GGBooks Reading Club

Final Report

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1. <u>Abstract</u>

Studies have shown that reading to a child improves the child's reading and learning ability. Grandparents have been known to read to their grandchild more often than the child's parents due to the societal changes. However, studies have also shown that geographic mobility has altered the roles grandparents play in their families. Due to this geographic mobility, many grandparents are unable to see their grandchildren regularly and are subjected to use occasional visits, letters and telephone calls to maintain relationships. Overall, this makes it difficult for a grandparent to read to the grandchild.

GGBooks is a web-based interface that has been designed to overcome this problem by enabling grandparents and grandchildren with a way to communicate with each other through reading of books from the ICDL (International children's Digital Library). On this website, the grandparent or the grandchild can sign up for a single account that they will both have access to. Signing up will provide them with the functionality of being able to read and record a book, post and read messages as well as listen to a recorded reading.

2. Credits

Camille Brooks

- Designed low fidelity prototype for GGBooks interface
- Wrote tasks and questionnaire for grandchildren usability testing
- Conducted usability tests
- Programmed the grandparent's signup page and the login page.
- Wrote the introduction, overview of problems and previous work including references for the final report

Shiva Dehghan

- Coordinated group assignments
- Designed low fidelity prototype for GGBooks interface
- Wrote tasks and questionnaire for grandparents usability testing
- Programmed the grandchildren signup page and the login page.
- Wrote the development process for the final report

Shima Eshraghi

- Assisted in coordinating group assignments
- Designed low fidelity prototype for GGBooks interface
- Wrote tasks and questionnaire for grandchildren usability testing
- Programmed the recording and the listen pages.
- Wrote the conclusion, future work possibilities as well as recommendations to future developers for the final report

Ahmad Ibrahim

- Designed low fidelity prototype for GGBooks interface
- Wrote tasks and questionnaire for grandparents usability testing
- Conducted usability tests
- Programmed the picture browser and uploading for both the grandparent and grandchildren signup page.
- Presentation of the GGBooks interface design for the final report

Adebukola Oyenusi

- Designed low fidelity prototype for GGBooks interface
- Wrote tasks and questionnaire for grandchildren usability testing
- Conducted usability tests
- Programmed the post and read message pages
- Wrote the abstract, credits and acknowledgment for the final report

3. <u>Introduction</u>

<u>Overview of the Problem</u>

Reading has always been seen as a way that families can bond. It can be a personal yet educational experience for the entire family. In light of this, we desire to create a system that will allow grandparents and grandchildren to continue the age old tradition of reading with one another. In today's fast paced world, distance, varying time zones and differing schedules can make it difficult for grandparents to schedule quality time with their grandchildren. This can result in a weakening of family ties.

The International Children's Digital Library (ICDL) has created an online library that can be found at www.icdlbooks.org, for teachers, children, parents and many others from varying backgrounds and nationalities to visit and read books online. ICDL wanted to expand the usage of their website to include a way for grandparents and grandchildren to correspond through reading books together online. Our group has provided a unique solution to achieve this goal. We propose that grandparents and grandchildren correspond via voice recordings of their chosen books. The idea is that grandparents and grandchildren will come to a centralized website, record their stories and leave them there to be listened to later by the other individual.

This system will include a single interface for grandparents and for grandchildren. The interface will include the option to find ICDL books, record readings, in whole or in part, and then upload the recording to the system. The system will also provide a user's guide for uploading voice recordings to the system.

<u>Relevant Web Sites</u>

This idea to provide grandparents and grandchildren the opportunity to go online and make voice recordings of books has proven to be very unique because there has not been much work done in this area by others. The few papers or relevant websites that have discussed problems similar to this one include:

-Grandparents as Parents
Overview: An increasing number of grandparents are finding their later years different from what they expected. Many grandparents have taken on the role of surrogate parents to their grandchildren. Recent legislative activity is also likely to contribute to an increase in the number of grandparent-grandchild families in the future. Living nearby, the grandchild knows grandmother and grandfather; they're part of everyday life. Being far away is different, geography causes gaps between them.

Comparison to GGBooks: GGBooks website allows grandparents and grandchildren to interact with each other through reading book. This matter makes it possible for grandparents to take role of parents and to be apart but still to get in touch with their grandchildren.

-Grandparents Today
Overview: According to Erik Erikson, psychoanalyst, there are several stages of development within the life cycle. These stages were formulated from extensive experience with children and adolescents. Grandparents can help their grandchildren develop trust, autonomy, initiative, identity and industry during the particular stage of their life by having interaction with their grandchildren.

Comparison to GGBooks: According to Erik Erikson, GGBooks website helps grandparents to teach their grandchildren different aspects of their life such as: trust, initiative, and autonomy, etc. With GGBooks the matter of distance and time zone could not prevent grandparents from teaching their grandchildren. In the GGBooks website, grandparents are be able to pick the book which is related to one of these aspects from the ICDL website and tell their grandchildren how to use these aspects in their life to be successful. They can support and encourage their grandchildren by reading and recording books to them that teach such values and morals.

-Palaver Tree Online
Overview: Palaver Tree is an online community that supports kids interviewing elders to build up a shared database of oral history. This system is designed to integrate oral history to a typical middle-school classroom. The intended users are kids, teachers and elders. Palaver tree has four main componenst; Profiles, Discussion Space, PavalStories and a Home Screen.

Comparison to GGBooks: Unlike Palaver Tree which targets middle-school kids and recruited elders by teachers, GGBooks is a website designed specially for grandparents and grandchildren. Besides enriching the child's education, GGBooks provides a way for grandparents to share their values and culture with their grandchildren and helps the child to develop the habit and love of reading. PavalStories, the shared stories in Palaver Tree, are the reports that kids write based on historical experience or memory that elders have. However, the shared stories in GGBooks are the voice recordings of grandparent and grandchild based on ICDL's book collection. The Discussion Space is very similar to the GGBooks' message board. However, unlike Palaver Tree, GGBooks allows the users to send and receive voice recordings. Also it provides a painting environment for the kids.

-Children's Books Online
Overview: Children's Books Online is growing volunteer project by Network for Goods. It provides children, parents and educators with hundreds of antique, illustrated literature, which are being translated into 22 different languages for educational purposes. Some of their objectives are to create sound files for their books and to increase the number of books online.

Comparison to GGBooks: Although this website's audience includes children, which is similar to the GGBook Reading website, it does not provide the proper navigational structure that children can follow. The website is a text based site with fonts that are too small for children. As a result of these, some users will probably experience difficulty finding a story to read, except when helped by an adult. GGBook Reading website on the

other hand, is designed with the notion of users (children) being able to access the website on their own to bring about learning. Therefore, the proper navigation such as visual guide and graphics is used.

-Reading Is Fundamental, Inc.
Overview: RIF is the oldest and largest children and family nonprofit literacy organization in the United States. Its programs combine three essential elements to encourage children's literacy: reading motivation and family and community involvement. It also provides articles and tips to help parents bring about good reading habits in their children.

Comparison to GGBooks: In order to bring about family and community involvement, this web site integrates a login system for children and adults. This idea of a login system is related to the login concept of the GGBooks Reading website. However, the GGBooks website has two different designs for the child and adult interface while the RIF website uses only one design. The interfaces for the GGBooks website allows back and forth interaction through posting and receiving messages, drawing and recorded stories between both users (grandparent and grandchild). Whereas, the RIF interfaces permits the user to send only text, and / or drawings.

-Suggested Reading for Grandparents & Grandchildren
Overview: A group by the name of *Relatives as Caregivers* from Erie County, New York made a website and a guide for its community's children and those who take care of them. Many caring for the children are relatives, often grandparents, who assumed the care of their grandchildren due to societal problems. This online resource provides information, support and activities for caretakers, with special attention shown to grandparents. One of the resources is a reading list that is divided up into two parts, one for the grandparent and the other for the grandchild, each includes a summary of a book and a suggested reading age.
Comparison to GGBooks: Many of the goals of ICDL and this community site are similar, by linking up with grandparents with a useful activity (reading) and advocating loving relationships. Both websites have the same general audiences, but differ on the methodology and objectives. Erie County's website deals with a personal one-on-one interaction with the caretaker and child, whereas ICDL bridges people separated by time and distance. Also the organizations of the websites are different. Erie County's website consists of a list of several books, a summary, author, date and a suggested child reading age. ICDL also makes the distinction of the child's age but also makes a special effort to incorporate different cultures and backgrounds; where Erie County objective is to address specific societal and family problems. ICDL also takes into account a global audience, and does so by including a Multilanguage feature, where it is lacking on Erie County's website. Specifically, the GGBooks reading club plans to implement features that will bring grandparents and children separated by long distances and time together to communicate and share experiences that Erie Community is promoting locally within their community.

Discussion of Previous Work

There has been a lot of discussion about the role that grandparents play in the lives of their grandchildren. Some of the work done to bridge the communication gap between grandparents and grandchildren has been that of providing a shared database of oral histories online by way of children interviewing their elders. There also are websites that contain children's books online. Some of these websites include audio files of these books. Although these efforts are worthwhile, there hasn't been any progress towards having personalized book reading between grandparents and grandchildren. With the lack of having a system to provide personalized book reading, GGBooks has provided a unique solution to grandparent and grandchild book reading via personalized voice recordings of books online.

