



Ann White
Senior Project Production
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Executive Summary

Introduction

Key Seeker, keyboarding for kindergarten is a learning game being developed for the Cobb County School District in Georgia. The project combines the learning and recognition of the alphabet with the keyboard used for computers. The goal is to integrate technology into the kindergarten classroom and expose the children to the computer and at the same time to assist with letter recognition. This document is designed to provide definition and direction to the Key Seeker project.

Overview of Solution

The following five phases are being used to develop Key Seeker.

- | | |
|---|--|
| Phase 1: Planning | Define concept goals and objectives, target audience, style guidelines and requirements for contents. |
| Phase 2: Strategy & Analysis | Research educational implications of the game. Complete a comparative analysis |
| Phase 3: Design | Define organization and hierarchy for all information; produce story boards, scripts and process flows. Develop a visual and partially functional prototype. |
| Phase 4: Development | Acquire and develop all assets for project integration as defined within the design documents. |
| Phase 5: Deployment (testing/delivery) | Test the interactive project functionality, reviews all information for accuracy. Key Seeker is then turned over to the Cobb County School Department. |

Planning Phase

Project Concept Note

The Project Concept Note was developed to identify the concept, target audience and goals of the Key Seeker project. This initial document is compiled to define the scope and feasibility of the project for the time frame of Senior Project Design and Development.

Project Concept Note

Ann White – IMD 465 Winter 2006

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Introduction

There has been some controversy over when children should begin learning keyboarding skills. Researchers of elementary learning have found that children with keyboarding skills compose faster and are proud of their work: their documents have a neater appearance, motivation is better, and composition and editing are easier. Thus, language arts skills improve. Elimination of another subject to make room for keyboarding is not necessary. Keyboarding should be incorporated into most subjects. Keyboarding is simply another method for communicating their ideas.

The Rosegrant Study ¹found that the four to five year old could at least develop logical search strategies for locating individual keys when needed. Two other studies have indicated that keyboarding may be less cognitively and physically demanding than handwriting. It is easier to locate one of 60 keys and depress it than it is to copy a single letter. Using speed as a proxy for cognitive load, keyboarding is arguably less taxing than handwriting.

In cooperation with Herman Wood, Cobb County Technology Integration Specialist, an interactive learning tool and support materials would be developed to introduce the concepts of keyboarding and initial strategies for kindergarten and first graders. The basic premise: as children are learning their letters, they can also learn recognition of those letters on the keyboard and learn what hand is used to input those letters. The curriculum would include print materials for parents and educators for additional activities to reinforce the learning skills necessary for keyboarding.

Career and Personal Goals

Education and learning have always fascinated me. I am of the opinion that education is one of the greatest gifts and precious opportunities. The ability to learn makes the world a better place. The ability to share using technology enhances our world, promotes understanding and fosters creativity.

I received my primary education when computers and keyboards were unavailable. I did not learn to "type" until I was in my late teens, there really was not a use for it until then. Times and technologies have changed dramatically. Curiosity fueled my desire to learn more about how people learn, why people learn, what is useful learning and how does interactive media play a role in learning.

I expect to meet the following goals throughout the process of this project:

- Further develop my interest in e-learning
- Utilize and strengthen my Flash Technology skills
- Apply my usability and information architecture skills
- Further develop my creative illustration skills

Completion of this project will provide me with confidence and skills to work in a variety of environments:

- Usability
- Information architecture
- Integrating technology with learning

¹ Rosengrant, T. (1985). Using the microcomputer as a tool to read and write. Journal of Learning Disabilities, 18, pp 113-115

Communication Objectives:

The objectives listed below were developed with the help of the Cobb County School District.

Goal for Kindergartner Keyboarding:

The student should be able to recognize the letters of the alphabet on the keyboard and use the correct hand to strike the key.

The following standards should be **introduced** during kindergarten:

- The learner will be able to recognize and use the letters and function keys on the keyboard with teacher guidance.
- The learner will be able to demonstrate an understanding of standard keyboarding techniques and correct fingering techniques.
- The learner will be able to use word processing skills to type words, phrases, and sentences.
- The learner will be able to use word processing skills to edit a typed document.

It is important to keep in mind that this project will only encompass the kindergarten introduction to keyboarding. Correct fingering would prove to be a difficult physical task at this age. Again, this project is an introduction of the keyboard.

The objective of the project is to make the learning effective and fun and appropriate for this age group. It is hopeful that in time the project can be expanded to include material for first and second graders.

Business Objectives:

At this time, the project has no business objectives. It is hopeful that the project will be successful enough to find a sponsor who might host the project for free. The reasoning behind this concept is two fold. First, the creator of the project does so willing and in cooperation with the Cobb County School District will consent and assign to Cobb County School District of all right, title and interest in and to the material, including ownership of the entire copyright in the material. ²The school district understands that this project is a learning project for the creator and that the project is to be used for educational purposes only. The second reason is personal. My belief that education is a shared experience and should be easily accessible outweighs my belief in making a dollar. I am fortunate to be in a situation at the present time where I am able and willing to provide this service simply for recognition. I am confident I will have other opportunities to create for pay in the future.

² I have obtained some forms that the County has requested I sign and return. I will bring them to my meeting and review them with Ameeta as well. Herman Wood has suggested if these forms are not agreeable he is still willing to work with me on the project in some other manner to be discussed in the future.

Target Audience

Primary Audience

The primary audience for this project is Kindergarten students in the Cobb County School District, Georgia. They will be the primary users and learners. The teachers of those students are also members of the primary audience as they will oversee the students and provide guidance as well as engaging the students in additional exercises to reinforce the keyboarding experience.

Secondary Audience

The secondary audience for this project will be parents and possible teachers from other districts that may be interested in implementing the materials. There may be a secondary audience of home school families as well.

Competition and Inspiration

At this time, four sites have been identified to be reviewed and analyzed.

- <http://www.kiddonet.com/gb/flash/phonics/Intro.html>
- <http://www.billybear4kids/games/online/alphabet/alphabet.htm>
- <http://www.learningplanet.com/act/fl/aact/index.asp>
- <http://www.cogcon.com/gamegoo/games/frieda/frieda.html>

Skills

Research

This project relies upon research in both e-learning and educational curriculum and methods. It is my intention to use Herman Wood's expertise in these areas to assist in guiding the project to meet the needs of the kindergarten learner and the teachers in the Cobb County School District. I have recently read Michael Allen's Guide to E-Learning and have done some initial research into teaching (introducing) keyboarding to kindergarten children. Information from these readings will be incorporated into the deliverables to support design and technical decisions for the project.

Soft Skills

The soft skills necessary for this project will be great listening and observational skills. The need to accept criticism and the ability to change or alter the design or concept as necessary to achieve the project's goals and mission is another set of important soft skills I will use to complete the project.

Time management will be critical not only for the completion of the project, but also for cooperating with both Mr. Wood and my advisor and instructor. Mr. Wood has agreed to make every possible effort to respond within a reasonable amount of time, and has agreed to meet as necessary.

Flash Technologies

The intention is to complete the interactive technology portion of this project using Flash. Flash provides sound and animation capabilities that can provide motivation for the young learner.

Illustration/Artistic

Visuals will need to be created for the supporting materials as well as simple animations. I envision I will create and deliver these as part of Senior Project 2.

Print Technologies

I believe I may need some assistance and guidance in this area. I have only taken one layout course on line at the Art Institute. I am open to suggestions in this area. I know the Art Institute has many resources that I may not know about. I believe I have enough knowledge to produce prototype materials. I am willing to find help here.

Resources

Human Resources

As has been stated, Herman Wood will assist in advising on this project. He has read the syllabus and understands the nature of the project. He has made several recommendations for the direction of the project and will assist in providing and approving additional curriculum materials (or at least to point out possible flags).

I have also asked Ameeta to be my advisor in-house at the Art Institute and she has agreed. Dara has also offered some direction as well.

Technical Resources

The technical resources necessary for this project are a PC or MAC that can accommodate

- Flash
- Illustrator
- Possibly incorporating php (not certain of this yet)

Financial Resources

None necessary at this time, but there may be some to consider for the production prototype and supporting print materials.

Strategy/Analysis Phase

This phase of the project included conducting research in the following areas and creating the following deliverables:

- ❏ Comparative Analysis
- ❏ Branding Guidelines
- ❏ User Definition and Research

Comparative Analysis

Ann White – Senior Project I
January 25, 2006

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Introduction

The competitive analysis is a review of competitive and comparative websites similar in objectives and content to the proposed Keyboarding for Kindergarten (Key Seekers) curriculum. Existing projects will be compared to each other on how well those projects meet the objectives and goals outlined below for the Keyboarding for Kindergarten.

Instructional activity is more than a multimedia response to a learner's gesture. It is interaction that actively stimulates the learner's mind to do those things that improve ability and readiness to perform effectively.³

Specifically examining the instructional activity and creative strategy of each site in regards to context, challenge, physical activity, and feedback will help define and design the goals for the project while ensuring a pleasant, informative and meaningful experience to the learner.

Cobb County School District Objectives

In cooperation with Herman Wood, Cobb County Technology Integration Specialist, an interactive learning tool and support materials would be developed to introduce the concepts of keyboarding and initial strategies for kindergarten children. The basic premise: as children are learning their letters, they can also learn recognition of those letters on the keyboard and learn what hand is used to input those letters.

Cobb County School District Goals for Kindergarten Keyboarding

Primary Goal for Kindergartner Keyboarding:

The student should be able to recognize the letters of the alphabet on the keyboard and use the correct hand to strike the key.

Secondary Goal for Kindergarten Keyboarding:

Incorporate elements of literacy expectations into the program to make the experience more meaningful for the learner.

The following documentation was used to define the specific goals for the project.

Kindergarten Cobb County School District Criteria/Curriculum—Language arts
<http://www.cobbk12.org/~schoolimprovement/curriculum/langarts/kinder.htm>

Kindergarten Cobb County School District - Technology
<http://picasso.cobbk12.org/cobbcurriculum/curriculum/ParTIGrKCR005688.HTM>

³ Allen, Michael, Michael Allen's Guide to e-Learning, p240

Technology based goals

The following standards should be **introduced** during kindergarten:

- The learner will be able to recognize and use the letters and function keys on the keyboard with teacher guidance.
- The learner will be able to demonstrate an understanding of standard keyboarding techniques and correct fingering techniques.

Student Literacy Expectations for Kindergarten

- Use words that signal sequence relationships such as first, next, and last.
- Distinguish sounds in the environment.
- Distinguish sounds of letters and words.
- Follow one and two part directions.
- Classify by characteristics such as color, size, shape, structure, and function.
- Use illustrations to retell or gain information
- Phonics (letter/sound relationships):
 - Develop phonemic awareness.
 - Begin to identify letters by sight and sound.
 - Begin to point out letters that are the same.
 - Begin to point out a capital and lowercase letters.
 - Begin to hear initial/ending consonant sounds.
 - Begin to focus on letter sounds in own name.
 - Begin to segment/blend words orally.
 - Begin to use phonics to decode
 - Begin to recognize own name in print.
 - Begin to use phonetically spelled words.
 - Begin to use appropriate initial consonants.
 - Begin to write upper and lower case letters.
 - Identify upper and lower case letters out of sequence.
 - Use left to right pattern of writing.
 - Copy simple shapes, designs, numerals, and letters.
 - Print name, self-selected words, and letters of the alphabet.
 - Follow print left to right, top to bottom.

It is important to keep in mind that this interactive project will only encompass the kindergarten introduction to keyboarding. Correct fingering would prove to be a difficult physical task at this age. It is hopeful that additional activities will assist the children in identifying correct fingering. Again, this project is an introduction of the keyboard. It is also intended as a supportive tool to phonics and letter recognition curriculum. A more defined picture of user skills and assumptions will follow in the User Definition and Requirements Document.) Research is still being conducted in this area)

The challenge for the project is to combine both the goals of the school district with good, effective instructional interaction that is age appropriate. Age and skill levels have been defined above. We also need to define effective instructional interaction.

Keys to effective interactive learning software:⁴

1. Build on anticipated outcomes
2. Select the right content
3. Use an appealing context
4. perform multi-step tasks
5. provide intrinsic feedback

How well does each of the comparative sites incorporate these key elements, and the above defined goals?

⁴ Allen, Michael, Michael Allen's Guide to e-Learning, p157

Comparative Goals Measured

It is important to understand what is being measured in this analysis. Each site will be reviewed specifically for how the site meets the following goals:

1. Site provides opportunities for – rehearsal, repetition, practice

The process of learning uses rehearsal to strengthen the forming relationships for later recall and application. Certainly none of these programs were designed to be the only tool to teach children phonics, letter recognition, or keyboarding skills. However, using a keyboard effectively will increase a child's ability to communicate and share ideas using technology. How well does the program meet literacy expectations?

2. Engage Learners

Age and skill level play an important role of this goal. Is the software enjoyable? Is it easy to use? Do the multimedia tools used in the project make sense? Are there features that keep the child interested?

3. Build needed competencies – right hand /left hand

The needed competencies for proposed program are somewhat defined in both the technological and literacy goals defined above. Do these programs help to enforce keyboarding skills; specifically, how is the correct hand or fingering position addressed?

Measurement Criteria

Context: Is the context age and skill appropriate? Is there a story line? Are the colors appealing to the age group? Is there educational value within the context? How does the concept relate to the framework?

Challenge: Are the problems presented age or skill level appropriate? Are there multiple levels of challenge? Is the challenge presented appropriate for the age group? Are the instructions clear and understandable? Is there a method of measurement for the challenge?

Physical Activity: Does the physical effort necessary to produce the desired response distract from the desired response? How is the child encouraged or guided to use the appropriate hand for keyboarding or the appropriate finger?


Feedback: Is the feedback age appropriate? Is there feedback? Is there feedback for incorrect answers? Is help available? What types of multimedia are used to incorporate feedback?

Identified Competitors/Comparators

There are numerous typing and phonics software programs available. Here is a small sampling of programs that use a variety of those programs geared toward children. All these examples incorporate a combination of multimedia rich content (animations, illustration, sounds). As these programs are being analyzed partly on their basis of interactivity, it is recommended that the sites be visited to experience the interactivity first hand. All attempts will be made here in the document to describe the interactions.







- DanceMat
 - <http://www.bbc.co.uk/schools/typing/>
- Kiddonet
 - <http://www.kiddonet.com/gb/flash/phonics/Intro.html>
- Learning Planet
 - <http://www.learningplanet.com/act/fl/aact/index.asp>
- GameGoo
 - <http://www.cogcon.com/gamegoo/games/frieda/frieda.html>

Scoring Method

The key symbol  will be used to visually display how well a site accomplishes the goal stated at the top of each page. The more keys the better the site meets the goal. .

Values range from 0 – 5. 0= does not meet the stated goal 5 = meets the stated goal best

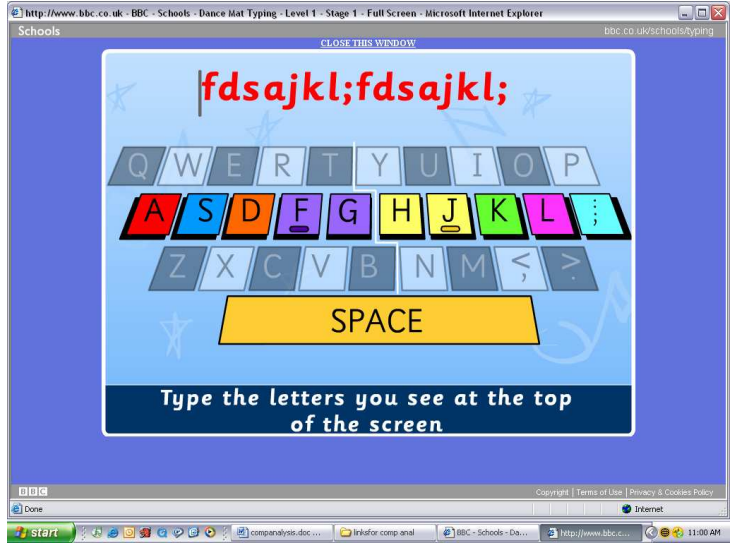
Site Goal: 1. Site provides opportunities for – rehearsal, repetition, practice

	Dancemat 	Kiddonet.com 	LearningPlanet 	GameGoo 
Context				
Challenge				
Activity				
Feedback				

The process of learning uses rehearsal to strengthen the forming relationships for later recall and application. Certainly none of these programs were designed to be the only tool to teach children phonics, letter recognition, or keyboarding skills. However, using a keyboard effectively will increase a child's ability to communicate and share ideas using technology. How well does the program meet literacy expectations?

