimensional animation of the falling mangos. The images were extracted from the illustration.



Figure 6.1: Interactive page showing the falling mangos.

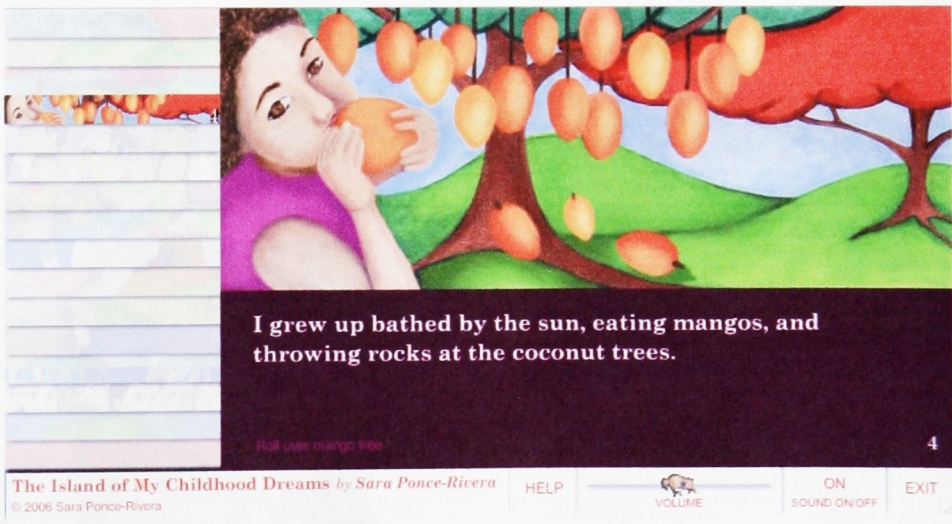


Figure 7: The cultural interactive page provides information about each culture.

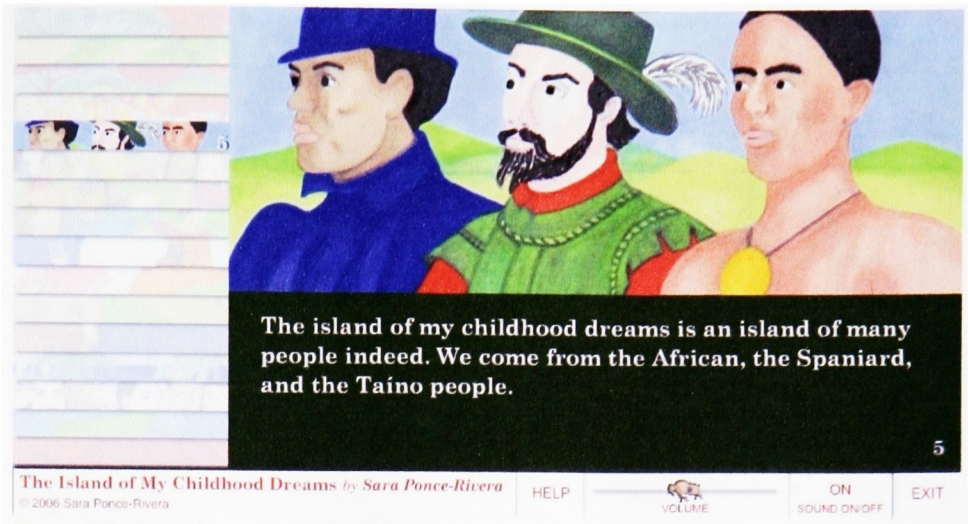


Figure 7.1: Each image was isolated and used as the trigger for the rollovers.



Figure 7.2: Information about each culture is revealed when the mouse moves over the individual image.



Figure 7.3: Detail of cultural information.



AFRICANS

Spanish planters brought slaves from Africa to work the land. On March 22, 1873, slavery was abolished in Puerto Rico. The Africans that came to Puerto Rico overcame many obstacles to help shape the music, art, language, and heritage of Puerto Rican culture.

Figure 8: This interactive page emphasizes the diversity of the culture.

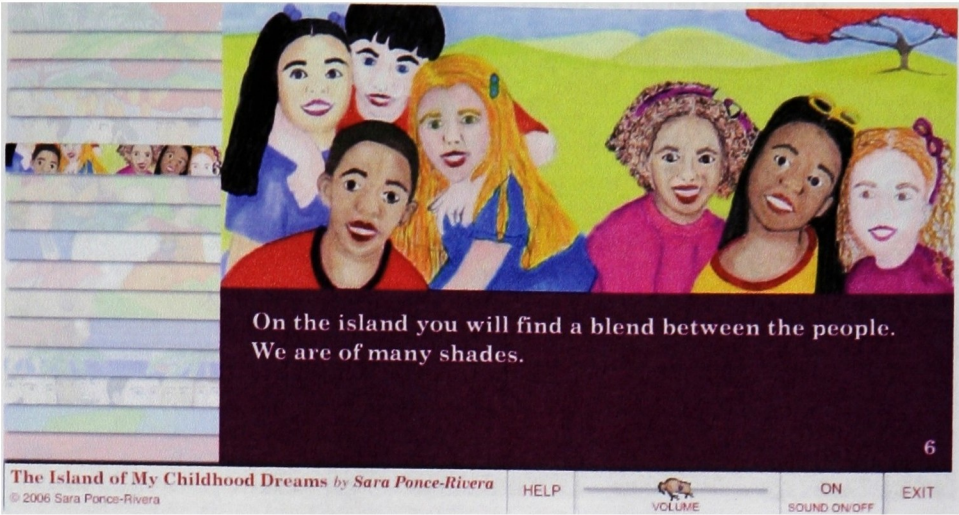


Figure 8:1: Images used to trigger the rollover.



Figure 8.2: The children's image enlarges when the mouse is moved over them to draw attention to the three cultures reflected on the people of Puerto Rico, represented here by the children on this illustration.

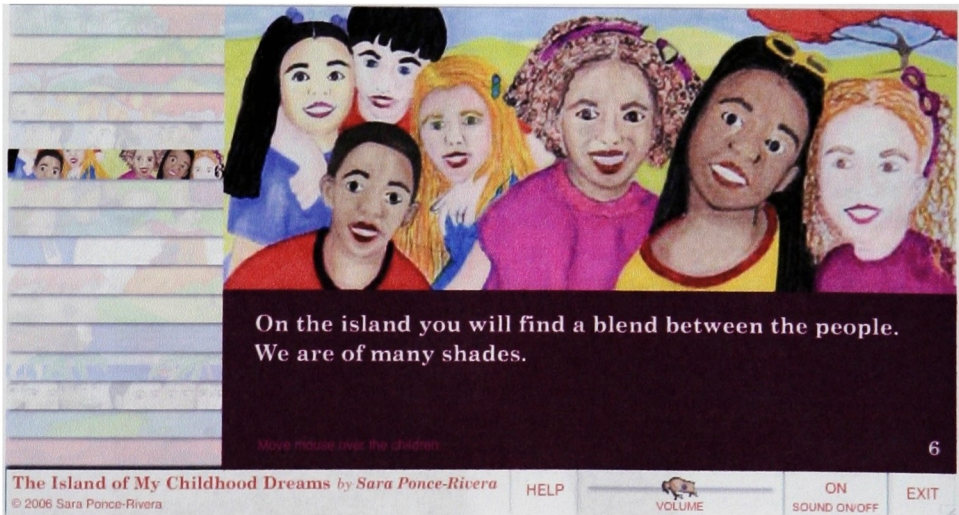


Figure 9: This interactive page showcases some of the typical instruments of Puerto Rico. I used a rollover on each instrument to reveal its name and sound.