4. Presentation of Design: GGBooks Interface

I. *General Approach to Design*

From the beginning, our group, the *GGBooks Reading Club*, felt very passionate about adding our input to the current HCILabs project, of the Internet Children's Digital Library (ICDL). An extensive project constantly growing, the ICDL collection includes 829 books in 32 languages and has been accessed from 158 countries worldwide. However, one thing it lacked was a way for people, specifically family members, to communicate, via the internet, and share the importance of reading. In today's global society, more and more families are separated by space and time. As a group we strove to solve this problem by bringing these families together with the help of ICDL.

Our goal was simple, to have grandparents read to their grandchildren. After defining a vision, *GGBooks* set out to implement it. We first needed an interface. Deciding on *Macromedia's Flash* was unanimous; we all agreed that its friendly atmosphere would make it most suitable for our users, children and older adults. It would later also offer an unbiased interface, regarding the user's age and gender. Our first designs and prototypes did not take into account any of the technical features, rather it concentrated on the design and presentation. Research was constantly being conducted by the group members, who effortlessly tried to find a method for users to communicate. Every time it seemed like we had exhausted all possibilities, we would stumble upon a piece of information that would get us closer to reaching our goal.

Soon we realized our original designs were too ambitious and did not take into account our time constraints, limited resources, and lack of technical expertise with *Flash*. Much of the HCIL staff were very helpful. Haixia Zhao and Anne Rose gave possible future add-ons. Sabrina Liao directed us in the right direction when we had technical questions or difficulties with *Flash*. However, most of the information that benefited the final product was found by the group members. With the help of GoogleGroups, we were able to make voice recordings with *Flash*, something that at one moment looked unlikely. Safety measures were always in place, as we thought of possible alternatives along the way. Just in case we were unable to record in *Flash,* our group was ready to switch to *Visual Studios .NET*. However, this would take our application offline, and hence lose the functionality of allowing others to communicate across time and space. Many other features such as browse needed a server to store the pictures. A workaround was used for now, until a server can be developed.

All the while, our group sought outside help from private web developers and contractors, to help give us ideas, actual industrial implementation and an idea of cost, which clearly was out of our budget. The final obstacle that we had to overcome was to take our locally working implementation and make it available online. However, the lack of a working server and a back-end for a database in ASP or PHP, ended our dream project. *GGBooks* hopes that maybe one day another group will take up the torch where we left off.
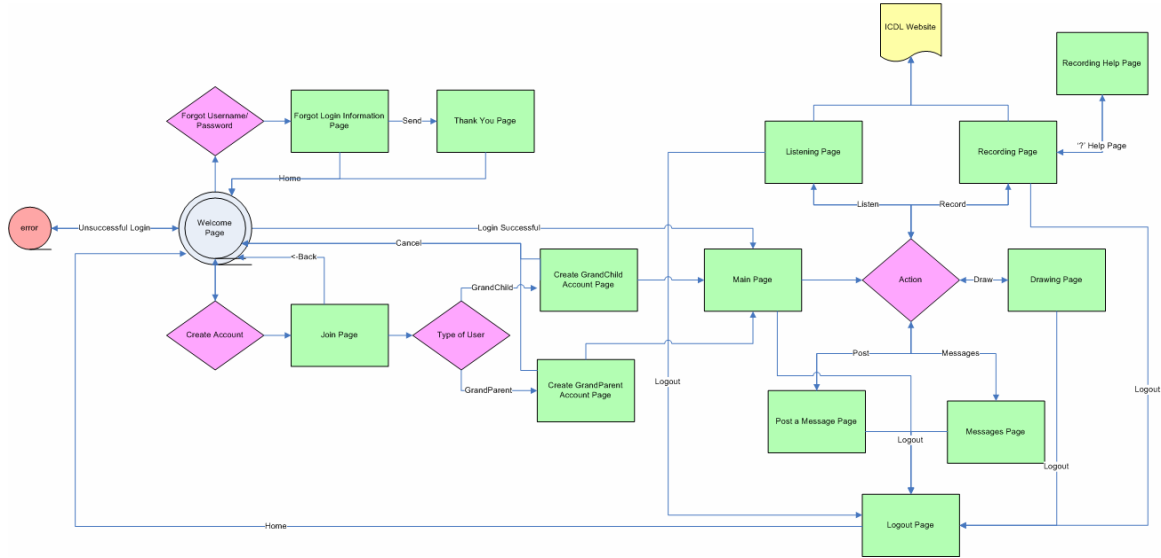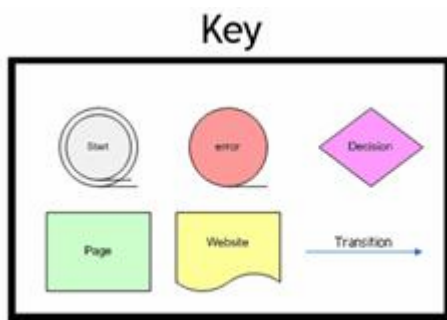
II. Transition Diagram

Figure 1: Transition Diagram

III. *Tutorial*

Welcome Page

Figure 2: Welcome Page

This is the very first page, titled "Welcome Page" because it greets the users. Here users can login with an already created id/pass combination or create a new one. It also has support for users who have forgotten their login information.

Tutorial: Enter login information in labeled fields. Error checking will notify you if errors exist in your input. If you are unable to login, please click on the "*Forgot Password or user id*" link. If you are new to *GGBooks* and do not already have a username and password, please click on the "Sign up" button.

Forgot Password or User ID Page

Figure 3: Forgot Password or User ID Page

When a user has forgotten their login information, they are directed to this page where they can enter their email address to be reminded.

Tutorial: Please move the cursor to the text box and enter your email address provided at registration to be reminded of your login information. If you found yourself here by accident, please click "Home" to return to the Welcome Page.

Thank You Page

Figure 4: Thank You Page

This page will be displayed after the user has entered their email address for password/login retrieval.

Tutorial: Click on "Home" to return to the Welcome Page.

Join Page

Figure 5: Join Page

When create new user users will be prompted with the Join page, where they must make a decision to register as a grandchild or a grandparent. There also is an option to return back to the Welcome screen.

Tutorial: If you are a grandparent please click on the older couple on the right. If you are a kid, please click on the children on the left. If you found yourself here by mistake please click on the "<-Back" button to go back to the Welcome Page.

Kids Sign Up Page

Figure 6: Kids Sign Up Page

This page will be shown once a user clicks on the kids from the Join Page. Users are required to provide a username, password, and an email address. There also are optional fields, such as age and gender. Another feature which is also optional is the capability to browse for a picture.

Tutorial: Please move the cursor to the first blank field, here you will provide a username. The second field is asking for a password. Please pick a unique secret phrase that you can remember to use when you login. Please confirm this pass phrase in the next textbox. Please provide an email address that will be linked to your account for future support. What remains are optional information, so you can tell us more about you. To find your picture, please press the "Browse" button, and look through your computer for a .jpg .gif or .png image file. When you are done please press "Register" to complete the registration process. If you found yourself here by mistake, please press "Cancel" to be redirected back to the Welcome Page.

Grandparents Sign Up Page

Figure 7: Grandparents Sign Up Page

This page will be shown once a user clicks on the grandparents from the Join Page. Users are required to provide a username, password, and an email address. There also are optional fields, such as age and gender. Another feature which is also optional is the capability to browse for a picture.

Tutorial: Please move the cursor to the first blank field, here you will provide a username. The second field is asking for a password. Please pick a unique secret phrase that you can remember to use when you login. Please confirm this pass phrase in the next textbox. Please provide an email address that will be linked to your account for future support. What remains are optional information, so you can tell us more about you. To find your picture, please press the "Browse" button, and look through your computer for a .jpg .gif or .png image file. When you are done please press "Register" to complete the registration process. If you found yourself here by mistake, please press "Cancel" to be redirected back to the Welcome Page.

Main Page

Figure 8: Main Page

From this Main Page, users can access all the functions of *GGBooks*. They will be able to access ICDL and read, record and listen to recordings, post messages and read them, and also draw. When a user logs in, they will provide a picture; this will replace the placeholder in the center of the page. The option to logout is on this page.

Tutorial: This is your Main Page. To read or record a story, please press on the books, or the "Read" button. To read your messages, please press on the journal, or on the "Messages" button. To listen to your recordings, please press on the person their hand held up to their ear, or on the "Listen" button, to leave a message, please click on the quill and note, or on the "Post" button. When you are done don't forget to logout.

Read/Recording Page

Figure 9: Read/Recording Page

Lo and behold the most important aspect of *GGBooks;* recording. This page will allow users to access the ICDL website where they can read books and record them. Before recording, users must first enter a file name. A list box on the right shows the current recordings and a counter at the bottom shows the progress. From this page users can also navigate back to the Main Page and Logout.