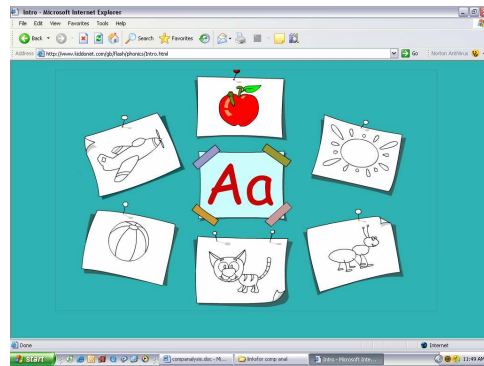
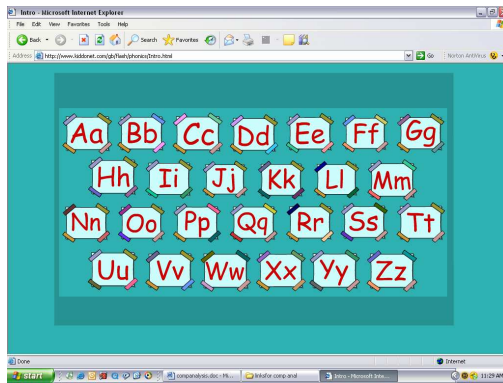
Values range from 0 – 5. 0= does not meet the stated goal 5 = meets the stated goal best

DANCEMAT – Site Goal: 1. Site provides opportunities for – rehearsal, repetition, practice



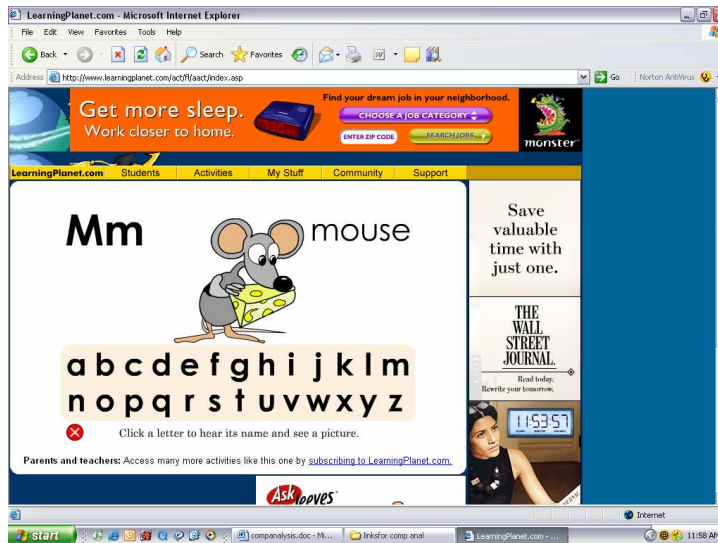
<p>Context: Provided many instances of repetition rehearsal and practice at different levels. Consistent color usage throughout the exercises. Good use of repetition for colors on the key board. Each color represents a finger. Uses keyboard configuration. Characters and storyline are consistent throughout practice sessions. Shows correct finger placement prior to the beginning of the practice using animated characters hands. This could be effective approach for proposed program.</p>	<p>Challenge: Too advanced for the age and skill level of kindergarten children. Makes the assumptions that a child will know how to escape from the application to repeat a particular lesson. Multiple levels of challenge are incorporated, but the entry level is too advanced for children of the targeted group. Does not address any beginning literacy skills. Assumes literacy level is high enough to recognize letters and words. Sight and sound are used for instructions.</p>
<p>Physical Activity: The physical activity needed to accomplish the levels correctly is too advanced for the level of kindergarten children.</p>	<p>Feedback: The feedback on this application is remarkable. Sight and sound are used for instructions. There are audible reminders for correct hand and posture positioning. The use of sound and sight for the appropriate key hit are effective. When an incorrect key is pressed during practice there is an audible and visual response and guidance to the correct key.</p>

KIDDONET – Site Goal: 1. Site provides opportunities for – rehearsal, repetition, practice



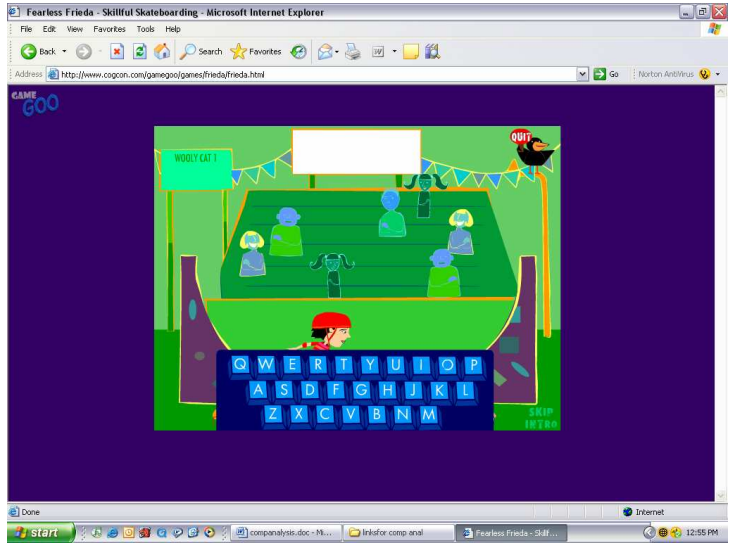
<p>Context: Provided simple instances of repetition rehearsal and practice Consistent color usage throughout the exercises. Very simple. Uses both Upper and lower case letters for recognition. Does NOT incorporate the keyboard. There is no point system or additional level. The concept is appropriate for literacy, but not for keyboarding.</p>	<p>Challenge: Some literacy challenges are addressed here. Recognizing the letter, recognizing illustrations. Understanding letter sounds and applying the letter to the correct picture. Click on the pictures that start with the letter. NO KEYBOARD RECOGNITION is used.</p>
<p>Physical Activity: The physical activity needed for this application to meet the repetition goal on the keyboard is not met. The child only needs a mouse. Using the keyboard yields no results</p>	<p>Feedback: The feedback on this application is mostly visual. When a correct answer is clicked on the illustration appears in color and there is a slight animation. Very age appropriate. Sound is used for instructions. There is no feedback for incorrect answers.</p>

LEARNING PLANET – Site Goal: 1. Site provides opportunities for – rehearsal, repetition, practice



<p>Context: Provided simple instances of repetition only. Very simple. Uses both Upper and lower case letters for recognition. Does NOT incorporate the keyboard. Concept is too simple for literacy expectations. However animations and illustrations are appropriate.</p>	<p>Challenge: There is no challenge here.</p>
<p>Physical Activity: Too simple – no real opportunity for thinking here. Point on the letter, see a picture and hear the letter name.</p>	<p>Feedback: This is basically the letter names associated with pictures. Not very effective literacy tool. Click a letter see the picture that starts with that letter and hear the letter name.</p>

GAME GOO – Site Goal: 1. Site provides opportunities for – rehearsal, repetition, practice



<p>Context: TOO BUSY. The level is too advanced but some features are worth investigating. Does display a keyboard but only for a very brief moment. Too noisy – constant loop in the background – distracting. Not much repetition but does use keyboard instead of mouse. Characterization may not be thing kindergarten children would identify with. Children are asked to type what they hear. Too much action for the learning process to be effective. Quit is displayed as is a replay button to hear the word again.</p>	<p>Challenge: This program offers some level of keyboard challenge and some literacy challenge as well. A lot is assumed of the “player.” The repetition is not a core element here. Child must already have an idea of how to spell the word.</p>
<p>Physical Activity: Children must already know the letters they are looking for on the keyboard. Some of the phonetic sounds are not clear.</p>	<p>Feedback: There is a score keeper device employed for feedback. It’s not intrinsic. You don not know if the correct key was hit. If you incorrectly hit keys, the skater falls. Not appropriate reward system, does not help learner get back on track if mistake is made.</p>

Site Goal: 2. Engage Learners

Values range from 0 – 5 . 0= does not meet the stated goal 5 = meets the stated goal best

	Dancemat 	Kiddonet.com 	LearningPlanet 	GameGoo 
Context				
Challenge				
Activity				
Feedback				

Age and skill level play an important role of this goal. Is the software enjoyable? Is it easy to use? Do the multimedia tools used in the project make sense? Are there features that keep the child interested?

DANCEMAT – Site Goal: 2. Engage Learners



Context:

Provided many instances of repetition rehearsal and practice at different levels. Consistent color usage throughout the exercises. Good use of repetition for colors on the key board. Each color represents a finger. Uses keyboard configuration. Characters and storyline are consistent throughout practice sessions. Shows correct finger placement prior to the beginning of the practice using animated characters hands. This could be effective approach for proposed program.

Physical Activity:

The physical activity needed to accomplish the levels correctly is too advanced for the level of kindergarten children.

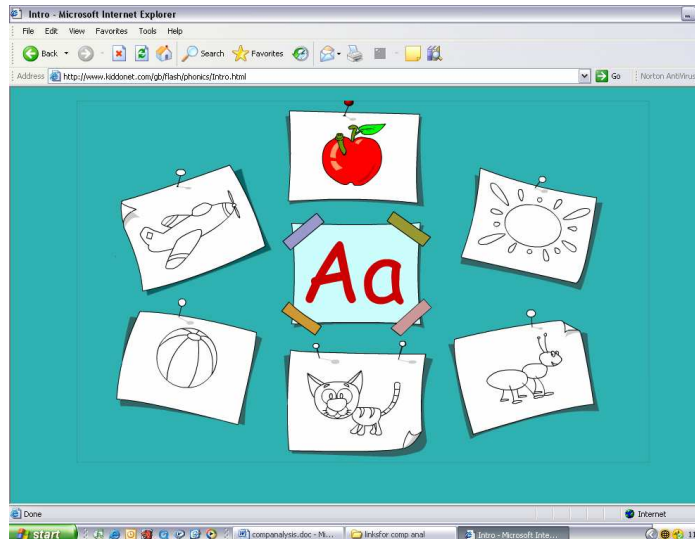
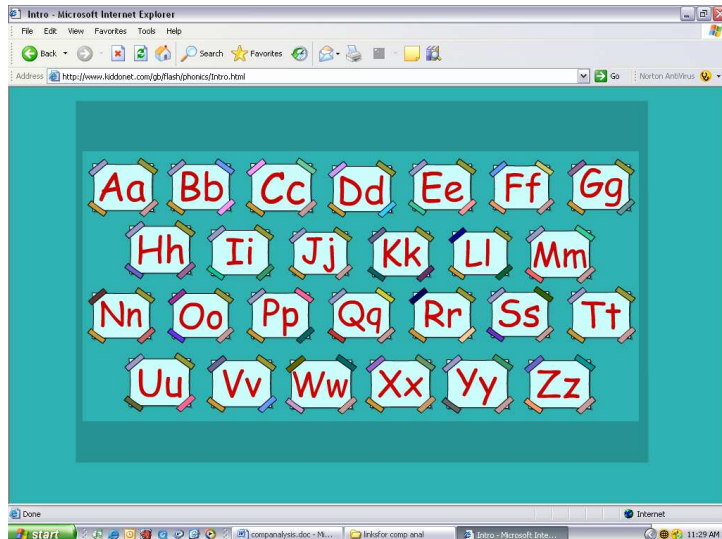
Challenge:

Too advanced for the age and skill level of kindergarten children. Makes the assumptions that a child will know how to escape from the application to repeat a particular lesson. Multiple levels of challenge are incorporated, but the entry level is too advanced for children of the targeted group. Does not address any beginning literacy skills. Assumes literacy level is high enough to recognize letters and words. Sight and sound are used for instructions.

Feedback:

The feedback on this application is remarkable. Sight and sound are used for instructions. There are audible reminders for correct hand and posture positioning. The use of sound and sight for the appropriate key hit are effective. When an incorrect key is pressed during practice there is an audible and visual response and guidance to the correct key.

KIDDONET – Site Goal: 2. Engage Learners



Context:

Provided simple instances of repetition rehearsal and practice
 Consistent color usage throughout the exercises.
 Very simple. Uses both Upper and lower case letters for recognition. Does NOT incorporate the keyboard. There is no point system or additional level. The concept is appropriate for literacy, but not for keyboarding.

Physical Activity:

The physical activity needed for this application to meet the repetition goal on the keyboard is not met. The child only needs a mouse. Using the keyboard yields no results

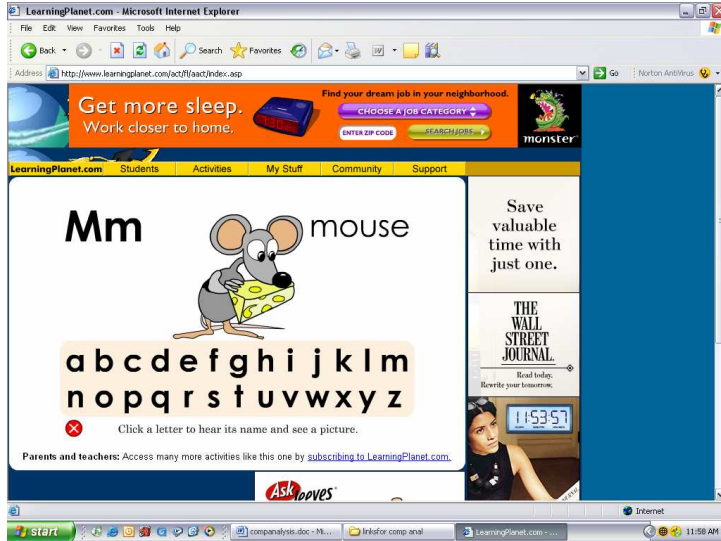
Challenge:

Some literacy challenges are addressed here. Recognizing the letter, recognizing illustrations. Understanding letter sounds and applying the letter to the correct picture. Click on the pictures that start with the letter. NO KEYBOARD RECOGNITION is used.

Feedback:

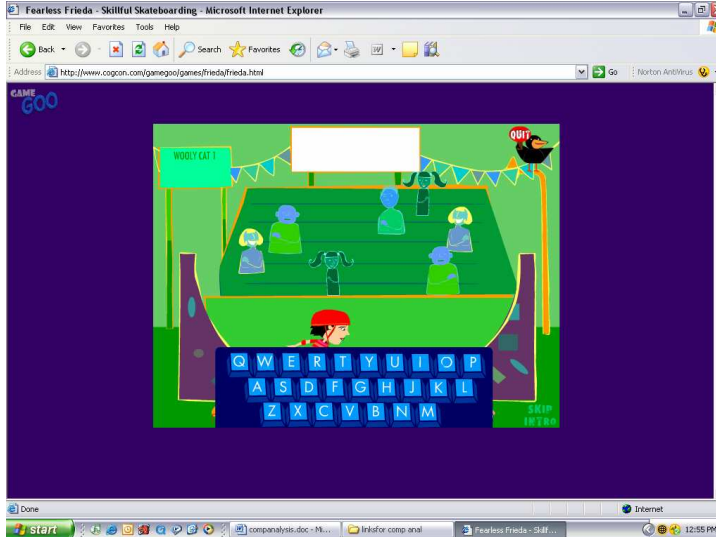
The feedback on this application is mostly visual. When a correct answer is clicked on the illustration appears in color and there is a slight animation. Very age appropriate. Sound is used for instructions. There is no feedback for incorrect answers.

LEARNING PLANET – Site Goal: 2. Engage Learners



<p>Context: Provided simple instances of repetition only. Very simple. Uses both Upper and lower case letters for recognition. Does NOT incorporate the keyboard. Concept is too simple for literacy expectations. However animations and illustrations are appropriate.</p>	<p>Challenge: There is no challenge here.</p>
<p>Physical Activity: Too simple – no real opportunity for thinking here. point on the letter, see a picture and hear the letter name.</p>	<p>Feedback: This is basically the letter names associated with pictures. Not very effective literacy tool. Click a letter see the picture that starts with that letter and hear the letter name.</p>

GAME GOO – Site Goal: 2. Engage Learners

**Context:**

TOO BUSY. The level is too advanced but some features are worth investigating. Does display a keyboard but only for a brief moment. Too noisy – constant loop in the background – distracting. Not much repetition but does use keyboard instead of mouse. Characterization may not be thing kindergarten children would identify with. Children are asked to type what they hear. Too much action for the learning process to be effective. Quit is displayed as is a replay button to hear the word again.

Physical Activity:

Children must already know the letters they are looking for on the keyboard. Some of the phonetic sounds are not clear.

Challenge:

This program offers some level of keyboard challenge and some literacy challenge as well. A lot is assumed of the “player.” The repetition is not a core element here. Child must already have an idea of how to spell the word.

Feedback:

There is a score keeper device employed for feedback. It’s not intrinsic. You don not know if the correct key was hit. If you incorrectly hit keys, the skater falls. Not appropriate reward system, does not help learner get back on track if mistake is made.

Site Goal: 3. Build needed competencies – right hand /left hand

Values range from 0 – 5 . 0= does not meet the stated goal 5 = meets the stated goal best

	Dancemat	Kiddonet.com	LearningPlanet	GameGoo
				
Context				
Challenge				
Activity				
Feedback				

The needed competencies for proposed program are somewhat defined in both the technological and literacy goals defined above. Do these programs help to enforce keyboarding skills; specifically, how is the correct hand or fingering position addressed?

Effectiveness of this goal requires supervision and physical guidance at this level.



s – right hand/left hand

Context:

Provided many instances of repetition rehearsal and practice at different levels.

Consistent color usage throughout the exercises. Good use of repetition for colors on the key board. Each color represents a finger. Uses keyboard configuration. Characters and storyline are consistent throughout practice sessions. Shows correct finger placement prior to the beginning of the practice using animated characters hands. This could be effective approach for proposed program.

Physical Activity:

The physical activity needed to accomplish the levels correctly is too advanced for the level of kindergarten children.

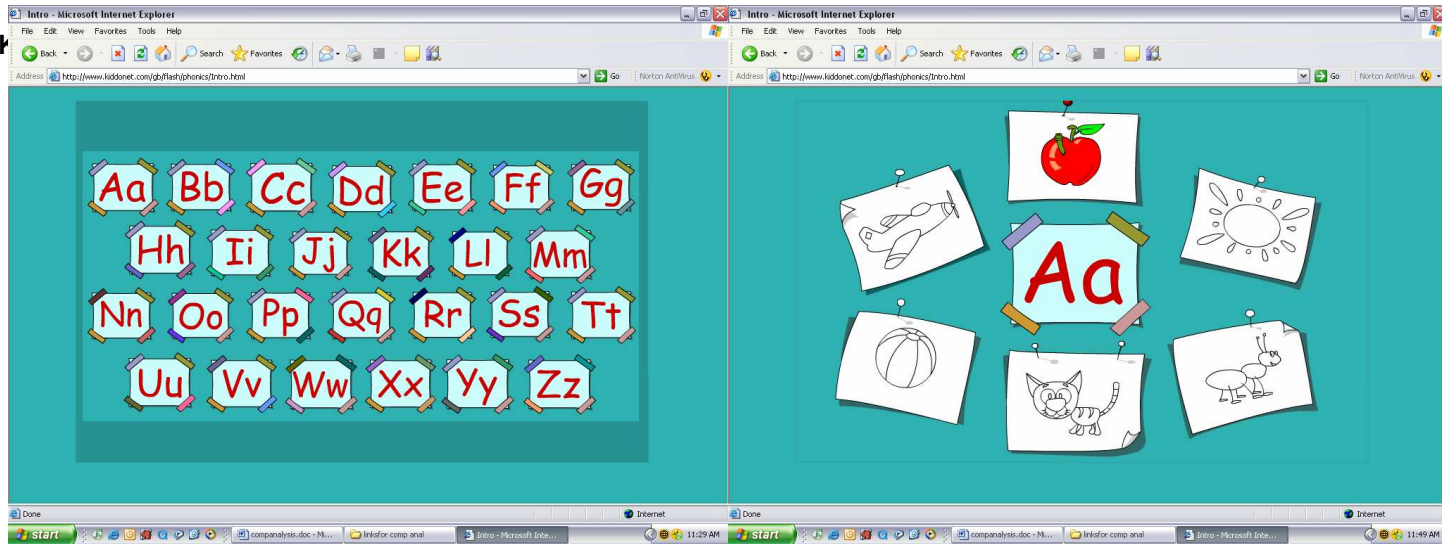
Challenge:

Too advanced for the age and skill level of kindergarten children. Makes the assumptions that a child will know how to escape from the application to repeat a particular lesson. Multiple levels of challenge are incorporated, but the entry level is too advanced for children of the targeted group. Does not address any beginning literacy skills. Assumes literacy level is high enough to recognize letters and words. Sight and sound are used for instructions.