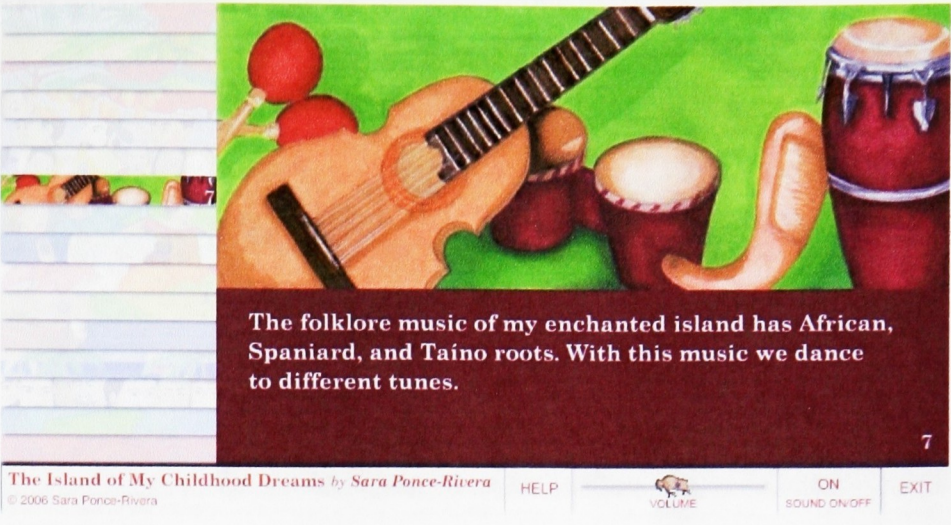


Figure 9.1: Maracas

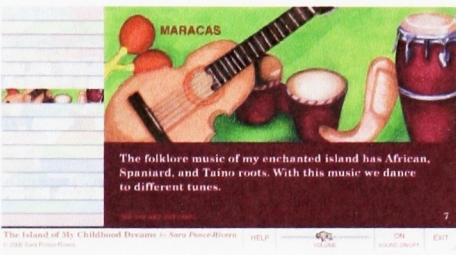


Figure 9.3: Bongos

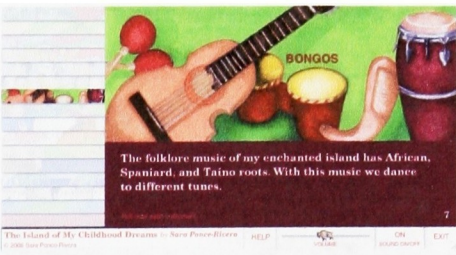


Figure 9.5: Conga

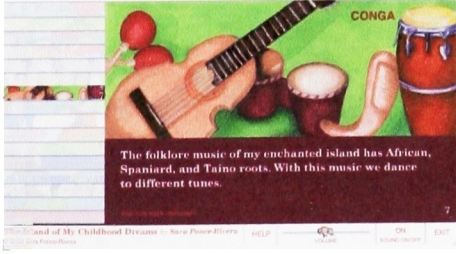


Figure 9.2: Cuatro

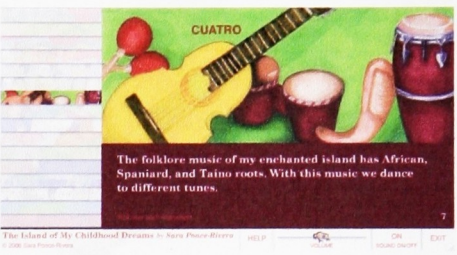


Figure 9.4: Guiro

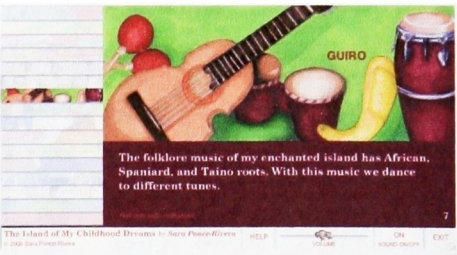


Figure 9.6: Example of rollover image



Figure 10: From this page the user can view photographs of the three dances portrayed on the illustration by clicking on each dancer's image. I wanted to show some of the characteristic moves and costumes of each dance.

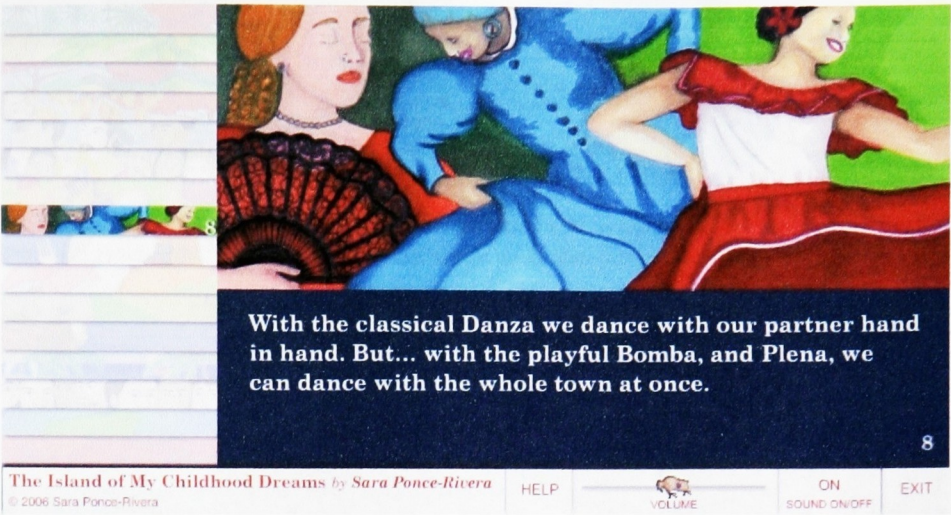


Figure 10.1: The Danza

Figure 10.1.1: Rollover image



Figure 10.1.2: After clicking on the Danza dancer, a series of photographs pan left and right to show the dance steps and the complete costume.

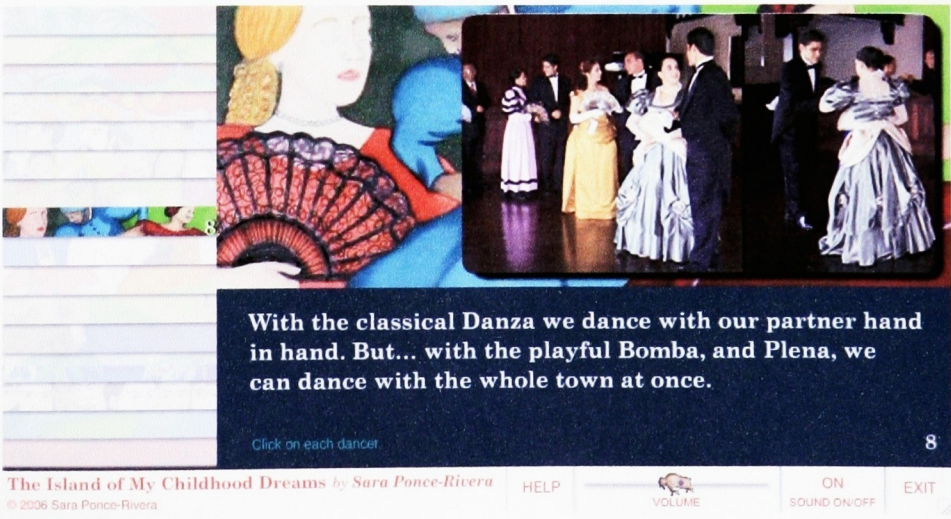


Figure 10.2: The Bomba



Figure 10.2.1: Rollover image



Figure 10.2.2: After clicking on the Bomba dancer, a series of photographs pan left and right to show the dance steps and the complete costume.