Tutorial: *See Figure 10.*

Recording Help Page
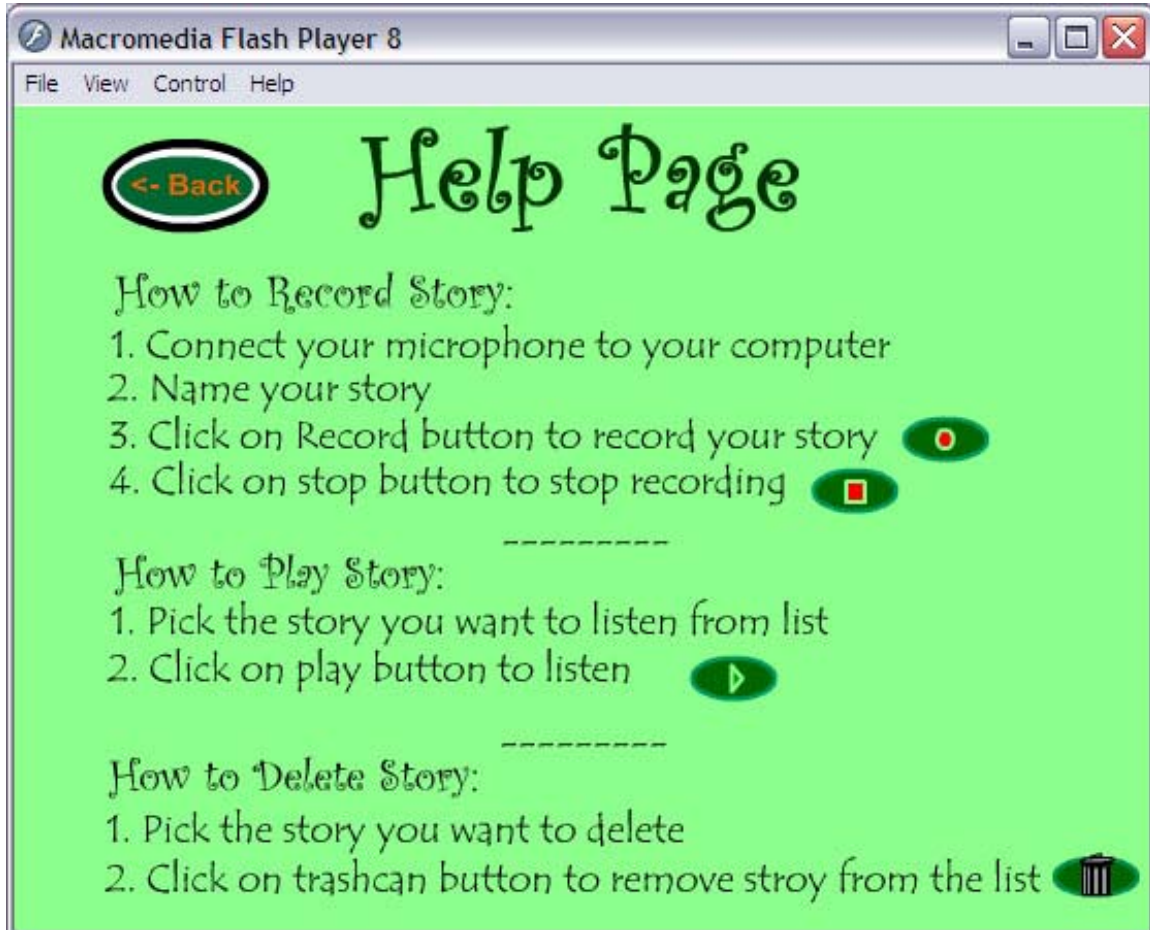
Figure 10: Recording Help Page

This Help Page is specifically for the issues dealing with recording. It provides users with a step by step detailed guide on how to record using *GGBooks*. When done users can return to the Recording Page.

Listening Page

Figure 11: Listening Page

The Listening Page, where the users will find their recordings. On the right hand side, a list box contains all Uploaded Recordings. Some of the buttons may look familiar to those from the Recording Page. Also users will find a link to ICDL, to follow along. A direct link cannot be included along with each recording due to the setup of the ICDL website. From this page users can also navigate back to the Main Page and Logout.

Tutorial: To listen to a recording, select one from the list box on the right and press the "play" button. To stop a recording press the "stop" button. When you would like to remove a recording, press the "delete" button. To access the ICDL website, press the link on the top center of the page. To return back to the Main Page, press on the "<-Back" button. To logout, press the "Logout" button.

Post Page

Figure 12: Post Page

From this page, users can leave messages to their alter-users. The picture place holder on the right identifies the child. This is the picture that is entered at the registration page.

Tutorial: If you are the grandparent, please click on the top textbox and leave a message for your grandchild. If you are the grandchild, please click on the bottom textbox to leave a message for your grandparent. The "Clear" button will reset your fields and the "Save" button will commit the posting to the journal. From this page users can also navigate back to the Main Page and Logout.

Messages Page

Figure 13: Messages Page

This page will keep record of postings left from the user to the alter-user and vise versa. Pictures will identify which user has left what message. The "delete" button enables users to remove unwanted messages. From this page users can also navigate back to the Main Page and Logout.

Tutorial: No modifying of the text is permitted; however, there is an option to delete unwanted messages by clicking on the garbage pale or the "delete" button. To return back to the Main Page, press on the "<-Back" button. To logout, press the "Logout" button.

Drawing Page
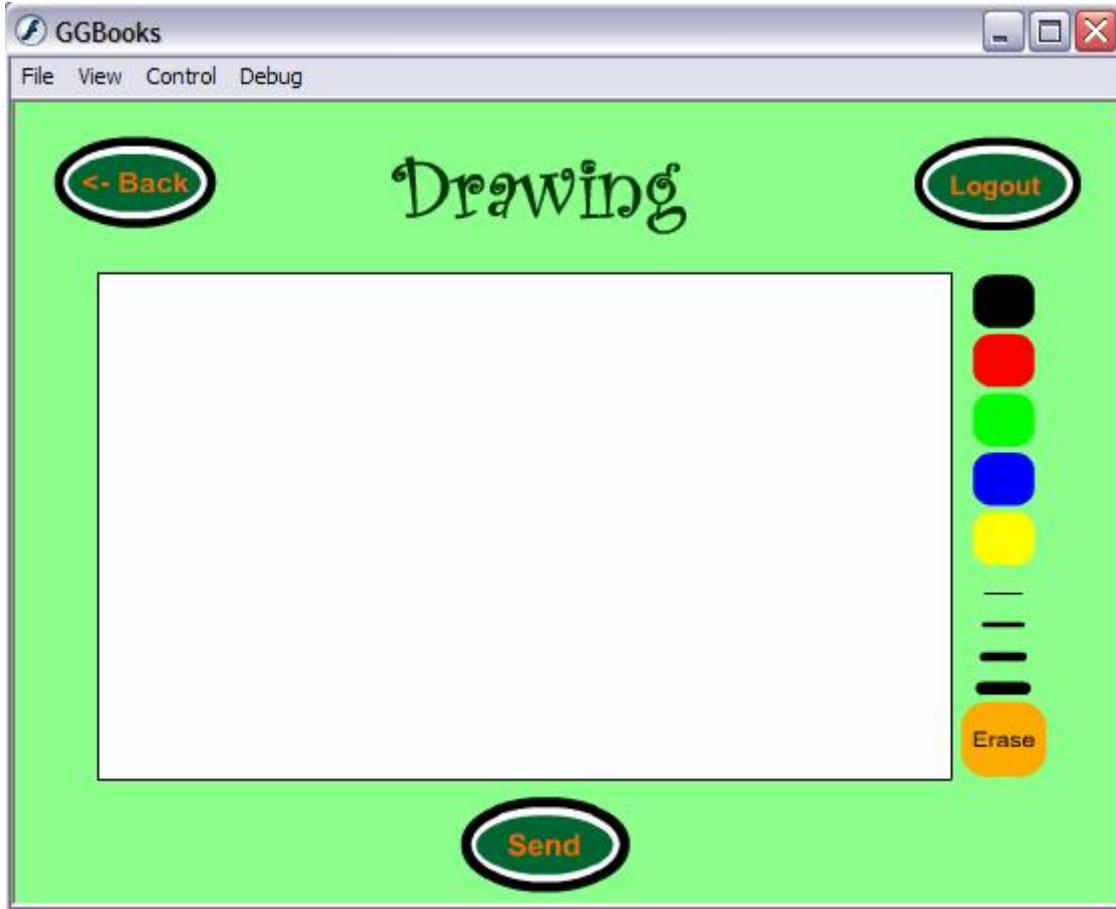
Figure 14: Drawing Page

A simple and fully functional drawing page. From this page users can also navigate back to the Main Page and Logout.

Tutorial: To draw, please move the cursor to the center on the white surface and press down and move the mouse. To change color please select one of the pallets on the top right. Options include: black, red, green, blue and yellow. To change your brush options, please select the size that best suits you, categorized, fine to thick, top down on the center right. To erase any of the drawings you have done, please select the orange circle on the bottom right and press down and move the mouse over the area you would like to be erased. To return back to the Main Page, press on the "<-Back" button. To logout, press the "Logout" button.

Picture Sent Page

Figure 15: Picture Sent Page

This Page will be displayed after a user has successfully sent a picture drawn on the Drawing Page. It notifies the user that their drawing has been sent to the email address associated with their account.

Tutorial: Press the "Home" button to be redirected back to the Main Page.

Logout Page

Figure 16: Logout Page

This page will be displayed when a user has clicked on the "Logout" button. From this page a user may elect to return back to the Welcome Page.

Tutorial: To return back to the Welcome Page press "Home".