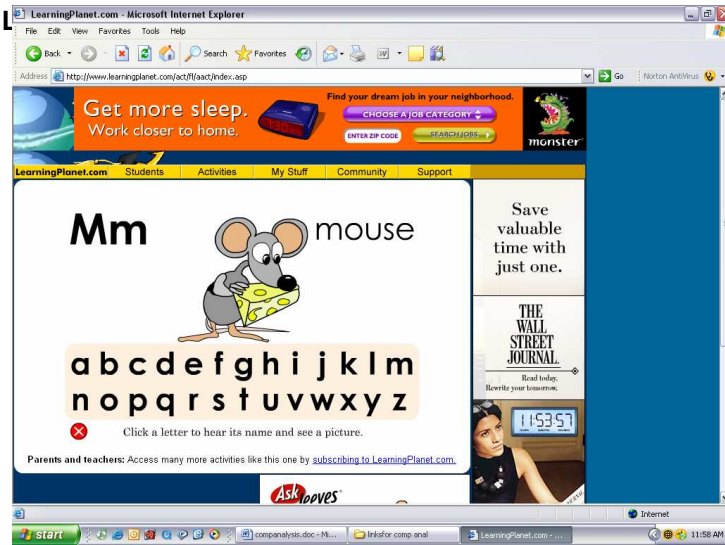
Feedback:

There are audible reminders for correct hand and posture positioning. The use of sound and sight for the appropriate key hit are effective. When an incorrect key is pressed during practice there is an audible and visual response and guidance to the correct key.

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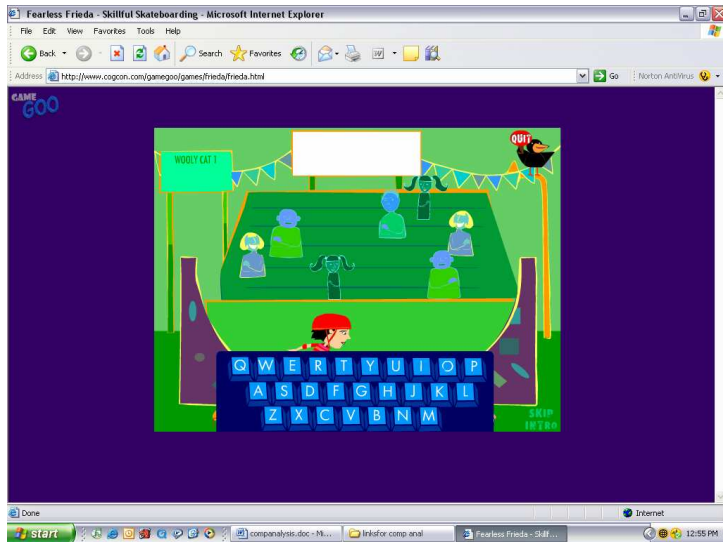


<p>Context: literacy context good. Keyboard non existent</p>	<p>Challenge: mouse only audible instruction only</p>
<p>Physical Activity: mouse only</p>	<p>Feedback: none appropriate for the goal</p>



encies – right hand/left hand

<p>Context: Some literacy context – no keyboard context</p>	<p>Challenge: mouse only no audible instruction</p>
<p>Physical Activity:</p>	<p>Feedback: too simple none appropriate for the goal</p>



– right hand/left hand

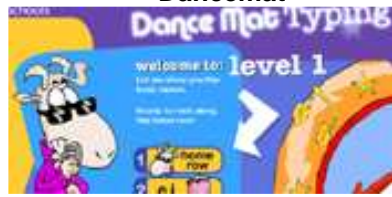
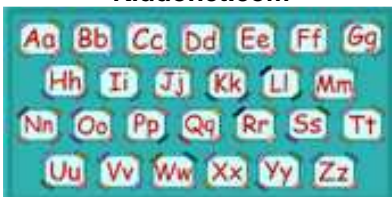


















<p>Context: Did at least introduce the keyboard and showed a brief example of how to find the letters</p>	<p>Challenge: This program offers some level of keyboard challenge and some literacy challenge as well. A lot is assumed of the “player.” Might work for first graders.</p>
<p>Physical Activity:</p>	<p>Feedback: none appropriate for the goal</p>

Conclusion

As is exhibited in this analysis, each site has its specific strengths and weaknesses. Some sites are more effective in literacy goals while others exhibit strengths in interactive instructional goals.

Below is an overall rating of the sites based on the aforementioned criteria.

Values range from 0 – 5 . 0= does not meet the stated goal 5 = meets the stated goal best

	Dancemat 	Kiddonet.com 	LearningPlanet 	GameGoo 
Context				
Challenge				
Activity				
Feedback				

Recommendations for Proposed Interactive Project

This analysis has revealed some interesting guides and design features they should be incorporated into the interactive keyboarding project. These recommendations will be used when creating a prototype providing a sound basis for technical and design decisions.

- Images can communicate to us more rapidly and with more fidelity than verbal descriptions, while animations can act as a reward for correct answers or guidance for incorrect answers – use lots of effective illustrations. The use of story telling also helps the learning process. Do not overuse animations or storytelling to distract from the learning goals. Appropriate characters may play a positive role in the learning process.
- Challenge – stimulus to action within the context—(reward of animation with correct answer – include reminders of correct hand position) Different or more challenging levels may not be appropriate at this level of introduction. Keep it simple.
- Activity – physical response to the challenge (simulate real life) Display a keyboard on the screen and a visual representation of the correct hand or finger position to be used. Use color to designate which hand or which finger is to be used (good example ... DanceMat)
- Feedback – reflection of the effectiveness of the learner's action – feedback provides reward of fun activity....good feedback reflects the different outcomes of specific actions (right and wrong answers). Use of visual and audible feedback and instructions.
- Seek assistance with word choices – make certain content is appropriate and meets Cobb County School District expectations.
- Combine effective elements of DANCEMAT with simple animations similar to KIDDONET to create effective interactive introduction to keyboarding for kindergarten children.

Branding Guidelines

Branding Guidelines:
Keyboarding Strategy for Kindergarten

Ann White – IMD 465 Winter 2006
Revised February 10, 2006

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Introduction

In cooperation with Herman Wood, Cobb County Technology Integration Specialist, an interactive learning tool and support materials will be developed to introduce the concepts of keyboarding and initial strategies for kindergarten and first graders. The basic premise: as children are learning their letters, they can also learn recognition of those letters on the keyboard and learn what hand is used to input those letters. The curriculum would include print materials for parents and educators for additional activities to reinforce the learning skills necessary for keyboarding. The goal of the curriculum is to teach children to use the appropriate hand for the left and right hand side of the keyboard.

The Key Seeker logo represents the basic premise of keyboarding for kindergarten children.

With Border



Without Border



The Name:

Key Seeker – each child will be seeking keys that correspond with images and letters. The name gives the child an identity and identifies the task.

The Graphics:

Keys: Each letter of the name is enclosed with graphics that represent keys on a keyboard. The colors of the keys are significant as explained below. Arial is used for the font to reflect the familiar font used on QWERTY keyboards.

Hands: The hands that will be used to seek and touch the keys are represented in different colors. Left hand: Purple – all letters on the left side of the keyboard will be represented in purple. Right hand: Green – all letters on the right side of the keyboard will be represented in green.

Key seeker is an easy name for children to remember. It is hopeful that once they have used the software; they will identify themselves as Key Seekers and recognize additional materials in the classroom as Key Seeker supportive tools. Branding in this manner will help the children to think of the keyboard while learning other language skills as well.

Conditional Usage

To ensure the integrity of the Key Seeker logo it is necessary to understand certain conditions when using the logo.

Minimum Size

To maximize legibility and impact, the height in all uses should not be any smaller than 1 inches as shown: This smaller size logo could be used with additional supportive materials being developed for the curriculum as well.



1 3/4 " x 1"







Minimum Clear Area - 1/4 inch

In order to protect the integrity and impact of our identity, a minimum clear area has been created around the logo. This area should always be kept free of any graphic elements and/or messages. 1/4 inch.

Logo Colors




It is important to keep children active and interested in learning. The colors used in the logo are bright and energetic. They are familiar colors to children and colors they will recognize. The contrast of the purple and greens allow for energy and activity but are not visually offensive when used together.

NEVER reproduce logo in any colors other than the approved color examples in this document. Never use a tint or screen. All other colors will be not acceptable.

Sample	Screen Source		Print Materials	Web Design
	HSB	RGB	CMYK	Hexi decimal
	252 68 93	111 75 238	56 65 0 0	6F4BEE
	241 13 83	186 185 214	27 19 14 1	BAB9D6
	247 14 95	213 208 244	16 13 1 0	D5D0F4
	124 87 58	19 149 29	95 1 100 0	139519
	77 63 93	171 214 77	33 2 73 0	A8D64D
	84 77 99	168 253 57	34 0 85 0	A8FD39

Example of Background Colors that may be used with logo

Here are approved colors for using as a background with the logo

Sample	Screen Source		Print Materials		Web Design
	HSB	RGB	CMYK	Hexadecimal	
	59 96 100	255 255 9	3 2 91 0	FFFF09	
	201 25 97	184 255 249	27 4 2 0	B8E1F9	
	29 100 100	255 127 0	2 50 93 0	FF7F00	

The recommended color backgrounds shown are simulated using four color process. (CMYK)



Unacceptable Use of Logo

The logo may not be rotated



Do not use any other background colors other than those specified in this document.



Do not use any other font than is specified in this document.(Arial font to represent sans serif font used on keyboards.)



Use ONLY colors specified in this document.

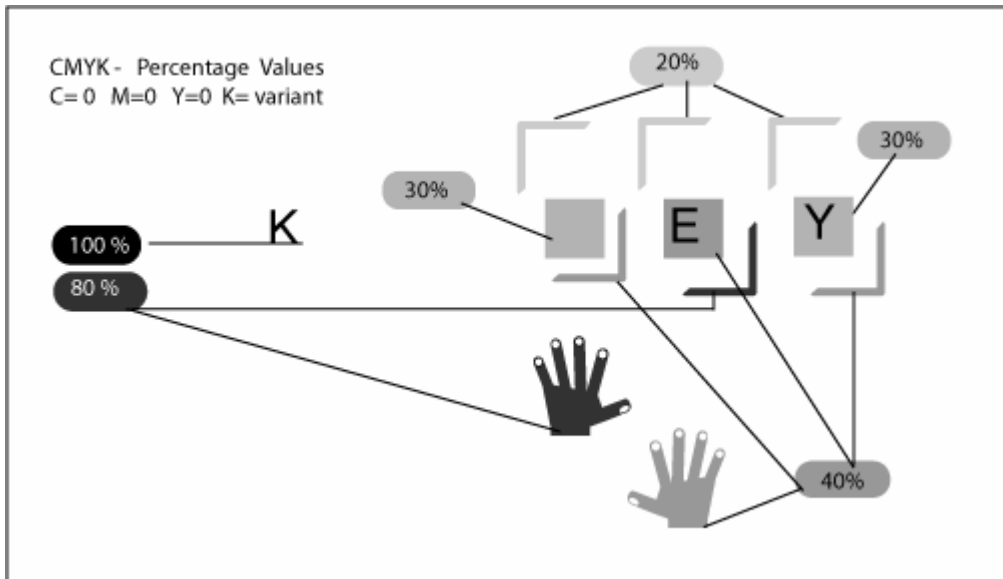


Gray and White Usage of Logo

Gray and white logo to be used with print materials only, and printed only on white stock.



When using black and white version of the logo it is imperative that these percentage values be used for proper contrast. This version should never be printed on color stock.



Recommended Font Usage

These are acceptable fonts that can be used with the logo. Those are sans serif fonts, which support the simple font used logo. Arial font is the font used for QWERTY keyboards.

Arial

Verdana

Myriad Roman

Examples of Logo Sizes

The logo may be resized proportionally, as needed, but may never be cropped.

Business Card or letterhead – 1.75” x 1” or on CD



Sized for header on Web Site or Screen Display or CD cover 2” x 4”





User Identification and Research

Ann White – Senior Project I
January 31, 2006

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Project Overview

The Cobb County School District is looking to integrate the introduction of computer keyboarding to kindergarten children while learning basic language art skills. This proposed interactive instructional keyboarding project will be used in cooperation with other language arts activities to strengthen the children's ability to create and communicate. The computer activity and correlating print materials will be created to meet the needs of the District, the children, parents and teachers.

Primary Goal for Kindergarten Keyboarding:

The student should be able to recognize the letters of the alphabet on the keyboard and use the correct hand to strike the key.

Secondary Goal for Kindergarten Keyboarding:

Incorporate elements of literacy expectations into the program to make the experience more meaningful for the learner.

Most typing or keyboarding applications are not integrated until first or even third grade. Currently, there is no existing computer application that meets the needs and skill level of kindergarten children.

Requirements

This document will examine the vast requirements necessary for the project to be created successfully. Studying the requirements necessary will alert the developer, designer and content providers of potential problem areas as well as address the many different areas of discipline involved in creating such a project.

Cobb County School District Requirements

The following sources were used for reference to identify technical, design and user requirements.

[Cobb County Web Page Publishing and Compliance Guidelines](http://www.cobbk12.org/~pope/acceptable_use_policy.pdf)

http://www.cobbk12.org/~pope/acceptable_use_policy.pdf

Kindergarten Cobb County School District Criteria/Curriculum—Language arts

<http://www.cobbk12.org/~schoolimprovement/curriculum/langarts/kinder.htm>

Kindergarten Cobb County School District - Technology

<http://picasso.cobbk12.org/cobbcurriculum/curriculum/ParTIGrKCR005688.HTM>

Technical Requirements

- Cobb County elementary schools are primarily PC, standardized on IE- versions in use vary widely, but no older than Win '98.
- There are several elementary schools on Mac OS 9 & X. Browser again is IE standard on OS 9, with Safari in broad use in X, but standardized on IE.
- It is unclear at this time if the Cobb County School District will host the Key Seekers application on its server or if the application will be stand alone.

MINIMUM Requirements for stand alone application:

- Windows 98/Me/NT/2000
 - Pentium II 266mhz processor
 - 4x CD-ROM drive
 - 64 MB RAM
 - Monitor with a minimum 800 x 600 resolution and 16 bit color
 - Sound Card
- MACINTOSH
 - G3 266 mhz processor
 - 4X CD-ROM drive
 - 80MB Free RAM
 - System 9 or Higher
- Flash and XML enabled (version 8)
- Flash Player (version 8)
- Headset is recommended

Design Requirements

- The design will be clean, crisp and inviting.
- Age appropriate illustrations to denote the approved word list (needs to be created)
- Instructions will be audible on interactive pages.
- Animations as "reward"
- Resolution to design for is 800 x 600 more likely lab screen sizes will be 1024 x768
- Primary colors will play an important role for instructions and attention.

User Requirements

- How to load the program
- How to end the program.
- Hit the right key for the desired response
- Know colors
- Know or learn left and right
- Motivation to continue using software

User Description and Goals

Primary Users

Key Goal: Use the correct hand to type the correct letter (“reward” is animation)

- Kindergarten Students

Secondary Users

Key Goal: To assist the kindergarten student to achieve language art skills and keyboarding skills

- Kindergarten Teacher
- Kindergarten Parent

Complementary Users

Key Goal: What can we provide to our students, teachers, parents to increase technical skills and language arts

- Integrated Instructional Technology Specialist
- Curriculum Researchers
- Cobb County School District

User Task Matrix

The purpose of this matrix is to help the client visualize who will use the application and the manner in which the application will be used most often.

Key Seekers Application TASK	Primary Users	Secondary Users		Complementary		
	Kindergarten Students	Kindergarten Teachers	Kindergarten Parents	Developers	Market Research	Cobb County School District Curriculum
start the program	x	x	x	x	x	x
end the program	x	x	x	x	x	x
match a letter on the keyboard to an illustration or a letter on the screen	x					
advance the program to the next word or level	x					
Option to turn sound on and off	x	x	x			
left hand right hand clues and encouragement	x					

Personas:

Personas are a way to personalize the users of a site. The personas created in this document were created using research referenced in the Additional Supporting Research section of this document.

If we keep our approach personal, we are more likely to meet the needs of the user.

Primary User: The Kindergarten Student

Susan Johnson Personal Profile

Quote:

“My favorite things are ice cream and my dog.”



Susan has recently entered kindergarten at Brown Elementary School in Cobb County, Georgia. She spends ½ day at school and enjoys being with her new friends. She especially likes puzzles and games. She is new to sharing as she is an only child.

She enjoys school and always talks about her dog named Bunny.

Background:

- 5 years old
- Attend Brown Elementary School Cobb County
- Concerned what other kids think

Attributes:

- Outgoing
- Physically active
- Concerned with the friends and having fun

Needs:

- Simple navigation and instruction
- Motivation
- Stimulation to activity
- Attention
- Learn Letters, recognize and by sight sound

Kindergarten Scenario	Student	Needs	Feature	Behavior
<p>Sue is given a choice of activities in kindergarten at one of the many learning centers. She chooses the computer and chooses to “play” with Key Seekers.</p> <p>There may be times when she needs to share the experience with another student as the computer stations are limited.</p> <p>She and a few friends take turns and sometimes work as a group to obtain proper hand use and correct letter recognition.</p>		<p>to start program</p> <p>to hear instructions</p> <p>to be reminded which hand to use</p> <p>match letter with picture and or sound</p> <p>Encouragement</p> <p>Feedback</p>	<p>Large buttons to start program</p> <p>Sound on or Off Option (headset)</p> <p>Audio/Visual cues of hands use.</p> <p>Color matching to find correct key and use correct hand</p> <p>Audio and Visual encouragement – correct answers will display “fun” meaningful animation correlated to the illustration displayed.</p> <p>Adult Supervision</p> <p>Audio and Visual feedback for correct and incorrect answers</p> <p>Adult Supervision</p>	<p>She places the disc in the drive or logs on to the site using a desktop shortcut. She is greeted with a colorful screen and listens to the instructions. She is prompted to start with audio and visual highlight of a large GO button.</p> <p>She proceeds through the “game” matching pictures with letters and matching her left hand letters with the left hand letters of the keyboard. She has trouble with left and right so colored tape is placed on the corresponding hands to help remind her where to find the letter on the key board and what hand to use to press the letters.</p>

Secondary User: The Kindergarten Teacher

Barbara Lee **Personal Profile**

Quote:

“Stay focused on the task, persevere, and you will succeed.”



Barbara is committed to her life as an early childhood educator. She spends much of her free time researching new and effective ways to make a difference in the learning environment for her kindergarten class.

She is relatively familiar with computer usage and feels comfortable incorporating it into the classroom. She is very picky about the quality time kids spend on the computer as the class time is limited. She is looking for software that meets the needs of her students and kindergarten literacy expectations.

Barbara is researching schools for her Masters Degree in education.

Background:

- 28 years old
- Teaching Kindergarten for 3 years
- Single
- Enjoys reading, board games, gardening
- Dreams of learning to salsa dance
- Uses the internet and email to communicate with family and friends and research.