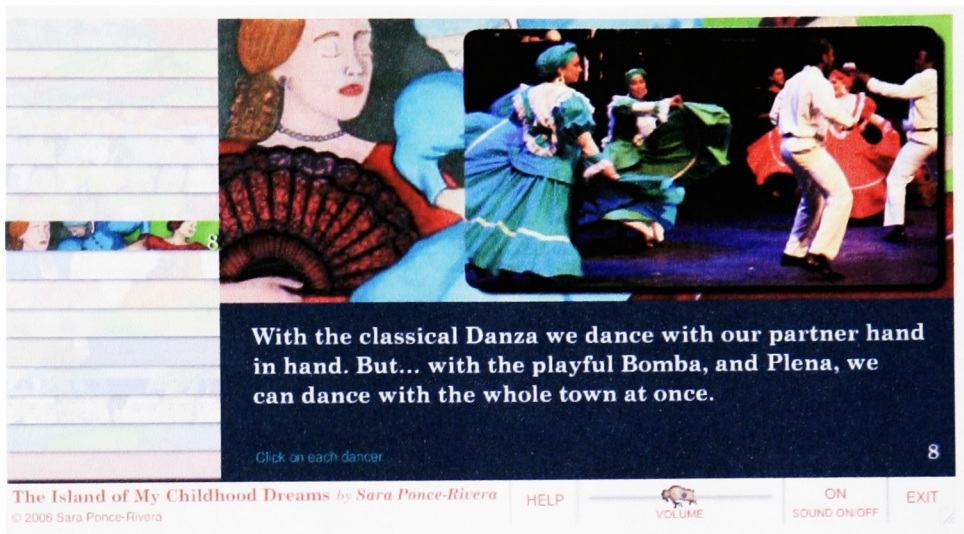


Figure 10.3: The Plena



Figure 10.3.1: Rollover image



Figure 10.3.2: After clicking on the Plena dancer, a series of photographs pan left and right to show the dance steps and the complete costume.

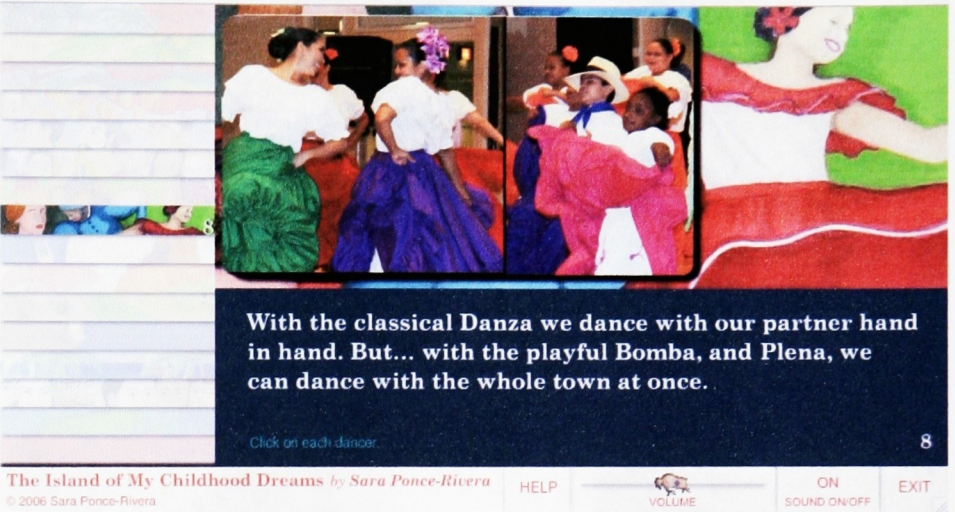


Figure 11: This interactive page features the three recipes for each of the typical foods featured on the illustration. When the user moves the mouse over the dish a set of recipe cards are revealed, the user then can proceed to click on each card to see the recipe for the rice, the beans and the plantains.



Figure 11.1: Rollover image



Figure 11.1: Detail of recipe

Figure 11.2: Set of recipe cards

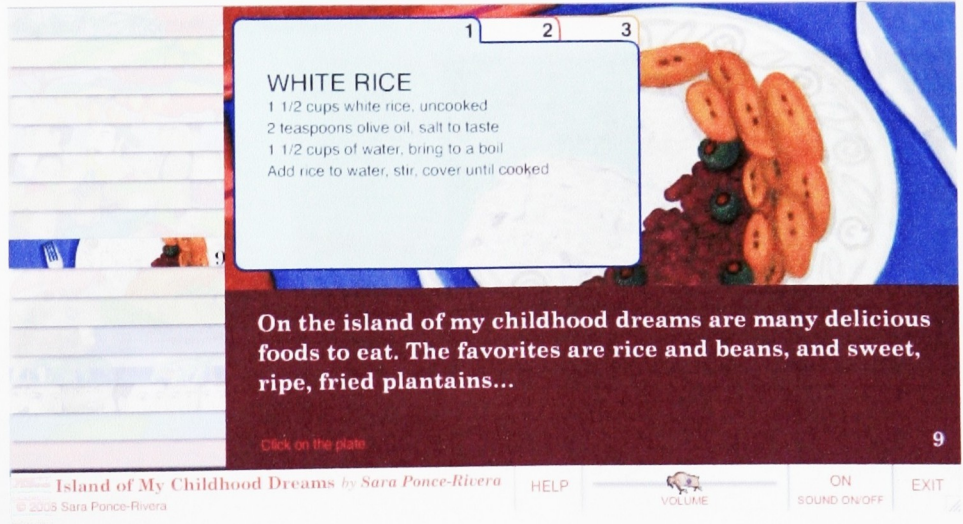


Figure 12: Photographs of each item on the illustrations are revealed when the mouse is moved over each image. I wanted to show how the actual item looks in a photograph. I also included the name in English and Spanish.