5. Development Process

I. *Tasks Requirements*

Introduction

Background

The International Children's Digital Library (ICDL) is a five-year project funded by the National Science Foundation (NSF) and the Institute for Museum and Library Services (IMLS) to create a digital library of international children's books. The materials included in the collection reflect similarities and differences in cultures, societies, interests, lifestyles, and priorities of peoples around the world. The collection's focus is on identifying materials that help children to understand the world around them and the global society in which they live.

This website is an excellent tool for its targeted users. However, at the current time, the website does not provide interaction between users distanced by space and / or time. Therefore, we propose a system where grandparents and grandchildren can communicate with one another via the ICDL website. This will be accomplished by the grandparent and grandchild pair using their personal computers to read and make voice recordings of stories from the ICDL website. These recordings will be uploaded onto the ICDL website by the grandparents and grandchildren then downloaded by them. Therefore, both sets of users can come any time of day to hear the voice recordings of their favorite stories. This system will include a single interface for grandparents and for grandchildren. The interface will include the option to find ICDL books, record readings, in whole or in part, and then upload the recording to the system. The system will also provide a user's guide for uploading voice recordings to the system.

Expected users

This addition to the ICDL website will target two categories of users. The first users will be children ages 7 to 11 of varied cultures, interests and genders. The second set of users will be grandparents of varying ages, cultural backgrounds, lifestyles and genders. Both sets of users must have a basic knowledge of computer usage. This basic knowledge includes simple website navigation.

Work Context and usage

The grandparent – grandchild interface will be an application that will first require the users to register. After typing in their personal information, the user will be asked to type

the name of the person or persons that he/she wants included in his/her network. Once logged in, the interface will include buttons that users can click on to make book selections, begin recording their book reading, playback their recording before saving and download previously uploaded recordings. The interface will also include a message board where the users can share their comments.

Usage of this system will benefit users by:

- Creating bonds between grandparents and grandchildren
- Helping to enrich the child's education
- Providing a way for grandparents to share their values and culture with their grandchildren
- Exposing children to computer interaction at an early age
- Helping the child to develop the habit and love of reading
- Making the grandparent feel useful and appreciated
- Pushing the child to read and learn about other cultures and values
- Increasing the child's typing skills

GGBooks Interface Tasks

Scenario 1

The Eshraghi family live in Connecticut, United States. They have a seven year old son named Arteen. Arteen's parents really want to teach him about the Persian culture via books. However, Arteen's parents have problems with finding Persian books and setting a time to sit and read these books to him. Therefore, Arteen's parents ask their parents, who are living in Iran, to find books on the ICDL website and read them to their grandson Arteen. Arteen's grandparents have a basic knowledge of the computer. So they registered on the ICDL website and found good Persian books. Arteen's grandparents read one of these stories and then recorded and uploaded it to the website.

Discussion:

The grandparents need to be able to register and find the right book through this system. They also must be able to record the story they read and upload it. This will allow the grandparents to pass on their culture and values to their grandchildren.

Scenario 2

A grandmother, Mary, watched the 11 o'clock news and she heard about a crime that a teenager had committed. She felt so bad and wanted to some how talk about good manners and consequences of bad behavior to her grandchild.

Discussion:

Grandparents can go to our website and choose a book regarding crime. Then make a voice recording, and send it to their grandchildren or simply make a comment and send their grandchild a message saying that they have to read this book.

Scenario 3

Steven is a nine year old boy with a learning disability related to reading. He left his family in Nigeria to live with his guardian in the United States. As a result of this disability, ever since he came to the US, Steven has been practicing how to read with the help of his guardian. One day he felt confident about reading on his own. So he decided to read to his grandparents in Nigeria to impress them. He visits the ICDL website, reads a chapter of his favorite book and clicks send it.

Discussion:

Every child wants to impress their grandparents by showing how their reading skills have improved. The grandchild can register on the ICDL website and pick his favorite book to read. Then he/she can make a voice recording and send it to his/her grandparents.

Scenario 4

Seven year old little Ali is learning about the pyramids in fifth grade. He is so excited to share what he has learned in school with his grandmother back in Egypt. Little Ali asks his parents permission to log on to the Internet and goes to the website. After logging in, little Ali decides to read a historical book to his grandmother. He enters the library, clicks on true stories, and finds a book about ancient Egypt and clicks on read. Little Ali reads the shortest story and leaves a comment for his grandmother.

Discussion:

This will help the child to develop the habit and love of reading. The child will experience computer interaction at an early age. This also provides a way to share common history through reading.

Scenario 5

Romina, a ten year old girl, logs into the website to see if her grandparent left her any new recorded stories. After she logged in, she saw that her grandmother had left her a new recording. It was one of Romina's favorite stories. Romina downloaded the story and after listening she left her grandmother a message to thank her.

Discussion:

Typing messages will help the child to improve his/her typing skills. Also, it helps the grandparent and grandchild to develop a familial bond. The grandparent will also feel appreciated and loved after receiving a thank you message from their grandchild.

System Requirements

Must include:

- A personal computer for the grandparent and grandchild.
- A microphone.
- Personal Internet access.
- Flash Communication Server MX
- A login system along with options to do voice recording, make comments and leave messages.

Should include:

- Option of downloading personal pictures.
- Ability to send feedback to the web designers.

Could include:

- Option of recording videos.
- Live chat environment.
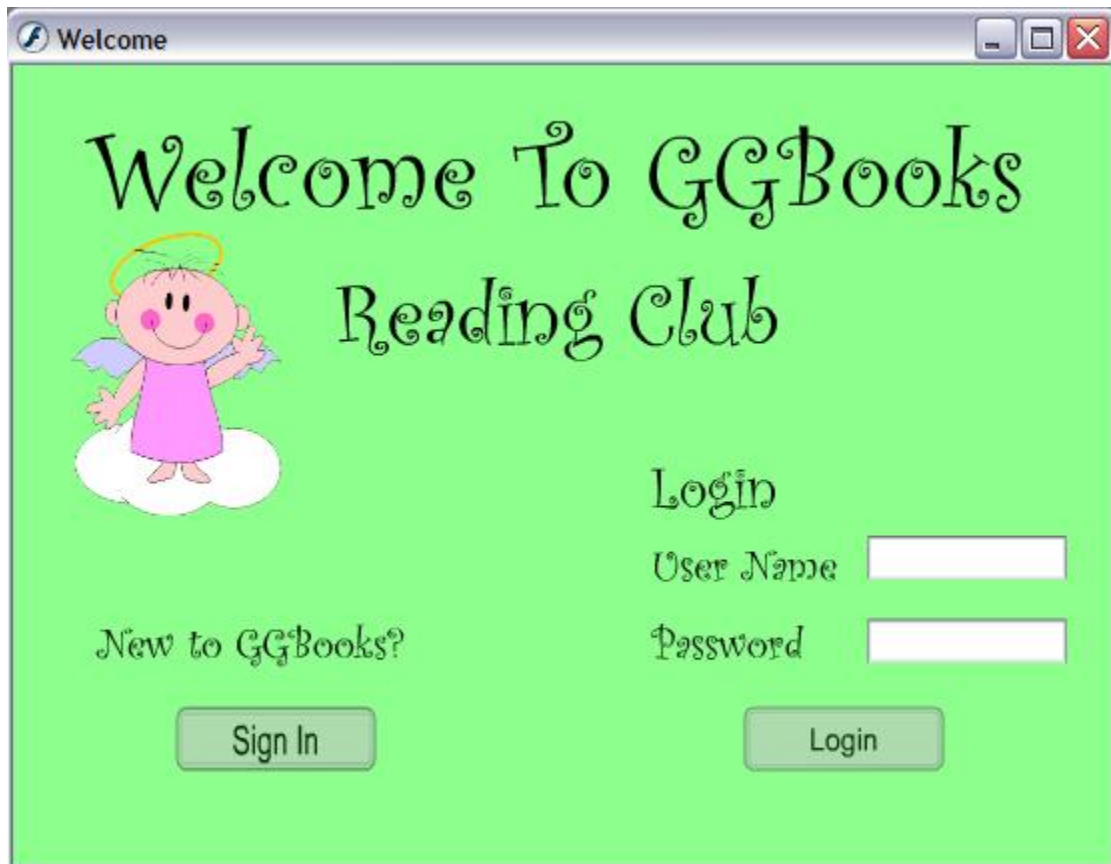- A painting workspace for the child.

II. *Low-Fidelity Design*

Design #1

Introduction:
This is a prototype for grandparents and grandchildren. The interfaces are shown in the order that either grandparents or grandchildren login, join GGBooks as a new user, choose a book from international Children's Digital Library, pick an uploaded recording, record a story, draw, and post some comments.

Login page:
Grandparent or grandchild will be able to login and record a story. If the user does not have an account, there is a button for a new user to register for a new account.

Join page:

      If grandparents or grandchildren are first-time users, they can come to this page and join to the system. Each grandparent and grandchild have different buttons to continue and join.

Kids Join Page:

Children will use this page to join GGBooks. They will be required to give a name and password to be used in GGBooks. The child will also provide their grandparent's email address so that the grandparent can later be added to the child's reading community. Children also have the option of uploading their picture for their personal GGBooks page.

Grandparent's Join Page:

Grandparents will come to this page if they are first time users of the system. Here they will be prompted for a name and password to be used in GGBooks. The grandparent will also enter their grandchild's email address so that the child can become a part of their grandparent's community in GGBooks. Grandparents also have the option to upload their picture.