Attributes:

- Caring
- Positive attitude
- Task oriented and studious
- Extremely well organized
- Dedicated to children's success

Needs:

- Additional Support for language arts teaching
- New ways to incorporate computer into early learning environment

Kindergarten Scenario	Teacher	Needs	Feature	Behavior
<p>Barbara allows her students 20 – 30 minutes twice a week to choose computer time as an optional activity.</p> <p>She is limited in the amount of supervision she can provide to the students and encourages them to work together at the computers.</p> <p>She sees that three children have chosen to use the computers. There are two available for the students in the classroom.</p>		<p>Software that the children can operate with minimal supervision</p> <p>Incorporate group use when there are not enough computers</p> <p>offer additional activities to support the keyboard project</p>	<p>Audio/Visual instructions</p> <p>Turn taking or children who know left right to help remind and encourage children just learning the concept.</p> <p>Children can speak the word displayed, say the color and the left-right hand that should be used.</p> <p>Supporting Materials that have the same look and feel as the interactive project (These are still being discussed)</p>	<p>She will assist the children in getting situated. She will supervise the loading of the program to be certain the child does understand what to do and how to do it.</p> <p>She will describe to the other children ways they can cooperate in the use of the game. Or redirect some children to other supportive activities (possible low tech key boards where they can play along)</p> <p>She may use class time as a group to play a low tech version of the software using flashcards and a large keyboard layout. These materials will have the same look and feel as the interactive program. (still being designed and discussed)</p>

Complimentary User: Integration Technology Specialist

Robert Wells **Personal Profile**

Quote:

“Delegation is an art, a science, a gift and a necessary evil.”



Robert has always been dedicated to education. He possesses an undergraduate degree in history. Years ago he taught history in a public high school. Later in life he became very interested in computer programming. He returned to school for his Masters Degree in Instructional Technology. After completing his degree he was able to secure a position with the Cobb County School District.

Background:

- 53 years old, married man with 2 children
- Coaches a little league team
- Very tech savvy
- Dedicated to the education of children

Attributes:

- Manages People Well
- Master at time management
- Delegates task he does not do well
- Efficient and friendly
- Patient

Needs:

- Information about appropriate software that can be incorporated into existing curriculum.
- Software and curriculum ideas that are easily implemented for both parents and students and teachers
- Will the software meet all necessary requirements for the Cobb County District
- Will the software meet the standards of the existing equipment.

Integration Technology Specialist Scenario	Needs	Feature	Behavior
<p>Among his many tasks with the Cobb County School District, Robert has been asked to create or find appropriate software for incorporating keyboarding into the kindergarten.</p>	<p>Program that will meet the developmental level for the children. Possible additional activities to support language skills. An application that requires some supervision but can be easily implemented by parents and teachers.</p>	<p>Robert will briefly review all features</p>	<p>Robert will load the program and give it a once over review keeping in mind the needs of the school district, children parents and teachers. He will assess whether the program will meet the existing requirements for the equipment available.</p> <p>He will also send the program to the appropriate teachers for their review and acceptance before implementing the program into the schools.</p>

Additional Supporting Research

Childhood Development

Five Year Olds

- Can copy simple geometric patterns.
- Can count ten or more objects
- Beginning to learn how to print letters
- Understand the difference between fantasy and reality
- Have the ability to remember parts of stories
- Are concerned with pleasing their friends

[National Network for Childcare – Child Development](http://www.nccc.org/Child.Dev/child.dev.page.html)
<http://www.nccc.org/Child.Dev/child.dev.page.html>

[Children and Computers](http://www.ericseece.org/pubs/digests/2000/haugland00.html)
<http://www.ericseece.org/pubs/digests/2000/haugland00.html>

Children this age are developmentally within Piaget's preoperational stage. This means they are concrete learners who are very interested in using newly learned symbolic representation - speaking, writing, drawing (including maps and geometric figures) and using numbers. Further, children this age are extremely active and mobile. They often have difficulty sitting still; they need frequent changes in learning modalities; and they want a variety of physical experiences involving dance, physical play, climbing and sports. Preoperational children are also continuing their mastery of language, and exploring various facets of social behavior.

[The Role of Technology in Early Childhood Programs](http://www.earlychildhood.com/Articles/index.cfm?A=302&FuseAction=Article)
[Francis Wardle, Ph.D.](http://www.earlychildhood.com/Articles/index.cfm?A=302&FuseAction=Article)
<http://www.earlychildhood.com/Articles/index.cfm?A=302&FuseAction=Article>

Software Design

When children are passive, there is no way to gauge whether or not they understand the concept presented.

When software is designed to facilitate active use, children are able to accomplish goals. Comprehension, not memorization is stressed.

<http://www.naeyc.org/resources/eyly/1996/09b.htm>

Software designed for children ages 3 – 6 should...

- Be easy to control (minimal mouse and keyboard usage)
- Use menus one level deep. The menus should be represented visually.
- Use sound and color to make the program interesting, but not overly stimulating.
- Be age appropriate and accommodate a range of skills.

<http://www2.edc.org/NCIP/library/ec/Char.htm>

Instructions

- Characters should speak the instructions should be verbal. Children will pay more attention to this than they will to audio alone.
- Children should be able to repeatedly play instructions.
- Animate or highlight characters while they are speaking to draw the children's attention.

Characters and animations

- Characters should not speak at the same time as one another.
- Characters should not be constantly in motion.
- Always allow children to terminate animations.

<http://www.research.microsoft.com/users/marycz/druin98.htm>

Children, between the ages of 4 and 5 use a computer independently for up to half an hour. If the child is having fun, the child will use the computer for a longer period of time.

Software should be patterned according to the child's daily activities.

<http://www.smartcomputing.com/editorial/article.asp?article=articles%2F1994%2Fsept94%2Fpcn0912%2Fpcn0912%2Easp>

The Haugland Developmental Software Scale

This scale consists of ten categories. Each of the categories contains a set of sub-criteria.

The following is a summary of the scale. A detailed diagram containing all of the sub-categories is available at: <http://www.childrenandcomputers.com/Evaluations/software/software-scale.htm>.

Age Appropriateness:	The concepts presented must be appropriate for the age group in question. The method of presentation should meet the children's developmental needs, the children should not have to adapt to the software. The software should support varying developmental levels.
Child in Control:	The children should have the ability to control the pace and the flow of the process. The software should provide children with an obvious method of returning to the main menu. Visual and verbal prompting should be used to aid the child in navigation. The software should support discovery through trial and error.
Clear Instructions:	Verbal instructions are helpful even to children who read. Directions should be clear and exact. Short phrases should be used. The software should always give children a clear indication of where to go next. Visual prompts are useful. A help option should be provided. Pictures and well-designed icons should be used to help children decide between choices.
Expanding Complexity:	The entry point of the software must be simple and easy to entice the child to explore further. Once the child is enticed the software should present important ideas and concepts.
Independence:	After initial guidance, children should be able to operate the software essentially on their own. This does not mean that adult interaction cannot be used to enrich the experience.
Non-violence:	The software should not contain violent scenes, objects, or activities. This is especially important on software, where unlike with television, children are more than passive observers. If violent acts must occur, their permanence should be stressed, do not allow children to undo explosions etc. The software should emphasize positive social values.
Process Orientation:	Intrinsic motivation, not a reward structure, should be used to create enthusiasm. The desire to explore, experiment, discover, and learn should be their own reward.
Real World Model:	The software should use concrete representations of real world objects. Scale and color should be realistic, not stereotypical. Information should be accurate since children believe, without questioning, that much of what they are presented with is true.
Technical features:	The website should be colorful and uncluttered. Clutter makes it difficult for children to focus. Whenever possible, let children control the animation. Realistic sound effects and music are helpful. Consistency is crucial. Actions should produce reasonable results. Printing should be possible. Printouts provide children with tangible results. The software should run quickly. Children should be actively involved. The software should allow children to save and restore .

Transformations:	The software should stress the impact of the child's interaction overtime.
------------------	--

Summary of key points:

- ❏ Children should control process flow and pacing.
- ❏ Visual and verbal prompting should be used to aid the child in navigation.
- ❏ The software should always give children a clear indication of where to go next.
- ❏ Pictures and well-designed icons should be used to help children decide between choices.
- ❏ The entry point of the software must be simple and easy to entice the child to explore further. Once the child is enticed the software should present important ideas and concepts.
- ❏ After initial guidance, children should be able to operate the software essentially on their own.
- ❏ Intrinsic motivation, not a reward structure, should be used to create enthusiasm.
- ❏ The software should use concrete representations of real world objects. Scale and color should be realistic, not stereotypical.
- ❏ The website should be colorful and uncluttered.
- ❏ Whenever possible, let children control the animation
- ❏ Printing should be possible.
- ❏ The software should allow children to save and restore
- ❏ The software should stress the impact of the child's interaction overtime.

http://www.childrenandcomputers.com/Articles/selecting_developmentally_approp.htm

Parental Involvement

Share with parents that setting limits and managing media time is essential. Too much "screen time" (computer, TV, videogame and video) can lead to increased distractibility and difficulty attending to extended activities. A good recommendation is one hour per day of total screen time for preschoolers, and two hours for elementary school children.

<http://www.netc.org/earlyconnections/kindergarten/curriculum.html>

Parents want to control volume.

Parents want their children to develop computer literacy.

Children have a tendency to skip difficult tasks and remain at easy levels. Parental involvement can mediate this issue.

<http://www.naeyc.org/resources/eyly/1996/09b.htm>

Technology and Curriculum

In kindergarten children and teachers are working on readiness skills and early literacy experiences. Even in kindergarten children may benefit from technology if care is taken that computer (and other technology) use does not replace time spent on important foundation skills. When used properly, computers and other technology can help children learn, both in short, simple lessons and as an integral part of larger, more complex, projects. Including technology as a part of classroom activities can motivate students and allow them to learn and share their understanding in a variety of ways.

Children receive the greatest benefits from technology in the classroom when:

- ❏ The lesson or project is directly connected to the classroom curriculum
- ❏ The technology allows for active learning and discovery
- ❏ The lesson or project is open-ended, allowing learners to proceed at their own pace
- ❏ Technology is applied to real situations for a real purpose
- ❏ Computers are part of classroom activities, rather than set apart in a separate room or lab

<http://www.netc.org/earlyconnections/kindergarten/curriculum.html>

Dos and Don'ts of Using Computers in Early Childhood Programs

- Provide a computer center as one of many equally valued learning centers in the classroom. Allow use, access, and choices as you would any other center.
- Do not use time on the computers as a reward for other activities, behaviors, and task completion. Do not only allow the 'well behaving' children to access the computers.
- Allow children lots of time to explore how to use a computer: what can/cannot occur, and simple exploration of the medium.
- Do not sacrifice resources for important basics such as art materials, blocks, books, play dough, puzzles, water tables, outdoor playground equipment, to purchase and maintain computers.
- Do carefully evaluate all software, both for developmental appropriateness, and for nonsexist, nonracist, nonstereotypical, and nonviolent material. Of the software evaluated by Haugland (2000), only 25% of the titles reviewed were considered acceptable. Use the Haugland Developmental Software Scale to evaluate software. (Haugland, 1997)
- Do not use computer labs. Public schools seem to love computer labs, but, by definition, it is simply impossible to integrate the ongoing classroom curricula if computers are isolated in a lab, where children must attend at a specific time during the day.

- Provide enough staff training that teachers feel comfortable both with the computers in the classroom, and the software selected (NAEYC, 1996).
- Do not use software that reinforces gender/racial stereotypes, or that promotes violence as an acceptable way to solve problems. This includes computer games.
- Do not allow computer use to distract children's time and attention from critical early childhood activities: art, music, play, social interaction, exploration of books, climbing on the playground, etc. Computers cannot replicate concrete experiences, hands on learning, mentoring by adults and older peers, and exploration of the real physical and natural world.
- Make sure needed training and support for computers in the program does not detract from other needed training and support, such as working with children with special need, literacy instruction, conflict resolution, etc.

[The Role of Technology in Early Childhood Programs by Francis Wardle, Ph.D.
http://www.earlychildhood.com/Articles/index.cfm?A=302&FuseAction=Article](http://www.earlychildhood.com/Articles/index.cfm?A=302&FuseAction=Article)

Design Phase

The following deliverables have been developed during this phase of production:

- Feature Value Analysis
- Process Flows
- Site Map
- Design Concept Comp
- Visual Prototype

Feature Value Analysis

Ann White – IMD 465 Winter 2006
February 10, 2006

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Introduction

This feature analysis describes individual screens and suggested functionalities at a high level. Traditional web sites follow standard site maps, wire frames and process flows. When developing in a FLASH environment the traditional methods are not effective in conveying the needs and requirements of the project.

This feature analysis used with a storyboard and script will attempt to fill the information architecture necessary for the project. The analysis conveys what features are needed and how they should operate to ensure an enjoyable and effective learning session.

Below are the elements of the Feature Value Analysis:

Feature - Short descriptive name for the feature

Description - High-level description of the feature

Rationale - Why this feature is considered to be valuable

The list of valued features presented here provides a base from which to begin forming the details and parameters of the product design.

Feature Value Analysis

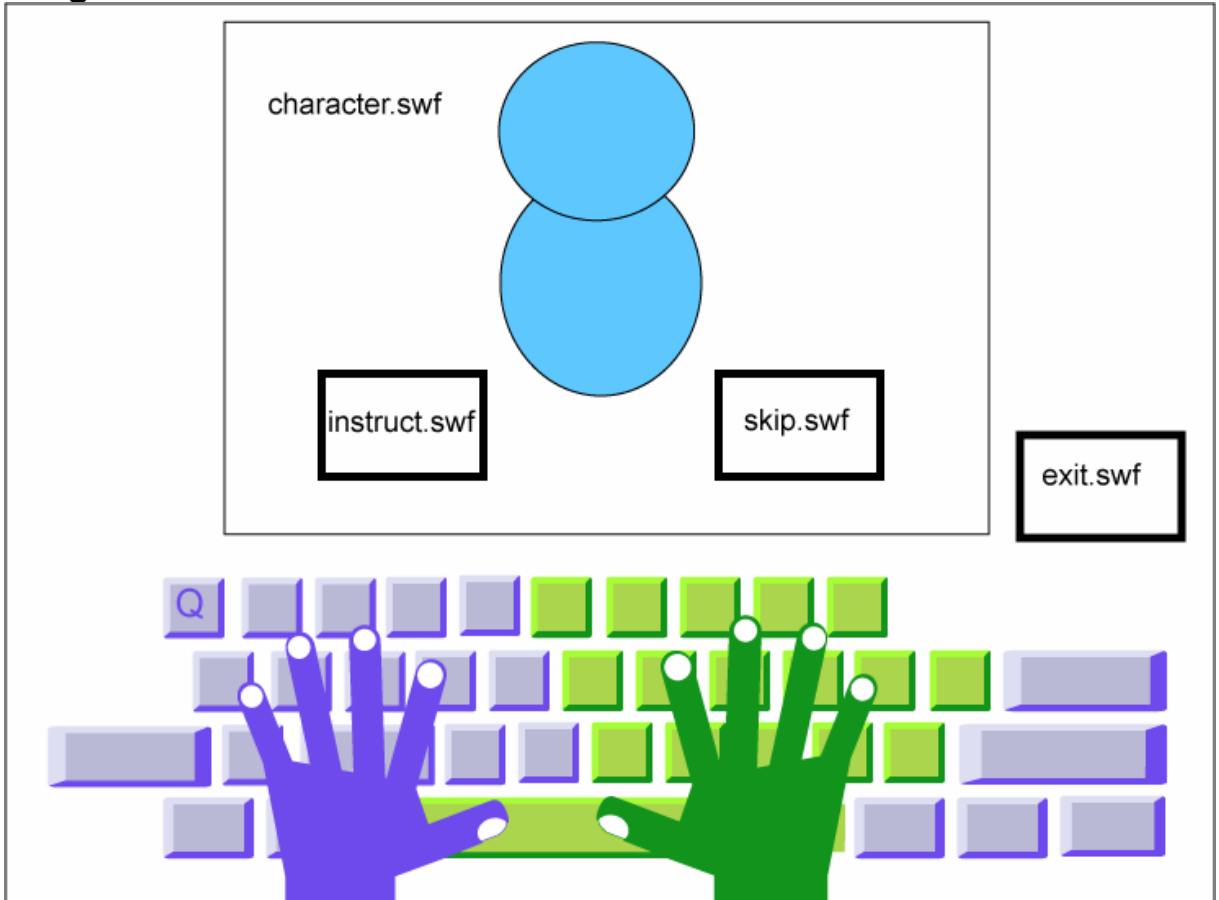
Set Up/Introductory Features

Feature
Teacher and Parental Information
Description
Additional supporting materials will be offered in print. These materials will include games/activities that will help to reinforce keyboard and letter recognition without the use of keyboard hardware. These activities are still in the development and approval process with the Cobb County School System.
Rationale
PULL NOTES FROM PREVIOUS WORK!

Auto Install

Feature
Auto-install – not necessary but nice to have
Description
The installment process should be very easy As an additional enhancement to this feature, it is recommend that a Key Seeker icon automatically download to the desktop of the user's computer as a shortcut to open the program. If the program is hosted on-line, the icon could link to the on-line version.
Rationale
Access should be easy enough for the child. Also the icon will reinforce the software brand. As of this writing this feature is being re-evaluated for feasibility. The program will probably be hosted on-line.

Program Introduction



Feature

Introduction

Description

A character (still in development) will welcome the user (audio), and will give a brief introduction to the program. This introduction will be targeted to both the teacher/parent and kindergarten user. The character will also function as the Help icon inside game and activities. This will be explained in the instructions. The user will be given the opportunity to skip the instructions and go directly to the game.