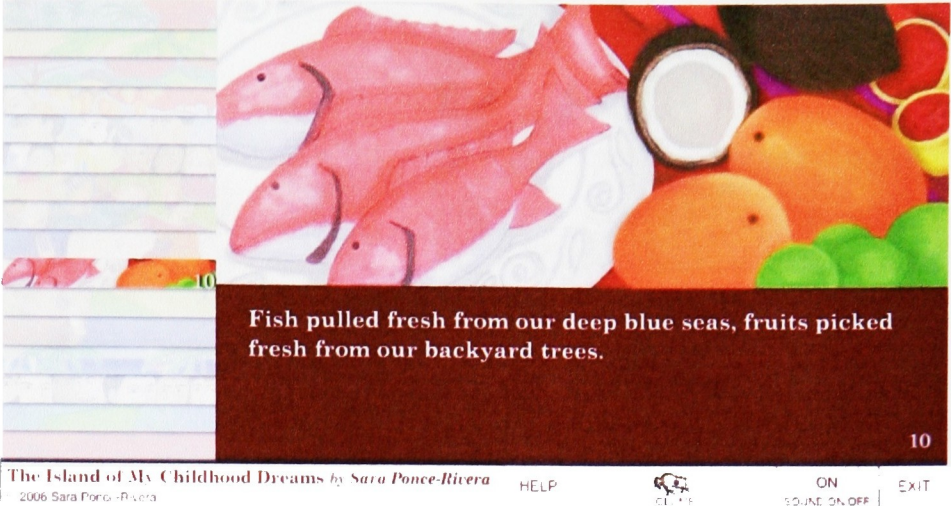


Figure 12.1: Fish rollover



Figure 13: Coconut rollover

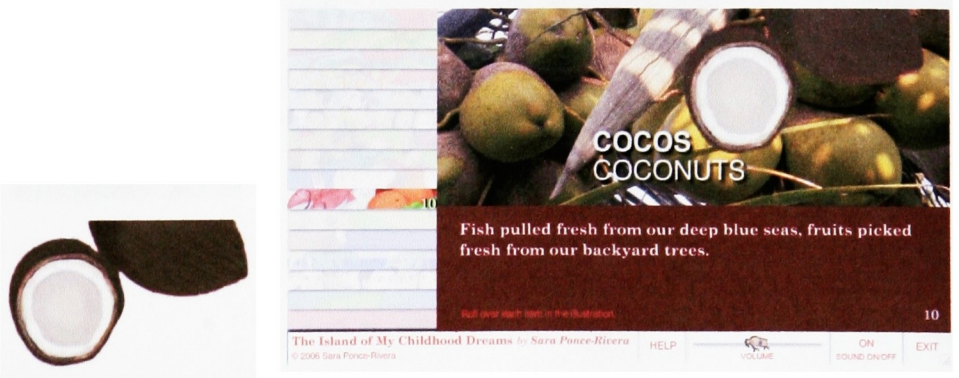


Figure 12.2: Mango rollover

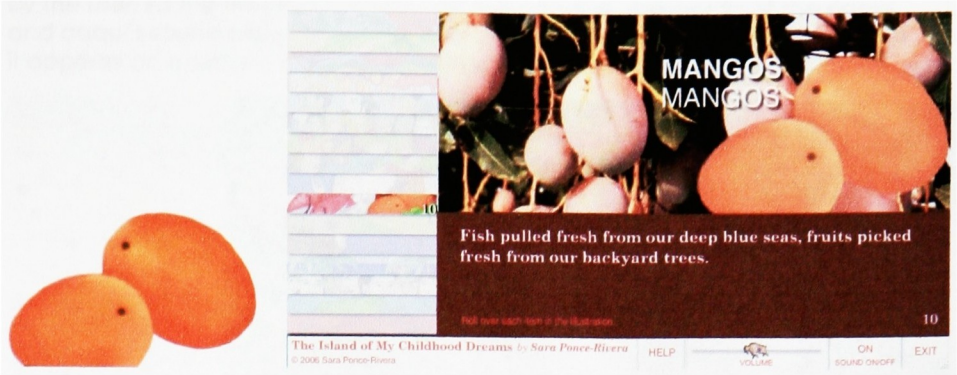


Figure 12.3: Guava rollover

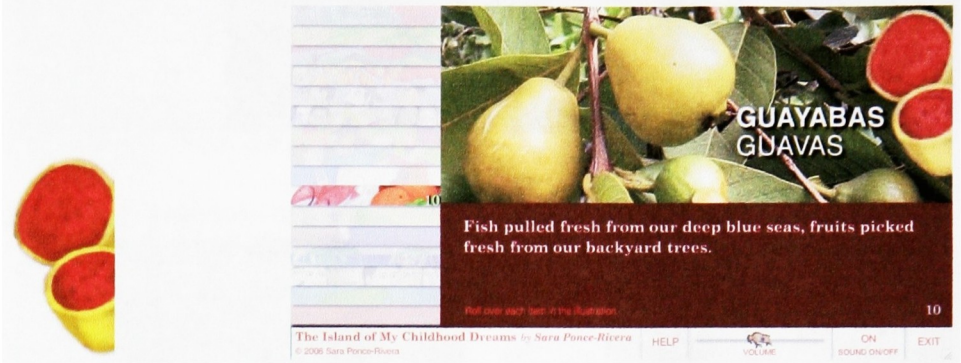


Figure 12.4: Limes rollover

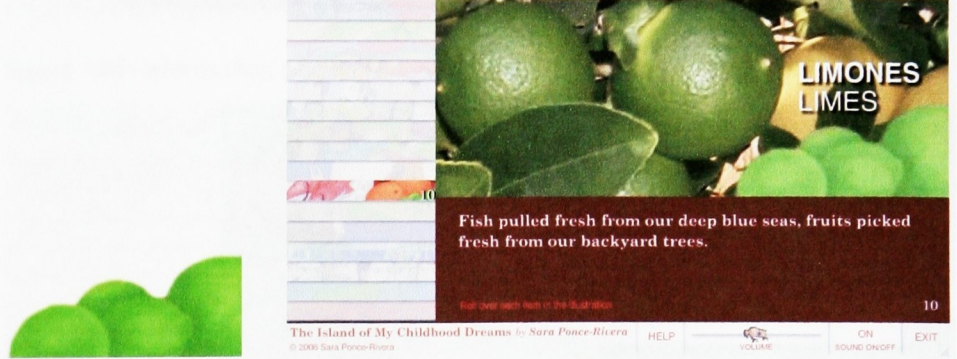


Figure 13: The coqui interactive page includes two types of information triggered by the user. As the mouse is moved over the coquí, a movie clip of the name and coquí's sound plays. When the user clicks on the coquí, information about it appears on a separate box to make the information more readable.

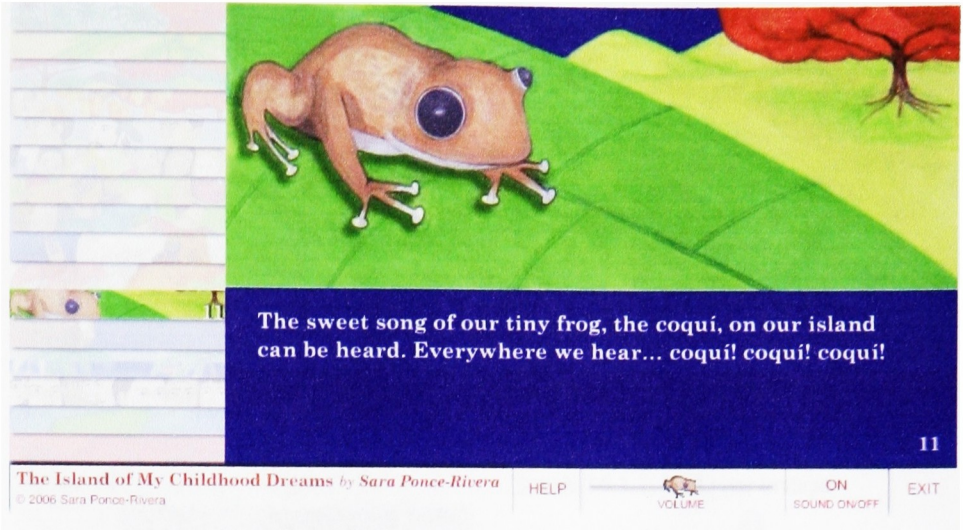


Figure 13.1: Animation of name

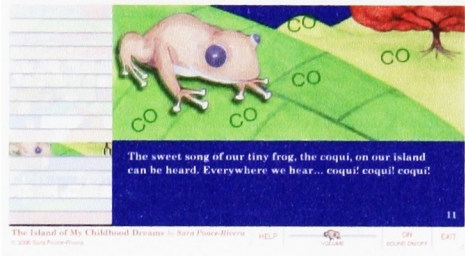


Figure 13.1.2: Animation of name

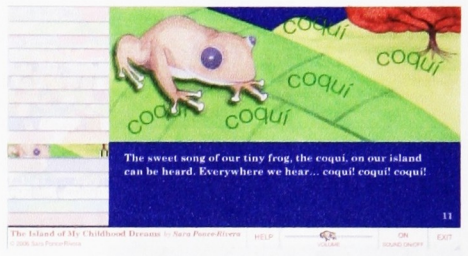


Figure 13.2: Information about the coquí

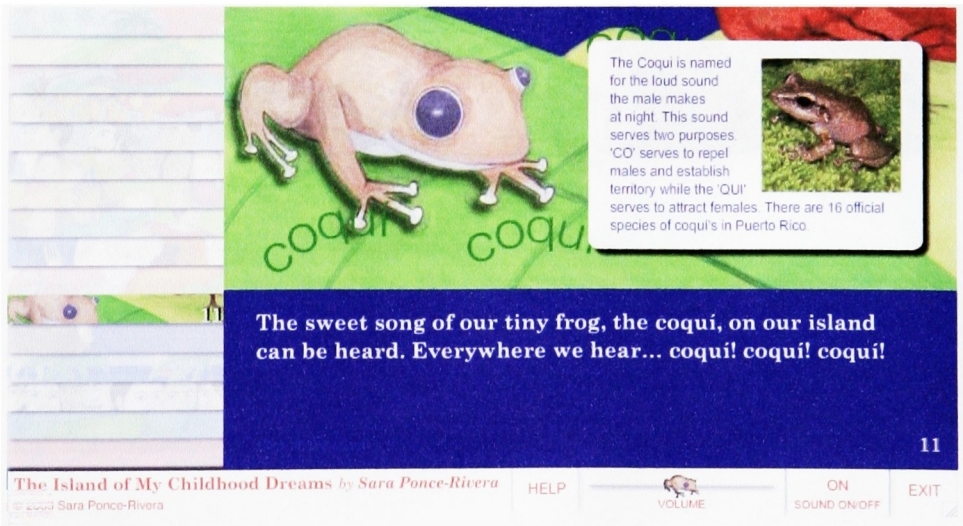


Figure 14: This interactive page includes an animation of the boats and a photograph of el Morro triggered by clicking on the image of the tower.