Main page:

        Grandparent and grandchild have the same main page. They can go to the International Children's Digital Library directly and pick the book they want to record for their grandchildren or grandparents. After they pick the book, they need to click on the "Record" button to go to the next page and record their story.

        After recording, they will come to this page and they can see their new story in the list of the uploaded recordings. Each time that users log in, they can see the new uploaded story at the top of this list and they download either the new stories or previous stories or delete it from the list. Grandchildren can also click on the draw button and draw while they are listening to the stories. If they want to logout of the interface they have a logout button.
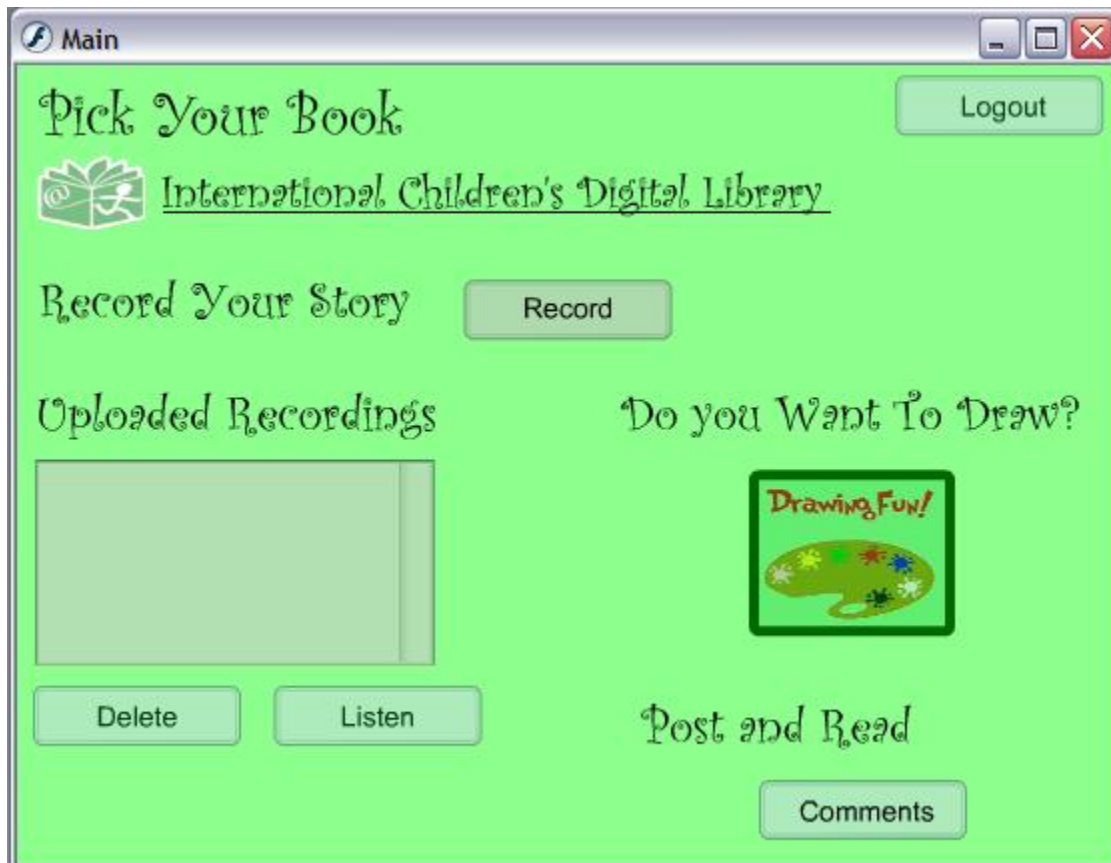
Record page:

        After grandparents and grandchildren pick their book, they need to come to this page for recording. They need to click on the "Record" button to record their story. After recording they need to give a name to their file. The "Save" button will save the story with the name the user gave and it will take them to the main page. Grandparent or grandchild can see the new recorded story in the uploaded recordings list.

Paint page:

In this page, grandchildren can paint pictures. After drawing a picture, they can put their grandparent's email address in the text box and click on the "Send" button to send their pictures to their grandparents. After sending, they will be taken to the main page automatically by the system.

Comments Page:

      Grandparents and grandchildren will be able to come to this page to post and send comments. This page will also contain the grandparent and grandchild's picture if it was uploaded when they joined.

The Comments Wall

Tuesday, October 11, 2005
Hi Grandma. Thanks for the book that you read to me. Can you read me another one?

Child's Pic Goes Here

Post Comment:

Grand's Pic Goes Here

Send   Cancel

Logout page:

When either grandparent or grandchild decides to logout, they are going to see this page after they click on "Logout" button in the main page. The button at the bottom of the page takes users to the login page which is the first page.

Successes:

This interface will allow the grandparent and grandchild to communicate freely without the worries of time and distance. Users will be able to read and record their readings with the help of the interface. Users will also be able to post comments to one another. All of this interaction is made easy through the usage of the interface. Since children and older persons have less dexterity, the interface provides big fonts and big buttons.

Problems:

The interface lacks universal usability. At the present time, the interface is not presented in multiple languages.
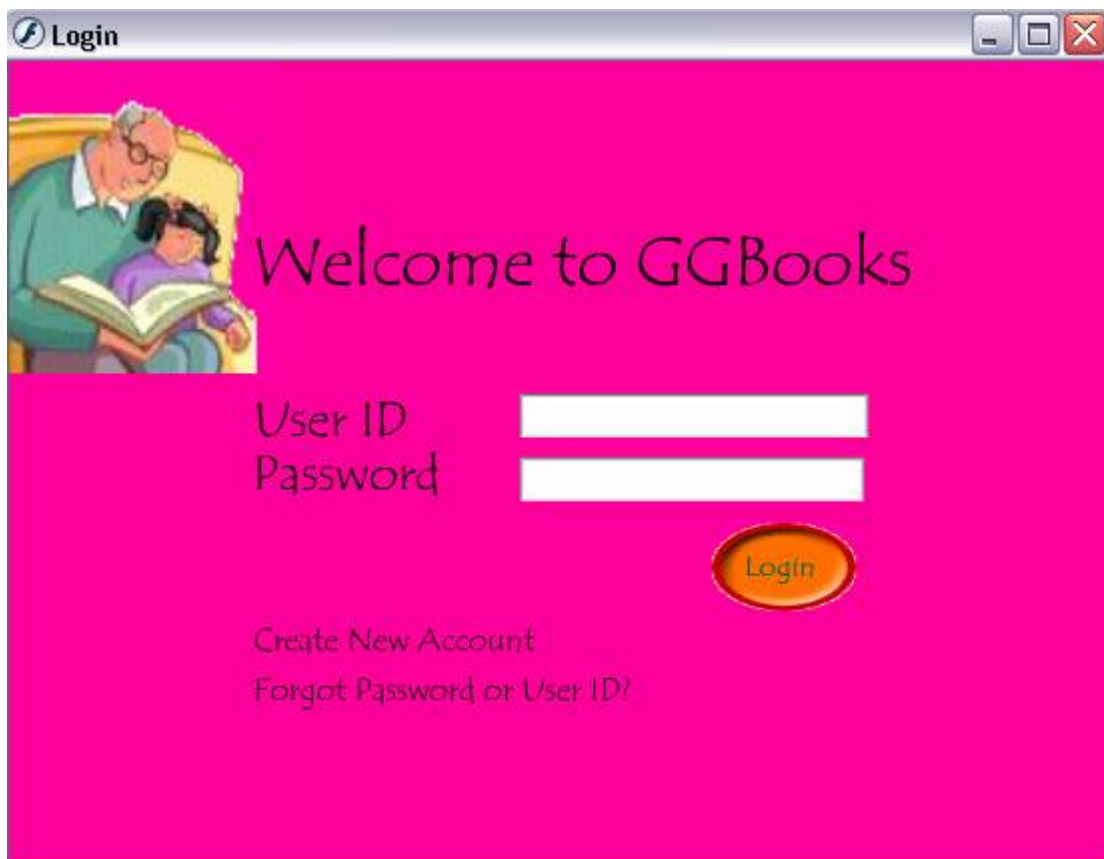
Design #2

Introduction:
       This is a prototype for GGBooks Reading Club. The intended users for this interface are grandparents and grandchildren. The pages are organized in the order of the user progress in the interface which is login, Failed login, create a new account, Forgot Pass or ID, Thank you, Main page, Post, Listen, Messages and Draw. A new user, most likely a grandparent or a guardian, will create a new account for themselves and their grandchild from the link provided in the login page, then they, grandparent or grandchild, can login from login page and from main page they have option of reading a book from ICDL website and make a voice recording of it, listen to existing recording if there is any, post text messages, or make drawings.

Login Page:
       This page enables the existing users (grandparents and grandchildren) to log unto the GGBook Reading Club with their user name and password. If a situation occurs where they cannot remember the user name and password, the "forget password" is provided to help get the login information. On the other hand, if the users are new to the club, they have the option to create a new account.

Failed Login Page:

   If the grandparent or grandchild signs in with the wrong user name or password, this page gives them the opportunity to re-login with the right data or to request their login information or to create a new account.

Create a New Account:
        This page requires that grandparent and grandchild share the same ID and Pass. Therefore, a grandparent or a child or both can go to this page and create a new account by providing the required information. The ID and Pass will be sent to the grandparent and child's email address.