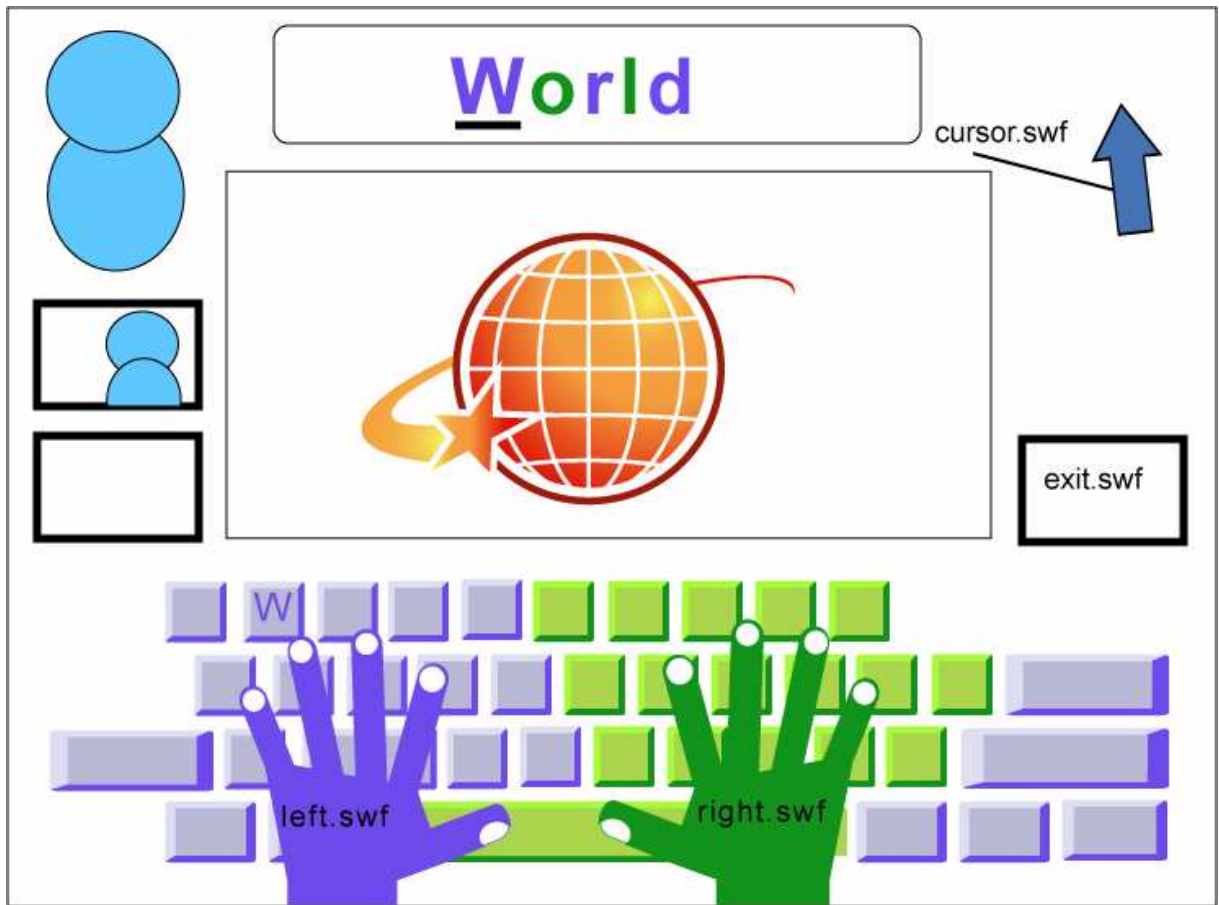
It serves as a gateway to the instructions and/or the game.

Rationale

The introduction introduces the character that will be used for help and instruction. It introduces the purpose of the game: help to create words on the screen using the correct hand for the corresponding side of the keyboard.

It encourages the child to have fun.

Instructions



Feature

Instructions

Description

The instruction page will consist of visual animations lead by the character.

How to advance the game

How to quit the game

How to get help

How to make the game harder(level)

Left hand right hand concept

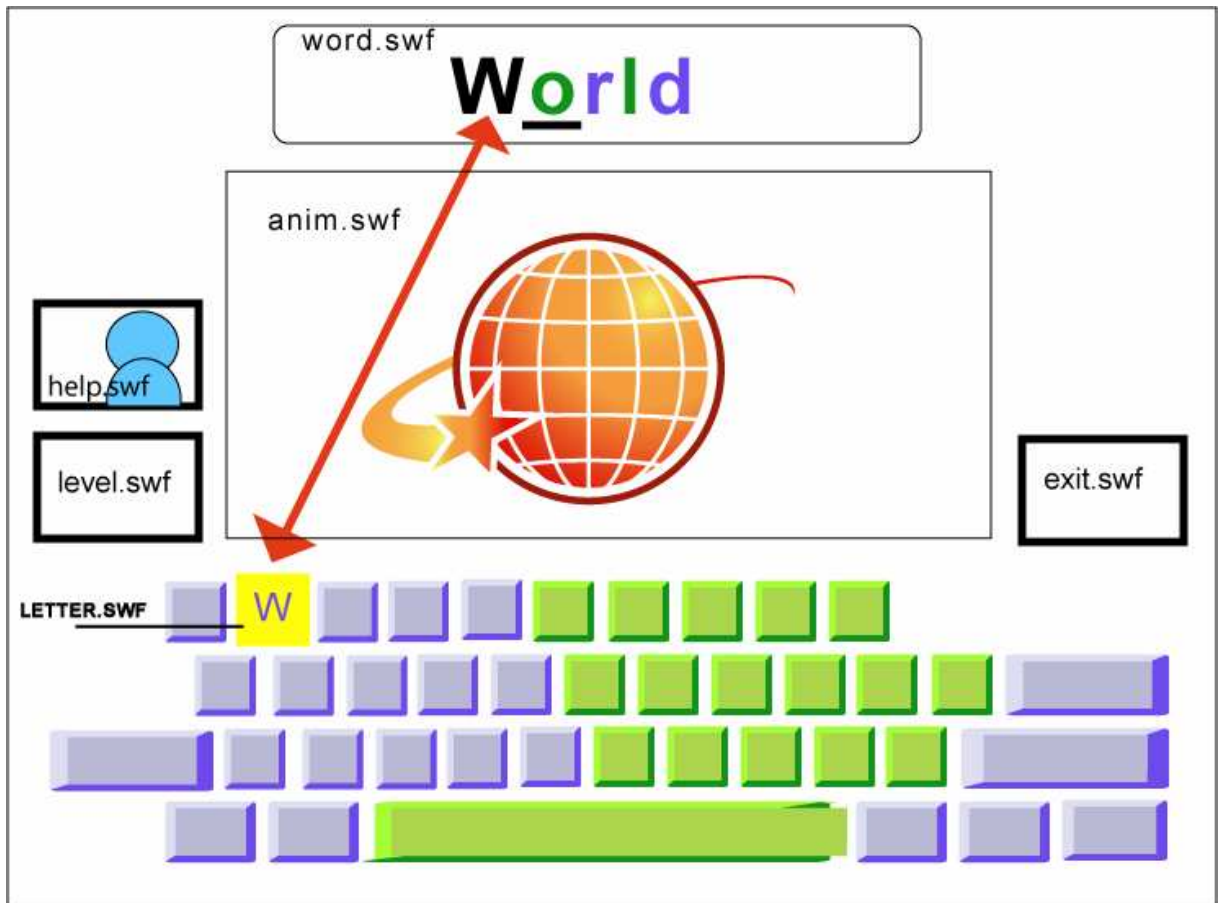
Highlight what is being explained

The cursor will point out the buttons

Rationale

The instruction is necessary to explain and show how the game is played. Again the animation will have an audio script so the child can see and hear what to expect.

Game/Activity



Feature

Game/Activity

Description

A word will appear in the word.swf. The child will be prompted to type the underlined letter using the left hand if the letter is purple and the right hand if the letter is green. A picture representing the word will appear on screen as well.

Once the child types the correct letter, the letter.swf will highlight for feedback the underline will move to the next letter. Once the word is typed, the picture (anim.swf) will animate and a new word will appear. There will be audio scripts reminding the child to use the correct hand and to encourage the user along the way.

If the child types an incorrect letter there will be an audio response (oops, try again)

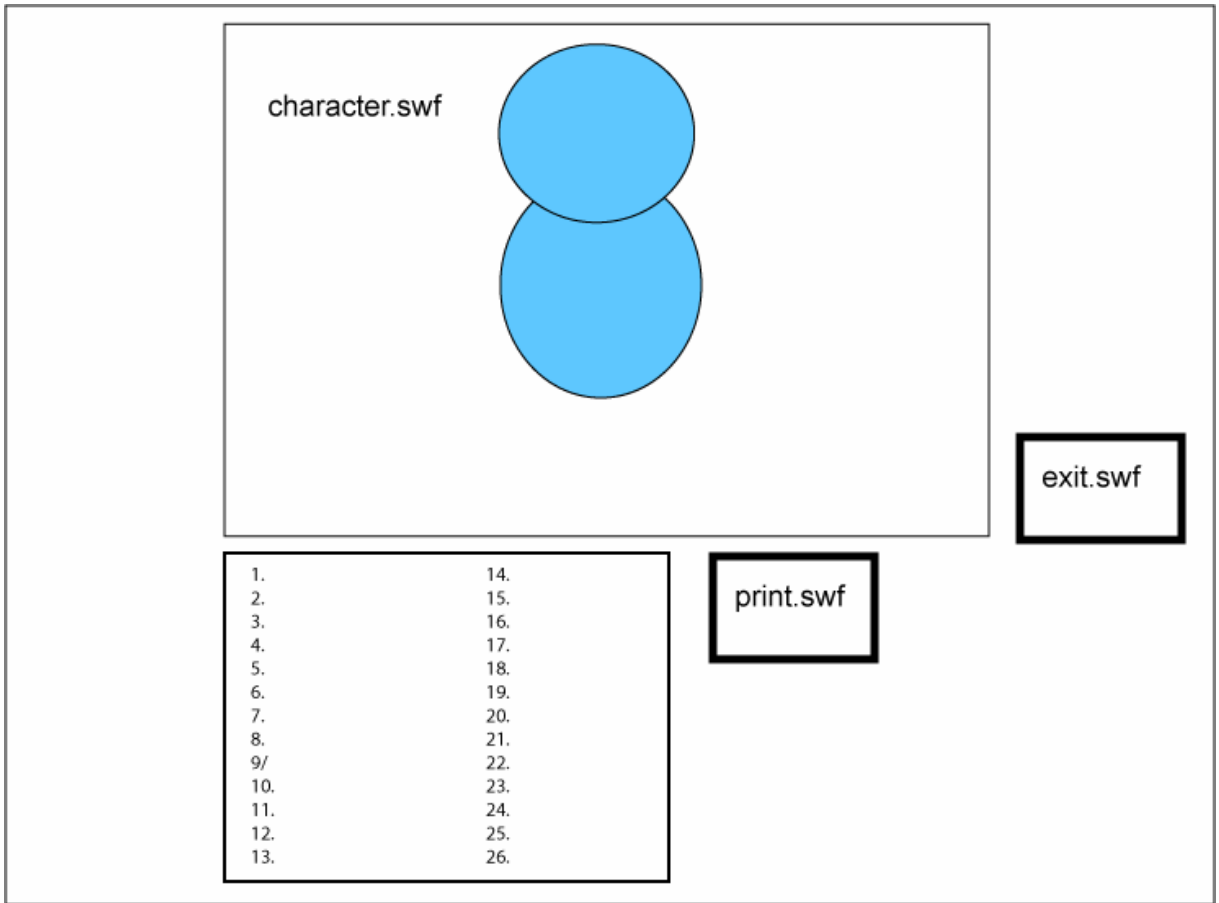
Rationale

As discussed in previous materials, this game focuses on literacy skills for children in kindergarten. It will also encourage the beginning of good keyboarding skills for a specific age group.

Feature
Difficulty Level (level.swf)
Description
<p>If time permits, two difficulty levels will be offered. The second level of difficulty has not yet been discussed. And in fact may be beyond the scope of this project at this time. As the goal of the software is language skills and keyboard recognition a second level may be just presenting the picture and the child will need to type the letter (using the correct hand) that the word starts with.</p> <p>A possible option may be categories of words that a child may want to learn, animals, food, colors etc.</p> <p>Another option would be more difficult words or attempting to use the correct fingers for the correct letters. (long term – increase the difficulty as the child enters first and second grade)</p>
Rationale
<p>It is important to keep a child's interest level. If the game is too easy for the child they will no longer wish to play. Keyboarding is a skill best learned by practice.</p>

Feature
In-game help
Description
<p>This in-game help will be prompted when the user clicks the character icon. (help.swf) The game will revert to the instructions screen.</p>
Rationale
<p>Children at this age and skill level can identify with a character that they have already been introduced to. The help icon will also have an audio file telling the child that this is where they can find help if they need it.</p>

Exit Features



Feature

Print option Play again option Exit

Description

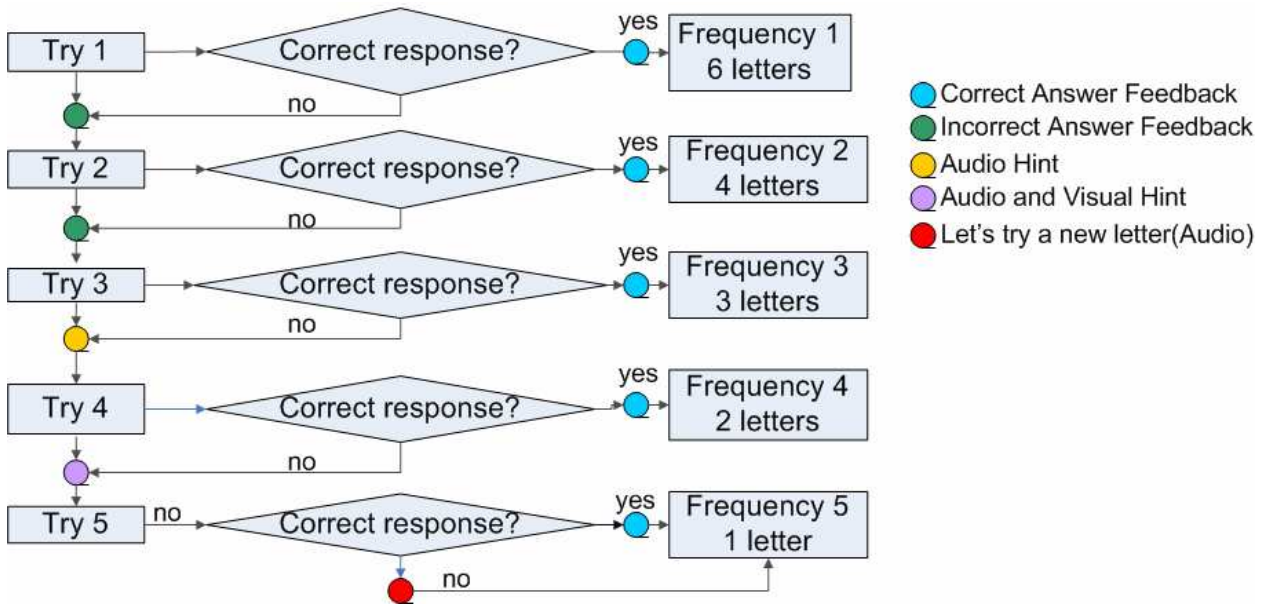
When a child opts to exit/quit the game they will arrive at a screen will show their progress in the game. A word list will be produced and they will have the option of printing the list. The can exit the game completely from this screen as well. Audio – goodbye, thanks for playing, come back again...

Rationale

The rewards in the program are simple animations (entertainment). Printing a list of words completed can give the child a sense of accomplishment and can be shared with parents to show progress.

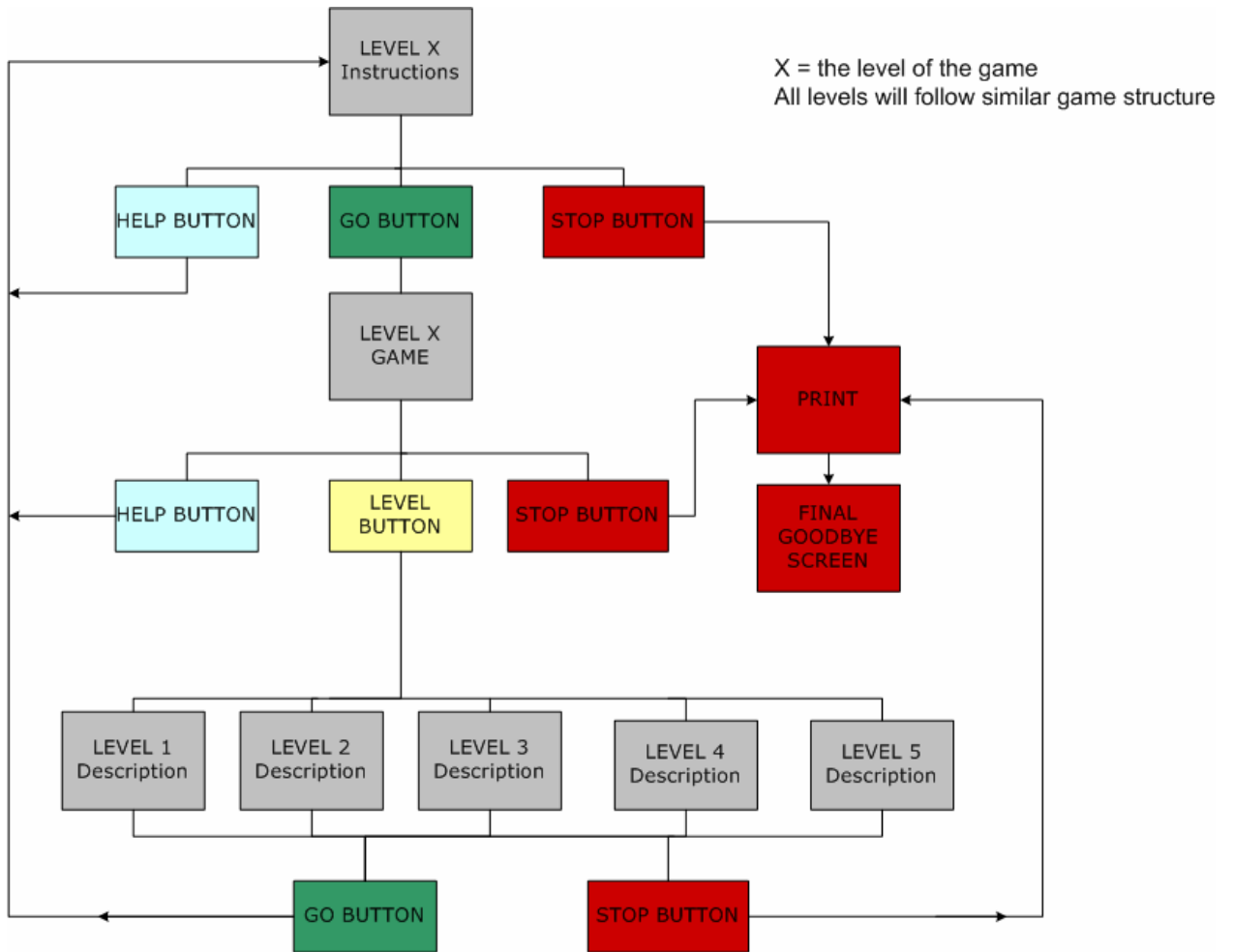
Process Flow for Practice Algorithm

The element of practice is critical to the learning process of Key Seeker. Using an algorithm and explanation supplied by Ameeta Jadav, Phd., - Interactive Media Design Program Director, Art Institute of Atlanta. The algorithm was modified to fit the needs of this project and the following process was determined for the coding of the game.