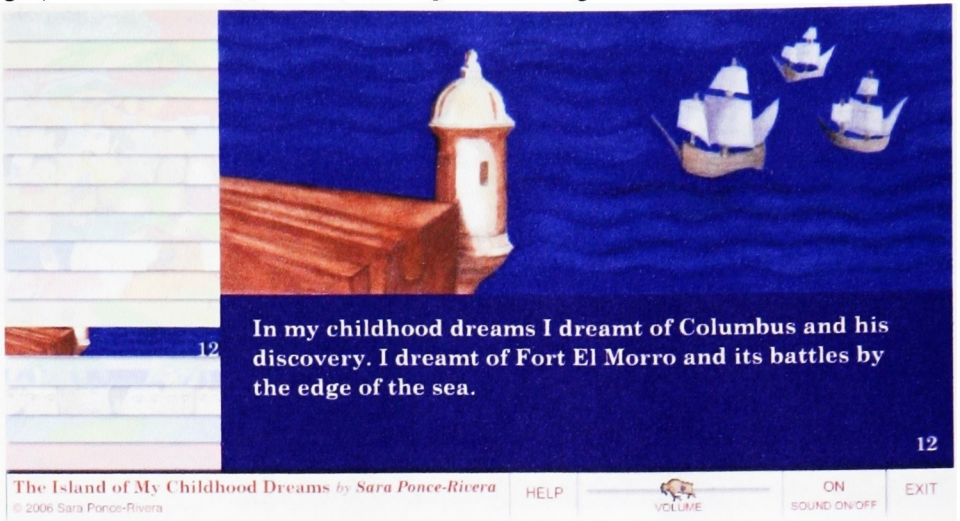


Figure 14.1: Rollover image

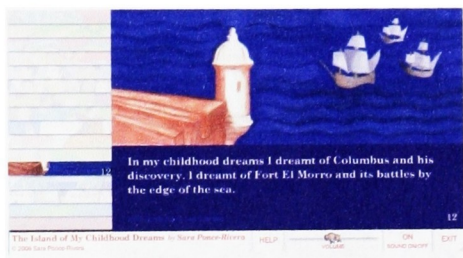


Figure 14.1.1: Rollover image



Figure 14.2: Animated images

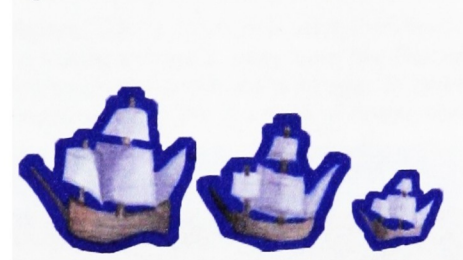


Figure 14.3: Photograph of el Morro

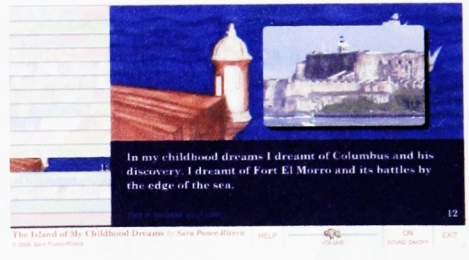


Figure 14.3.2: Image used for panorama of El Morro



Figure 15: This page has a simple two dimensional animation of the boat, and rollovers of the seashells. I wanted to keep this image simple with the two elements of surprise, the animation of the boat and the rollover of the seashells.

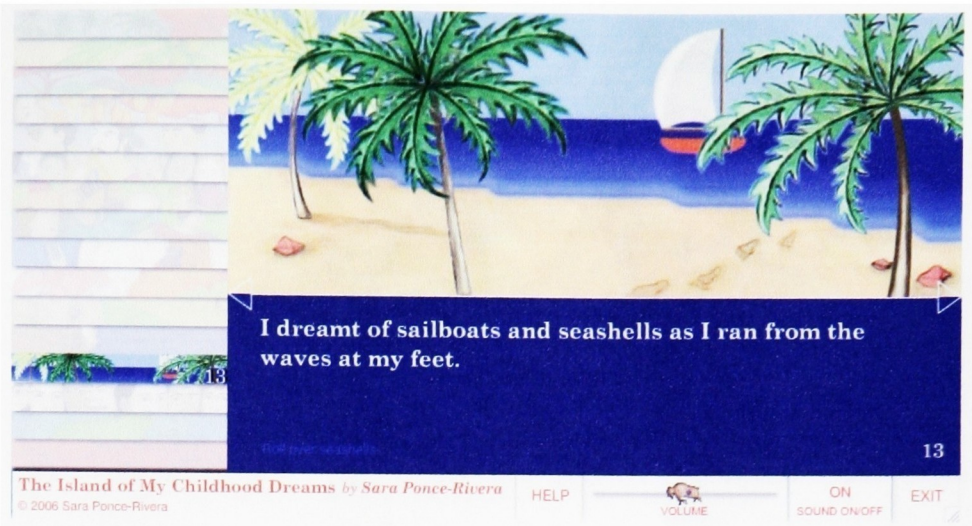


Figure 15.1: Images used to build the animation

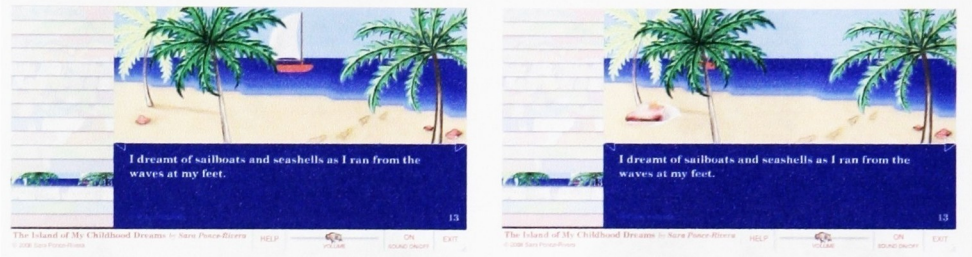


Figure 15.2: To have the animated boat move behind the palm trees I had to separate the palm trees from the illustration background and bring them into the scene as a separate image. To animate the boat I made a movie clip and brought it into the scene. The animation triggers as soon as the page loads.

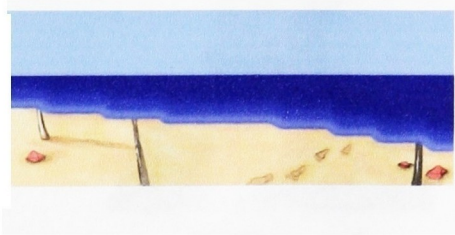


Figure 15.3: Boat image



Figure 15.4: Images seen when rolling over the seashells on the illustration.

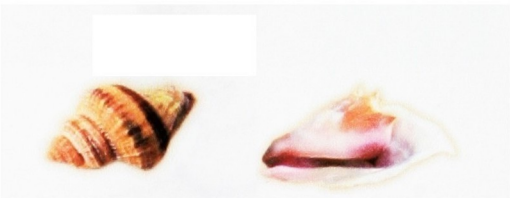


Figure 16: The individual image of each famous person on this illustration is used to load information about that individual. The information is revealed when a rollover image with information loads as soon as the mouse enters the images.

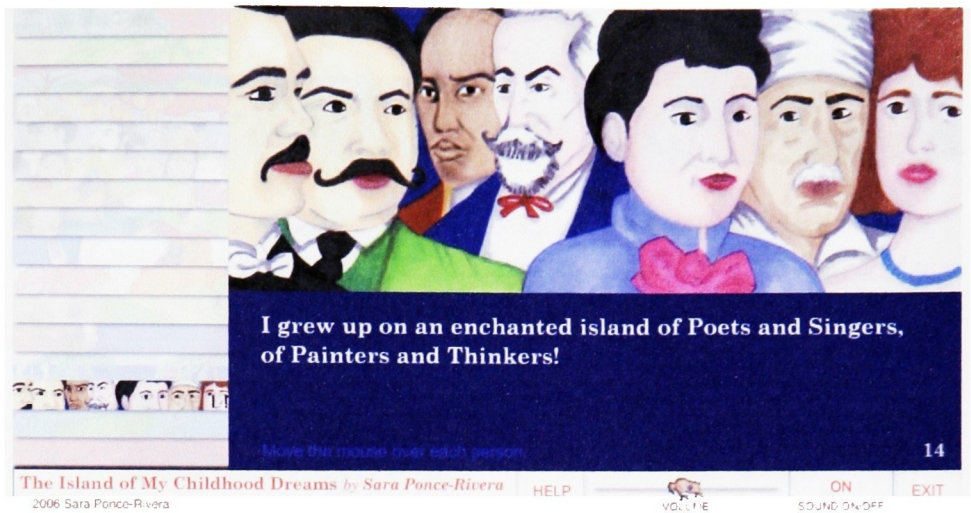


Figure 16.1: Images used to trigger rollovers.