Forgot Your Pass or ID:

This page will ask the user for their email address that they provided at the registration and will find the corresponding ID and Pass and will send them to the user's email address.

Thank You:

This page will provide an informative message for the user saying that their Pass and ID has been sent to their email account.
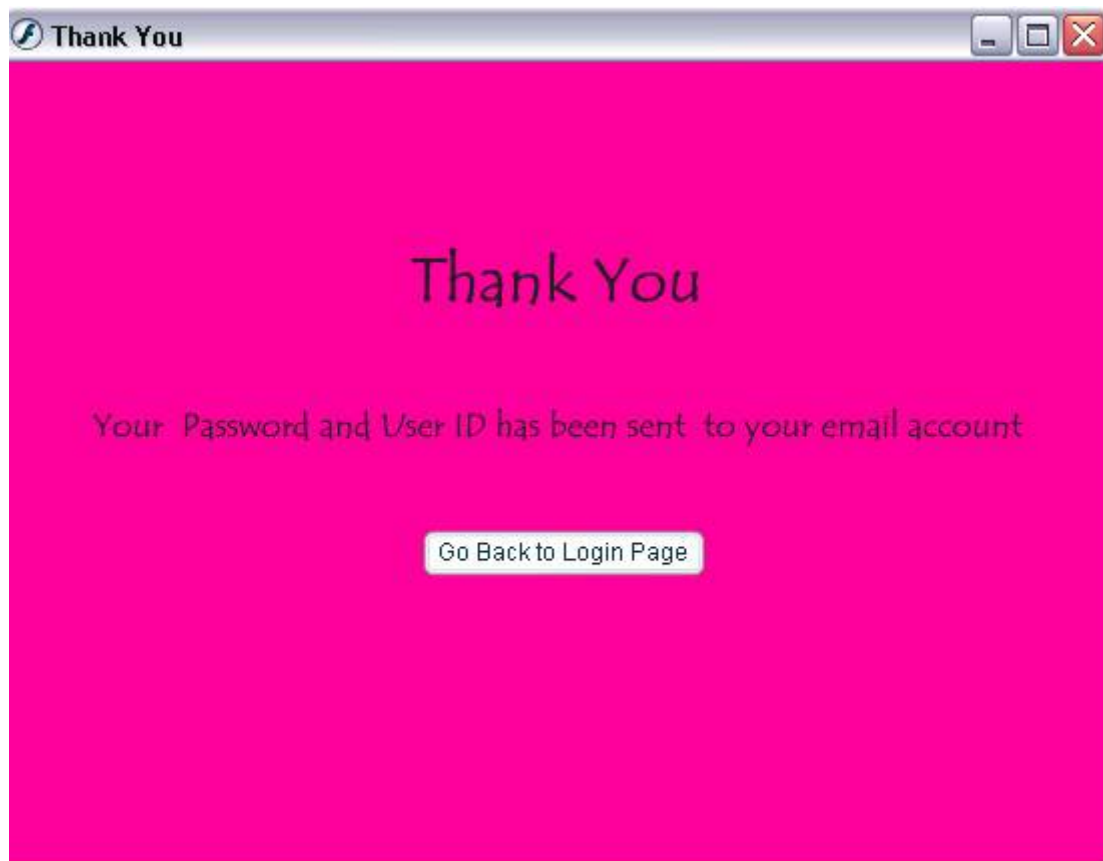
Weclome Page:

     After logging the user will be directed to this page. This page allows the user to navigate to all *GGBook* features. On the top left, the users are able to listen or delete the recorded books by their alter-user. On the top right the user is able to record or read a book. On the bottom right the users are able to view messages left by their alter-user. On the bottom left the users are able to post messages to their alter-user. If the user would like to send a picture to the alter-user they can select the draw button to draw a picture. At the top of the page the users will find the main navigation buttons, where they can logout.

Post Page:
      This page enables the grandchild to post messages to the grandparent.

Read/Record page:

        This page has split functionality. On the left is the ICDL website. On the right hand side are buttons that allow the users to record and upload books. There also is stop and play buttons to listen to the recording before uploading. Before uploading the user can leave a note to be attached to the recording. This page should be able to save the URL of the book page upon selecting "upload" and allow the alter-user the option to be retrieved while listening. At the top of the page the users will find the main navigation buttons, where they can logout, return to previous page, or go to their welcome page.
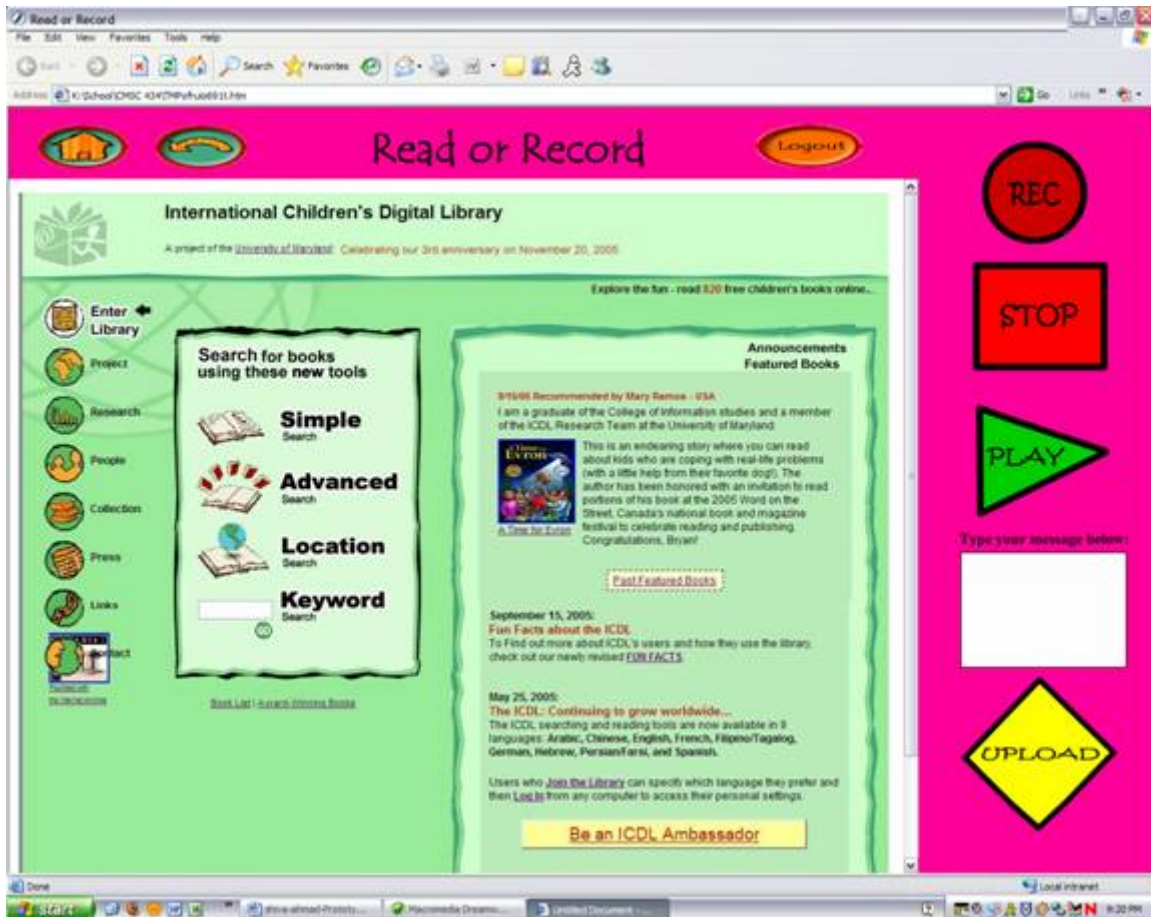
Listen page:

       This page has a listing of the audio recordings. The users are able to listen to the recordings left by the alter-user and read their messages. The user has control over the recordings when they play them, to play, pause, and stop. There also is an option to delete the recordings. At the top of the page the users will find the main navigation buttons. Here they can logout, return to previous page, or go to their welcome page. At the top of the page the users will find the main navigation buttons, where they can logout, return to previous page, or go to their welcome page.
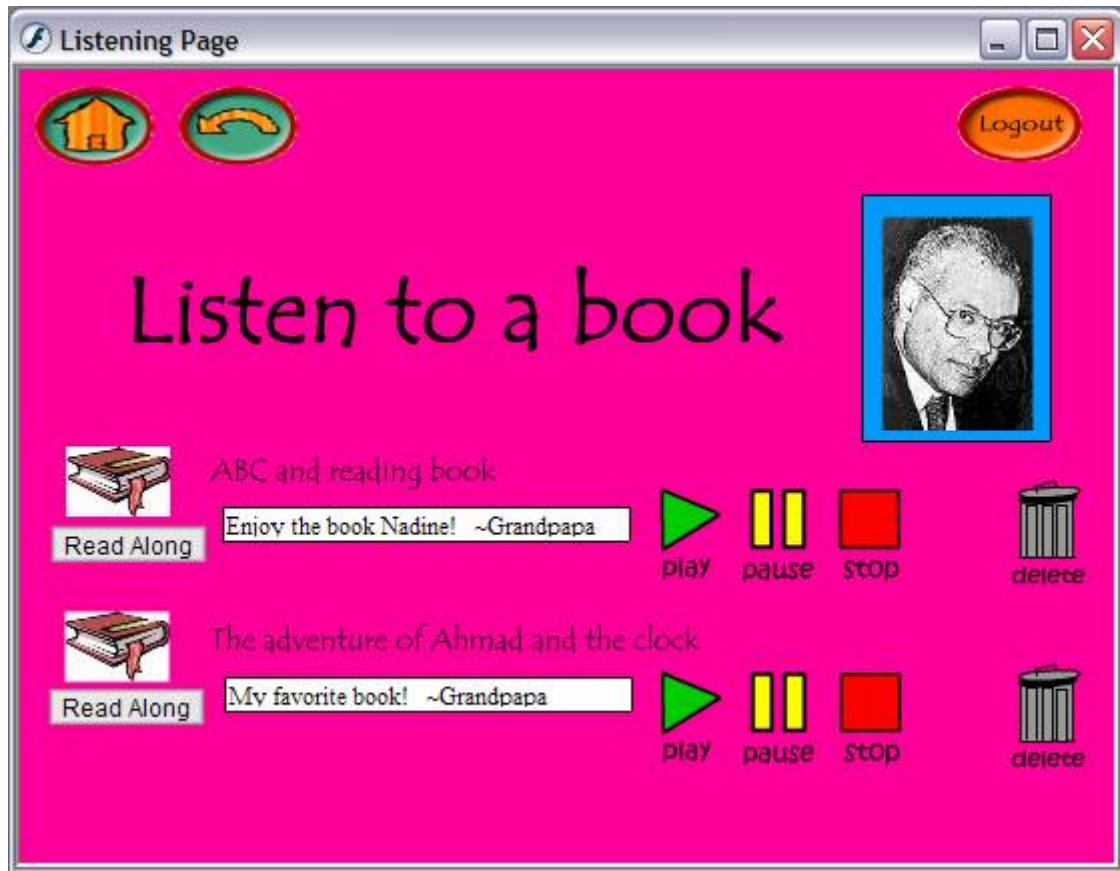
Message:
      This page allows the grandchild to read messages from the grandparent. It also enables the grandchild to save and discard any of the messages received.

Draw:

        This page allows the grandchild make a drawing about what their grandparent has read to them. They also have an option of sending the drawing to their grandparent.

Successes:

        This is a more advanced interface that allows grandparents and grandchildren to send messages and record books. The users will feel like they are in more control of the system. This system is more personalized with the welcome screen showing their picture and listening page having a picture of the alter-user. Users will be able to access the books that are read to them by a link stored with the audio recording, giving the option of following along. The drawing page is intricate and detailed. Users will find their way easily around this prototype due to its clear labels and descriptive buttons.

Problems:

        Although this is an interesting interface that permits interaction between grandparents and grandchildren, it will be difficult to enable some of its functions. Also, the interface is only designed for English speaking users; therefore it does not accomplish the property of universal usability.

III. *Development of High Fidelity Prototype*

Choice of Prototype

The first step was to choose which prototype we would base our high fidelity prototype on. After close consideration of available options, we decided that it would be best to use our first design for the high fidelity prototype. We selected the first design because the layout and color combination was much closer to the ICDL design. Also, we thought this design would be much easier to use and follow for young children and elders who are our main targeted audience.

Interface Design

Some changes were made to the interface in the high fidelity prototype. We changed the shape and color of the buttons and we made all of the buttons functional. We also provided descriptive text to the buttons and as well as created conditional checks so that the buttons will not function until the user provides the correct information. The other change that we made was to make all the interface pictures clickable. Furthermore, we made the interface more personal by giving the users the option of uploading their pictures to the interface.

Other changes include adding a forgot pass/id page which will assist the users by sending them their account information when they forget their pass/id to the GGBooks interface. To make the interface easier to use, we divided the post messages page to two different pages called post messages and read messages. In the post messages page, the users can send messages and in the read messages page the users can actually read the messages that they have received.

Implementation

We tried our best to implement the GGBooks interface as close as possible to a real web application. However, due to the technical constraints and limitations, the GGBooks interface had to be implemented locally. Most of the changes that we made to the content of the high quality prototype resulted from the limitations that we faced using Macromedia Flash as our web developing tool. We had problems with setting up a server and doing voice recording in Flash. Therefore, we could not make a real web application and instead we implemented the GGBooks interface locally.

IV. *Usability Tests and Analysis of Results*

GGBook Reading Task List

1. Create a new Account with the following information:
    a. User name (Cinderella)
    b. Password (tumbelina)
    c. Grandchild's email (rudy [AT] yahoo.com) / grandparent's email (ibrahim [AT] gmail.com)
2. Using Cinderella as a username and tumbelina as a password, login to the website
3. Find the link to the International Children's Digital Library
4. Find the page for recording
5. Pick a book from the International Children's Digital Library; record the first page of the book and save it.
6. Find a new recorded story and listen to it
7. Find the page to read messages and post comments
8. Post a comment
9. Read comments
10. Find the page to paint a picture
11. Logout of the website

Introduction

Our usability test subjects were the grandchildren and the grandparents among our friends and families. The age range of subjects was as follows: grandchildren--eight to twelve years old; grandparent--fifty to fifty-nine years old. Our subjects accepted and parsed our ideas of bringing together grandchildren and grandparents by an online book reading/recording website and were enthused to test our design. All the subjects participated in our usability test voluntarily and signed a consent form prior to the test. Before conducting the test, subjects were given an information sheet which formally greeted the subjects and listed the usability test rules such as not speaking to the tester and not asking question from the tester during the test. The subjects tested our design by following and using a set of ordered and prewritten tasks that we provided for them. After conducting the test, we asked the subjects to fill out a questionnaire in order to evaluate our design. We also gave them a chance to write their recommendations, including what they liked and disliked about our design and further improvements that they thought was needed.

Reports:

Subject 1:
Subject one is a fifty-four year old grandmother who is identified as Chiquita. She enjoys spending time with her grandchildren. So she thought that the grandparent-grandchild book reading was a wonderful idea. She liked the colors of the website and the arrangement of information on the screen. While taking the test, Chiquita was very enthusiastic and even wanted to do more than one recording. She was very pleased with

the voice recording page and felt that the design of the website was fantastic. There were no suggestions or comments about the website because she was very satisfied with its performance.

Subject 2:
Subject two is a twelve-year-old female, who is identified as Chelsea. Chelsea is a Middle School Student whose grandmother lived in Richmond, Virginia for most of her life. Chelsea was eager to take the test. She thought it sounded interesting to be able to communicate this way with her grandmother who lives far away. Chelsea felt that the colors, graphics, and pictures on the website were appropriately used. She liked the fact that she could record herself reading a book. However, Chelsea did find a problem with our website. Chelsea noticed that there was no back button on the page to post comments. She also felt that there could be more feedback while navigating through the website. So this correction will be made immediately.

Subject 3:
Subject three is Cecilia a fifty-nine year old grandmother whose grandchildren reside in Nigeria. Cecilia is a novice computer user, so she understood what was required of her to complete the usability test. She liked the appearance of the interface; she found the colors, graphics and pictures very appealing. Although she was able to accomplish most of the tasks she was assigned, she was faced with some difficulty in completing some of them. The difficulties she encountered included not being able to go back to the previous page when she got to the posting page, instead she had to logout. Also, she was unable to find the page to record without having to click all the other icons and from observation, it appeared that she assumed the icon for each page on the main screen was clickable. Overall, she liked the entire interface and suggested that it would be better tested if it was completely functional. She recommended that we change the label of the recording icon to "record" or something in that form and to also add a back button to the posting page. She also suggested that the buttons could be removed and the icons made clickable, since there already exist descriptions for the icons.

Subject 4:
The subject four is Opeyemi, a ten years old girl whose grandmother lives across town. She uses the computer a lot often than normal for a 10 year old; she uses the computer for games and for learning. During the test, she encountered a problem of not being able to type the entire user id and the password she was given because the design of the interface did not permit her to do so. She also noticed that the password was not asterisked when signing up for an account, making it possible for anyone to see what password the user was typing. And the last problem she came across was not being able to go back to the previous page after getting to the post page. However, she found the interface very interesting and was interested in what it has to offer. She liked the fonts, graphics and thought the colors used were very soothing even though she preferred a more feminine color. She suggested that users should be enabled to use longer user id.

Subject 5:
Subject five is Lolade who is a sister to Opeyemi and her grandmother lives across town

as well. Lolade is eight years old and she uses the computer on occasions for playing and games and learning just like her sister. Lolade encountered similar problems like her sister such as being able to type only a few characters for user id and password, not being able to go back to the previous page from the post page, as well as lack of privacy when entering the password during registration. Also, she found it very difficult to locate the page for recording and she did not like the color, she said it's for boys. Overall, she like the pictures and the fact that she was able to record and hear herself afterwards. She also liked the drawing page and thought it was easy for her to use. Due to the fact that she was not able to locate the recording page, she suggested that the name on the buttons should match what the buttons do. That way, it is easier to find and use.

Subject 6:
Subject six is Dr. Hassan Ibrahim, a university professor who also is a proficient computer user. Dr. Ibrahim is the father of Mohamad Ibrahim and for the usability test is playing the roll of the adult. He had difficulty understanding the point of the exercise of testing the interface. When he was asked specific tasks to perform, he questioned why to do them. For example, when he was asked to "create a user" he went ahead and logged in with the given user name and password. Upon his recommendation, there was not sufficient feedback to the actions the user was taking and he recommended conducting the usability test with a fully working version of the design.