Game Structure Map

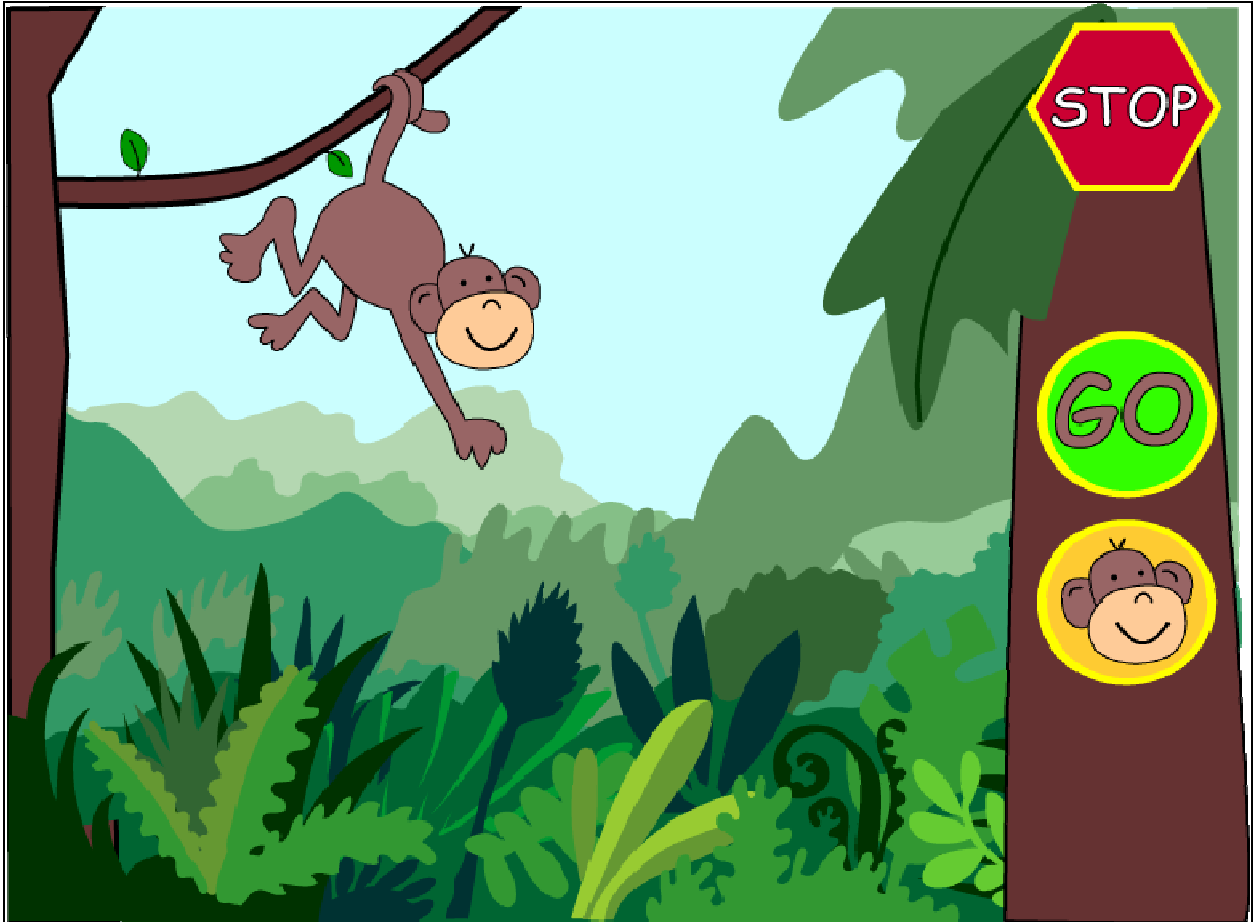
Using the Feature Analysis document, a structure was developed for the Key Seeker game. This map is similar to a site map.



Key Seeker Game Structure Map

Concept Comp

Having completed most of the technical aspects of the concept, it was then time to create a visual design. The concept of a jungle adventure will be used for Key Seeker. The child will seek letters in the jungle with a friendly monkey character to help the child along.



Visual Prototype

The Feature Analysis and Game Structure Map were used to create the visual prototype. The prototype can be seen on- line at <http://keyseeker.org/test>

Development Phase

These are the development activities and deliverables completed during the Summer Quarter 2006:

- Develop actual programming and scripting.
- Finalize Flash movie structure and movie naming convention.
- Write audio script for instructions and buttons.
- Create movie clip animations for each letter of the alphabet
- Create sound to use in movie
- Make sure the site is adhering to the specified designs and scripts.
- Design and execute usability test.
- Modify the site based on usability testing result.

Project Schedule - Milestones

It is important for any project to have a schedule that notates all events and activities necessary for the tasks involved to complete the project. This helps all parties involved in the development stay on task and allows for modifications and solutions as needed.

Key Seeker - Project Schedule

Task Name	ID	Start	Finish	Duration	June																														
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Project Presentation	23		06/01/2006	one evening	▲																														
Project Report	24	06/02/2006	06/08/2006	7 days		DOCUMENT ▲																													

Success Evaluation

In order to be able to determine if a project has been developed effectively a series of tests must be designed and conducted repeatedly on the project.

Iterative testing is the best approach to testing. Repeating tests, revising the product and repeating more tests helps to ensure the success of the overall product.

Two types of testing were designed and implemented throughout the development of this project.

Quality Assurance testing was done to monitor the technical correctness of the project, the logic and navigation, all technical aspects of the site.

Usability testing was designed and completed to monitor the achievement of the stated goals for the project. A technically well designed site does not guarantee its success with users, and a site designed well but not implemented properly in technical manners is not usable. There must be a balance for a site to succeed in its goals.

Testing allows developers to remove themselves from the project and see the site through the eyes and experiences of others.

Quality Assurance Test Results

Key Seeker – Keyboarding for Kindergarten
<http://keyseeker.org>

Ann White
Summer2006

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Executive Summary

Key Seeker – Keyboarding for Kindergarten is an interactive learning tool developed to introduce children (age 5) to the concept of keyboarding and assist them in letter recognition. The tool is based on paired associative learning theory. Letters displayed on the screen in purple should be input with the child's left hand. Letters displayed on the screen in green should be input with the child's right hand. Also incorporated into the tool is a carefully designed sequencing algorithm to aid in the learning process and letter mastery.

Ann White, a student at the Art Institute of Atlanta recently completed a formal quality assurance test for Key Seeker – Keyboarding for Kindergarten.

Purpose of Quality Assurance Testing

The purpose of quality assurance testing is to insure that the application is free of technical bugs and some usability issues. The game may be used on a variety of machines with a variety of internet connections. As macromedia Flash is cross platform, the quality assurance testing for the project is best accomplished by “playing” the game.

A variety of browsers, platforms and screen sizes were tested.

Goals of Quality Assurance Testing

Usability testing and quality assurance testing attempt to address two different aspects of production. The goal of these quality assurance tests is to be certain the elements of the game are correct.

Purple letters on the screen are the same for the purple side of the keyboard, and green for green

- The animations run smoothly and in a timely fashion (pace)
- The printing portion of the game is technically sound and error free
- The sequence of letters is correct for right and wrong answers
- The navigation between help screens, print screens and go screens runs smoothly and properly
- All buttons operate in a logical manner and audio is used properly for direction

Participants

Participants were screened to insure that the participants had some technical background and could understand what technical issues may occur during the game. They needed to at least have been using the internet for three years. If they were online participants they needed at least a beginner level rating in Flash with some experience with Action scripting. Although this group was unable to test for “usability” issues for the target audience, they will be able to detect any technical and general usability issues with the game.

Methodology

Both bugs and usability issues were addressed. The game was put in front of 8 people (5 pc users 3 mac users) who have not been involved with its development, they were given some general direction and requests, and then they played the game.

Quality assurance was conducted at the Art Institute of Atlanta and with an online community of four. Each session took no more than 1 hour. Not all sessions were observed by a facilitator. The online testers were given the flash .fla file and asked to run the game first from within the

flash player. Several trace statements were placed within the code to attempt to keep track of potential problem areas. Respondents were then asked to make a .txt file of the game session and give a written account of what happened (if an error appeared in the game). Those files were then forwarded to the developer for further analysis. Performing the initial quality assurance tests in this manner helped the developer to identify problems with the logic being programmed prior to incorporating any design assets into the game.

This allowed for iterative testing on the programming aspect of the game. In the mean time small informal usability tests were done on the game assets, animation and sound for its entertainment and educational value. This allowed both the design and programmatic aspects of the game to move forward at separate paces.

The beta game was played on both PC and Mac machines and a variety of browsers (listed below). Technical issues were observed and recorded for each participant.

The cumulative results from the latest round of quality assurance testing held August 27, 2006 (prior to usability testing) are included on page 88 of this report.

Testing Outline

- ___ Make certain consent form has been completed
- ___ Make certain screening questionnaire has been completed
- ___ Explain a little about Key Seeker
- ___ Explain How the observation works – observations must be recorded on paper
- ___ Assign a Machine and a browser
- ___ Assess the navigation
- ___ Complete Task Scenarios
- ___ Complete Post Questionnaire

Test Environment and Equipment

The Art Institute of Atlanta computer lab will serve as both the observation and evaluator room. Clients will not be present for the testing.

Roles

Test Administrator/Facilitator: Overall coordination of the individual test, explain the test activities and administer questionnaires. Responsible for taking observation notes. Primary person the test subjects will interact with.

Evaluation Measures

The evaluation measures are a combination of quantitative measurements and subjective observations. The quantitative and qualitative data measures are listed below

Quantitative Data	Qualitative Data
Number of problems encountered Number of errors or unsuccessful tries Interviews before the test Interviews after the test Flash output text from trace methods written into the code	Facial Expressions Verbal comments when they think out loud Spontaneous verbal expressions (comments) any solicited or non solicited recommendations

Recommendations report:

As a result of several rounds of quality assurance testing, many logic errors were found and repaired. The majority of these issues were found by the online testers.

Areas needing improvement upon initial testing:

- Working with arrays – sequencing of displaying letters
- Key Listeners – determine which key was pressed and what specific action should be taken not all letters responded consistently
- Development of counters to track the appearance and disappearance of items
- Making sure all help screens and audible cues made logical sense
- Making sure the audio was smooth and volume levels were pleasant
- When to keep sounds on and when to turn them off
- Timing of animations needed to be consistent – no letter should have more importance than any other letter
- Placement of Buttons – audio on the buttons
- Appearance of the banana rewards

Solutions:

Most errors found were solved easily. Some errors were unanticipated – my inexperience with Flash logic was brought forward, but tackled and errors were corrected. The only solution I am still not happy with is the refreshing of the html page to get all the key listeners in Flash to stop listening once a movie is unloaded from the main timeline.

The refresh solution adds an extra click for the user to actually go to the game, but it was a solution. Without refreshing the page, the game would still keep in its memory the last letter that had appeared on the stage and try to give audible incorrect responses when in fact the user had input the correct letter. This was a major problem with the game. Better solutions are still being investigated as of this writing.

Future Recommendations

- Include an audio control on the instructions screen
- Add a variety of audible responses and a variety of animations for each letter and dynamically generate those responses randomly.
- Use the counters data to supply information to the teachers – what letters take more tries?
- Fully develop the print function to read the mastered letters from the learned bin and print those specific letters.
- Build more levels of difficulty

Summary

The iterative testing on the game proved to be the most useful in furthering the development of the game. Without such testing, a fully designed game complete with audio and animation assets might have gone into usability testing and failed, not based on its usability but on technical errors or errors in logic. Quality assurance testing brought forth many issues that had not been addressed in the original conceptualizing and process flow design of the game. It helped lead the developer toward coding in a manner which would allow for future enhancements to the game.

Quality Assurance Document

Web Site Name:	http://keyseeker.org
Connection Speed:	cable and dsl no dial up was tested...

	Correct Letter for Keyboard side	Color for	Layout	Printing function	Script Errors	sequencing for incorrect letters	“timing” for animations - pace	General Errata
IE 5.x (PC)	yes		no shifting	no error	none appeared	correct!	smooth and timely	flash as page refreshes to play game again
IE 6 (PC)	yes		no shifting	no error	none appeared	correct	smooth and timely	flash as page refreshes to play game again
Firefox (PC)	yes		no shifting	no error	none appeared	correct	smooth and timely	flash as page refreshes to play game again
Netscape (PC)	yes		no shifting	no error	none appeared	correct	smooth and timely	flash as page refreshes to play game again
Opera (PC)	yes		no shifting	no error	none appeared	correct	smooth and timely	flash as page refreshes to play game again
Firefox (Mac)	yes		no shifting	no error	none appeared	correct	smooth and timely	flash as page refreshes to play game again
Safari (Mac)	yes		no shifting	no error	none appeared	correct	smooth and timely	flash as page refreshes to play game again

Appendices

Forms and Surveys

Consent Form

Thank you for participating in the Quality Assurance testing for the Key Seeker , keyboarding game.

I, _____ voluntarily agree participate in this testing, and observation. I understand that the observation and testing is being done for educational purposes only. Any feedback provided will be used to enhance the educational software. The participant may stop at any time. Any information provided by me for this testing is to be used solely for research purposes in relationship to this project.

Signature

date

Participant Screener


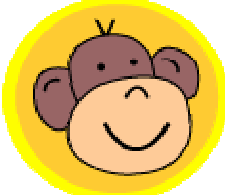


<p>Have you been using the Internet (including using e-mail, gopher, ftp, etc.) For more than 3 years?</p>	<p>if yes, continue</p> <p>if no: thank you for your participation.</p>
<p>Are you familiar with Flash Actionscripting? If yes, what level?</p>	<p>beginner intermediate expert</p>
<p>What do you usually do on the internet? (e.g., email, use reference materials such as encyclopedias and dictionaries, read news, curriculum activities, games, entertainment etc.)</p>	
<p>What is the primary language spoken at home? (i.e., the one you speak most of the time)?</p>	<p><input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Chinese <input type="checkbox"/> French <input type="checkbox"/> German <input type="checkbox"/> Dutch <input type="checkbox"/> Japanese <input type="checkbox"/> Other: _____ specify _____ _____</p>

<p>How frequently do you use internet?</p>	
<p>Home</p>	<p><input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Less than once a month <input type="checkbox"/> never <input type="checkbox"/> can't say</p>
<p>School</p>	<p><input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Less than once a month <input type="checkbox"/> never <input type="checkbox"/> can't say</p>
<p>Work</p>	<p><input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Less than once a month <input type="checkbox"/> never <input type="checkbox"/> can't say</p>
<p>Cyber Café</p>	<p><input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Less than once a month <input type="checkbox"/> never <input type="checkbox"/> can't say</p>
<p>Other</p>	<p><input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Less than once a month <input type="checkbox"/> never <input type="checkbox"/> can't say</p>

<p>Please indicate the highest level of education completed.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Grammar school <input type="checkbox"/> High School or equivalent <input type="checkbox"/> Vocational/Technical School <input type="checkbox"/> Some College <input type="checkbox"/> College Graduate(4yr) <input type="checkbox"/> Master's Degree (MS) <input type="checkbox"/> Doctoral Degree (PhD) <input type="checkbox"/> Professional Degree (MD, JD, etc) <input type="checkbox"/> Other: Please Specify
<p>What is your primary computing system platform?</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Windows <input type="checkbox"/> Macintosh <input type="checkbox"/> Linux <input type="checkbox"/> Unix <input type="checkbox"/> Other: Please Specify <input type="checkbox"/> Don't know <p>(match participants accordingly)</p>

Navigation Assessment:

Do the links work properly?

 A green circular button with a yellow border containing the word "GO" in purple, stylized letters.	<ol style="list-style-type: none">1. Begin the game after instructions2. Return to the game option(at exit)
 A yellow circular button with a yellow border containing a cartoon monkey face with a brown body and a smiling expression.	Help(play the instructions)
 A yellow circular button with a yellow border containing a yellow printer icon with a sheet of paper coming out of it. The paper has the letters "A", "G", "H", "Y", "W" printed on it.	Print(performs the print function)
 A red octagonal button with a yellow border containing the word "STOP" in white, bold, capital letters.	Exit game (go to print screen option)
Other comments before beginning:	

Scenarios/User Tasks

Key Seeker OBSERVATION FORM

_____ **Participant ID**

Browser _____ Mac or PC _____ Screen Size _____

Introductory animation

Does it run smoothly (load correctly, quickly)
Can it be heard easily?

Suggestions or Comments

Any Errors?

Round One – Key Seeker

Beginning game play

Please write down the sequence of the letters as they appear.

right 1st try – does the letter reappear? (when)

Right 2nd try– does the letter reappear? (when)

Right 3nd try– does the letter reappear? (when)

Right 4nd try– does the letter reappear? (when)

Right 5nd try– does the letter reappear? (when)

Never get it right – record what happens

Please record Any technical issues that come up

Print Test
Any Errors?

Get 5 letters correct – then end the game
Print test

Exit the game

Keyboard Color = Screen Color

	Color	Correct?	
A	purple	YES	NO
B	purple	YES	NO
C	purple	YES	NO
D	purple	YES	NO
E	purple	YES	NO
F	purple	YES	NO
G	purple	YES	NO
H	green	YES	NO
I	green	YES	NO
J	green	YES	NO
K	green	YES	NO
L	green	YES	NO
M	green	YES	NO
N	green	YES	NO
O	green	YES	NO
P	green	YES	NO
Q	purple	YES	NO
R	purple	YES	NO
S	purple	YES	NO
T	purple	YES	NO
U	green	YES	NO
V	purple	YES	NO
W	purple	YES	NO
X	purple	YES	NO
Y	green	YES	NO
Z	purple	YES	NO

Imagine – if you can that you are 5 years old....

Were the instructions clear?

Did the game make sense?

Was the game fun?

Did it hold your attention?

Now, as an adult:

What changes or enhancements would you suggest?

Did you notice any bugs? If so, what were they?

Did anything happen that kept you from finishing the game?

How were the sounds?

Other comments

Usability Test Results

Key Seeker – Keyboarding for Kindergarten

<http://keyseeker.org>

ANN WHITE

Summer 2006

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Executive Summary

Key Seeker – Keyboarding for Kindergarten is an interactive learning tool developed to introduce children (age 5) to the concept of keyboarding and assist them in letter recognition. The tool is based on paired associative learning theory. Letters displayed on the screen in purple should be input with the child’s left hand. Letters displayed on the screen in green should be input with the child’s right hand. Also incorporated into the tool is a carefully designed sequencing algorithm to aid in the learning process and letter mastery.

Ann White, a student at the Art Institute of Atlanta recently completed an initial usability test for Key Seeker – Keyboarding for Kindergarten.

Purpose of the Key Seeker Usability Test

Usability testing provides information vital for user-centered software design. By investigating user’s interactions with software, usability testing provides the designer and the developer with information fundamental for designing a positive user experience.

Traditional usability testing asks users to complete specific tasks. Testing usability with children varies greatly from the traditional tests. Children’s software usability tests need to be enjoyable for the child. A child will interact with software to have fun they are likely to have difficulty completing an assigned task for the software. Adults, even those who are familiar with children and with related research, cannot accurately predict children’s interaction with software. This makes usability testing essential for creating well-designed children’s software. Throughout the development process, informal testing was used with a variety of children to monitor reactions to the characters displayed, sounds heard and the “level of enjoyment” experienced by the child. The findings from those informal tests were then implemented into the game.