Figure 16.2: Alejandro Tapia y Rivera

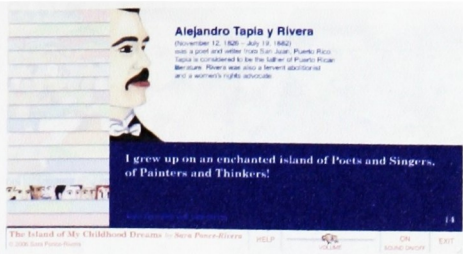


Figure 16.3: Juan Morel Campos

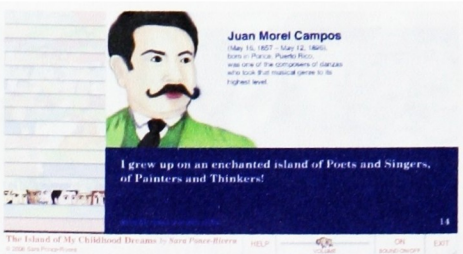


Figure 16.4: Jose Campeche

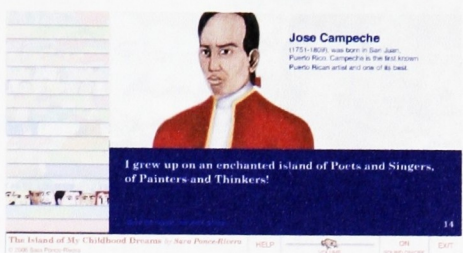


Figure 16.5: Eugenio María de Hostos

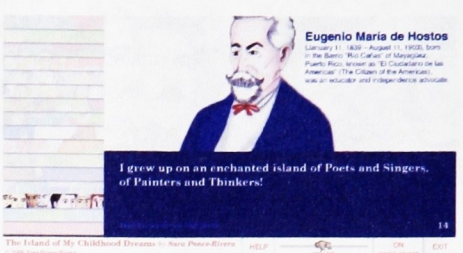


Figure 16.6: Lola Rodríguez de Tió

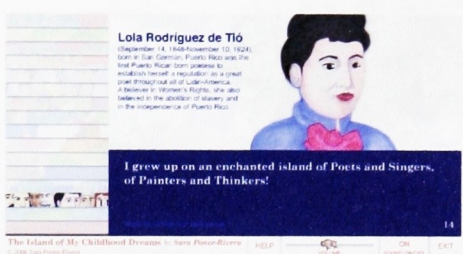


Figure 16.7: Rafael Cordero



Figure 16.8: Sylvia Rexach

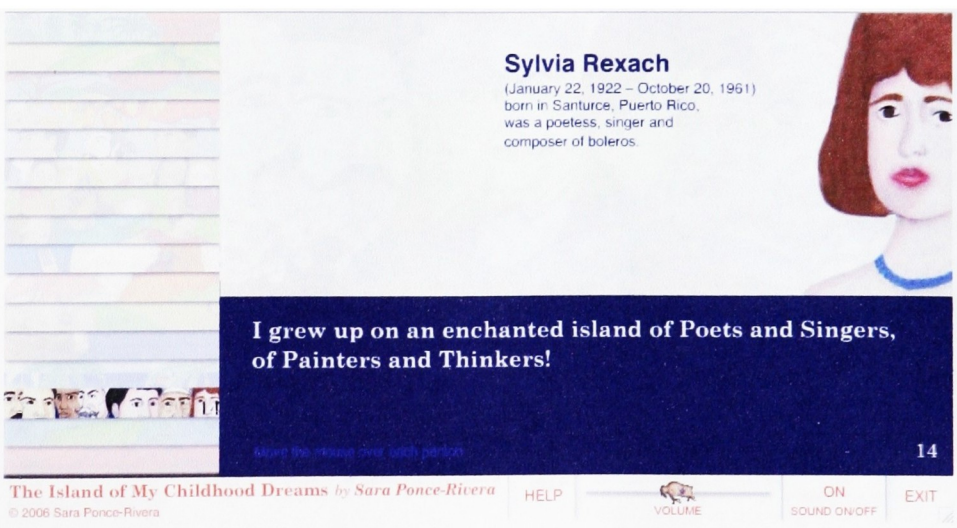


Figure 17: This page leads the user to a more in depth exploration of the Island of Puerto Rico.

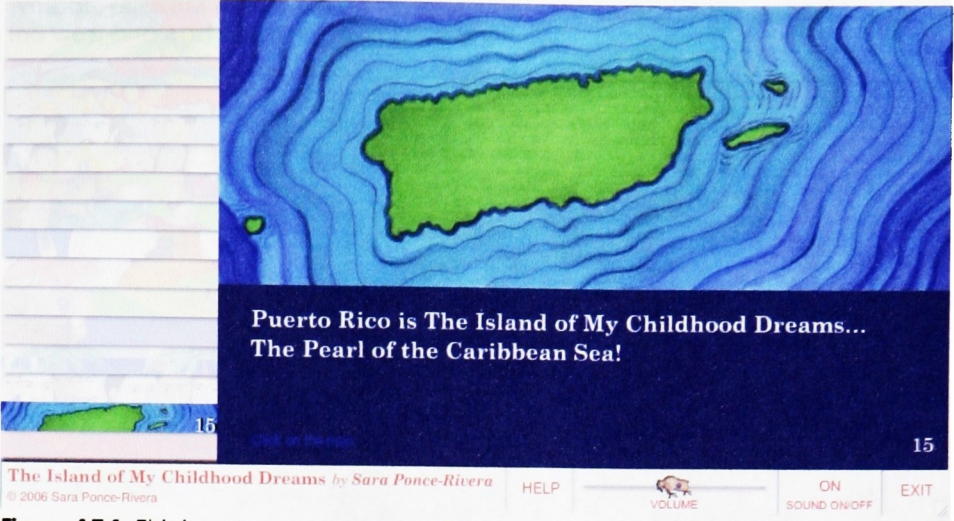


Figure 17.1: This image was separated from the illustration to be used as a rollover for this interactive page.

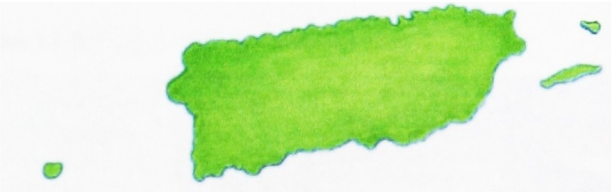


Figure 17.2: Moving the mouse over the Island reveals the official name of the Island of Puerto Rico, which is the Commonwealth of Puerto Rico, the names of the surrounding seas, and the names of the islands off the east and west costs of Puerto Rico.

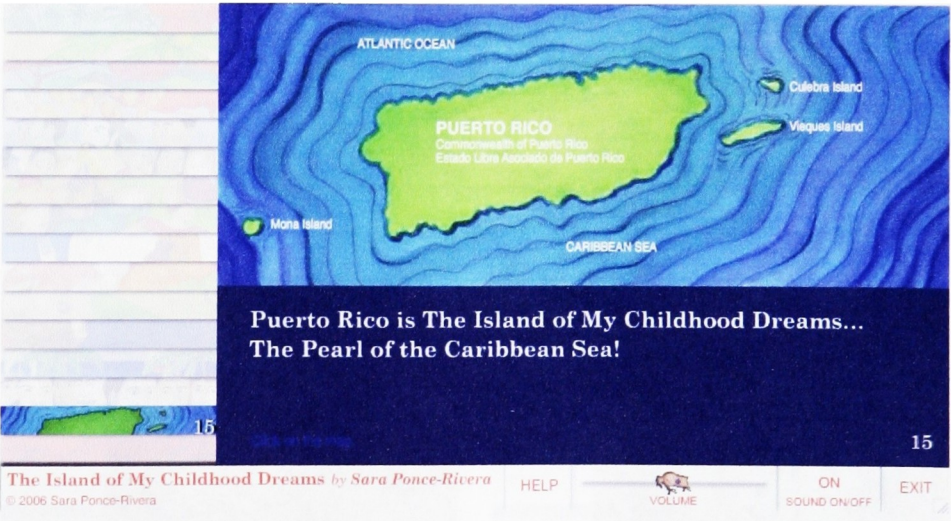


Figure 17.3: This interactive page is an introduction to some of the landmarks of Puerto Rico. Moving the mouse over the dots reveals photographs of the national symbols, different landmarks on the mainland, and a view of the smaller islands off the west and east coasts of Puerto Rico.