Subject 7:
Subject seven is Mohamad Ibrahim, the grandson of Dr. Hassan Ibrahim, an eleven-year old boy who is a moderate computer user. This user seemed to know exactly what he was doing. He clicked through the tasks and had no problem navigating. The problems he ran into which showed weaknesses in the interface. For example, the listening and reading pages as well as the posting and reading messages pages look very similar. Certain tasks can be completed by going to either one. One thing that was realized through this interface was its simple design. The speed that the user exercised was very impressive; it almost appeared like he was a professional with his first sitting. The user found the site very enjoyable however lacked the seriousness to give thoughtful suggestions; writing "no comment" and finding it humorous.

Summary of tests

After we ran the usability test on our seven users, three grandparents and four grandchildren, we realized that both grandparents and grandchildren had same problems with the main page buttons and icons. They suggested making icons clickable to make it easier to access different pages. Our users noticed that there was one problem with one of the pages, "Post Comments". It did not have a back button, so users couldn't finish the usability tasks after posting comments. Therefore, they had to logout. One of the users found out that the grandchildren sign in page had a problem in the password textbox. She mentioned that the password was not asterisked, and she suggested fixing this problem regarding users' privacy. The other problem our users noticed was that there were not enough allowable typable characters in the registration textboxes in the grandparent sign in page.

Both grandparents and grandchildren mentioned to the testers that the GGBooks interface is interesting, and they did not have any problems with colors and fonts. They liked the recording page, and they found it easy to use. The only problem they had with the interface was its buttons. Users suggested that the name on the buttons match what the buttons actually do.

Evaluation of Suggestions and Possible Changes

High Priority

- Add back buttons to some of the screens.
- Make all the icons and pictures clickable.
- Create a help page for the recording page.
- Provide descriptive text for buttons and images.
- Provide more space for user name and password.

Low Priority

- Add send option for the recording page.
- Add option to post comments to the interface.

Conclusion

Overall the usability tests were very informative. We have gained a lot of information and many suggestions for ways in which we can expand upon the functionality of the GGBooks interface to make it more functional and useful for our targeted audience.

Questionnaires

GGBook Pre-Test Briefing

1. Hello
2. You have been invited to participate in a usability test for the Grandparent-Grandchild Book Reading project.
3. At no time will we be testing your abilities or skills with computers.
4. We are only testing how well our interface works for users. So please make yourself comfortable.
5. We'll first give you a questionnaire about your background. Then we'll begin the usability test. Finally, we'll give you questionnaire based on your experience with the interface.
6. If you have any recommendations, there will be time after the test for you to give us any recommendations you have.
7. You can withdraw from this experiment at any time.
8. Are there any questions?

9. The test will begin right now.
10. Thank you and have a great day

GrandParent's Questionnaire

1. The interface in general was…
       Poorly designed.   Well designed.
         1   2   3   4   5   6   7   8   9

2. The arrangement of information displayed on the screen was…
       Hard to follow   Easy to follow
         1   2   3   4   5   6   7   8   9

3. The colors of the website are…
       Harsh   Soothing
         1   2   3   4   5   6   7   8   9

4. The button names corresponded to the information presented.
       Not at all   Absolutely
         1   2   3   4   5   6   7   8   9

5. Graphics and pictures were appropriately used.
       Not at all   Absolutely
         1   2   3   4   5   6   7   8   9

6. The website layouts contained…
       Inadequate information   Adequate
information
         1   2   3   4   5   6   7   8   9

Child's Questionnaire

1. How did you like the website?
       Disliked   Liked
         1   2   3   4   5   6   7   8   9

2. The way information was placed on the screen was …
       Confusing   Clear
         1   2   3   4   5   6   7   8   9

3. The colors of the website are…
       Harsh   Soothing
         1   2   3   4   5   6   7   8   9

4. The button names matched the information presented.
       Not at all   Totally
         1   2   3   4   5   6   7   8   9

5. Graphics and pictures were correctly used.
       Not at all   Totally
         1   2   3   4   5   6   7   8   9

6. The website had enough information.
       Not enough   Enough
         1   2   3   4   5   6   7   8   9

TASKS

1. The tasks can be performed in a straight-forward manner
      Never   Always
        1   2   3   4   5   6   7   8   9

2. The steps to complete a task follow in a logical sequence
      Never   Always
        1   2   3   4   5   6   7   8   9

3. Feedback on the completion of a sequence of steps
      Unclear   Clear
        1   2   3   4   5   6   7   8   9

4. The ease of the voice-recording and uploading process was …
      Difficult   Easy
        1   2   3   4   5   6   7   8   9

5. The use of the drawing environment was …
      Too complex   Simple
        1   2   3   4   5   6   7   8   9

6. Posting and reading messages were …
      Hard   Easy
        1   2   3   4   5   6   7   8   9

Grandparent's Questionnaire Result

Question (rating from 1 to 9)	Average Answer
The arrangement of information displayed on the screen was…	8
The colors of the website are…	7
The button names corresponded to the information presented.	6
Graphics and pictures were appropriately used.	8
The website layouts contained…	7
The interface in general was…	8

Child's Questionnaire Result

Question (rating from 1 to 9)	Average Answer
How did you like the website?	8
The way information was placed on the screen was …	7
The colors of the website are…	8
The button names matched the information presented.	6
Graphics and pictures were correctly used.	8
The website had enough information.	7

Task's Questionnaire Result

Question (rating from 1 to 9)	Average Answer
The tasks can be performed in a straight-forward manner	6
The steps to complete a task follow in a logical sequence	7
Feedback on the completion of a sequence of steps	6
The ease of the voice-recording and uploading process was …	6
Posting and reading messages were …	7
The use of the drawing environment was …	7

6. <u>Conclusions</u>

<u>Final status report</u>

The GGBooks project is designed for grandparents and grandchildren to communicate with each other by creating voice recordings of books from the ICDL website and then listening to the records of one another.

GGBooks Interface

The GGbooks interface has been completely implemented locally. However, due to technical constraints, we were not able to fully integrate a database into the GGBooks interface. Therefore, some of the interface's features have limited functionally. The following functional tasks can be performed in the GGBooks interface:

- Login of the registered grandparent or grandchild.
- Registration of new a grandparent or grandchild account.
- Uploading pictures to the website.
- Accessing the International Children Digital Library (ICDL) website for the purpose of reading books and stories.
- Recoding stories.
- Help for the recording page.
- Listening to recorded stories.
- Deleting recorded stories.
- Drawing pictures.
- Posting messages for each user.
- Reading messages.
- Additional feedback to help users in each stage.

<u>Future work possibilities report</u>

The GGBooks interface was implemented in Macromedia Flash 8 and Flash Communication Server MX but was not connected to a database (as was permitted by Dr. Shneiderman). In the future we would like to create a "Web Application" in Microsoft Visual Studio .NET which would be connected to a database to store all data on a database instead of storing them locally. This will allow full functionality of grandparents and grandchildren being able to log in and view their personal information such as personal messages and previous recorded stories.

Another improvement that can be done to the website is to implement the custom font size setting to work directly with the individual pages. It would also be nice to incorporate Multilanguage features in order to be consistence with the ICDL website and to provide universal usability.

Recommendations to future developers of GGBooks

The ability of saving/downloading recorded stories on users' personal computers and also uploading recorded stories to interface from users' personal computers could be added to GGBooks interface. This would make it easy for users to record stories on their personal computer and then upload them onto the GGBooks interface.

Downloading stories from the GGBooks interface would enable users to listen to and record stories whenever they wanted to on their personal computers.

Finally a sharing system could be added to the GGBooks interface that would enable grandchildren to share their own stories with their friends or other GGBooks users.

7. <u>Acknowledgements</u>

The GGBooks team would like to thank Dr. Ben Shneiderman of the University of Maryland Computer Science department, the founding director of HCIL (Human Computer Interaction Laboratory), for his guidance and encouragement. He provided us with several individuals we could work with in order for our design to be successful.

We would also like to thank Jade Alburo and Sabrina Liao, who were referred to us by Dr. Schneiderman for giving us the inspiration to continue in our design efforts. Our test users also deserve our thanks for taking their time to use this interface design and providing us with constructive feedback.

All of these people have been a tremendous contribution during the design process and, as a result, we have been able to succeed.

8. <u>References</u>

Children's Books Online, 2004, http://www.childrensbooksonline.org

Grandparents as Parents, 1996,
http://www.seniorglobe.com/readarticle.php?article_id=52

Grandparents Today, 2001,
http://www.uwex.edu/ces/flp/grandparent/understandingmygrandchildren.pdf

Palaver Tree Online, 2001, http://www.cc.gatech.edu/elc/palaver/papers/pt-chi01.pdf

Reading Is Fundamental, Inc., 2005, http://www.rif.org/readingplanet/

Suggested Reading for Grandparents & Grandchildren, 2001,
http://www.erie.gov/depts/seniorservices/rac/suggested_reading.phtml

Designing the User Interface, Ben Shneiderman, Catherine Plaisant

Drawing page. http://www.actionscript.org/components/showComponent.php?id=4

Upload page http://www.flash-db.com/Tutorials/upload/

Jeff Jones
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