“Usability testing is necessary because a product’s designers and creators cannot anticipate the wants, needs, and reactions of actual users. The nature of software design causes the people involved to become far too familiar with the product to accurately predict the interactions of average users. In many cases, the product’s designers and creators are more technically advanced than the average user. In the case of children’s software, the differences between the people involved in the product’s design and the product’s intended users are enormous.”⁵

Goals for the Key Seeker Usability Test

Overall Goal: To ensure ease of use and meaningful learning, it is important that the Key Seeker application is:

Simple enough for young children to use.

Sufficiently engaging to capture children’s limited attention spans.

Provides an element of practice for mastery of associative paired values

Problem Statements and Test Objectives

⁵ Alexander, Hanna, Ridsen. (September – October 1997). **Guidelines for Usability Testing with Children.** Interactions, ACM.

Two Levels of Testing: This application requires some initial help from adults. Teachers' interactions with the children were observed as well. Both teachers and children were also asked to complete a post questionnaire. Ten students, two teachers and one teacher's aide participated in the testing. Parents completed a demographic survey and consent form for their child's participation.

Teacher/Parent

1. Is the application easy for you to explain and provide assistance with?
(Is it easy to load? /exit?)
2. Do you feel this is helpful to the learning process, why or why not?
3. Is the level of interaction needed by the adult overwhelming?

Student

1. Is the interface easy to learn for kindergarten children?
2. Are the instructions clear?
3. Are the interactions entertaining enough to hold interest?

User Profiles

Personas:

Personas are a way to personalize the users of a site. The personas created in this document were created using research referenced in the Additional Supporting Research section of this document.

If we keep our approach personal, we are more likely to meet the needs of the user.

Primary User: The Kindergarten Student

Susan Johnson Personal Profile

Quote:

“My favorite things are ice cream and my dog.”



Susan has recently entered kindergarten at Brown Elementary School in Cobb County, Georgia. She spends ½ day at school and enjoys being with her new friends. She especially likes puzzles and games. She is new to sharing as she is an only child.

She enjoys school and always talks about her dog named Bunny.

Background:

- 5 years old
- Attend Brown Elementary School Cobb County
- Concerned what other kids think

Attributes:

- Outgoing
- Physically active
- Concerned with the friends and having fun

Needs:

- Simple navigation and instruction
- Motivation
- Stimulation to activity
- Attention
- Learn Letters, recognize and by sight sound

Kindergarten Scenario	Student	Needs	Feature	Behavior
<p>Sue is given a choice of activities in kindergarten at one of the many learning centers. She chooses the computer and chooses to "play" with Key Seekers.</p> <p>There may be times when she needs to share the experience with another student as the computer stations are limited.</p> <p>She and a few friends take turns and sometimes work as a group to obtain proper hand use and correct letter recognition.</p>		<p>to start program</p> <p>to hear instructions</p> <p>to be reminded which hand to use</p> <p>match letter with picture and or sound</p> <p>Encouragement</p> <p>Feedback</p>	<p>Large buttons to start program</p> <p>Sound on or Off Option (headset)</p> <p>Audio/Visual cues of hands use.</p> <p>Color matching to find correct key and use correct hand</p> <p>Audio and Visual encouragement – correct answers will display "fun" meaningful animation correlated to the illustration displayed.</p> <p>Adult Supervision</p> <p>Audio and Visual feedback for correct and incorrect answers</p> <p>Adult Supervision</p>	<p>She places the disc in the drive or logs on to the site using a desktop shortcut. She is greeted with a colorful screen and listens to the instructions. She is prompted to start with audio and visual highlight of a large GO button.</p> <p>She proceeds through the "game" matching pictures with letters and matching her left hand letters with the left hand letters of the keyboard. She has trouble with left and right so colored tape is placed on the corresponding hands to help remind her where to find the letter on the key board and what hand to use to press the letters.</p>

Secondary User: The Kindergarten Teacher

Barbara Lee Personal Profile

Quote:

“Stay focused on the task, persevere, and you will succeed.”



Barbara is committed to her life as an early childhood educator. She spends much of her free time researching new and effective ways to make a difference in the learning environment for her kindergarten class.

She is relatively familiar with computer usage and feels comfortable incorporating it into the classroom. She is very picky about the quality time kids spend on the computer as the class time is limited. She is looking for software that meets the needs of her students and kindergarten literacy expectations.

Barbara is researching schools for her Masters Degree in education.

Background:

- 28 years old
- Teaching Kindergarten for 3 years
- Single
- Enjoys reading, board games, gardening
- Dreams of learning to salsa dance
- Uses the internet and email to communicate with family and friends and research.

Attributes:

- Caring
- Positive attitude
- Task oriented and studious
- Extremely well organized
- Dedicated to children's success

Needs:

- Additional Support for language arts teaching
- New ways to incorporate computer into early learning environment

Kindergarten Teacher Scenario	Needs	Feature	Behavior
<p>Barbara allows her students 20 – 30 minutes twice a week to choose computer time as an optional activity.</p> <p>She is limited in the amount of supervision she can provide to the students and encourages them to work together at the computers.</p> <p>She sees that three children have chosen to use the computers. There are two available for the students in the classroom.</p>	<p>Software that the children can operate with minimal supervision</p> <p>Incorporate group use when there are not enough computers</p> <p>offer additional activities to support the keyboard project</p>	<p>Audio/Visual instructions</p> <p>Turn taking or children who know left right to help remind and encourage children just learning the concept.</p> <p>Children can speak the word displayed; say the color and the left-right hand that should be used.</p> <p>Supporting Materials that have the same look and feel as the interactive project (These are still being discussed)</p>	<p>She will assist the children in getting situated. She will supervise the loading of the program to be certain the child does understand what to do and how to do it.</p> <p>She will describe to the other children ways they can cooperate in the use of the game. Or redirect some children to other supportive activities (possible low tech key boards where they can play along)</p> <p>She may use class time as a group to play a low tech version of the software using flashcards and a large keyboard layout. These materials will have the same look and feel as the interactive program. (still being designed and discussed)</p>

Data Analysis and Recommendations

Below is a list of the major areas of concern and recommendations. These concerns and recommendations are elaborated on more deeply in the Usability Test Results Analysis portion of this document.

Analysis of the test data provides these major findings:

1. Instructions were listened to more than once – mostly to adjust volume for the game.
2. No one used the help button during the game – but kids did roll over it to find out what it was.
3. Very few children needed as much help as was available – only two children never found the correct letter, but were able to find it the second time the letter appeared out of the bin.(not always on the first try)

Based on these findings the following recommendations were made:

1. Print more letters – more development and testing is required here
2. Volume control option

Additional recommendations based on findings:

These are recommendations made to further expand the existing project which is presently beyond the scope of this coursework. It will take further development, testing and design to complete.

1. Implement teacher controls over which letters are practiced
2. Teachers would like a way to track a child's progress (personalize the game)
3. Add more difficulty levels – more animations so game does not get boring.
4. Develop an ongoing study to measure whether or not the software improves keyboarding skills for children.
5. Can the game be adapted for children with special needs?

Methodology

Usability testing was conducted in the classroom at Brown Elementary School August 28, 2006. Each session took no more than 20 minutes. The sessions was administered and observed by one facilitator and a teacher (or a teacher's aide)

Children need to be encouraged to participate. The observer, and or teacher should stress the value of the child's input and show appreciation and gratitude. It is extremely important to make the child feel at ease. For this reason, testing will be done in the classroom (familiar environment) with the aid of the teacher.

When testing with young children observer notes are crucial. Rather than relying on verbal comments, expressions such as smiling or sighing often are used to judge the quality of interaction. When teachers are present during testing, teachers will be asked to complete reaction questionnaires at the end of the session... Teachers are often better judges of student's mannerisms than observers.

Testing Outline

- ___ Make certain consent form has been completed by parent
- ___ Make certain demographic questionnaire has been completed by parent
- ___ Introduce yourself to each child
- ___ Explain a little about Key Seeker
- ___ Explain How the observation works – observations must be recorded on paper (No video taping allowed in the public schools)
- ___ Assess the navigation
- ___ Complete Task Scenarios (instructions, start the game, end the game, print letter)
- ___ Complete Post Questionnaire with Child
- ___ Have teacher complete Post questionnaire as well

Test Environment and Equipment

The kindergarten classroom (or computer lab) served as both the observation and evaluator room. Clients will not be present for the testing, however teachers (those responsible for implementing the use of the application will be present)

Roles

Test Administrator/Facilitator: Overall coordination of the individual test, explain the test activities and administer questionnaires. Responsible for taking observation notes. Primary person the test subjects will interact with. Ann White served as Primary Administrator- Teachers were used for additional observation as well.

Usability Test Results Analysis

Summary

The evaluation measures will be a combination of quantitative measurements and subjective observations. The quantitative and qualitative data measures are listed below

Quantitative Data	Qualitative Data
Number of problems encountered	Facial Expressions
Number of unsuccessful tries	Verbal comments when they think out loud
Length of time users spend playing the game	Spontaneous verbal expressions (comments)
Number of times help is used	Observed and recorded behavior
Number of times user needs to be probed or prompted to use the game	

Site Positives

1. The children are engaged in the game – they find the animations and sound fun and appealing.
2. They learn the buttons easily and remember them (post questionnaire)
3. Teachers would like the game to be expanded further

Specific Problems of Concern:

Specific areas that need consideration	Description of Problem	Task or test that identifies problems
Help Button	not used	Observation – children would roll over the buttons to hear what they meant but no child used the help button during the game. May not be an issue for this level , but may be needed in future levels
Stop Button	not used without instruction to do so	No child used the stop button without being instructed to do so.
Instructions	difficult to hear	observation - Several children re started the instructions and had difficulty in having the volume set properly. Needed adult assistance
Print	only prints one letter – button says – “leave the game and print your letters”	Observation – when asked to stop the game then print – the children only got one letter printed out – they were expecting more. Needed adult assistance

Results Analysis Qualitative Data

Qualitative data is obtained using observation of facial expressions, verbal comments when participants think out loud and spontaneous verbal expressions (comments). Qualitative data is also obtained from participants using surveys that measure how a respondent feels or perceives about a particular statement. Our testing includes both methods of observation of the task scenarios and data collected from the post questionnaires.

Pre-task Interview and Task Scenarios

The teacher was asked to situate the child to “play the game.” Although not an official or formal part of the testing, children were given a variety of “monkey paws” from which to choose. Monkey paws are physical indicators for the children to know which side of the keyboard the letters are located – purple for left, green for right. The children were given the choice of tape, wristbands, and fingerless gloves. Some monkey paws were “home made” from socks that had been dyed and the toes and heels removed – similar to punk fashion accessories. This “dress up” element of the game was a good icebreaker and helped to set the mood for a specific task – to be a key seeker.

Navigation Assessment:


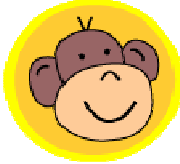


Children and teachers were asked to first do a simple navigation assessment. This assessment was done to test for intuitiveness of the labels/icons used on the site.

NOTE: this navigation assessment was also given as a post task assessment.

After playing the game 90% of the participants understood the function of the go and help buttons and remembered what they do (and the audible reply!). The one child that could not tell what the buttons meant is severely hearing impaired.

The adults had a similar problem when simply looking at monkey icon. However, when they visited the site they easily comprehended the idea and could explain what the button was used for.

Ask about each icon (visual interpretation) - - What do you think this does?

	Children	Adults
	90% of the children tested were not sure what this meant just looking at it on a page	100% start playing the game
	100% of the children tested were not sure what this meant just looking at it on a page	0% knew what this button was without hearing the button or reading the button name from the site
	60% of the children tested thought this meant “print”.	100% print something
	100% of children tested understood that this meant stop playing the game	100% stop playing the game
Other comments before beginning:	“I like that monkey face” “Are these stickers?”	

Scenarios/User Tasks

Note to facilitator: In observing the tasks be aware of body language, facial expressions and comments. Record all verbal comments and where they occur in the testing process as well as facial expressions and body language.

Key Seeker **OBSERVATION FORM (cumulative recorded results)**

Browser IE6 Platform PC Screen Size 1024 x 768

Introductory animation focus:

Focused
 Unfocused

Observations:

6 children appear confused – “I can’t hear it” - looks to teacher for help.

Teacher adjusts volume for those students and then hits the monkey button for the instructions to play again...then leaves them alone to play.

Teachers eventually figure out to set volume before situating the child.

One child is severely hearing impaired but was able to get to the go button without problem and was able to continue the game playing process based on the visuals of the instructions alone! – this was revealing to me as the developer...

Two children try to use the mouse during the instructions to point at the letters on the screen – these same two children will need prompting when the game starts

Introductory animation reaction:

Positive
 Neutral
 Negative

Observations: all children listened and watched without speaking during the instructions. Appeared engaged and attentive.

Go button interaction:

No facilitator prompting – 10 students

Observations: all students knew to start the game with the go button directly – several repeated “go play the game!”

Round One – Key Seeker

Beginning game play

- 7 No facilitator prompting
- 3 Objective prompting

Observations

When did the child type the correct letter (was the appropriate hand used?) (first letter out of the bin)

- 2 First try
- 7 Second try
- 1 Never (this child did eventually get the letter correct on another try)

Six children rolled over the help button at some point during the game (within the first 4 letters presented), but none of them clicked on it. They appeared to be curious about it.

Four children played long enough and got enough letters correct to receive at least one banana reward. Banana rewards are given if a child masters the letter – answered correctly on the first try – twice.

Upon receiving a banana one child said– “what’s that? I got a prize!”

Other observations

“I already saw the zebra”
That monkey fell down
Lots of intermittent giggles, laughs and smiles.

Teachers would only interrupt the student if the incorrect hand was used, even if the child got the letter correct. (This happened more earlier in the game – after a few reminders most children used the correct hands)

Overall game focus

Focused

Overall game reaction

Positive

After 20 minutes child is asked to stop playing

Child finds stop button

All 10 children knew how to stop the game and had ease with the mouse in using the button.

Child is asked to print

This area was the most troubling for the students. They could all find the print button without prompting, but when the print dialog came up only one student knew how to continue. Teachers would interact with the game at this point then the child would retrieve their page off the printer. Teachers expressed that this was a lesson each child would need to master eventually and that it would differ for each classroom or lab. Teacher explained to the child what needed to be clicked to be able to print, but the teachers would actually

click. All the children, except for the hearing impaired child thought more letters would print. It is expected with time and exposure that the children will master the "print" function as it applies to their situation.

Each child was instructed by the teacher to put his/her name on the sheet.

Game Mastery – the child understood the following:

Game concept (type the correct letter and get animation reward)

Left Hand Right hand Green/Purple relationship – needed reminding early on in the game

Did the child correlate the images with the letters? (prompting or no prompting)

Some children knew some letter and picture correlation and would speak them out loud. They were not prompted about the relationship. This may be an avenue for further study or an opportunity for reinforcement in the classroom with supporting materials.

Did the child have trouble using the mouse?

No

Total Activity Time 20 minutes

Post Session Survey Results – 10 children surveyed

	Yes, very much	Yes	Not really	Not at all
I understood the instructions.	 8	 2		
Mora the monkey was helpful	 9	 1		
The game was fun	 10			
The game was easy to play	 2	 8		
I used my left – purple hand and right – green hand correctly	 7	 3		
I want to play this game again	 10			
I would like to play this game at home note: two children do not have computers at home	 8		 2	

What did you like the most? What ideas do you have about the game?

I like the sounds they are funny
 I like the penguins
 I like when the monkey falls down
 The turtle makes a funny noise
 Can I have another picture for my sister?
 I like the cow
 I like the monkey the most
 I just like it

Post Session Survey TEACHER

	Strongly agree	Agree	disagree	Strongly disagree
The child appeared engaged	3			
My level of interaction was minimal (only three adults involved – two teachers and one teacher’s aide) note: some ambiguity in the question here – teachers felt that the playing of the game needed their interaction in terms of observing to be certain the correct hand was being used, but felt that assisting with the game their interaction was minimal) Also noted that their assistance was required during the print portion of the game – but they felt they would need to assist in the print portion of any exercise in the classroom at this level.		2	1	
The child used left hand/right hand without my external prompting Note: all 3 adults expressed that the prompting to use the correct hand appeared to be less and less the longer the child played the game.		1	2	
This is a useful learning tool	3			
The game meets one or more Cobb County learning objectives in alphabet recognition (Can you specify?) identify letters out of alphabet sequence recognize letters used to spell their names	3			
The game meets one or more Cobb County learning objectives with technology integration (Can you specify?) introduction of print use of mouse introduction to the keyboard use of exit	3			

What ideas do you have about the game? How can it be improved? Other comments

Remarkable concept

Better than the shoot em up games!

First "game" I've seen that does not focus on the mouse for kids in this age range.

Fun, recognizable animations and sounds.

The kids really like it. Good Job.

I like the random display of letters and when they repeat.

Not all classrooms have the ability to print, can the feature be disabled?

Can a teacher set the letters that are practiced?

Can more animations be added so it won't get boring?

Are there any supporting materials to go with the game?

Will there be more levels?

Would like to see the child's name and date print on their letter sheet

Can they get a print out to practice writing the letters?

Only one letter prints, can they get a page of letters?

Can we track a child's progress?

How can we measure if this approach works to improve keyboarding skills?

Can the game be adapted for children with special needs?

Results Analysis Quantitative Data

Quantitative data is obtained using numerically measured methods. By using careful observation and recording, specific numerical results were captured pertaining to specific tasks. Also included are the results of the demographic surveys.

Number of participants using help button during instructions = 6

This alerted the developer to the fact that a volume control issue exists and a solution should be implemented in the next version.

Subject 1	yes	Subject 6	yes
Subject 2	no	Subject 7	yes
Subject 3	yes	Subject 8	yes
Subject 4	yes	Subject 9	no*
Subject 5	no	Subject 10	no

Number of participants using help button during the game = 0

However, 6 of them did roll over the button to hear what it says
(Is this a possible distraction – further testing will be needed-)

Subject 1	no	Subject 6	no
Subject 2	no	Subject 7	no
Subject 3	no	Subject 8	no
Subject 4	no	Subject 9	no*
Subject 5	no	Subject 10	no

Number of participants completing the game within the given time (20 mins) = 0

Many children at this age and at this point in the school year are just beginning to learn the alphabet and the idea of typing letters is very new. It is expected that as their letter recognition skills improve and the more they play the game they will actually finish the game within a 20 min time frame (the usual amount of time they can use the computer during free time at school). It is recommended that more testing be done later in the school year to see if the ability to finish the game has increased.

Subject 1	0	Subject 6	0
Subject 2	0	Subject 7	0
Subject 3	0	Subject 8	0
Subject 4	0	Subject 9	0
Subject 5	0	Subject 10	0

Number of Users able to use the game without prompts and probes = 7

The majority of children understood how to play the game. The prompts and probes necessary were to assist in reminding the children of which hand they needed to use to input the letters.

Subject 9 was a severely hearing impaired child. It is interesting to note that although the child could not hear the instructions well or hear the animations, he still found the game to be fun and playable. This is an area worth further investigation.