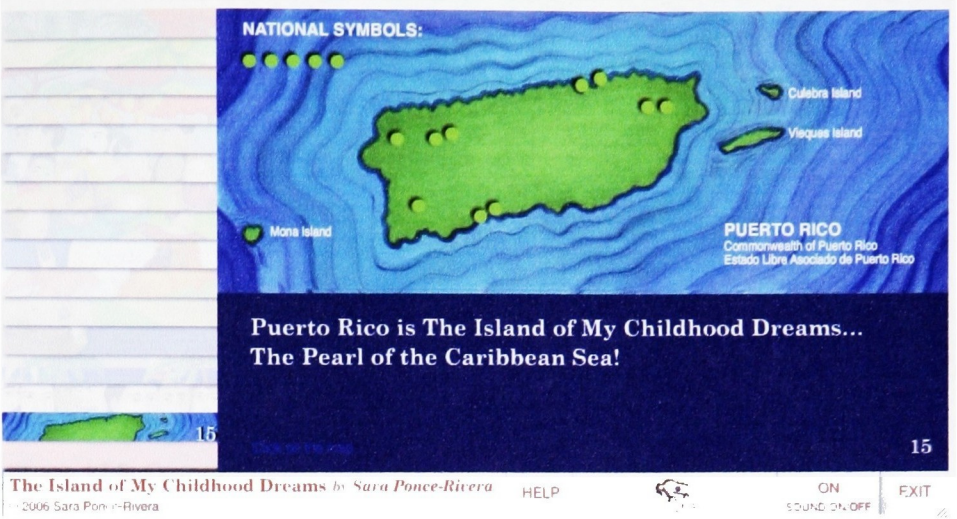


Figure 17.4: Flag of USA and Puerto Rico

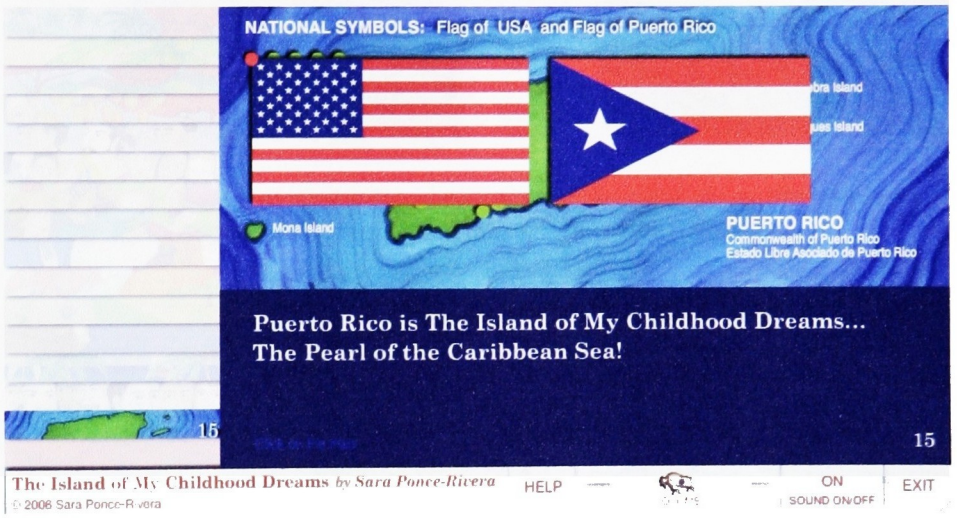


Figure 17.5: National flower

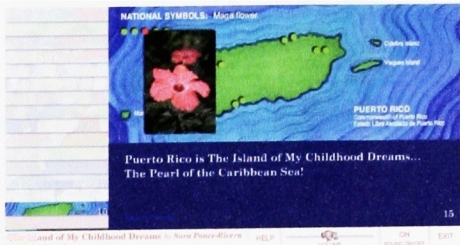


Figure 17.6: National bird

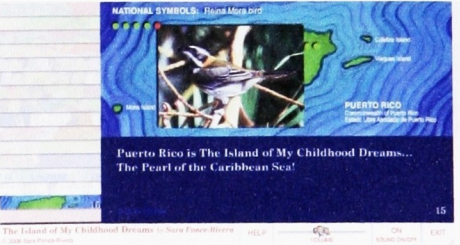


Figure 17.7: El Yunque

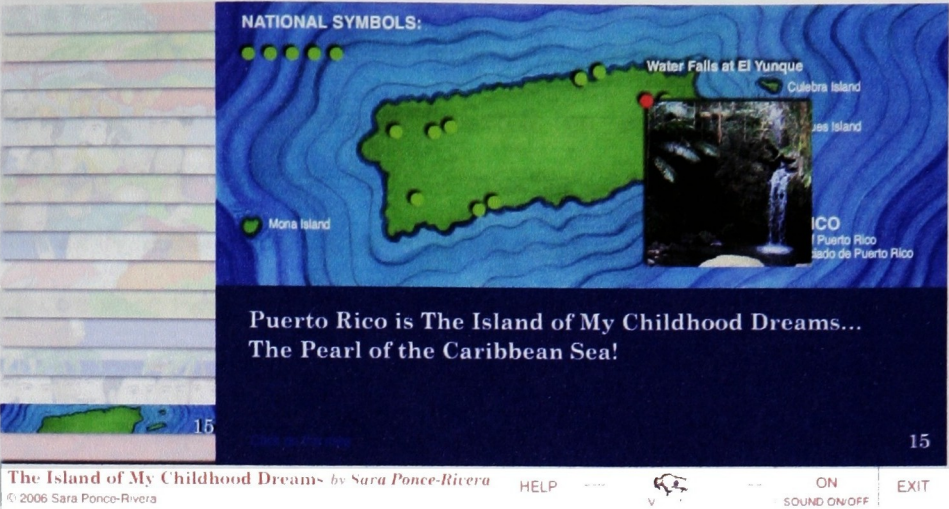


Figure 17.8: Camuy cave

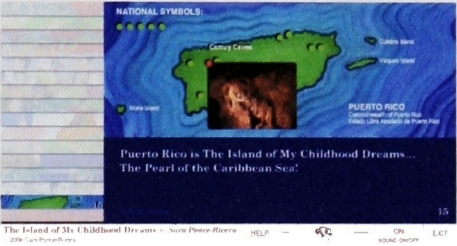


Figure 17.9: Beach in Vieques Island

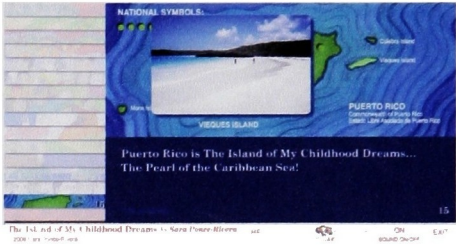
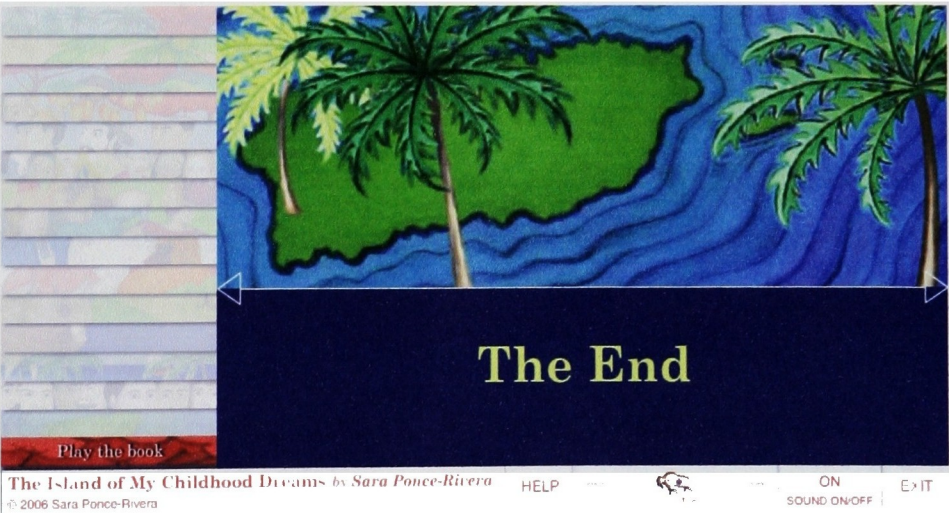


Figure 18: This image shows the final page in the interactive book. The arrows let the user go forwards or backwards moving only from page to page.