CHILDREN			
Subject 1	yes	Subject 6	yes
Subject 2	yes	Subject 7	no
Subject 3	no	Subject 8	yes
Subject 4	yes	Subject 9	no*
Subject 5	yes	Subject 10	yes

ADULTS	3
Subject 1	yes
Subject 2	yes
Subject 3	yes

Number of Users able to use the game with prompts and probes = 10

After playing the game a bit, or after having received additional instruction from the teacher, all the students were able to play the game unassisted. The teacher role at that point was to observe and offer guidance in hand choice.

CHILDREN	10		
Subject 1	yes	Subject 6	yes
Subject 2	yes	Subject 7	yes
Subject 3	yes	Subject 8	yes
Subject 4	yes	Subject 9	yes
Subject 5	yes	Subject 10	yes

ADULTS	3
Subject 1	yes
Subject 2	yes
Subject 3	yes

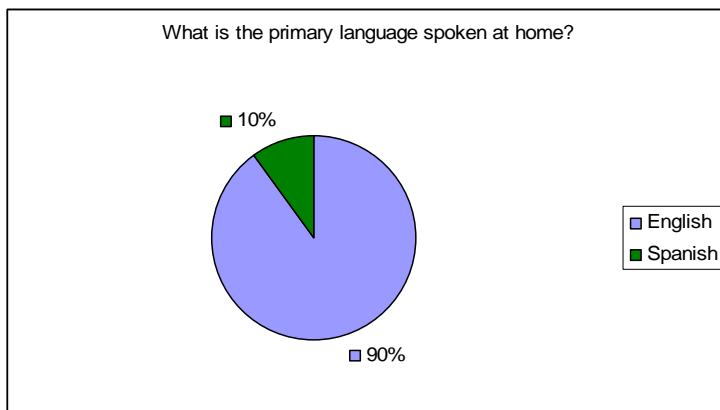
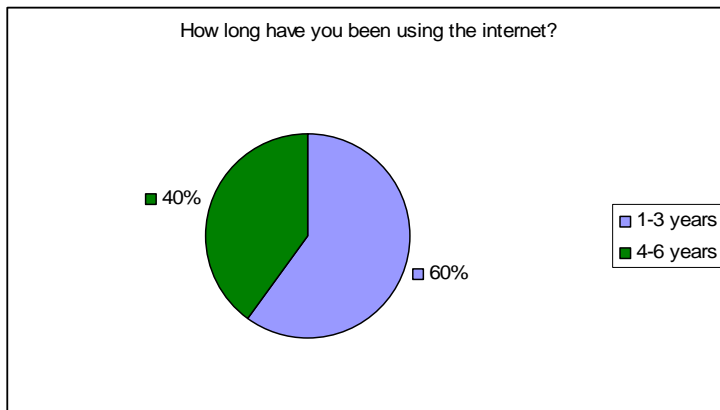
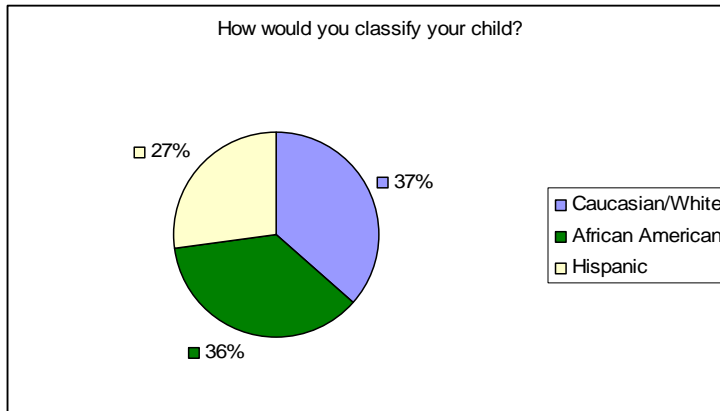
Number of users able to print from the game without prompts and probes = 1

Printing is a fairly new concept to the kindergarten class. One child knew how to continue in the print cue but all other children needed adult assistance.

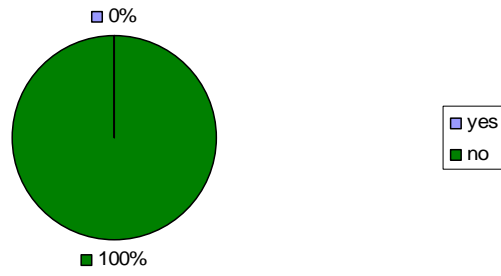
CHILDREN	10		
Subject 1	no	Subject 6	no
Subject 2	no	Subject 7	no
Subject 3	no	Subject 8	no
Subject 4	no	Subject 9	no
Subject 5	no	Subject 10	yes

Demographics

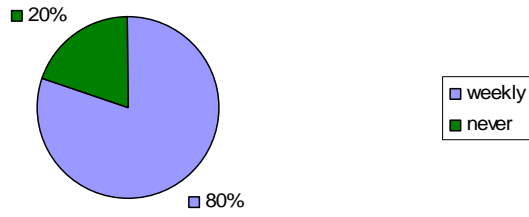
Parental Demographic Results



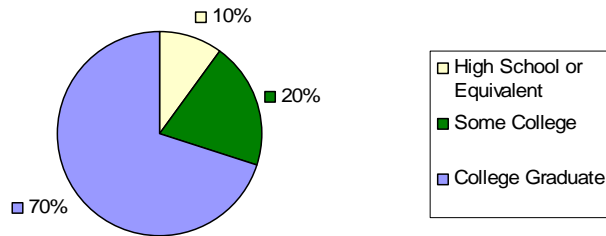
Do you access the computer with your child outside the home?

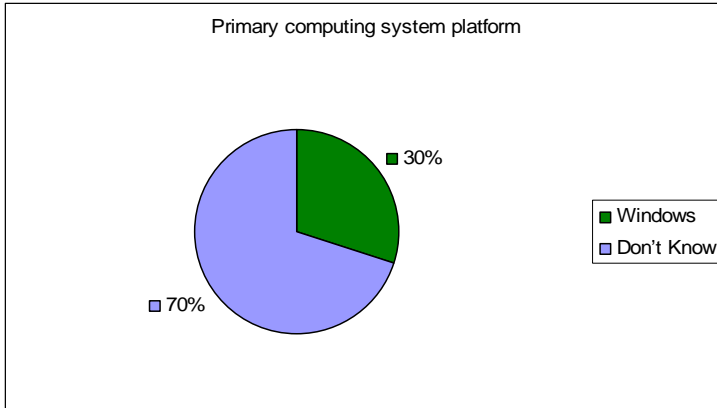


How frequently do you use (or supervise) the computer with your child?

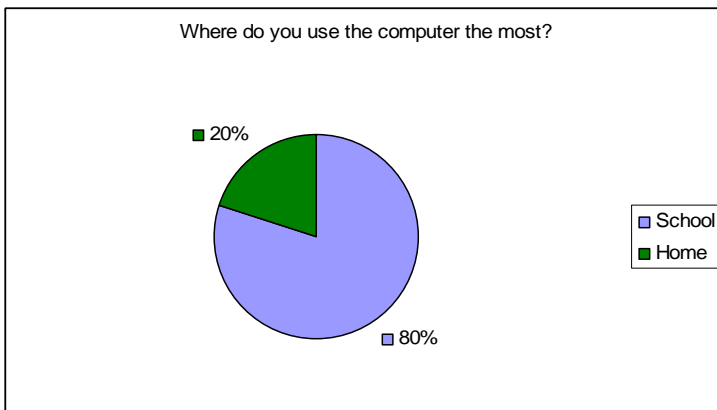
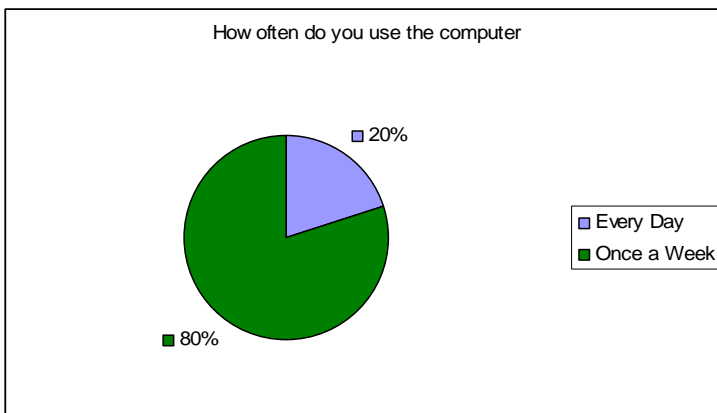
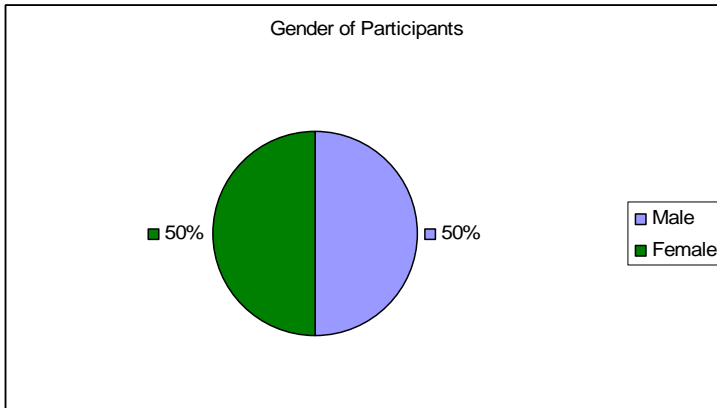


(Parents) Highest level of education completed

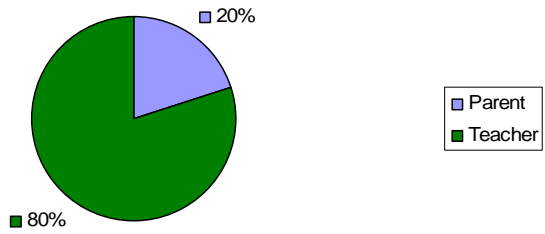




Children's Demographic Results



Who usually uses the computer with you?



Summary of Recommendations

Overall the game tested well in the majority of areas. The game proved to be simple enough for young children to use, sufficiently engaging to capture the children's attention span and it also provides an element of practice for mastery of associative paired values and letter recognition.

The major areas of concern are related to the adult involvement with the child during the game process. It is understandable that an adult will need to be involved with the child while using the computer, but the level of interaction has not proven to be overwhelming.

Areas needing improvement or solutions

1. The volume of the audio instructions needs to be addressed. The adult supervisor will need to adjust the volume level of the game prior to playing the instructions for the child. At the current time, the adult would need to know how to adjust the volume level on the internal speakers of the computer or the external speakers. A volume adjustment button on screen may prove to be helpful here.
2. The print function needs to be expanded and programmed to print out all the mastered letters for that session of play. An additional feature to the print function should include Denelian font letters that print out so the children can practice writing their letters as well. Denelian font is the approved font used by the Cobb County School System (and many other systems as well) to help children learn to print the alphabet.

Additional Features

These are recommendations made to further expand the existing project which is presently beyond the scope of this coursework. It will take further development, testing and design to complete.

1. Implement teacher controls over which letters are practiced
2. Teachers would like a way to track a child's progress (personalize the game)
3. Add more difficulty levels – more animations so game does not get boring.
4. Develop an ongoing study to measure whether or not the software improves keyboarding skills for children.
5. Can the game be adapted for children with special needs?
6. Develop supporting classroom activities and materials that coordinate with the Key Seeker graphics

Appendices – Forms and Surveys

Consent Form

Thank you for participating in the usability testing for the Key Seeker, keyboarding game.

I, _____ voluntarily agree to let my child _____ participate in this testing, and observation. I understand that the observation and testing is being done for educational purposes only. Any feedback provided will be used to enhance the educational software. The child may stop at any time. Any information provided by me for this testing is to be used solely for research purposes in relationship to this project.

Parent Signature

date


Scenarios and Task Lists

_____Participant ID

This assessment is done to test for intuitiveness of the labels/icons used on the site. They will then be given the opportunity to "play" the game to test specified features.

Navigation Assessment:

Ask about each icon (visual interpretation). What do you think this does?

 A green circle with a yellow border containing the word "GO" in purple, outlined letters.	
 A yellow circle with a yellow border containing a cartoon monkey's face with a brown body and a smiling expression.	
 A yellow circle with a yellow border containing a yellow printer with a sheet of paper coming out. The paper has the letters "A", "G", "H", "Y", "W" printed on it.	
 A red hexagon with a yellow border containing the word "STOP" in white, outlined letters.	
Other comments before beginning:	

- Third try
- Fourth or greater try
- Never

Overall game focus

- Focused
- Unfocused

Overall game reaction

- Positive
- Neutral
- Negative

Game Mastery – the child understood the following:

- Game concept (type the correct letter and get animation reward)
- Left Hand Right hand Green/Purple relationship
- Did the child correlate the images with the letters? (prompting or no prompting)

After 20 minutes child is asked to stop playing

- No facilitator prompting
- Objective prompting
- Interaction walkthrough
- Facilitator completed

Child is asked to print

- No facilitator prompting
- Objective prompting
- Interaction walkthrough
- Facilitator completed

Did the child have trouble using the mouse?

- Yes
- No

Total Activity Time ___ minutes

Parent Demographic Questionnaire

_____Participant ID

(Please note, your information will not be sold or given to outside entities. It is for internal educational use only.)

Name		
Gender	Male	Female
Age		
<p>How would you classify your child?</p> <p>Note: This is a sensitive question that can help content developers to understand the needs of current software users--it is not intended to offend.</p>	<input type="checkbox"/> Rather Not Say <input type="checkbox"/> Caucasian/White <input type="checkbox"/> African American <input type="checkbox"/> Indigenous or Aboriginal <input type="checkbox"/> Asian/Pacific Islander <input type="checkbox"/> Hispanic <input type="checkbox"/> Multiracial <input type="checkbox"/> Other: Specify _____	
<p>How long have you been using the Internet (including using e-mail, gopher, ftp, etc.)?</p>	<input type="checkbox"/> less than 6 months <input type="checkbox"/> 6 to 12 months <input type="checkbox"/> 1 to 3 years <input type="checkbox"/> 4 to 6 years <input type="checkbox"/> 7 years or more	
<p>What do you usually do on the internet? (e.g., email, use reference materials such as encyclopedias and dictionaries, read news, curriculum activities, games, entertainment etc.)</p>		
<p>What is the primary language spoken at home? (i.e., the one you speak most of the time)?</p>	<input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Chinese <input type="checkbox"/> French <input type="checkbox"/> German <input type="checkbox"/> Dutch <input type="checkbox"/> Japanese <input type="checkbox"/> Other: specify _____ _____	

<p>How frequently do you use (or supervise) the computer with your child?</p>	
<p>at Home</p>	<p><input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Less than once a month <input type="checkbox"/> never <input type="checkbox"/> can't say</p>
<p>Do you access the computer with child outside the home? (at school, library, at a friends or relatives home?)</p>	<p><input type="checkbox"/> yes <input type="checkbox"/> no</p>
<p>Please indicate the highest level of education completed.</p>	<p><input type="checkbox"/> Grammar school <input type="checkbox"/> High School or equivalent <input type="checkbox"/> Vocational/Technical School <input type="checkbox"/> Some College <input type="checkbox"/> College Graduate(4yr) <input type="checkbox"/> Master's Degree (MS) <input type="checkbox"/> Doctoral Degree (PhD) <input type="checkbox"/> Professional Degree (MD, JD, etc) <input type="checkbox"/> Other: Please Specify</p>
<p>What is your primary computing system platform?</p>	<p><input type="checkbox"/> Windows <input type="checkbox"/> Macintosh <input type="checkbox"/> Linux <input type="checkbox"/> Unix <input type="checkbox"/> Other: Please Specify <input type="checkbox"/> Don't know</p>

Child Questionnaire- pre-task

_____Participant ID










Observer or teacher will ask these questions of the child and complete the form.

Name		
Gender	Male	Female
Age		
How often do you use the computer?	<input type="checkbox"/> Every Day <input type="checkbox"/> Once a Week <input type="checkbox"/> Once a Month <input type="checkbox"/> Only when I need something	
Where do you use the computer the most	<input type="checkbox"/> School <input type="checkbox"/> Library <input type="checkbox"/> Home	
Who usually uses the computer with you?	<input type="checkbox"/> Parent <input type="checkbox"/> Sitter <input type="checkbox"/> Teacher <input type="checkbox"/> Other _____	

Post Session Survey CHILD

_____ Participant ID

Please fill out the following questions about the site:

	Yes, very much	Yes	Not really	Not at all
I understood the instructions.				
Mora the monkey was helpful				
The game was fun				
The game was easy to play				
I used my left hand/right hand correctly				
I want to play this game again				
I would like to play this game at home				

What did you like the most? What ideas do you have about the game?

Thank you answering the questions.

Post Session Survey TEACHER

_____ Participant ID

Please fill out the following questions about the site:

	Strongly agree	Agree	disagree	Strongly disagree
The child appeared engaged				
My level of interaction was minimal				
The child used left hand/right hand without my external prompting				
This is a useful learning tool				
The game meets one or more Cobb County learning objectives in alphabet recognition (Can you specify?)				
The game meets one or more Cobb County learning objectives with technology integration (Can you specify?)				

What ideas do you have about the game? : How can it be improved? Other comments

Thank you answering the questions.

Deployment Phase

These are the deployment activities and deliverables that will be necessary to complete during the Fall Quarter 2006:

- Make final decision if Key Seeker is to be hosted on-line or stand alone
- Move the site to the destination server.
- Make a backup of the site.

Conclusion

Using the five phases to develop Key Seeker has provided clear and informative direction to the success of the project. Continued development and testing will further the project into new areas of study and development.

Phase 1: Planning	Define concept goals and objectives, target audience, style guidelines and requirements for contents.
Phase 2: Strategy & Analysis	Research educational implications of the game. Complete a comparative analysis
Phase 3: Design	Define organization and hierarchy for all information; produce story boards, scripts and process flows. Develop a visual and partially functional prototype.
Phase 4: Development	Acquire and develop all assets for project integration as defined within the design documents.
Phase 5: Deployment (testing/delivery)	Test the interactive project functionality, reviews all information for accuracy. Key Seeker will reside on the CCSS server

Key Seeker, keyboarding for kindergarten hopefully will meet its goals of integrating technology into the lives of elementary school children in a positive and rewarding fashion. Incorporating the learning of technology with the learning of language skills allows children to develop the ability to create and communicate. When we increase the ability of a child to communicate, we increase the ability of the world to become a place of exploration and understanding.

What is the future of Key Seeker?

It is hoped, given the time and that Key Seeker will be developed further to include:

- Implement teacher controls over which letters are practiced
- Teachers would like a way to track a child's progress (personalize the game)
- Add more difficulty levels – more animations so game does not get boring.
- Develop an ongoing study to measure whether or not the software improves keyboarding skills for children.
- Adapt the game for children with special needs?
- Develop supporting classroom activities and materials that coordinate with the Key Seeker graphics