USABILITY TESTING

I conducted a survey to test the usability of the interactive book with ten children between the ages of seven to ten years old, which was the project's target age. I specifically wanted to test the ease of use and the clarity of the content's presentation. The survey was conducted one on one since I wanted to observe the children's reaction to the information encountered in the project. The printed book was given to the children to read by themselves, and if necessary, I provided assistance with the reading. After the child read the book, I presented the interactive book and explained to them that I had made the printed book as an interactive book or a computer book and that I wanted them to use it and let me know what they thought about it. The reaction was one of surprise and excitement to be able to see and use the book in the computer. I showed the children the icon to click in order to open the interactive book and then observed how they interacted with it.

The book opened to the main navigation page where they heard the title of the book and saw the title page. They also encountered the main navigation menu for the interactive book pages as small rectangular opaque images, and also the general menu for help, volume control, and exit. Most children proceeded to move the mouse up and down the main navigation menu looking at the rollover images and revealing a book spread as they moved the mouse from button to button on the menu. The use of this menu was intuitive and fun for them as they went back and forth between the pages.

It was harder for them to make the connection to press on a button to load an interactive page. Some children figured this out on their own being pleasantly surprised by the sound of the narrative for the particular spread after it loaded. They proceeded to look at the spread with more detail looking at the animations or finding the hidden surprises on the page. Other children had to be prompted to click on the buttons. After being prompted once, they were on their own exploring the interactive book, having the same reaction of surprise and eagerness to see what else they would find throughout the book.

The last button of the main navigation menu is labeled "play book," and when clicked a complete file of the interactive book loads and leads the user to a title page with a start button on it. I found that most of the children ignored the play book button continuing to interact with the book using the menu buttons for the interactive pages. However, when they clicked on the play book button they proceeded to interact with the book by clicking on the start button. Once they pressed the start button, they were taken to the first interactive book spread and animated arrows for previous and next appeared, giving the children a prompt to proceed and explore the book by using the arrows. As the children pressed the arrows to move from page to page, an audio for the narrative played. They were also provided with a simple line of directions for each page. Some children read the directions and proceeded to follow them, but most of them either continued to press the arrows in sequence or stopped to move the mouse over the illustrations to see if there were any hidden surprises.

From my observations, I concluded that it was a good decision to include two different ways to navigate throughout the interactive book. Some children clearly preferred to use the arrows to view the book in sequence, while others preferred to randomly jump from one page to the other. They did not seem frustrated either way, it was just a matter of preference. Both ways they were able to discover the different interactive activities woven throughout the book.

I also observed that the general navigation menu with help, volume control and exit was not used. The children readily proceeded to explore the interactive book without being concerned about seeking help or controlling the volume of the narrative. They were also not concerned about exiting the book once they were done. Perhaps they did not seek help from within the application because I was there to assist them if they needed any help. I found that I only had to provide help in a few occasions to show some of the children how to load the individual pages of the interactive book.

After each child was done viewing the interactive book, I proceeded to engage in a short conversation to obtain a verbal reaction to the printed and interactive book. I asked them which book version they preferred, what were their favorite sections, if the interactive book was easy or hard to use, and which navigation they preferred. It was no surprise that the answers were as unique as the individuals. The children were particularly drawn to the colorful illustrations, remarking that they liked the colors in the book. One child said that it would be nice to learn how to read the Spanish words in some of the pages. Another one

said that she liked the different people in the book, referring to the children's illustration on one of the book spreads. They also particularly liked the laughter audio and how the image became larger when the mouse moved over the image. Other children preferred the animations such as the mangos falling off the mango tree. One child did not like the side navigation for the individual pages and only preferred to use the arrows within the interactive book.

Overall I found that the children had a positive reaction to the printed and the interactive book. They responded positively to the artwork, the content, and the interactivity of the books.

CONCLUSION

The process of writing, illustrating and designing a printed book and then converting it into an interactive application proved to be challenging in many ways, yet very rewarding. The original proposal was an ambitious one, and one that had to be tailored to the essence of what I was trying to accomplish. I did not set out to make a new discovery. My objective was to create an educational tool for learning more in-depth information about the topics mentioned in the narrated story in a fun, exciting way. I wanted to provide a venue to allow children to have a sense of discovery as they learned more in depth information about Puerto Rico. I succeeded in accomplishing my objective. At the end of this process I created a printed book that stands on its own and an interactive book that can be marketed either as part of the book or on its own. The interactive application was developed with Adobe Flash.

The most challenging aspect of the project was the illustration process of each topic in the narrative of the book's manuscript. I wanted to represent the topic in an accurate, creative, beautiful manner that would appeal to children as well as to adults. I wanted each illustration to speak about its representation without words. The narrative accompanying each illustration would only strengthen its content. In looking for a way to resolve the challenge of illustrating, I came up with the solution of making collage compositions in *Photoshop* using copy free photographs as visual reference. I made compositions for most of the illustrations, which I used as guides to make line drawings, and then rendered them using color markers and pencils. The advantage of this process was

in giving me the ability to make several compositions for one illustration, allowing me to compare them and arrive at the best solution. The disadvantage was that it was easy to get too involved on each collage composition, at times spending too much time on each variation. At the end of this process however, I got the results I was expecting.

Using the color markers and pencils to render the final illustrations was also a good decision since I wanted to give the illustrations a hand painted look. The media did not require any drying time and the vibrancy of the colors remained intact when scanned into the computer. I could have used any of the illustration or painting programs to do the illustrations but I purposely decided not to. I did use such programs to touch up the illustrations when necessary and to prepare files for the interactive portion of the project. For example, I used *Photoshop* to add more color to the mango tree in one of the illustrations. I also separated the images I need for the rollovers in the interactive book.

Designing the printed book was a more intuitive process for me as a designer. I considered various options but ultimately I let the format of the illustrations dictate the layout for the printed book. I also wanted the illustrations to be the main focus of the book. I decided to use full page spreads with the typography woven into each illustration. This presented various challenges because at the same time I did not want the typography to overpower the illustrations. In some illustrations the placement of the text flowed easily, on others it did not. For instance, on the illustrations with people, I did not want to place text on their faces.

This limited the space I had for the placement of the typography.

Overall the final design for the book flowed as a cohesive piece.

In contrast, the interactive book had to be simplified because of the features required to make it work. I decided to add a color band at the bottom of each illustration where I placed the text for the narrative. This allowed me to add interactivity to the illustrations without overcrowding them. This approach worked very nicely because the children were able to explore the interactive book with minimal distractions.

My thesis is a successful project which can be marketed as a multicultural learning tool for schools and homes, however, there is always room for improvement. As the project stands now, it works very nicely, but a few additions would strengthen it even further. I would improve the project by adding a question and answer section to test learning, and to further engage the user. I would also provide a separate vocabulary section where the user can learn the meaning and pronunciation of the Spanish words woven throughout. And finally, I would translate the printed and interactive book into the Spanish language making it also a language learning tool. My ultimate goal for the thesis project is to publish both the printed and the interactive books as a commercial venture.

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